

26 November 2018

**To: Members of the Greater Cambridge Partnership Executive Board:**

Councillor Lewis Herbert	Cambridge City Council (Chairperson)
Councillor Ian Bates	Cambridgeshire County Council (Vice-Chairperson)
Councillor Aidan Van de Weyer	South Cambridgeshire District Council
Phil Allmendinger	University of Cambridge
Claire Ruskin	Cambridge Network

Dear Sir / Madam

You are invited to attend the next meeting of **GREATER CAMBRIDGE PARTNERSHIP EXECUTIVE BOARD**, which will be held in **COUNCIL CHAMBER, GUILDHALL, CAMBRIDGE** on **THURSDAY, 6 DECEMBER 2018** at **4.00 p.m.**

**Requests for a large print agenda must be received at least 48 hours before the meeting.**

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AGENDA		PAGES
1.	<b>Apologies</b>	
2.	<b>Declarations of Interest</b>	
3.	<b>Minutes of the Previous Meeting</b> To authorise the Executive Board to sign the Minutes of the meeting held on 11 October 2018 as a correct record.	1 - 12
4.	<b>Questions from Members of the Public</b>	13 - 14
5.	<b>Joint Assembly Chairperson's Report</b> To follow.	
6.	<b>Cambourne to Cambridge Better Public Transport Project</b>	15 - 112
7.	<b>City Access and Bus Service Improvements - update</b>	113 - 150
8.	<b>Histon Road: Bus, Cycling and Walking Improvements</b> To follow. Publication of this report has been delayed so that it can be updated to reflect the outcome of the additional meeting of the Local Liaison Forum, which will take place on the evening of 26 <sup>th</sup> November 2018.	

**9. Quarterly Progress Report**

**151 -  
174**

**10. Date of Next Meeting**

To note that the next meeting will take place at 4pm on Wednesday 20 March 2019.



## **GREATER CAMBRIDGE PARTNERSHIP EXECUTIVE BOARD**

Minutes of the Greater Cambridge Partnership (GCP) Executive Board held on  
Thursday, 11 October 2018 at 4.00 p.m.

### **Members of the Greater Cambridge Partnership Executive Board:**

Cllr Lewis Herbert	Cambridge City Council
Phil Allmendinger	University of Cambridge
Cllr Ian Bates	Cambridgeshire County Council
Claire Ruskin	Cambridge Network
Cllr Aidan Van de Weyer	South Cambridgeshire District Council

### **Members of the Greater Cambridge Partnership Joint Assembly in Attendance:**

Councillor Tim Wotherspoon	GCP Joint Assembly Chairperson
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### **Officers/Advisors:**

Beth Durham	Head of Communications, GCP
Niamh Matthews	Head of Strategy and Programme, GCP
Rachel Stopard	Chief Executive, GCP
Peter Blake	Transport Director, GCP
Sarah Heywood	GCP
Kathrin John	Democratic Services, South Cambridgeshire District Council
Victoria Wallace	Democratic Services, South Cambridgeshire District Council

### **1. APOLOGIES**

There were no apologies for absence.

### **2. DECLARATIONS OF INTEREST**

Councillor Aidan Van de Weyer declared a non-pecuniary interest in relation to agenda item 11, as he was a member of the A10 Corridor Cycling Campaign.

### **3. MINUTES OF THE PREVIOUS MEETING**

The minutes of the meeting of the GCP Executive Board, held on 4 July 2018, were confirmed as a correct record of the meeting.

### **4. QUESTIONS FROM MEMBERS OF THE PUBLIC**

Five public questions had been received. Junior Travel Ambassadors from Meldreth Primary School and Dr Adam Bostanci were invited to ask their questions which related to the Melbourn to Royston Cycle Link. Details of the questions and a summary of the

responses are provided in Appendix A to the minutes.

Councillor Susan van de Ven was invited to speak on the Melbourn to Royston Cycle Link proposals as Local Member. Councillor van de Ven requested that local schools and Melbourn Village College be involved in the public consultation on the proposals. The health benefits of active travel needed to be incorporated into the benefit analysis of the scheme. She pointed out that the Local Enterprise Partnership's geography included Royston.

A further public question was received under agenda item 9.

## **5. JOINT ASSEMBLY CHAIRPERSON'S REPORT**

The Executive Board **RECEIVED** an overview report from Councillor Tim Wotherspoon, Chairperson of the GCP Joint Assembly, on the discussions from the Joint Assembly's meeting held on 20 September 2018.

## **6. A428 CAMBOURNE TO CAMBRIDGE PUBLIC TRANSPORT SCHEME**

This item was deferred until the November 2018 meeting of the GCP Joint Assembly and the December 2018 meeting of the Executive Board, to allow the completion of detailed technical work by the Combined Authority's consultants. This was aimed at ensuring the scheme met alignment requirements with the Cambridge Area Metro (CAM) network proposals and other criteria such as cost, deliverability and timing.

The Chairperson reported that the GCP Executive Board had met with the Mayor and a plan had been agreed to integrate the GCP's work with future work on the CAM, to deliver the best possible public transport routes.

## **7. CAMBRIDGE SOUTH EAST TRANSPORT STUDY**

The Chairperson of the South East Transport Study Local Liaison Forum (LLF), Tony Orgee, was invited to speak. He made the following points:

- The LLF had met on 12 September 2018 and had looked at the outcome of the public consultation, which was in line with the views of the LLF.
- The LLF broadly supported the adoption of Strategy 1 as the way forward.
- There was some support for not ruling out light rail.
- If Strategy 1 could not be taken forward then the LLF would support Strategy 2 or 3 going forward.
- Ecological enhancement should be an integral part of the process.
- Work on minor interventions along the A1307 was also discussed at the meeting and useful discussions with the consultants had taken place. The importance of involving local people, local councillors and parish councils was emphasised.
- The Executive Board was informed that representatives from local villages were regular attendees at the LLF meetings; the development of the proposals kept in mind the need for the scheme to benefit the villages around it.

The Executive Board Chairperson thanked Tony Orgee for chairing an effective LLF which had played a major role in developing the options.

The GCP Transport Director presented the report which set out the GCP's vision and objectives for public transport, the Cambridge South East Transport Study business case development work and the results of the public consultation undertaken at the end of 2017. The Transport Director highlighted that:

- The proposals were very closely aligned with the development of the CAM proposals and delivered significant additional capacity that was needed to accommodate the planned growth in the area.
- A significant amount of work had gone into developing an off-road proposal which had received a lot of support at public consultation.

The Executive Board discussed the report and in expressing their support for the proposals, made the following comments:

- Councillor van de Weyer welcomed the recommendation to draw up ecological enhancements. He highlighted that the benefits of the scheme were clear but the impact would be significant, therefore enhancements were essential. He suggested that these should not be limited to a linear park.
- It was felt that the scheme unlocked growth and shared prosperity around the region without spoiling the environment.
- It was noted that the cost benefit of the scheme was good.
- The Executive Board thanked the LLF for all its work on developing the proposals.
- Councillor Herbert highlighted the importance of the scheme benefitting the villages. It was felt that the scheme would do so as it would take a lot of commuter traffic off the roads.
- The Chairperson pointed out that light rail was in the hands of the Mayor and Combined Authority. Cost per kilometre was an issue with light rail.
- The GCP wanted to work with the LLF to make further environmental and safety improvements along the A1307.

The Executive Board:

- a) **NOTED** the outcome of the public consultation and final consultation report.
- b) **AGREED** the adoption of Strategy 1, the off-road strategy, as the preferred strategy for the A1307 corridor and requested that officers developed detailed proposals for delivery of the scheme including detailed route alignment, park and ride and review of environmental impact.
- c) **REQUESTED** that officers drew up landscaping and ecological design proposals which could add enhancements to the area, maximising the potential of the off-road option including considering the possibility of a linear park alongside the development of the off-line solution.
- d) **NOTED** the updated programme for the project.

## 8. WEST OF CAMBRIDGE PACKAGE (M11/JUNCTION 11 PARK AND RIDE)

The GCP Transport Director presented the report which provided an update on the progress with the West of Cambridge package, taking into account the feedback from the GCP Joint Assembly. The Transport Director emphasised the following:

- 34,000 vehicles a day passed through junction 11 of the M11. This would increase to 40,000 over the period that was being looked at.
- Trumpington Road park and ride was already at capacity.
- Despite the proposed improvements at Foxton and Whittlesford and taking account of Cambridge South Station, there was still a considerable requirement for increased park and ride capacity.
- Additional park and ride capacity would have to achieve the necessary planning requirements.
- During the public consultation, the GCP would talk to existing local park and ride users to find out what would make using the park and ride even more attractive along Trumpington Road.

The Executive Board discussed the report and:

- Members emphasised the sense of urgency and the need to accelerate a solution given the growth at the Cambridge Biomedical Campus (CBC) and that the existing park and ride was already at capacity.
- The Executive Board was informed that a planning application for 280 additional spaces at the existing Trumpington Road park and ride site had been submitted to Cambridgeshire County Council. Work on this would commence immediately if planning approval was granted.
- In response to comments regarding the need to shorten the timescale for proposals, the GCP Transport Director emphasised the need to follow due process and to carry out public consultation on other proposals.
- Members highlighted the acute problems in the area due to the growth at the CBC and the demand for access to the site. The proposed scheme only solved part of the problem as it focussed on getting people to the CBC.
- Councillor van de Weyer raised concern regarding the impact of proposals on Harston and surrounding South Cambridgeshire villages, which could make their existing traffic problems even worse. It was felt that going through the process of consultation was a good way of looking at these issues and how they could best be managed without making problems worse. He urged that consultation looked at these issues. Once a solution was identified, this needed to be implemented urgently.
- Claire Ruskin emphasised the need to involve stakeholders from outside the region in the public consultation.
- Councillor Bates advised that the consultation needed to draw out where the traffic was coming from. He reminded the Board that Papworth Hospital and Astrazeneca would both have moved to CBC by 2020, with Papworth Hospital moving to CBC in 2019.
- Councillor Bates pointed out that traffic flow on Trumpington Road also needed to be improved, which would be a challenge.
- The Chairperson highlighted that CBC was a site on which 25,000 jobs and two of the busiest hospitals in the region were to be located. He suggested a bus from Babraham to these sites, to ensure reliable onward public transport as well as walking and cycling options, would be beneficial.
- The Chairperson advised that using the park and ride site as a potential site for coach parking also needed to be considered, as the city did not have the capacity that was needed for coach parking.
- The Executive Board recognised the need to mitigate and minimise the impact on surrounding villages, of traffic coming to and from the park and ride sites.

The Executive Board:

- a) **NOTED** the review of the West of Cambridge Park and Ride options.
- b) **AGREED** to consult on increasing the capacity for park and ride to the west of Cambridge by either further expanding the existing site at Trumpington or providing a new site adjacent to Junction 11 of the M11.
- c) **AGREED** to obtain feedback from the public consultation on the access options and other improvements associated with any development, including regard to the Cambridge and Peterborough Combined Authority's request that any new sites were temporary.
- d) **AGREED** to include in the consultation, strategic options for improving public transport reliability into the city centre along Trumpington Road.

## 9. **BETTER PUBLIC TRANSPORT PROJECT - WATERBEACH TO SCIENCE PARK AND EAST CAMBRIDGE CORRIDORS**

Mal Schofield was invited to ask his public question. Details of this and a summary of the

response is set out in Appendix A to the minutes.

The GCP Transport Director presented the report which set out the emerging recommendations for the better public transport project for Waterbeach to the Science Park and East Cambridge corridors. These corridors had been identified by the Executive Board as priority projects for developing public transport, walking and cycling improvements that were linked to the development of proposals for a regional mass transit solution.

Executive Board members expressed their support for the proposals and in discussing the report, raised the following points:

- Much of the traffic travelling down the A10 was not going into Cambridge but continuing to the A14; the consultation needed to include these people.
- This transport route needed to be aligned with the development of Waterbeach. The GCP needed to work closely with the developers at Waterbeach.
- Members were informed that data on the use of the guided busway was presented in a report to the County Council's Economy and Environment Committee on 11 October 2018. The data demonstrated that a significant number of people used the guided busway.
- Executive Board members emphasised the need to get on with the project.
- The Chairperson highlighted the severe and unresolved transport issues on Newmarket Road which needed to be addressed. He requested that opportunities from the rail route out to Newmarket and Ipswich were built in.

The Executive Board:

- a) **APPROVED** the commencement of work on the A10 Waterbeach to Science Park and East Cambridge corridors.
- b) **ENDORSED** the approach to align the high quality public transport corridors with the CAM concept.

## 10. PLACE BASED PUBLIC ENGAGEMENT STRATEGY

The GCP Communications Manager presented the report which provided an update on proposals to refresh and improve the GCP Communication's and Engagement Strategy. This built on experience to date, external reviews, including that carried out by The Consultation Institute, stakeholder feedback and in analysing the geography of multiple additional transport schemes. It proposed moving to a place based rather than scheme based engagement model.

In discussing the report, the following comments were made:

- There was a focus on South Cambridgeshire with a lot of schemes based in this area. Groups would be set up as soon as possible.
- Members felt that public consultation had been one of the strengths of the GCP and that the LLF approach had been very successful. The need for place based engagement to complement and be developed in parallel with the existing LLFs, was emphasised. The Executive Board was assured that the LLFs would run alongside the place based approach, however it was not possible to set up an LLF for each scheme given the increasing number of these.
- The importance of public engagement was emphasised and it was highlighted that proposed GCP schemes had been improved through public engagement exercises.
- Executive Board members supported the proposed approach and emphasised the importance of not losing the good work that had been done through public consultation and engagement to date.
- It was felt that the report demonstrated how the GCP had been a learning

organisation.

The Executive Board was assured that the quality of the public engagement work done to date, would not be lost.

The Executive Board:

- a) **ENDORSED** the proposed adoption of a place based engagement strategy as outlined in the report.
- b) **APPROVED** the standard terms of reference for the LLF (clause 4.3 would apply to any new LLFs only).

## 11. QUARTERLY PROGRESS REPORT

The GCP Head of Strategy and Programme presented the report which updated the Executive Board on progress across the GCP programme.

Councillor Bates would look into how cycling projects at Cambridge City and South Cambridgeshire District Councils may be linked to or incorporated with GCP projects. The Chairperson proposed that the next progress report included an update on projects from the County Council's cycling team.

The Executive Board:

- a) **AGREED** to include the A10 Melbourn to Royston Cycle Link as part of the Melbourn Greenway's consultation in late October 2018.
- b) **AGREED** that officers should formally explore funding options for the scheme with neighbouring Local Authorities.

## 12. DATE OF NEXT MEETING

The Executive Board **NOTED** that the next meeting would take place on 6 Thursday December 2018 at 4.00pm, at the Guildhall in Cambridge.

**The Meeting ended at 5.30 p.m.**

## Appendix A – Public Questions and Responses

Questions relating to Agenda Item 11: Quarterly Progress Report (asked under agenda item 4: Public Questions)		
Yunus Bostanci	<p>My name is Yunus Bostanci. I am 10. I live with my family in Meldreth, and I am a Junior Travel Ambassador at Meldreth Primary School. I think cycling is important because it avoids CO2 emissions and is enjoyable. I think Melbourn Greenways is important, in particular the Melbourn to Royston link, because fewer people from Meldreth would have to drive and more would be able to cycle, without fearing for their safety, to go to Tesco, to go to the Leisure Centre, or to just go shopping or for a tea in Royston. Next year, I will go to school at Melbourn Village College and I will have friends from Melbourn, from Royston as well as other surrounding villages. Safe Melbourn Greenways cycle paths would mean that I can visit my friends independently. My question is: <b>Do you want me to grow up being a cyclist and active commuter, or do you want me to grow up getting in the habit of driving everywhere?</b></p>	<ul style="list-style-type: none"> <li>• The GCP has already invested in this project and is keen to continue the project to completion. The route finishes in Royston which is outside the geographical area covered by the GCP.</li> <li>• Promoting active travel is very important to the GCP and work has already been undertaken on this over the last few years, with more work planned in the coming years.</li> <li>• The public consultation regarding the Melbourn Greenway will take place in early 2019 and we would encourage young people to get involved in this to ensure their views are captured in order to shape proposals.</li> <li>• The views of young people are valued by the GCP.</li> </ul>

Alfie Richardson	My name is Alfie Richardson and I'm a Junior Travel Ambassador at Meldreth Primary School. My job is to persuade more people to walk, scooter and cycle to school. Our Deputy Headteacher Mr Jones has mostly given up driving to work and cycles from Shelford, though he had to drive today in order to get us to Cambourne. I cycle with my Dad as much as possible but in many places the roads are too dangerous. My question for you is: <b>What ideas do you have for getting children involved in making decisions about improving cycle links between villages?</b>	
Iris Bostanci	My name is Iris Bostanci. I am 7 years old. I go to Meldreth Primary School, and I am a Mini Junior Travel Ambassador. I don't like cars because they are bad for the environment, animals often get killed by cars, and driving makes me car sick. I enjoy cycling because when I cycle I feel free, and I have participated in the annual A10 Bike Awareness Ride twice already. Last time, I cycled the 11km from Cambridge to Melbourn by myself and was the youngest person to do so, as reported in the local <a href="#">newspapers</a> . My question is: <b>How old do you think I will be by the time the Melbourn to Royston bike path is finished?</b>	<ul style="list-style-type: none"> <li>• The Government's appraisal tool was used to assess the benefits of the Melbourn to Royston link. The GCP recognises the importance of the route and wants to see the project progressed to completion.</li> <li>• Cost benefit was not the only consideration in the appraisal of the project; the health benefits of active travel are recognised.</li> <li>• The remaining section of the scheme is outside the GCP's geographical area but the GCP is keen to work with partners to deliver it. The report proposes contacting neighbouring local authorities with a view to progress the project in partnership with them and other local partners. As the GCP is reliant on working with partners to progress the project, it is not possible to give a timescale on delivery.</li> </ul>
Dr Adam Bostanci	My name is Dr Adam Bostanci. I am a Science Writer with a technology company and a Research Associate at the University of Cambridge. I live in Meldreth with my family. We do not own a car, mainly to minimise CO2 emissions. As part of my work, I have been involved with the Commuting and Health in Cambridge research project at Cambridge University. I use the A10 cycle path 2 days each week (both to cycle into Cambridge and home again), and my partner uses it more frequently than that. The Melbourn to Royston link, as part of Melbourn Greenways, would be transformational because residents of Meldreth and Melbourn could become much less car-dependent. Above all, it would enable safe and convenient cycle access to Royston, our nearest town, for shopping and	



	<p>leisure, as well as safe and convenient cycle access to fast commuter trains to and from London and safe cycle access for school students travelling in both directions. Further, it would complete the cycle link between Cambridge and Royston, providing the spine of a much-needed local network of cycle paths, with all attendant benefits. Based on my experience with the Commuting and Health in Cambridge project, I am conscious that active commuting options and an active lifestyle have health and, separately, wellbeing benefits. Safe and convenient bike paths can have a catalytic effect in promoting active commuting and a more active lifestyle, in particular among people who were previously inactive. Moreover, one can envisage that Melbourn Greenways would have other intangible community benefits for our villages. My question is about the less tangible benefits of cycling infrastructure: <b>how do health, wellbeing and community benefits factor in the benefit cost analysis that accompanies your decision making?</b></p>	
<b>Agenda Item 9: Better Public Transport Project – Waterbeach to Science Park and East Cambridge Corridors</b>		
Mal Schofield	<p>" 4.5 The Transport Strategy for Cambridgeshire and South Cambridgeshire (TSCSC), prepared in parallel with the submitted Local Plans, was adopted in March 2014" The Cambridge Corridor Area Transport Plan (April 2014) defines 4 Corridors, Northern, Eastern, Southern and Western.</p> <p>Two different corridors are now delineated in Agenda Item 9</p> <p>Figure 1 Waterbeach to Science Park Corridor Figure 2 East Cambridge Corridor</p> <p>Two other corridors are referenced - "Work is already underway on developing and delivering proposals for two key corridors; the A428 Cambourne to Cambridge and the A1307 Cambridge South East corridor."</p> <p><b>Question. How many corridors to/from Cambridge are defined and what is their relative significance in terms of congestion/commuting traffic flows?</b></p>	<ul style="list-style-type: none"> <li>• The four corridors being looked at are the same as those in the Cambridge Local Transport Plan (LTP).</li> <li>• The traffic volumes of these corridors are the greatest traffic volumes coming into Cambridge; 25,000 vehicles coming from Waterbeach daily, 16,000 vehicles from Royston daily and 15/16,000 vehicles from Cambourne daily.</li> <li>• These corridors also represent the areas of greatest projected growth going forward.</li> <li>• While other corridors may come forward in future, the GCP needs to focus on these four corridors first before focussing on any additional ones.</li> <li>• The Combined Authority will be developing a new Cambridge and Peterborough Local Transport Plan, which will involve a public consultation.</li> <li>• The four corridors connected the edge of</li> </ul>

	<p>There was a similar question raised earlier this year at the GCP Assembly, concerning the need for a high level strategic context for all transport projects. It follows a request for an outline of travel hub/park and ride locations at the February 2018 Assembly Meeting "question related to agenda item 8 (Western Orbital: Progress on Additional Park and Ride Capacity and Submission to Highways England")</p>	<p>Cambridge outwards.</p>
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# Agenda Item 4

## **Greater Cambridge Partnership Executive Board Questions by the Public and Public Speaking**

At the discretion of the Chairperson, members of the public may ask questions at meetings of the Executive Board. This standard protocol is to be observed by public speakers:

- Notice of the question should be given to the Democratic Services Team at South Cambridgeshire District Council (as administering authority) by 10am three working days before the meeting.
- Questions should be limited to a maximum of 300 words.
- Questioners will not be permitted to raise the competence or performance of a member, officer or representative of any partner on the Executive Board, nor any matter involving exempt information (normally considered as 'confidential').
- Questioners cannot make any abusive or defamatory comments.
- If any clarification of what the questioner has said is required, the Chairperson will have the discretion to allow other Executive Board members to ask questions.
- The questioner will not be permitted to participate in any subsequent discussion and will not be entitled to vote.
- The Chairperson will decide when and what time will be set aside for questions depending on the amount of business on the agenda for the meeting. Normally questions will be received as the first substantive item of the meeting.
- Individual questioners will be permitted to speak for a maximum of three minutes.
- In the event of questions considered by the Chairperson as duplicating one another, it may be necessary for a spokesperson to be nominated to put forward the question on behalf of other questioners. If a spokesperson cannot be nominated or agreed, the questioner of the first such question received will be entitled to put forward their question.
- Questions should relate to items that are on the agenda for discussion at the meeting in question. The Chairperson will have the discretion to allow questions to be asked on other issues.

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# Agenda Item 6



## CAMBOURNE TO CAMBRIDGE BETTER PUBLIC TRANSPORT PROJECT

**Report to:** Greater Cambridge Partnership Executive Board

6<sup>th</sup> December 2018

**Lead officer:** Peter Blake – GCP Director of Transport

### 1. Purpose

- 1.1. This report provides an update on progress with developing the business case for the A428 Cambourne to Cambridge (C2C) Better Public Transport project.
- 1.2. The A428 Cambourne to Cambridge corridor is one of the key radial routes into Cambridge. It suffers considerably from congestion during peak times, particularly at the Cambridge end, at the junction with the M11. Modelling for the Greater Cambridge Partnership (GCP) has demonstrated that Maddingley Road has seen significant increases in traffic over the last decade. The key current conditions on the corridor include; long delays on the eastbound A1303 up to the Maddingley Road Park & Ride (P&R) site, and; significant journey time variability along the corridor, particularly eastbound in the morning peak and westbound in the evening peak.
- 1.3. There are also some large development sites on this corridor including the West of Cambridge site, Cambourne and Bourn.
- 1.4. The corridor has been identified by the Greater Cambridge Partnership's (GCP's) Executive Board, as a priority project for the first five years of the GCP.

### 2. Recommendations

- 2.1. The Executive Board is recommended to:
  - (a) Consider the outcome of the public consultation and the work to date developing the Cambourne to Cambridge Better Public Transport project;
  - (b) Endorse the key conclusions of the Interim Report and in relation to this:
    - (i) Agree that Phase 1, Phase 2 and a Park and Ride location continue to be developed towards an Outline Business Case for a High Quality Public Transport route between Cambourne and Cambridge;
    - (ii) For Phase 1, note that the recommended off-road route, defined as the Specific Route Alignment providing a new public transport corridor between Maddingley roundabout and Grange Road best meets the strategic and policy objectives of the Greater Cambridge Partnership; and
    - (iii) Agree to develop Options for Phase 2 between Cambourne and Maddingley roundabout for further Business Case assessment including a public consultation and that this section of the route and final recommendation for

a preferred Park and Ride site be presented in the final Outline Business Case;

- (c) That the outcome of further work required as a result of recommendation (b) above be included in the final Outline Business Case which will be presented for Board approval in accordance with the current programme (October 2019);
- (d) Request that officers develop detailed technology and design solutions and draw up landscaping and ecological design proposals which would enhance the potential impact of the off-road option solution on the rural environment and ensure maximum transport benefit;
- (e) Agree that cycle and pedestrian infrastructure improvements identified for Madingley Road are taken forward for delivery developed in detail as part of a separate project;
- (f) Agree that, following the review by the Combined Authority, proposals for the Cambourne to Cambridge High Quality Public Transport corridor align with the features of a rapid transit network (CAM);
- (g) Agree that through the CAM Programme Board, officers ensure that the interface point at the eastern end of the scheme aligns with the work on the tunnelled section of the CAM network; and
- (h) Agree that the ambition for the preferred mode for the scheme once open is an autonomous electric rubber-tyred metro, subject to final business case, and that any interim mode required will be an electric vehicle to ensure a beneficial impact on air quality.

### **3. Joint Assembly Feedback**

- 3.1 The Joint Assembly had a lengthy debate on the proposals and expressed mixed opinions, with no consensus view emerging.
- 3.2 Some members spoke in support of the proposals and hoped that the Executive Board would progress this scheme. It was pointed out that the development strategy adopted by the GCP aimed to provide the 'best in class' public transport available and it was suggested that the proposals set out in the paper achieved this. There was a clear need for a major transport route that could cope with all the additional cars and meet the needs of the residents of the new houses. The potential impact on Coton was acknowledged, but the wider benefits and local plan requirements were recognised, which meant the public transport solution now needed progressing. The prospect of getting from Cambourne to Cambridge in 30 minutes was welcomed and it was suggested that this was the sort of step change people wanted to see. From a business perspective journey time was paramount.
- 3.3 Some members raised concerns about the proposals, referring to the possible introduction of an interim solution. As Cambridge Autonomous Metro (CAM) compliance was now a policy requirement there was a feeling that it was necessary to compare two schemes that were both compliant. Questions were asked about the choreography, process and timeframe for taking forward the proposals and it was suggested that an interim solution should be developed, leading to long term optimal alignment. This could cost significantly less and would allow more time for a longer term CAM system to be developed. If an interim solution looked attractive it should be pursued, even if it caused delay. Dealing with the urgent problem would buy time and that would be the best way to future proof any



decision taken. Concern about some elements of the planned mitigation was also expressed.

#### **4. Context**

- 4.1 This report provides a summary of the option assessment work carried out for development toward the Outline Business Case (OBC), since the presentation of the Strategic Outline Business Case (SOBC) in October 2016. The full OBC will present a single scheme between Cambourne and Cambridge for approval in October 2019 to progress to planning consent and powers for the construction of the works.
- 4.2 At this point in the development of the business case, work has focussed assessing proposed public transport infrastructure improvements on Phase 1 of the project between Madingley roundabout and Grange Road, Cambridge, in particular the on and off-road alignment options.
- 4.3 Phase 2 of the project (Madingley Roundabout to Bourn Airfield Roundabout) will form part of the full OBC, along with a final recommendation for a Park & Ride site along the route. A further public consultation on options for this section of the route is planned for early 2019.
- 4.4 The report includes input from the public consultation on Phase 1 which was carried out from November 2017 to January 2018, and subsequent ongoing technical work, the key outcomes of which are detailed in this report. Further information on this assessment work is contained within Appendix 1 (Interim Report).
- 4.5 A report seeking a final decision on the scheme, including both Phase 1 and Phase 2 route alignments, and Park & Ride site, will be brought to the Executive Board in October 2019.

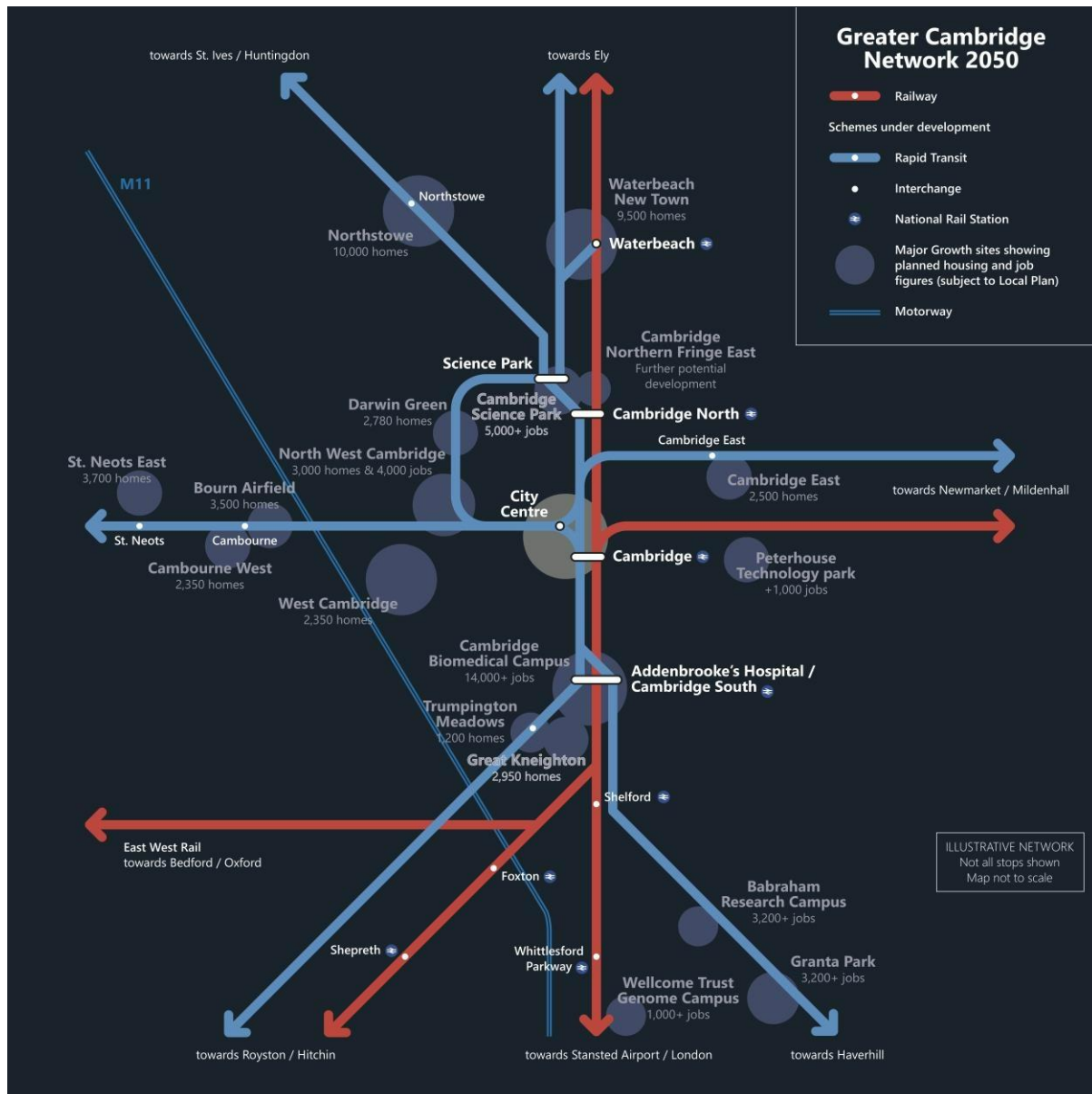
#### **Strategic Case**

- 4.6 The C2C Better Public Transport project (“the project”) supports the Greater Cambridge Partnership (GCP) transport vision of delivering a world class transport network that makes it easy to get into, out of, and around Cambridge in ways that enhance the environment and retain the beauty of the city. Transport infrastructure is essential in supporting the delivery of sustained growth, prosperity and quality of life for the people of Greater Cambridge. Earlier work in the SOBC had identified a strong policy and strategic basis for delivering a High Quality Public Transport (HQPT) scheme between Cambourne and Cambridge and the strategic context assessment work has further reinforced this case. The project is part of the Greater Cambridge Partnerships programme using devolved City Deal funding. This is a comprehensive package of measures which aim to tackle congestion within Cambridge with the creation of a world class transport system, to achieve a reduction in peak-time traffic levels in Cambridge by 10-15% by 2031 on 2011 baseline.
- 4.7 Between 2011 and 2031 there are a planned additional 15,500 new homes and 20,000 new jobs in development locations to the west and south of Cambridge, at Cambridge Biomedical Campus, Cambridge Northern Fringe, Cambridge North West, Cambridge Southern Fringe, West Cambridge, Cambourne and Bourn Airfield. A significant proportion of new residents and new employees will need to travel between Cambourne and Cambridge.
- 4.8 As such to meet this growing demand the vision of the C2C Project as defined in the business case is:

*“To connect existing and new communities along the A428/A1303 to places of employment, study and key services to enable the sustainable growth for Greater Cambridge. We will deliver this through improved, faster and more reliable HQPT services, together with high*

*quality cycling and walking facilities serving a new Park & Ride site to the west of Cambridge.”*

- 4.9 The C2C Better Public Transport project therefore forms an important part of the overall GCP aim to develop a sustainable transport network for Greater Cambridge that keeps people, business and ideas connected, as the area continues to grow; to make it easy to get into, out of, and around Cambridge by high quality public transport, by bike and on foot.
- 4.10 The GCP delivery programme is based on the policy framework established by the local planning and transport authorities. These include the recently agreed Local Plans for Cambridge and South Cambridgeshire and emergent transport policy of the Cambridgeshire and Peterborough Combined Authority (CPCA) and in particular the compatibility of the project with the proposed Cambridge Area Metro (CAM) - a mass rapid transit scheme.
- 4.11 The Transport Strategy for Cambridgeshire and South Cambridgeshire (TSCSC) prepared in parallel with the recently adopted Local Plans was agreed in March 2014. The strategy provides a plan to manage the rising population and increasing demand on the travel network by shifting people from cars to other means of travel including public transport, walking and cycling. Policy within the TSCSC requires a range of infrastructure interventions on the St Neots and Cambourne to Cambridge corridor as a key part of the integrated land use and transport strategy responding to levels of planned growth. Cambourne to Cambridge is one of the key growth areas identified in the adopted Local Plan. The Local Plan policies for the strategic developments sites along the corridor requires High Quality Public Transport (HQPT) to link new homes to employment and services in and around Cambridge.



**Figure 1– Potential GCP HQPT network**

- 4.12 As set out in Figure 1 the C2C scheme, as part of the wider HQPT network including CAM network, will provide a step change in public transport accessibility, as well as safe and segregated cycling and pedestrian routes into key destinations in and around Cambridge. By reducing growth in congestion, offering environmental mitigation and enhancement and providing a realistic alternative for many car journeys, the scheme will result in a public benefit for new and existing residents.

#### **National Infrastructure Commission (NIC)**

- 4.13 The National Infrastructure Commission's (NIC) report on the Cambridge – Milton Keynes – Oxford Growth Corridor has concluded that improvements in east-west transport connectivity along the corridor are necessary to underpin the area's long term economic success, and alleviate the area's "chronic undersupply of homes [which] could jeopardise growth, limit access to labour and put prosperity at risk". It estimates that infrastructure investment could support the delivery of up to 1 million new homes in a broad corridor between Oxford and Cambridge. This level of development will inevitably place additional pressure A428/A1303 and surrounding routes. Calling for City-scale transport infrastructure to enable growth, the NIC focuses on:

*“maximising the opportunities associated with the development of East West Rail and the Oxford-Cambridge Expressway – integrating mass rapid transit with these schemes to enable effective first/last mile connectivity, in a way that enhances the value of these strategic infrastructure projects”.*

- 4.14 The NIC has identified the Cambridge – Milton Keynes – Oxford arc as a national priority stating that its world-class research, innovation and technology can help the UK prosper in a changing global economy.

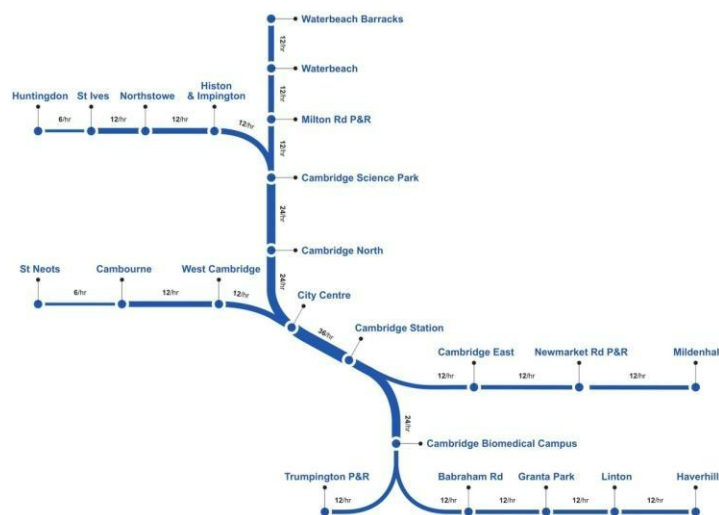
#### **East – West Rail**

- 4.15 East – West Rail is a scheme to re-establish a rail link between Cambridge and Oxford and will improve rail services between East Anglia and central and southern England, including enhanced rail connections with national mainline services. Work has progressed on the western section between Oxford, Aylesbury and Bedford. The East – West Rail Company are currently working with Network Rail to develop route options between Bedford and Cambridge and expect to consult on preferred options in 2019. The scheme is expected to be built over the next decade, beyond the timetable for the C2C scheme.

#### **Cambridgeshire and Peterborough Combined Authority**

- 4.16 The Cambridgeshire and Peterborough Combined Authority (CPCA) was established in March 2017 and is led by an elected Mayor and Board comprising of the constituent local authorities. The key ambitions for the CPCA include:
- Doubling the size of the local economy;
  - Accelerating house building rates to meet local and UK need; and
  - Delivering outstanding and much needed connectivity in terms of transport and digital links.
- 4.17 The CPCA is responsible for transport infrastructure improvement and the Local Transport Plan. The existing Local Transport Plan 2011 to 2026 remains the existing key transport policy framework at this time which emphasises the need for new developments to be supported by sustainable transport measures such as HQTP.
- 4.18 In December 2017 Steer Davies Gleave delivered an options appraisal report jointly funded by the Combined Authority and the GCP on the possibility of developing a rapid mass transport network. This favoured a mass transit system in Greater Cambridge based on innovative rubber tyred tram like vehicles utilising autonomous technology as the preferred solution – described as CAM.
- 4.19 On 30 January 2018 the Combined Authority agreed to fund further development of the proposed CAM, a mass rapid transit network to Strategic OBC. The CAM proposal was formally accepted by the GCP on 8 February 2018. The Combined Authority resolved also to *“liaise with the GCP to ensure GCP’s current and future plans for HQPT corridors were consistent and readily adaptable to the emerging proposition for a CAM network.”*

- 4.20 The potential CAM network is set out in **Figure 2** and includes an alignment towards Cambourne.



**Figure 2– Potential CAM network**

- 4.21 The CPCA has subsequently undertaken a review of alignment between the C2C scheme and the emerging CAM. The CPCA review, undertaken by consultants Arup, concluded the following key findings:
- The process undertaken to date to determine the route is robust and identified the optimal solution for the corridor;
  - The route should be reclassified a CAM route;
  - The vehicle operating along the route should comply with the principles of the CAM being a rubber tyred, electrically powered vehicle;
  - The route must continue to be designed to align with the overarching CAM network; and
  - The route is connected into a tunnelled CAM network thereby providing a high frequency, pollution free public transport option into and across Cambridge centre and the entire CAM network.
- 4.22 A report on the review undertaken by consultants Arup, is attached in Appendix 2.
- 4.23 In ensuring consistency with the CAM it is considered that the scheme developed by GCP will need to deliver:
- A HQPT system using rapid transit technology.
  - High frequency, reliable services delivering maximum connectivity.
  - Continued modal shift away from car usage to public transport.
  - Capacity provided for growth, supporting transit-oriented development.
  - State of the art environmental technology, with easily accessible, environmentally friendly low emission vehicles such as electric/hybrids or similar.
  - Fully integrated solution, including ticketing and linkages with the wider public transport network to maximise travel opportunities.
- 4.24 At CPCA meeting on 31 October the Executive Board agreed to support the recommendations of the Arup report and agreed that the Cambourne to Cambridge scheme is aligned and should be progressed by the GCP.

## **5. Developing a Business Case**

- 5.1 The C2C project was commissioned in 2014 with initial public consultation on high level options being undertaken in 2015. The method of progressing the project is via a 'business case' which assesses the overall case for public investment by measuring the public benefits and costs of different options. The business case is formed from 5 'cases' for investment in line with HM Treasury guidance and the Department for Transport's' Transport Assessment Guidance. Details of the Business Case stages and further work undertaken since the public consultation ending early in 2018 can be found in Appendix 1.
- 5.2 Following presentation of the initial stage of the business case the decision was taken by the GCP Executive Board in October 2016 to agree in principle to a segregated route given the wider economic benefits and undertake further work.

## **6. Further Business Case Development**

- 6.1 Following the Executive Board decision of October 2016, the next stage of business case development has included the following work and activities to address the Board's specific decisions and instructions:

- Reviewing the strategic basis for the project.
- Developing specific route alignments within the previously agreed Catchment Area to identify the best alignment.
- Further development of 'on road' options to compare against an off road option including environmental assessments.
- Review of P&R sites along the route.
- Work with the GCP Greenway project teams to review cycling potential along the corridor.
- Engagement with third parties including developers along the route.

- 6.2 Updates were provided to the GCP Executive Board in July 2017 on the development of the Local Liaison Forum (LLF) "Option 6" and the further review of Park & Ride sites along the corridor. In October 2017 the GCP Executive Board agreed that public consultation be undertaken as part of the further development of the business case.

### **Public Consultation**

- 6.3 The public consultation was undertaken between 13 November 2017 and 29 January 2018. The consultation was quality assured by the Consultation Institute, an independent best practice Institute, promoting high-quality public and stakeholder consultation in the public, private and voluntary sectors.
- 6.4 The public consultation involved:
- Distribution of over 14,000 brochures.
  - 21 drop in sessions including both fixed exhibitions and road shows.
  - A series of focus groups.
  - Extensive use of social and traditional media to raise awareness.
- 6.5 Because of the range of developing strategic considerations, the consultation only included proposals for Phase 1 HQPT transport infrastructure options from Madingley roundabout to Grange Road and the final shortlisted Park & Ride sites.
- 6.6 Three route and two potential Park & Ride site locations were presented in the public consultation.

- 6.7 The public consultation achieved 2,049 complete responses. A significant amount of qualitative feedback was gathered via the questionnaire, at road-shows, via email and social media and at other meetings including the formal workshops.
- 6.8 A range of views were expressed during the course of the public consultation exercise, particularly against the off-road alignments by those residents living along the route.
- 6.9 In qualitative terms a majority of people did not support the off-road alignments, expressing concern regarding the environmental impact of the project, particularly around the Coton area and the West Fields location.

### **Response to Public Consultation**

- 6.10 The objective of public consultation in the option development process is to help inform and understand stakeholder concerns, issues and opportunities and to feed these into the ongoing business case process. Public Consultation events and ongoing stakeholder engagement inform the emerging scheme and as such it would be expected that options will continue to develop following the public consultation.
- 6.11 The majority of respondents did not support the off road options, and therefore the concerns expressed should be reflected in the final proposals, either by the choice of proposal or the mitigation plan developed as part of the emerging proposals. In terms of mitigation on any off-road alignment this could include:
- Extensive landscaping and design proposals to minimise visual and environmental impact, this should include exploring the feasibility of developing environmental safeguards along any proposed routes, for example the development of a linear park (or similar).
  - High quality, environmental sustainable vehicles to improve air quality and reduce noise, e.g. electric/hybrids.
  - Infrastructure to reflect local requirements and the local surroundings.
  - Development of extensive walking and cycling facilities along any corridor.
  - Clearly demonstrate the scheme's connectivity to wider public transport network, including the CAM, and in particular, integration with the future tunnelled sections.

## **7. Technical Work - key findings**

- 7.1 The technical work confirmed the earlier findings of the SOBC, namely that the need for a HQPT scheme is clearly identified and supported in policy given existing and rising congestion between Cambourne and Cambridge and the desire for economic growth stated in national and local policy.
- 7.2 The underlying causes, which together set out the need for intervention include:
- Population and housing growth.
  - Employment growth.
  - The increasing need for travel.
  - Levels of car ownership.
  - The quality of existing transport infrastructure.
- 7.3 Based on these causes the project objectives are:
- To achieve improved accessibility to support the **economic growth** of Greater Cambridge.



- To deliver a **sustainable transport network/system** that connects people between Cambourne and Cambridge along the A428/A1303.
- Contribute to enhanced quality of life, **relieving congestion** and improving air quality within the surrounding areas along the corridor and within Cambridge City Centre.

7.4 The project objectives are further amplified in the Defining a Transformational Public Transport paper on the Joint Assembly agenda, February 2018

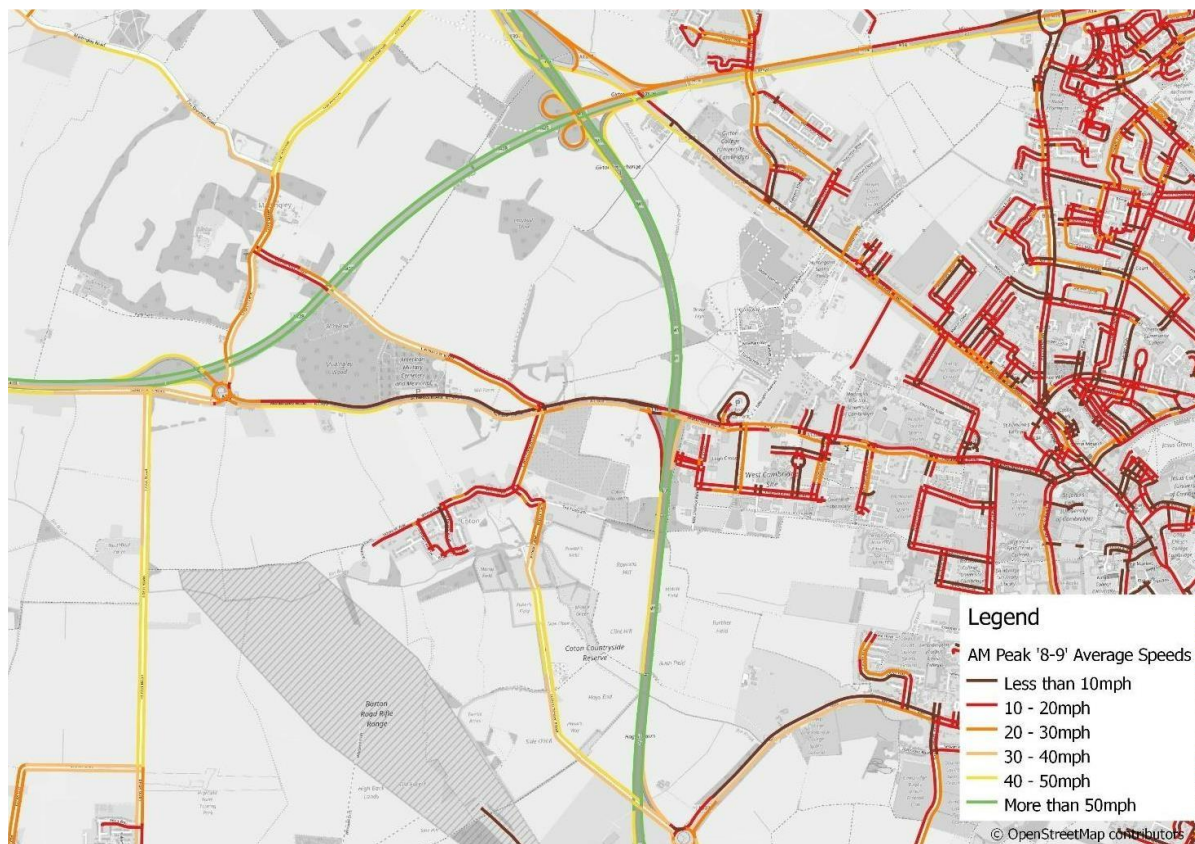
7.5 A summary of existing congestion issues is set out in **Table 1**

Section of corridor	Issue
A428 between Caxton Gibbet and St Neots	<ul style="list-style-type: none"> <li>• High journey time variability</li> <li>• Delays of up to 10 minutes eastbound in the AM Peak period</li> <li>• Delays of up to 3 minutes in the PM Peak period</li> </ul>
The A1303 approach into Cambridge	<ul style="list-style-type: none"> <li>• High levels of variability and congestion</li> <li>• Delays of up to 18 minutes travelling in to Cambridge in the AM Peak</li> <li>• Delays of up to 4 minutes travelling westbound in the PM Peak.</li> </ul>
A1303 / M11 Junction	<ul style="list-style-type: none"> <li>• Up to 80% of the route experiencing queuing in the AM Peak when travelling eastbound</li> </ul>
Madingley Road Park & Ride site	<ul style="list-style-type: none"> <li>• Interaction of traffic entering and leaving the well-used Madingley Road Park &amp; Ride site, with the signalised junction here contributing to variability and delay.</li> </ul>

Source: Trafficmaster

**Table 1: Existing Congestion 'hotspots'**

7.6 Average speed data, demonstrating significant delay on the network is provided in **Figure 3**



**Figure 3 – Average Speed for traffic (AM Peak 2016)**

7.7 Considering forecast growth, between 2011 and 2031, car trips along the A428/A1303 corridor eastbound are forecast to increase by:

- 45% in the AM Peak hour;



- 70% in the Inter-peak period, and;
- 50% in the PM Peak period.

- 7.8 The existing car mode share and car ownership within the A428/A1303 corridor is high, and future growth is expected to generate additional demand for car use in this area. Therefore, HQPT plus additional cycling and walking facilities has a key role in providing an attractive and competitive alternative to car use, which would alleviate, congestion, poor journey time reliability and delay. Crucially, such intervention will help to accommodate future growth planned to the west of Cambridge, improve access to housing and employment sites alike, and improve quality of life in the local communities.
- 7.9 Reviews of existing public transport provision identified that within the A428 / A1303 corridor, existing public transport infrastructure offers little or no competitive advantage over private cars. This has meant that car use is the dominant transport mode and as a result has caused congestion on the wider transport network. This in turn causes disruption to existing public transport routes.
- 7.10 The existing cycling network has sections of segregated links of uneven quality but is disconnected and does not in total provide a high segregated route between Cambourne and Cambridge which would cater for the potential high modal share of cyclists along the corridor.

## **8 Basis of Selecting an Option**

- 8.1 As part of part of the OBC, the Strategic Case, has set out the strategic and policy context, and provided an assessment of the project options within the transport and wider policy context requirements for the delivery of sustained economic growth, reduction of traffic congestion and increased prosperity and quality of life for the people of Greater Cambridge.

### **Wider Economic Benefits**

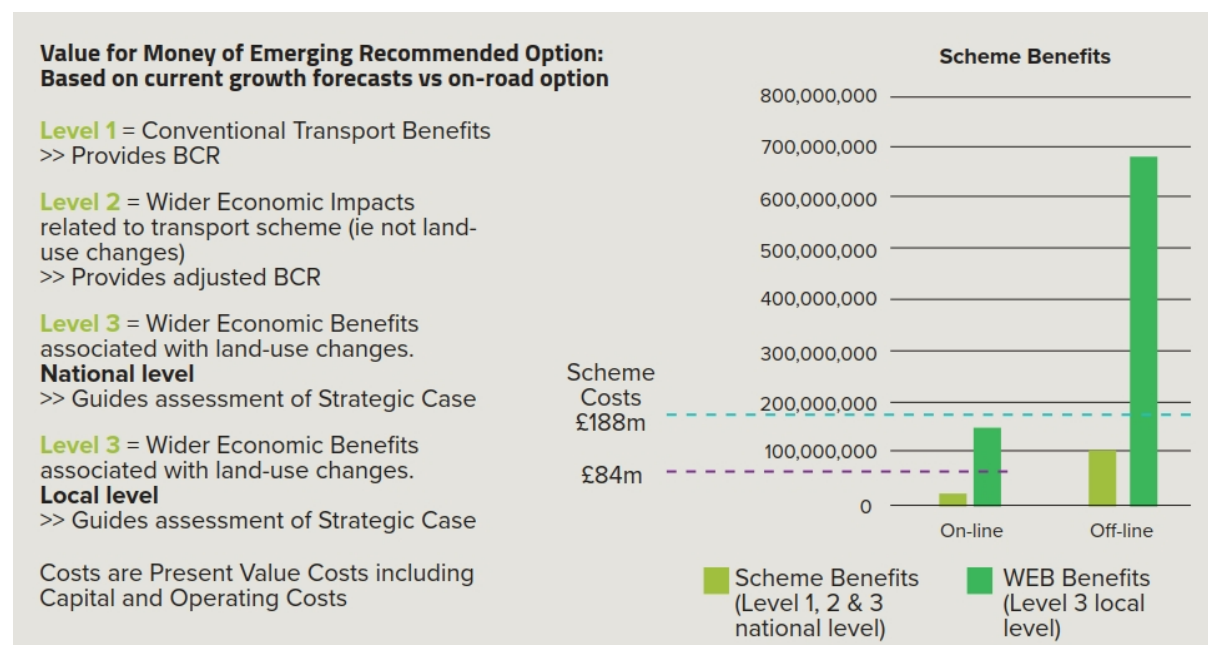
- 8.2 Greater Cambridge is one of the UK's fastest-growing and most productive cities and is a key hotspot for regional and national job creation. Between 2009 and 2016 total jobs growth in Cambridge was 17.6% (in absolute terms) compared to 12.0% regionally and 10.5% nationally.
- 8.3 Greater Cambridge, is a thriving economy and a key driver of the wider CPCA economy, representing 34% of its total population, 41% of total employees and 42% of all Gross Value Added (GVA). The Mayor and CPCA aspires to double GDP in the region.
- 8.4 The recently published final report, by the Cambridgeshire and Peterborough Independent Economic Commission provides the latest evidence that jobs growth in the area has been faster than anticipated and that future growth could, potentially outstrip national indicators. The report stated, "Rising costs from an infrastructure deficit that has built up over time threaten the ongoing success of the Cambridge Phenomenon, which represents 67% of the region's output. Infrastructure issues are most urgent in and around Cambridge and must be dealt with as a first priority..." This may further revise the estimates of economic benefits attributed to the proposed HQPT interventions. A key recommendation was that, "A package of transport and other infrastructure projects to alleviate the growing pains of Greater Cambridge should be considered the single most important infrastructure priority".
- 8.5 In developing the business case the different levels of public transport intervention were assessed for their impact on wider (non-transport) economic growth expressed as Gross Value Added (GVA). GVA measures the total value of goods and services. This assessment found that a new segregated off road alignment for public transport would have significant wider economic benefits.

- 8.6 The work done to date has identified the need for HQPT infrastructure to unlock economic growth by enabling the delivery of new housing and employment. The earlier stage of the business case in 2016 identified £680m of GVA attributable to a segregated public transport scheme between Cambourne and Cambridge which was significantly higher than options using the existing public highway.
- 8.7 The results from further GVA assessment show that an off-road solution between Cambourne and Cambridge has the potential to deliver a significantly greater level of Wider Economic Benefits at the local level for Greater Cambridge than the on road and offer a high ratio of return on investment. This is set out in Table 2

Benefit (£,000m)	Do Something 2a
GVA benefits – <u>Greater Cambridge level</u>	679,300
Present Value Costs (PVC)	184,586
<b>OVERALL IMPACT</b>	
“Local WEBs ratio”	3.68

**Table 2: Analysis of Monetised Costs and Wider Economic Benefits at Greater Cambridge local level**

- 8.8 **Figure 4** summarises the findings from the Value for Money assessment, and includes the relative benefits of the on and off road options against the current scheme costs to demonstrate how the off-road option has a greater value for money in delivering Wider Economic Benefits.



**Figure 4 – On/Off Road GVA**

- 8.9 The work concludes that both existing and emerging policy, as well as the specific objectives of the GCP, continue to support a recommendation for the need to significantly improve public transport and other sustainable modes between Cambourne and Cambridge.

#### **Comparison of On vs Off Road Options between Madingley Roundabout and Grange Road**

- 8.10 In addition, Option B in the public consultation included a ‘tidal’ bus lane which reversed bus travel direction depending on the time of day. There are no tidal bus lanes in the UK although there are a number of tidal lanes which are used for general traffic. The relative infrequency of buses adds a level of uncertainty for road users as to which direction to

expect on coming vehicles. Overhead gantries are required for tidal lanes for general traffic as set out in the Departments for Transport (DfT), Design Manual for Road and Bridges (BD51/98). It should be noted that current guidance refers to tidal lanes for general traffic: DfT guidance does not address on a central tidal bus lane of this type and so the Highway Authority may well wish to refer to DfT for approval which should not be taken for granted.

- 8.11 The 19 gantries would require a minimum height of 5.5 metres from the surface of the carriageway and a maximum height of 9m (Traffic Signs Regulations and General Direction (TSRGD) 2016). The spacing shown in the work associated with the September 2017 End of Stage Report provides useful guidance as to likely spacing. The frequency of these gantries would be a factor of local safety issues such as visibility along the road and the number of side roads/private entrances which would require movements across the tidal lane and would be refined during Road Safety Audits in dialogue with the Highway Authority and DfT.
- 8.12 The environmental impact of these gantries would not be in-significant in terms of visual intrusion as well as introducing large urban structures on a route of rural character into Cambridge.
- 8.13 In evaluating the overall cost/benefit of tidal lanes against the other options, the key conclusion was that the additional impacts and costs would not be outweighed by greater benefits for the business case.
- 8.14 One of the main outcomes of the consultation was the development of an “Optimised” on-road option. This came from the desire to have both inbound and outbound priority as proposed in option B but without the need for gantry structures and within the highway boundary. Following a workshop with community stakeholders the optimisation was modelled to assess the impact of the following changes:
- Westbound bus priority at Maddingley Roundabout.
  - Signalisation of Cambridge Road Junction.
  - Lane arrangement at the M11 Junction 13.
  - Layout of existing Park & Ride entrance and bus priority at High Cross Junction.
  - Signalisation of Grange Road Junction.
  - Removal of Bus lane from West Cambridge development to Storeys Lane.

Apart from Cambridge Road and Grange Road junction signalling, which showed no benefit when modelled, all the other optimisations were included as the ‘Optimised’; final on-road option taken forward for further assessment.

- 8.15 Table 3 outlines a comparison of the ‘Optimised’; on and off route options between Maddingley Roundabout and Grange Road:

	PT Journey time	Reliability (AM Peak Journey Time variation)	CAM Future proofing	Patronage	PT Capacity	Benefits/disbenefits for other modes	Cycling
<b>On Road</b>	17 mins	14% reduction in Journey Time variability	Not suitable for CAM or tunnels	2,300-3,700 daily depending on final scheme and park and ride options	Limited due to constraints of road network	Disbenefits other road users due to need to provide bus priority	Improvements to 3.4km of existing shared cycle lanes / footpaths
<b>Off Road</b>	12 mins	74% reduction in Journey Time variability	CAM compliant		High due to dedicated infrastructure	Low impact on other road users except where it crosses public highway. Significant cycling benefits	5km of new shared-cycle lanes / footpaths

**Table 3: Key Transport Comparators On vs Off Road between Maddingley roundabout and Grange Road Cambridge**

- 8.16 The Key Findings from the assessment

- Aligns better with transport policy.
- More reliable journey.
- Less disruption to existing roads.
- Policy compliance – Aligns with CAM.
- Better in terms of Heritage and biodiversity.

8.17 Key Findings from the assessment On-Road:

- Has less impact on Green Belt.
- Lower Cost.

8.18 The off road option is the only solution that presents the potential of a segregated route for mass rapid transit that is close to population centres, and with potential capacity to meet the development pressures along the corridor. It is the only solution that provides for delivery of the long term transport objectives of both the GCP and the Combined Authority, and it is the only option that is compliant with the emerging CAM concept.

### Environment

8.19 Environmental considerations are summarised in Table 4, including key concerns raised in the public consultation which included the potential effect upon the landscape and ecology particularly near Coton. Natural England stated in regard to Madingley Wood , a Site of Special Scientific Interest (SSSI) that the, “off-line option appears to be sufficiently distanced from the designated site and therefore unlikely to have any adverse impact. Historic England considered that the effects of the off road route, “...could be minimised or avoided subject to a robust mitigation strategy.

8.20 The role of environmental impact assessment within the current stage of the business case appraisal process is to understand the overall benefits and disbenefits of each option, so that these can be taken into account when determining which option offers the greatest value for money. The next stage of the business case development will include further detailed assessment of environmental impacts.

	Key Concerns	Environmental Considerations	
		On Road	Off Road
<b>Designated Environmental Sites</b>	Concerns that the on-road Route A option would impact on the SSSI.	Passes SSSI at Madingley Wood	Does not directly pass these sensitive sites
<b>Green Belt</b>	Impact of the off-road route on the Green Belt, particularly at the West Fields and at the two proposed Park & Ride sites.	Requires modification to existing highway in green belt	Is in undeveloped green belt land - Potential effect on openness of Green Belt
<b>Ecology</b>	Concerns that the off-road route would impact on wildlife sites close to Coton.	Some loss of habitat due to road widening – less potential for mitigation or enhancement (including SSSI)	Loss of agricultural land with habitat – significant potential for enhancement

<b>Noise/ Air Quality</b>	Concerns relating to noise, and to a lesser extent air quality, from the buses, where routes passed residential areas and at housing close to the proposed Park & Ride sites.	Marginal – existing busy highway – low number of bus movements Mitigated by low emission hybrid electric HQPT vehicles	Marginal – low numbers of bus movements Mitigated by low emission hybrid electric HQPT vehicles
<b>Visual Impact</b>	Concerns relating to light pollution where the routes passed residential areas and for housing close to the proposals Park & Ride sites. Concerns relating to the visual impact of the gantries proposed in Route B, the Waterworks site due to the topography and to a lesser extent, Scotland Farm.	Widening of existing carriageway and loss of road side vegetation.  Gantries required  Less opportunity for mitigation	the alignment of route using topography integrates into landscape  Visual impact can be more effectively mitigated
<b>Landscaping</b>	Damage to the landscape.	Loss of vegetation, including trees, next to highway - less potential for mitigation due to adjoining properties	Loss of vegetation, including trees.  Potential for overall increase in native hedgerow and trees
<b>Social benefits (access to education, leisure, employment)</b>	Waterworks site had better access to employment sites south of Cambridge. Although the off-road route was the most expensive, it was considered to be more future proofed to upcoming housing and employment sites.	Some improvement to bus and cycle accessibility	Significant improvements to bus and cycle accessibility
<b>Community Impacts</b>	The off-road route would not benefit residents in Coton as there was no planned stop. For on road option Route A, there were concerns regarding the impact on Clare Hall.	No HQPT public transport service or direct access to walking or cycling infrastructure	Cycling and walking alignment closer to Coton village.

<b>Heritage</b>	Concerns that the on-road Route A option would impact on conservation areas, such as the American Cemetery Memorial.	Passes American Cemetery	Does not directly pass the site  Potential effect on archaeology
<b>Flood Risk</b>	Impact of the off-road route on properties close to the West Fields part of which is the Bin Brook flood plain.	Neutral effect	Neutral effect – Bin Brook crossing can be designed to have no negative effect on flood risk
<b>Land &amp; Property</b>	Permanent loss of residential property or garden.	May require loss of residential property or garden  Requires verge hedgerow and tree belt	Does not require residential property or garden  Requires mainly agricultural land

**Table 4: Other comparators On – Off Road**

- 8.21 Impacts could be mitigated by creating landscape and ecological mitigation areas balanced with preserving the existing open landscape. There is also an opportunity to enhance local landscape and integrate the new route with existing features.
- 8.22 The off road route could apply a “green lane” design treatment along its length to enhance biodiversity through the creation of habitats. This would include the planting of new trees and native species hedgerow along the route.
- 8.23 A stop at Coton could be considered as part of the CAM scheme.

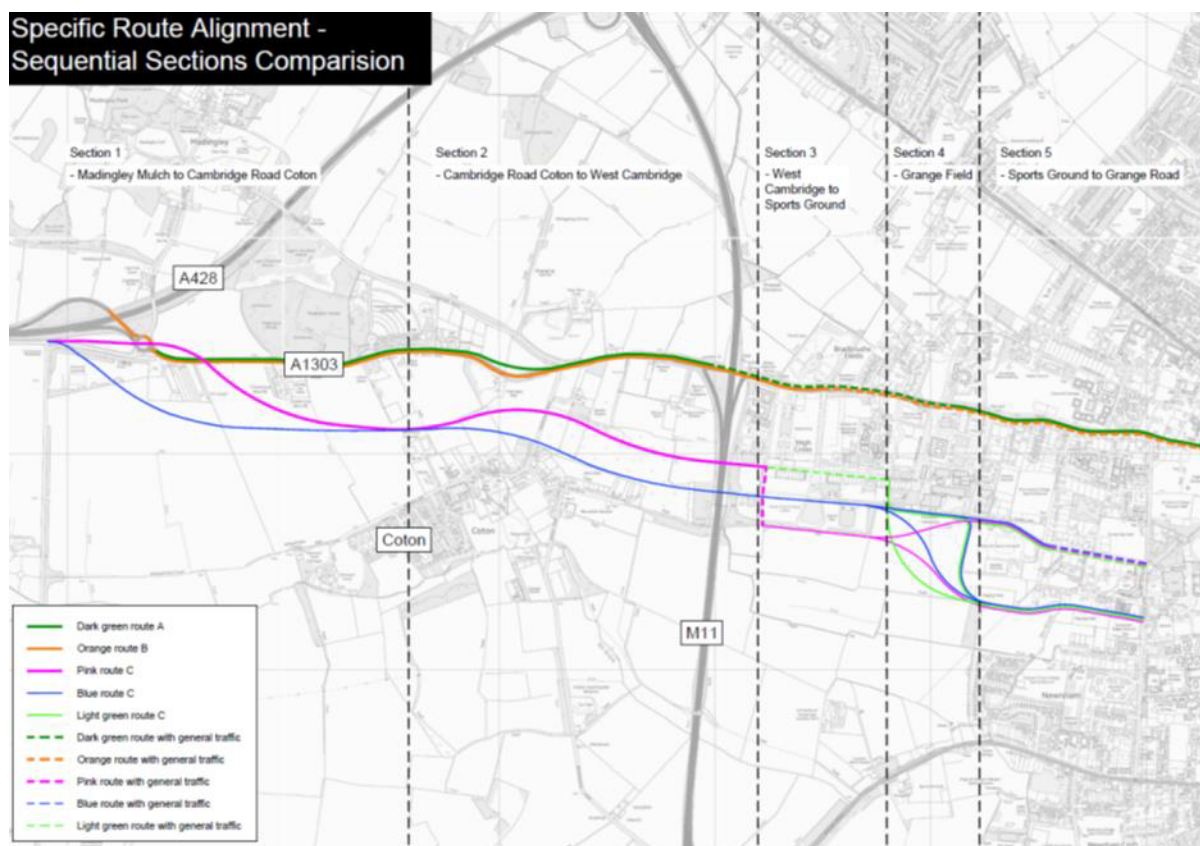
### **Summary**

- 8.24 The Strategic Case demonstrates a proposed off road segregated alignment for HQPT will provide significant transport benefits over bus priority on the existing highway and is consistent with the CPCA’s CAM proposal. While both options would have environmental impacts, the proposed specific route alignment has higher potential for mitigation measures and environmental enhancement. Hybrid Electric vehicles (Euro V1 or better) will address concerns regarding noise and air pollution.
- 8.25 Definition of the specific route alignment will require further environmental assessment in the form of an Environmental Impact Assessment (EIA) by which the anticipated or potential impacts on the environment of the emergent scheme would be assessed and measured. The appraisal towards the Final Outline Business Case requires further detailed assessment including further site surveys to identify the potential scope of these impacts in order to understand them and inform the design development for avoidance, mitigation and enhancement measures, reflecting public concerns, as outlined above.
- 8.26 This should continue to be considered, in parallel with development of the Phase 2 route alignments, for a final Executive Board decision in October 2019.

## 9. Specific Route Alignment (SRA)

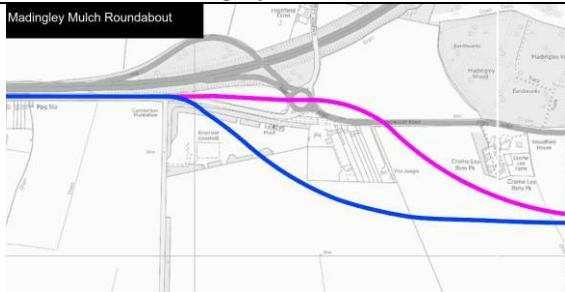
- 9.1 Having established the economic and strategic business case for an off road option and considered the issues around delivery, further analysis and technical review of the off-road route and the SRA options has been undertaken.
- 9.2 The design approach and quality of new segregated HQPT infrastructure has and will continue to be informed by the principles agreed by the GCP Executive Board in October 2016 – namely:
- Location of public transport infrastructure – respecting the urban and rural context for example through assessing proximity to and the relationship with the existing built up areas.
  - Testing accessibility from the start to the end of journeys through the centres of employment (e.g. Cambridge West) and housing (e.g. Bourn Airfield) and the environmental effects with a view to integrating with existing infrastructure and minimising impacts.
  - Siting – positioning of infrastructure to minimise visual intrusion on the existing landscape through considering issues such as ground levels, slopes and other natural features and also minimising impact on important features such as ecological and heritage assets.
  - Design – the materials, features and introduced landscaping that will form the new infrastructure and achieve high quality design, minimising environmental impacts consistent with delivering the scheme’s objectives, and integration with existing infrastructure and the ends of the route and along it.
- 9.3 Extensive design and mitigation work would be undertaken as part of the emerging scheme development to avoid or minimise the impacts of the scheme and be subject to the full Environmental Impact Assessment as part of any process to seek planning consent and powers. The Arup review considered some options which will be evaluated as part of the final scheme design process.
- 9.4 In order to assess a Specific Route Alignment (SRA) for the off road option the area has been divided into 5 sequential sections to assist comparison as set out in **Figure 5**.





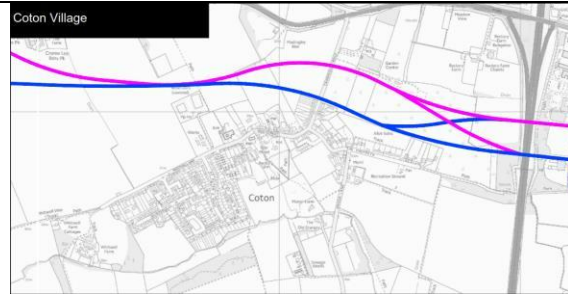
**Figure 5 – SRA route assessment sections**

9.5 The assessment outputs are set out in **Figures 6 to 10**

Section 1 – Madingley Hill	
 <p><b>Transport Issues</b></p> <ul style="list-style-type: none"> <li>Blue route is less disruptive to public to build.</li> <li>Blue route is segregated from other traffic</li> <li>Provides improved pedestrian and cyclist facilities.</li> <li>Pink route is segregated but has interactions with other traffic at busy road junctions (including exit from A428 Trunk Road)</li> </ul>	<p><b>Environment Issues</b></p> <ul style="list-style-type: none"> <li>Blue Route can be better incorporated within the existing landscape because it follows a lower, less prominent alignment</li> <li>Pink route less sympathetic to topography</li> <li>Pink closer to SSSI cemetery</li> </ul> <p><b>Planning/Property Issues</b></p> <ul style="list-style-type: none"> <li>LDA assess that the eastern section of the Pink Route may have moderate impact upon the Green Belt, as the steeper slope may require a degree of cut &amp; fill</li> <li>Pink Route cuts across Chrome Lea field making it less viable for current agricultural use.</li> </ul>

**Figure 6 – Section 1 SRA considerations**

## Section 2 - Coton



### Transport Issues

- Blue Route is better aligned for a more accessible potential future bus stop to serve Coton

### Environment Issues

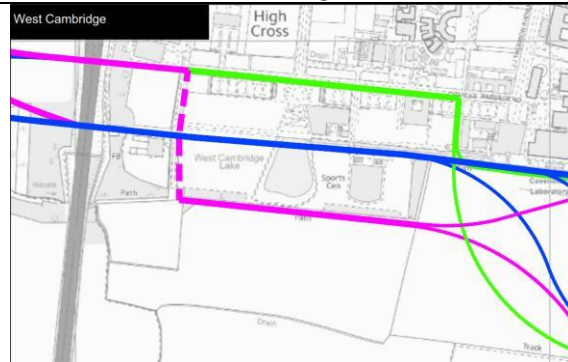
- Pink Route more visible from Coton Village and Red Meadow Hill as it is on higher ground even with mitigation
- Blue Route less visually intrusive as it can be encompassed within the field edge with landscaping.
- Pink route and bridge over the M11 is more visible from Rectory Farm and bisects City Wildlife site
- Any potential future bus stop on Pink Route at Coton would be more intrusive within the landscape

### Planning/Property Issues

- Pink Route has greater impact on the orchard and juicing business on site.
- LDA assesses Pink Route more intrusive on Green Belt openness as further from the urban area

Figure 7 – Coton

## Section 3 – West Cambridge



### Transport Issues

- Blue Route would be fully segregated
- Segregated green route along Charles Babbage likely to have greater conflict with pedestrians and cyclists
- Pink route does not serve the campus
- Blue and Green Routes have good penetration of the West Cambridge development.

### Environment Issues

- Blue Route has environmental (vibration etc.) impacts on “Titan” microscope (could be mitigated)
- Pink Route impacts most on the green belt
- Green route along Charles Babbage mitigates vibration impact concerns

### Planning/Property Issues

- Blue and Green routes require high value development land from the University of Cambridge, and changes to the master plan.

Figure 8 – West Cambridge

## Section 4 – Grange Field



## Transport Issues

- Revised alignment for blue route in order to maintain network efficiency and minimise impact on Grange Field

## Environment Issues

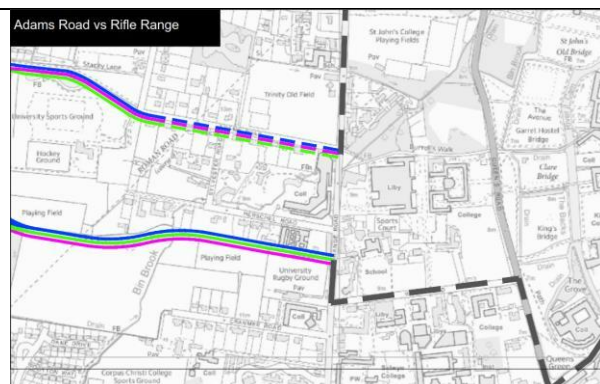
- Of the southern routes, the Pink and Green have the greatest potential impact on the green belt
- Alignments heading to Adams Road or running around field edge have higher ecological impact

## Planning/Property Issues

- All route options will impact on Grange Field, with the amended blue route leaving the largest area to the south and minimising impact on the Green Belt and agriculture
- Pink route has greatest impact on West Fields

### Figure 9 – Grange Field

## Section 5 – Grange Road &amp; Beyond



## Transport Issues

- Adams Road option will require a new signalised junction at Wilberforce Road.
- Rifle Range allows for segregated rapid transit infrastructure
- Rifle Range provides additional cycling and walking capacity to support West Cambridge.

## Environment Issues

- Adams Road offers less segregation and creates potential conflicts with cyclists and residents.
- Adams Road route may have an impact on the areas of high ecological value (e.g. ponds with possible newts).
- Rifle Range may have adverse impact on Trees (including 3 TPOs) and existing Landscape
- Local concern regarding potential flooding at Bin Brook (can be mitigated)

## Planning/Property Issues

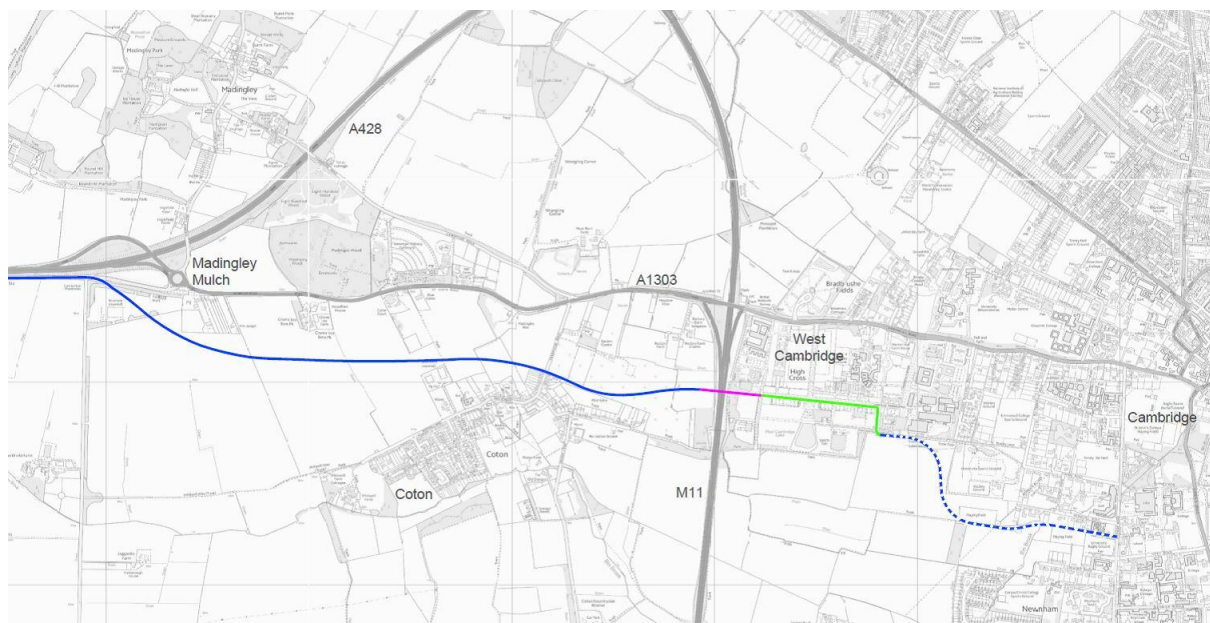
- Rifle Range option requires a small part of the training area of the university rugby club.
- land owners St Johns College supports the Rifle Range option.

**Figure 10 – To Grange Road and beyond**

## 10. Recommended Route Alignment

- 10.1 The summary conclusion of the assessment has concluded that, in considering the overall strategic objectives of the scheme which seeks to achieve HQPT while ensuring that local environmental quality is maintained and the applicants obligations are met to avoid, mitigate negative impacts and enhance the environment where possible, the most effective SRA is as set out in **Figure 11**.

- 10.2 Landscape character and quality were carefully considered as part of the SRA assessment. Particular attention was paid to the West fields, which forms an important and sensitive part of the Greenbelt around Cambridge as part of this Assessment. So far as possible, the route follows the boundaries of the established open field pattern and integrates with the former Rifle Range tarmac track leading to Grange Road. The SRA route from Grange Field to the former Rifle Range track is recommended as a suitable merger of both landscape and ecological considerations. We recognise the need to mitigate ecological impacts and enhance biodiversity whilst retaining land use and landscape character, so far as possible. The final exact alignment will need to be subjected to further work with CPCA regarding the development of CAM and a detailed assessment as part of the EIA work, which would definitively assess the impact and potential benefit of mitigation options [shown as a dotted blue line on figure 11].
- 10.3 The SRA from Grange Field to the former Rifle Range track is required to attain consent to build and operate the proposed scheme (including integral cycle and walking provision) in its first year of opening of 2024. Further phased extension of the public transport network through the business case for CAM (anticipated SOBC from the CPCA due January 2019) would by means of a separate but complementary consent provide for tunnelled sections, which once in place would combine to provide even greater capacity and connectivity for Greater Cambridge residents, by public transport, walking or cycling.
- 10.4 This approach was endorsed by the independent review of the scheme by the Combined Authority subject to further work on the tunnel portal.



**Figure 11 – Recommended Specific Route Alignment**

## **11. Phase 2**

- 11.1 There is planning policy requirement for new strategic high quality segregated public transport alignment through Bourn Airfield as part of any proposed new development of that site which is currently subject to a live planning application with the Local Planning Authority.
- 11.2 The Cambourne West development was approved in 2016. Cambourne West forms the western extent of the project and in partnership with Development Control officers in the Local Planning Authorities, the project team have worked with the Cambourne West



developer and local stakeholders to identify potential public transport improvements within Greater Cambourne to support current and future public transport services,

11.3 The catchment area identified for Phase 2 has been assessed as a new segregated public transport alignment. However, it may be feasible to deliver similar benefits using measures along the existing St Neots Road highway and as such, similar to Phase 1, a comparative assessment between on and off road options should be undertaken and offered for public consultation. This consultation would be based on 3 broad options and potential sub-option depending on further design. The broad options would be:

- A segregated HQTP route between Bourn Airfield roundabout and Madingley roundabout to the same or similar design specification as that proposed for Phase 1.
- On road bus priority measures including bus lanes and or gates in one or both directions along this section.
- A hybrid of both segregated and on road measures.

The range and type of interventions that could be considered for Phase 2 are summarised in Figure 12.

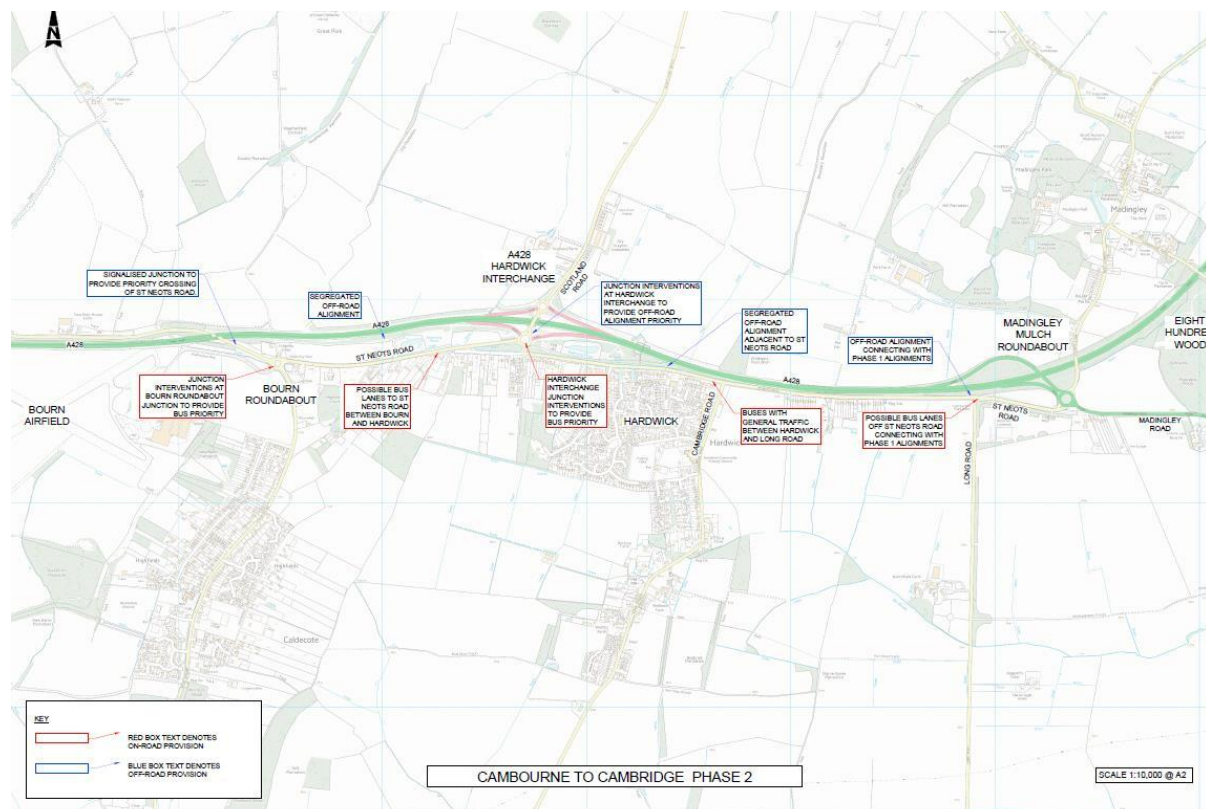
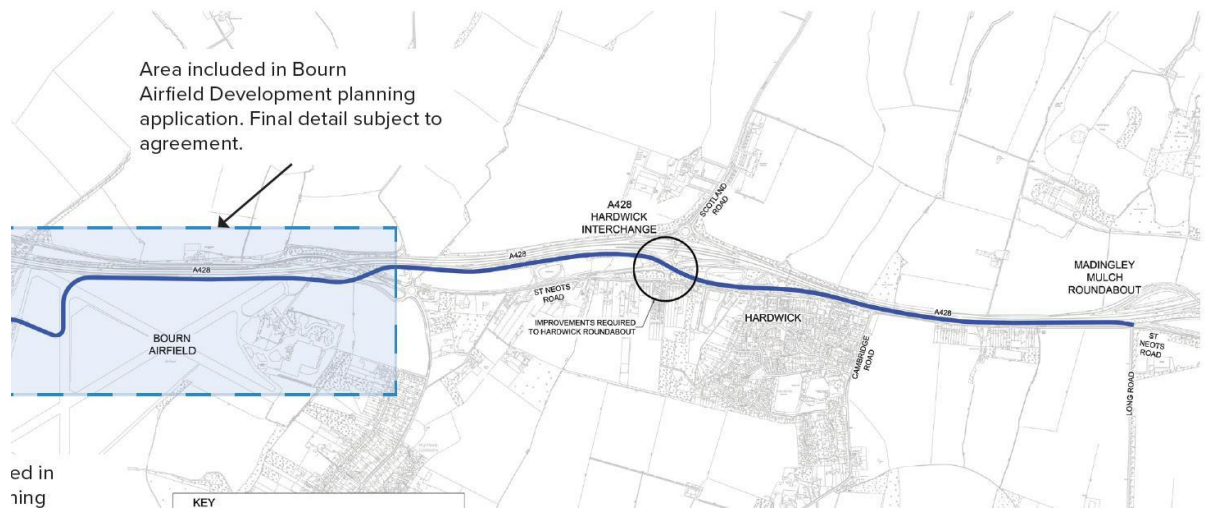
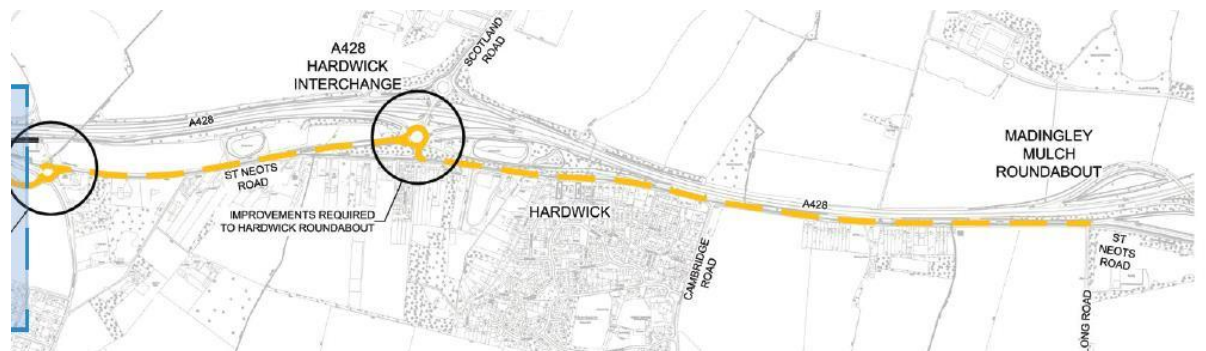


Figure 12 – Potential interventions Phase 2

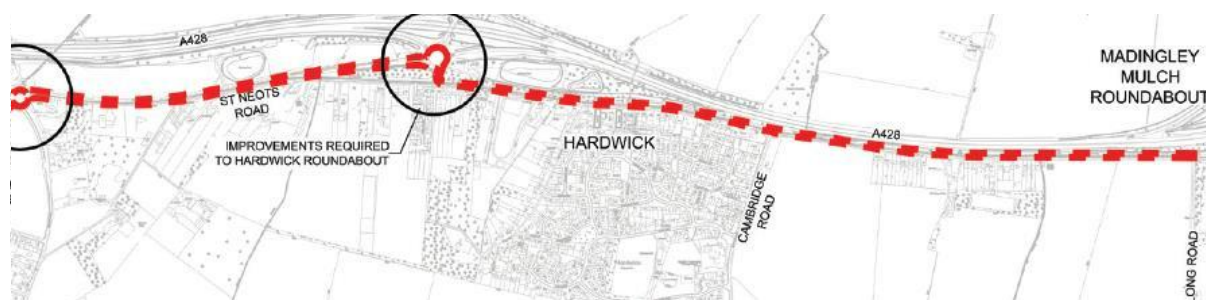
- 11.4 A public consultation setting out options for Phase 2 is planned for early 2019. These options are summarised in Figures 13 to 15 below:



**Figure 13 – Phase 2 Option 1 – Off Road Segregated Route from Bourn to Madingley Roundabout**



**Figure 14 – Phase 2 Option 2 – Public Transport vehicles running with general traffic between Bourn and Madingley Roundabout**



**Figure 15 – Phase 2 Option 3 – Bus Lanes for Public transport vehicles between Bourn and Madingley Roundabout**

- 11.5 The response received from the Phase 2 public consultation, will assist the further technical assessment of the available options and will inform the Full Outline Business Case to the Board.

### **Park & Ride**

- 11.6 The existing Park & Ride on Madingley Road, close to M11 Junction 13 as a stand-alone service been very successful, showing consistent growth in patronage. Surveys undertaken for the SOBC suggest that the facility captures up to 45% of “in-scope” traffic passing the site. This indicates that the P & R service is attractive to car drivers because it provides a public transport option into Cambridge albeit from quite close in which is not the case with bus services that come from the Cambourne direction. The P & R service is however,

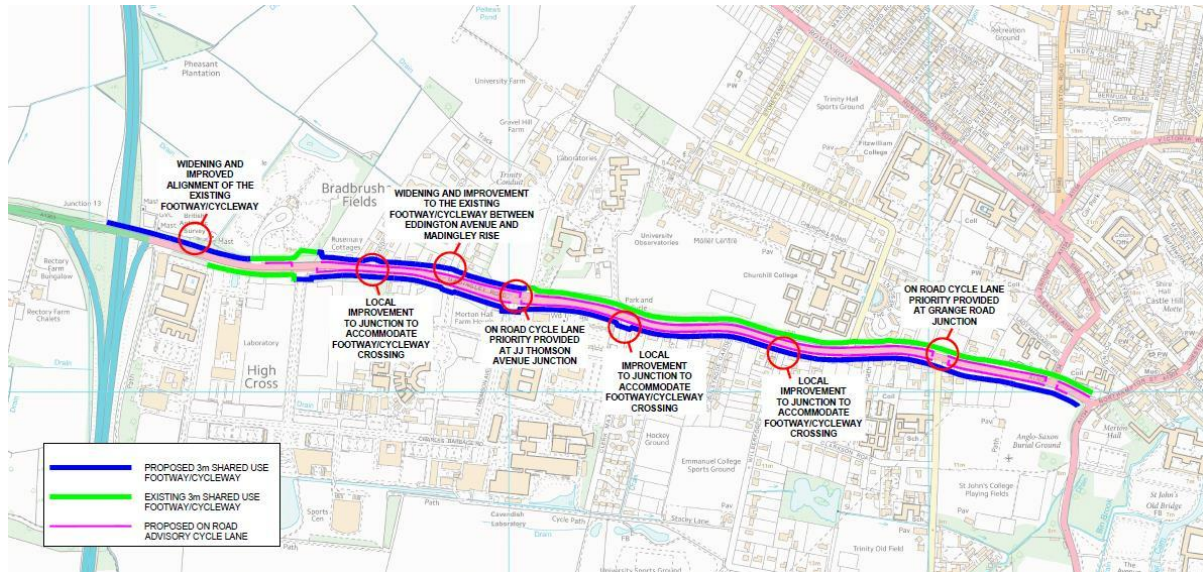
reaching capacity and passengers are increasingly experiencing difficulties in accessing the site due to its location and existing congestion on Madingley Rise and the M11.

- 11.7 The work to date assessed 2 potential locations for a P&R sites. The public consultation set out a clear majority of respondents in favour of Scotland Farm.
- 11.8 There remain a number of strategic issues which require fuller understanding before a final location is recommended as part of the emerging scheme for detailed development. These are:
- The specific interventions on Phase 2 and in particular the access and egress arrangements from the sites including interaction with the existing road network for both general traffic, P&R users and public transport vehicles including a potential traffic calming of St Neots Road.
  - The ongoing development of the CAM proposal and its integration with existing and new transport infrastructure.
- 11.9 On the basis of interdependency between the Phase 2 proposals and the P&R sites, it is considered that any final decision on the location of a Park & Ride should be made as part of the overall final defined scheme presented in the OBC.

## **12 Other Considerations**

### **Madingley Road Cycling Improvements**

- 12.1 As part of the public consultation the consultees suggested that there should be better walking and cycling provision along this section of the route therefore improved cycle provisions have been included as part of the post consultation do minimum option. This is also in line with the Local Transport Plan has a policy to improve cycling priority along Madingley Road.
- 12.2 The subsequent occupation of the Eddington site as well as potential expansion of the West Cambridge site also increase the case for complementary cycling improvements along Madingley Road, building on those already secured via the planning process.
- 12.3 As such, in the context of adherence to policy and as a response to the public consultation, it is proposed to develop a cycling project for Madingley Road and to develop proposals to improve the cycling network within the area. Officers will present a separate report on it to the Board for approval. Stakeholders proposed that any cycling and pedestrian improvements be entirely within the public highway with no third party land requirements. A series of concepts for further development are set out in **Figure 13**.



**Figure 13: Concepts for cycling and pedestrian improvements along Madingley Road**

### 13. Delivering a Scheme

#### Financial Case

- 13.1 Further refinement of option costs has been carried out since the SOBC and 2017 stage of project development. The current estimated capital cost of the current off-road option is £157.8m. The predicted costs and third party contributions are shown in Table 8 and builds upon the estimates previously provided for the Phase 1 works.
- 13.2 It should be noted that the financial case does not include Optimism Bias (currently 44%), which is used within the economic appraisal, but does include a risk allowance of 20%.

Cost Summary	SOBC Cost	Current estimate
<b>Total Inc. Inflation</b>	<b>£141,700,000</b>	<b>£157,800,000</b>
Developer Contributions	£0	£38,000,000
<b>Net Total</b>	<b>£141,700,000</b>	<b>£119,800,000</b>

**Table 8: C2C Scheme Costs current vs SOBC**

- 13.3 The estimated high level scheme costs at this stage of the project's development are based on a number of assumptions and exclusions, which are detailed within the technical assessment work reported under Appendix 1 (The Interim Report). As would be expected there are some differences to the costs that were presented in the SOBC and subsequent reports, there are multiple reasons for this which include the following:
- Level of detail of schemes – the options have been developed further enabling the costs to be further refined;
  - Option alignment work for Phase 2 (formally Option 3a) which has implications on costs; Optimised On Road (low cost comparator) which has a revised scope than previously costed;
  - Information and data – further information on utilities, land assembly has been obtained; and
  - Further indicative design work specifically related to the recommended option .



## **Funding**

- 13.4 Funding for the project is intended to be sourced through the GCP and third party developer contributions through S106. City Deals provide a funding framework for central government and local partners to agree investment programmes, centred on the promotion of local economic growth and development. The total scheme costs for the scheme of £158m are deemed affordable based on successfully securing funding from the identified funding sources.
- 13.5 The estimated developer contributions shown above are dependent upon on-going assessments and negotiations and so are indicative at this stage. However, it is currently anticipated that between 20% and 25% of the scheme costs can be attributed to development.

## **Commercial Case**

- 13.6 The Commercial element of the business case covers a range of commercial factors related to delivery of options. Examples are the issues associated with procurement, contractual risk etc. In the SOBC it was concluded that these commercial factors did not significantly differentiate between the options.
- 13.7 An initial procurement work stream has commenced for each option as currently defined there is a clear commercial strategy for the range of options currently under consideration. The procurement strategy will be influenced by further developments in options for example around vehicle guidance technology which would be further developed at the OBC stage in order to establish the applicable process for the application of powers and consents.
- 13.8 Operation and maintenance considerations also form part of the Commercial Case but at this stage do not offer a basis of differentiation between options.

## **Management Case**

- 13.9 The Management section of the business case focuses on project delivery and management/ governance arrangements in place. The management case also considers the planning process and legal powers necessary to undertake to build a scheme.
- 13.10 Broadly, as stated in the SOBC, the management case does not differentiate in terms of the options under consideration. This is based on a review of previous projects delivered by GCP authorities such as Cambridgeshire County Council and lessons learnt.
- 13.11 The GCP includes a governance structure via the Executive Board and a standard approach to project management including a standard project control framework. A project management team exists with defined roles and responsibilities. A series of commercial contracts are in place with third party suppliers (designers, consultants, legal advisors etc.) which are managed by the project team. The GCP Assembly reviews projects at the strategic level prior to recommendations being presented to the Executive Board. An Assurance Framework exists between central Government and GCP in terms of project prioritisation and delivery.
- 13.12 The management case also identifies the key risks and mitigations for the project.

## **Public Consultation and Engagement**

- 13.13 The management case reviews the process of public consultation and engagement. Public and stakeholder consultation is essential to ensure that the various aspirations of the general public and key stakeholders are taken into account throughout development and delivery of the project and to manage communication and flow of information relating to

the project. A communication plan sets out how this process is managed, identifying key stakeholders and how engagement is managed including the facilitation of a project specific Local Liaison Forum.

- 13.14 There have been 2 major public consultations as part of project development to date and the details of this and how it has informed the option assessment process are set out further in Appendix 1.

## **14 Summary**

- 14.1 This report updates on the ongoing development of the Business Case toward a recommended Option for the C2C project. The report has detailed the outcomes of the public consultation on developing options in 2017-18 and the technical assessment work carried out in the context of the '5 Cases' business case methodology.
- 14.2 The ongoing business case assessment reaffirms the findings of the previous stages, that there remains a strong strategic case to undertake a major transport infrastructure project from Cambourne to Cambridge based on both current and projected transport demand along the corridor, given the GCP objectives to promote sustainable economic growth and reduce congestion.
- 14.3 The report has also identified a recommended alignment for a rapid transit route for Phase 1 between Madingley Roundabout and Grange Road. The route alignment from Grange Field to Grange Road passes through the West fields a sensitive part of the Greenbelt around Cambridge which will be reflected in the further design development of the scheme and subject to ongoing dialogue with the CPCA as part of the development of the CAM network.
- 14.4 Further assessment work and refinement is required and as such further business case development to the OBC will continue and be aligned with CAM.

## **15 Next Steps and Milestones**

- 15.1 This report has updated the Joint Assembly on the ongoing development of the Business Case toward a recommended Option for the Cambourne to Cambridge Better Public Transport Project. The report has detailed the outcomes of the public consultation and stakeholder engagement on developing options in 2017-18 and the technical assessment work carried out in the context of the WebTAG '5 Cases' business case methodology.
- 15.2 The ongoing work for the project would include the following key elements as set out in Table 9 below, this includes a formal scheme consultation in 2019.
- 15.3 A report seeking a final decision on the scheme, including both Phase 1 and Phase 2 route alignments and the Park & Ride location will be brought to the Board in October 2019.

<b>Task</b>	<b>Commentary</b>	<b>Timescale</b>
<b>CAM SOBC</b>	Complete the SOBC evaluation	Jan 2019
<b>Public Consultation</b>	A public consultation on the options for Phase 2 including a P&R location.	Early 2019
<b>OBC to Executive Board</b>	The Board will be presented with the Full OBC for selection of a single option between Cambourne and Cambridge and P&R site.	October 2019

<b>Prepare and submit application for statutory consent</b>	The power to construct the scheme is likely to come from a Transport and Works Act Order which would be determined by the Secretary of State for Transport. This process is likely to include a Public Inquiry directed by an independent Inspector	Submit application Mid 2020 with a determination period estimated of around 18 months – completed in late 2021
<b>Seek authority to construct project</b>	Following the completion of the statutory permissions stage, the Board will be presented with the Final Business Case for approval. This will trigger the construction of the project.	2021 depending on statutory powers process
<b>Opening of the scheme to operational services</b>	Planned opening	Planned for 2024

**Table 9 – Indicative Programme**

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# Cambourne to Cambridge Better Public Transport Project

**Interim Report**

November 2018



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# Executive Summary

Greater Cambridge is one of the most successful and fastest growing economies in the UK. The pace of economic growth is unlikely to slow which will lead to population growth and, if not supported by improved public transport infrastructure, increased congestion. As such, Greater Cambridge would be unable to achieve its full potential without investment in infrastructure and housing, which would otherwise act as a bottleneck on growth.

The C2C project will connect to a wider public transport network to enable people to travel for employment and education, and, by encouraging modal shift to public transport via a congestion free alternative to the car, will facilitate sustainable development at key strategic economic and housing sites.

It will provide a new or significantly improved public transport route, with public transport measures between Cambourne and Cambridge:

- Improvements that avoid traffic congestion;
- A new park and ride, and;
- New high-quality cycling and walking facilities

This Business Case Update for the emerging scheme has been produced, to provide an update to the GCP Executive Board on progress toward a final recommended option. The term 'Update' is used because the core considerations are related to Phase 1 of the scheme between Madingley Mulch and Grange Road. The final Outline Business Case will consider the entire scheme from Cambourne to Cambridge in order to provide a final recommended option.

For Phase 1 a short-list of 4 options were appraised against each other, using the following methodology: assessment of the transport impacts based on transport modelling outputs, overall Benefit-Cost Ratio (BCR) based on scheme's projected capital and operating expenditure, and Value for Money (VfM) assessment based on BCR, Wider Economic Benefits and qualitative assessments.

In order to provide a strategic assessment an illustrative comparator option was also appraised. This option included an illustrative route from Cambourne to Cambridge (Phase 1 and Phase 2) with a park and ride at the Waterworks site. This option was used to understand the overall cost and benefits of a potential future scheme including both Phase 1 and Phase 2.

Route options for Phase 2 would be subject to public consultation and only at final OBC (October 2019) would a final recommended option for Phase 1, Phase 2 and the Park and Ride site will be presented.

Table 1 overleaf provides more detail on the options which were appraised.

The options which were appraised are as follows

**Table 1: Options description**

Option	Development
<b>Low Cost a (optimised on-road with Waterworks Park and Ride)</b>	An on-road scheme with a Park and Ride at the Waterworks site, near to Madingley Mulch roundabout. Provides Eastbound public transport lane along the existing A1303 between Madingley Mulch roundabout and High Cross along with short sections of Westbound public transport lanes where appropriate. Changes at M11 Junction 13 to provide an additional lane of traffic on the A1303 and a new pedestrian / cycle bridge over the M11. Changes to the Northbound M11 off-slip to allow both traffic lanes to turn right towards Cambridge.
<b>Low Cost b (optimised on-road with Scotland Farm Park and Ride)</b>	As Low Cost a but with a Park and Ride positioned at the Scotland Farm site, just off Scotland Road to the north of the A428.
<b>Do Something 1a (off-road from Madingley Mulch Roundabout to Grange Road with Waterworks Park and Ride)</b>	An off-road scheme between Madingley Mulch roundabout and Grange Road with a Park and Ride at the Waterworks site. From this point this scheme provides a new, fully segregated public transport route to Grange Road where journeys will continue to the city centre and other destinations. Provides a new bridge over the M11 where the public transport route passes through the West Cambridge site and joins to Grange Road using the former Rifle Range Track adjacent to the University of Cambridge Rugby ground.
<b>Do Something 1b (off-road from Madingley Mulch Roundabout to Grange Road with Scotland Farm Park and Ride)</b>	As Do Something 1a but with a Park and Ride positioned at the Scotland Farm site, just off Scotland Road to the north of the A428.

### Illustrative Comparator

All of the options above were tested against an illustrative comparator from Cambourne to Cambridge. This illustrative comparator comprised an off-road scheme between Cambourne and Grange Road with a Park and Ride at the Waterworks site, near to Madingley Mulch roundabout. The illustrative comparator is used as a means to assess a strategic option and is not intended to preclude any options for Phase 2 including a Park and Ride at Scotland Farm. This scheme provides a new illustrative, fully segregated new public transport route from Cambourne to Grange Road where journeys will continue to the city centre and other destinations. Provides a new bridge over the M11 where the public transport route passes through the West Cambridge site and joins to Grange Road using the former Rifle Range Track access track adjacent to the University of Cambridge Rugby ground.





The total estimated costs for the illustrative comparator are £158m which is deemed affordable based on successfully securing funding from the following identified funding sources:

Funding Sources	Costs
City Deal Phase 1	£59m
City Deal Phase 2 & 3	£61m
<b>Total City Deal Funding</b>	<b>£120m</b>
Estimated developer contributions, S106 (secured in principal or currently under negotiation)	£38m
<b>Total</b>	<b>£158m</b>

The estimated developer contributions shown above are dependent upon on-going assessments and negotiations and so are indicative at this stage. However, it is currently anticipated that between 20 and 25% of the scheme costs can be attributed to development. Furthermore, there is an expectation that developers of Cambourne West and Bourn Airfield will implement the sections of the scheme through those sites which could potentially further reduce the need for City Deal Phase 2 funding set out above.

On the basis of this Business Case Update it is recommended that the GCP Executive Board should, for Phase 1, proceed to develop an off-road route from Madingley Mulch roundabout to Grange Road, and proceed to consult on a Phase 2 route between Cambourne and Madingley Mulch Roundabout with a Park and Ride site either at Waterworks or Scotland Farm. This option has the best strategic performance when taking into consideration the scheme objectives, wider economic benefits and the qualitative options assessment.

The choice of Park and Ride location can be best made once plans for Phase 2 of the scheme have been refined and subjected to consultation. The final Outline Business Case will recommend a scheme, including Phase 1 and 2 as well as a Park and Ride location, to be taken forward for the necessary statutory approvals including Environmental Impact Assessment.

# 1. Introduction

The Cambourne to Cambridge Better Public Transport Project aims to deliver high quality public transport (HQPT) through the provision of quick, frequent and reliable public transport services.

## Purpose of the report

This report provides an update on the development of the Outline Business Case (OBC) for the A428 Cambourne to Cambridge (C2C) Better Public Transport project.

It provides a summary of the option assessment work as part of the development of the OBC, since the presentation of the Strategic Outline Business Case (SOBC) in October 2016 and the End of Stage report in 2017. The final OBC will present a single scheme between Cambourne and Cambridge for approval to progress to consent and then to construct the works.

The report focuses on work assessing proposed public transport infrastructure improvements on Phase 1 of the project between Madingley Mulch roundabout and Grange Road in particular the on and off-road alignment options. Phase 2 of the project (Madingley

Mulch Roundabout to Cambourne) will form part of the final OBC, along with a final recommendation for a Park & Ride site along the route.)

This Business Case Update includes both further public consultation on Phase 1 (carried out from November 2017 to January 2018) and technical work, the key outcomes of which are detailed in this report.

## Background

The pace of economic growth is unlikely to slow which will lead to population growth and, if not supported by improved public transport infrastructure, increased congestion. As such, Greater Cambridge would be unable to achieve its full potential without investment in infrastructure and housing, which would otherwise act as a bottleneck on growth.

The recent report prepared by the Cambridge and Peterborough Independent Economic Review (CPIER) in September 2018 concluded the following:

*“We also find evidence that, right across these economies, growth is higher than official figures suggest. Examination of employment growth in individual companies suggests firms are increasing employment at a rate greater than that captured by ONS (Office of National Statistics) data; similarly, turnover growth is strong.*

*There are strategic risks to the area if it cannot get the major infrastructure improvements it needs, and previous delays in bringing forward and delivering schemes must not continue.”*

Investments in transport infrastructure are critical to ensuring that already high congestion levels and poor reliability issues are addressed, enabling the next wave of innovation led growth. The C2C project contributes towards addressing a transport constraint on growth by linking key employment and housing sites together, and with the city centre. Particularly with regards to the following developments:

- Cambourne West;
- Bourn Airfield;
- Eddington;
- West Cambridge;
- City centre growth and wider growth as shown in figure 1

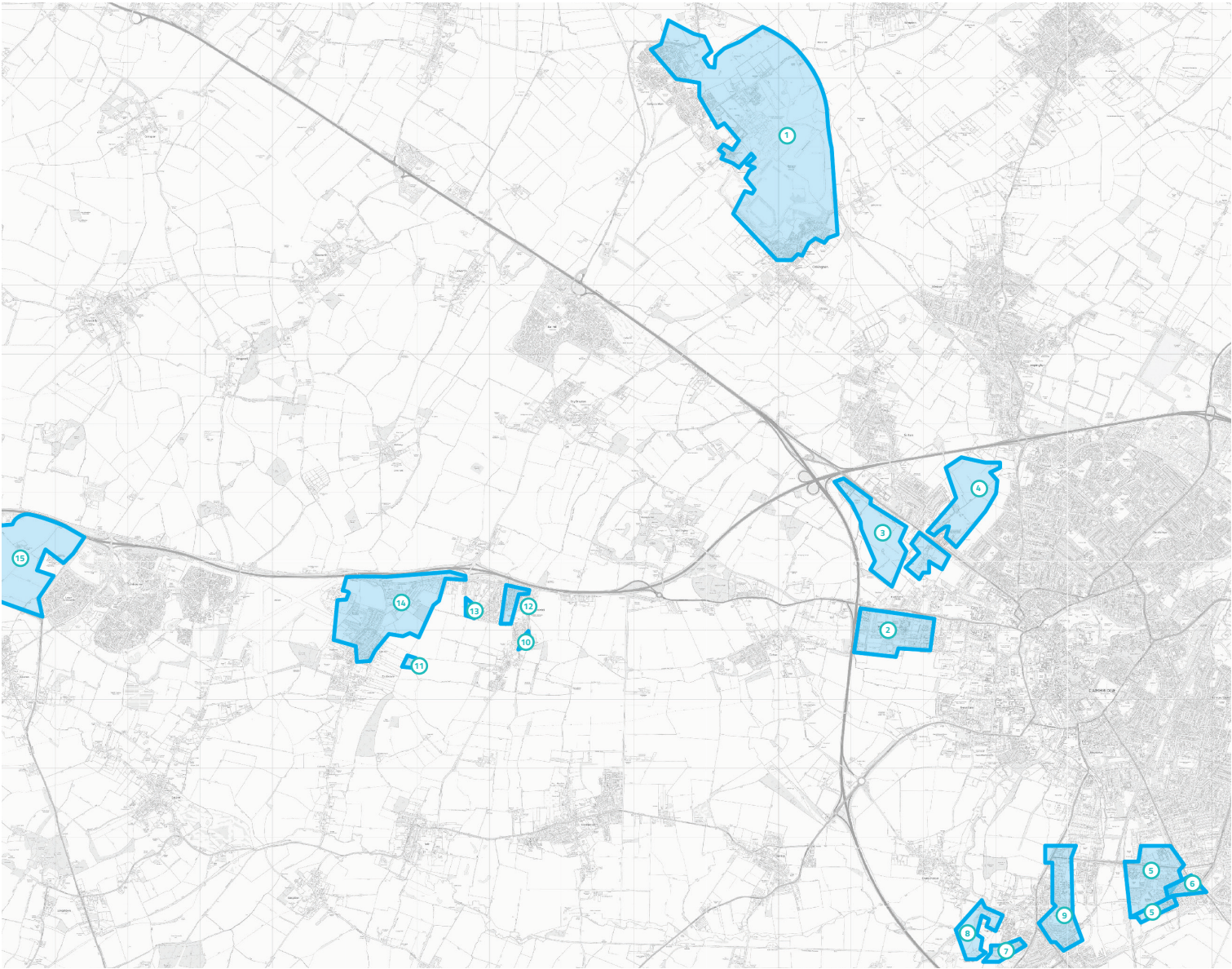


Figure 1: Future Development Sites

Site numbers	Site name	Dwellings/Jobs	
1	Northstowe	10,000 dwellings	
2	West Cambridge	10,000 jobs	
3	North West Cambridge	3,000 dwellings	4,000 jobs
4	Darwin Green	2,780 dwellings	
5	Cambridge Biomedical Campus (CBC) & Extension to CBC (Local Plan Proposal) <sup>1</sup>	14,000+ jobs	
6	Bell School	347 dwellings	
7	Glebe Farm	316 dwellings	
8	Trumpington Meadows	1,200 dwellings	
9	Clay Farm	2,300 dwellings	
10	Hardwick - West of Grace Crescent	98 dwellings	
11	Highfield Caldercote - Highfields Road	71 dwellings	
12	Hardwick - St Neots Road	155 dwellings	
13	Highfields Caldercote - Land East of Highfields Road	140 dwellings	
14	Bourn Airfield (Local Plan Proposal)	3,500 dwellings	
15	Cambourne West - (Resolution to grant planning Permission)	2,350 dwellings	

Source: Mott MacDonald (© Crown Copyright. All Rights Reserved. OS License Number 100023205.2018)

1. The SCDC and CaCC Local Plans were adopted on 27th September 2018 and 18th October .



## Context

The C2C project will connect to a wider public transport network to enable people to travel for employment and education, and by encouraging modal shift to public transport via a congestion free alternative to the car, will facilitate sustainable development at key strategic economic and housing sites.

The C2C project 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 will bring forward schemes 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.

As such, to meet this growing demand, the role of the C2C project as defined in the business case is as follows:

*“To connect existing and new communities along the A428/A1303 to places of employment, study and key services to enable the sustainable growth for Greater Cambridge. We will deliver this through improved, faster and more reliable High Quality Public Transport (HQPT) services, together with high quality cycling and walking facilities serving a new Park & Ride site to the west of Cambridge.”*

The recently published Cambridgeshire and Peterborough Independent Economic Review found evidence that, across the regional economy, growth is higher than official figures suggest. Examination of employment growth in individual companies suggests firms are increasing employment at a rate greater than that captured by ONS data; similarly, turnover growth is strong. There are, however:

*“major doubts as to how well the area is set up to cope with future growth, particularly where the strain is already evident.”*





### National Infrastructure Commission (NIC)

The 2017 National Infrastructure Commission's (NIC) report on the Cambridge – Milton Keynes – Oxford Growth Corridor has concluded that improvements in east-west transport connectivity along the corridor are necessary to underpin the area's long term economic success, and alleviate the area's *"chronic undersupply of homes which could jeopardise growth, limit access to labour and put prosperity at risk"*. It estimates that infrastructure investment could support the delivery of up to 1 million new homes in a broad corridor between Oxford and Cambridge. This level of development will inevitably place additional pressure on the A428/A1303 and surrounding routes. Calling for City-scale transport infrastructure to enable growth, the NIC focuses on;

*"maximising the opportunities associated with the development of East West Rail and the Oxford-Cambridge Expressway – integrating mass rapid transit with these schemes to enable effective first/last mile connectivity, in a way that enhances the value of these strategic infrastructure projects"*

The NIC has identified the Cambridge – Milton Keynes – Oxford arc as a national priority stating that its world-class research, innovation and technology can help the UK prosper in a changing global economy.

Submissions made as part of the NIC's call for evidence on the corridor emphasised that congestion is becoming a threat to economic investment and quality of life as well as increasing levels of air pollution. Growing congestion in these towns and cities will limit people's ability to access employment in the arc's key towns and cities. The development of public transport and active travel options could make more efficient and effective use of road space in the arc's key cities, reducing the amount of road space required per person and enabling a greater volume of journeys using the existing transport networks. The NIC states that;

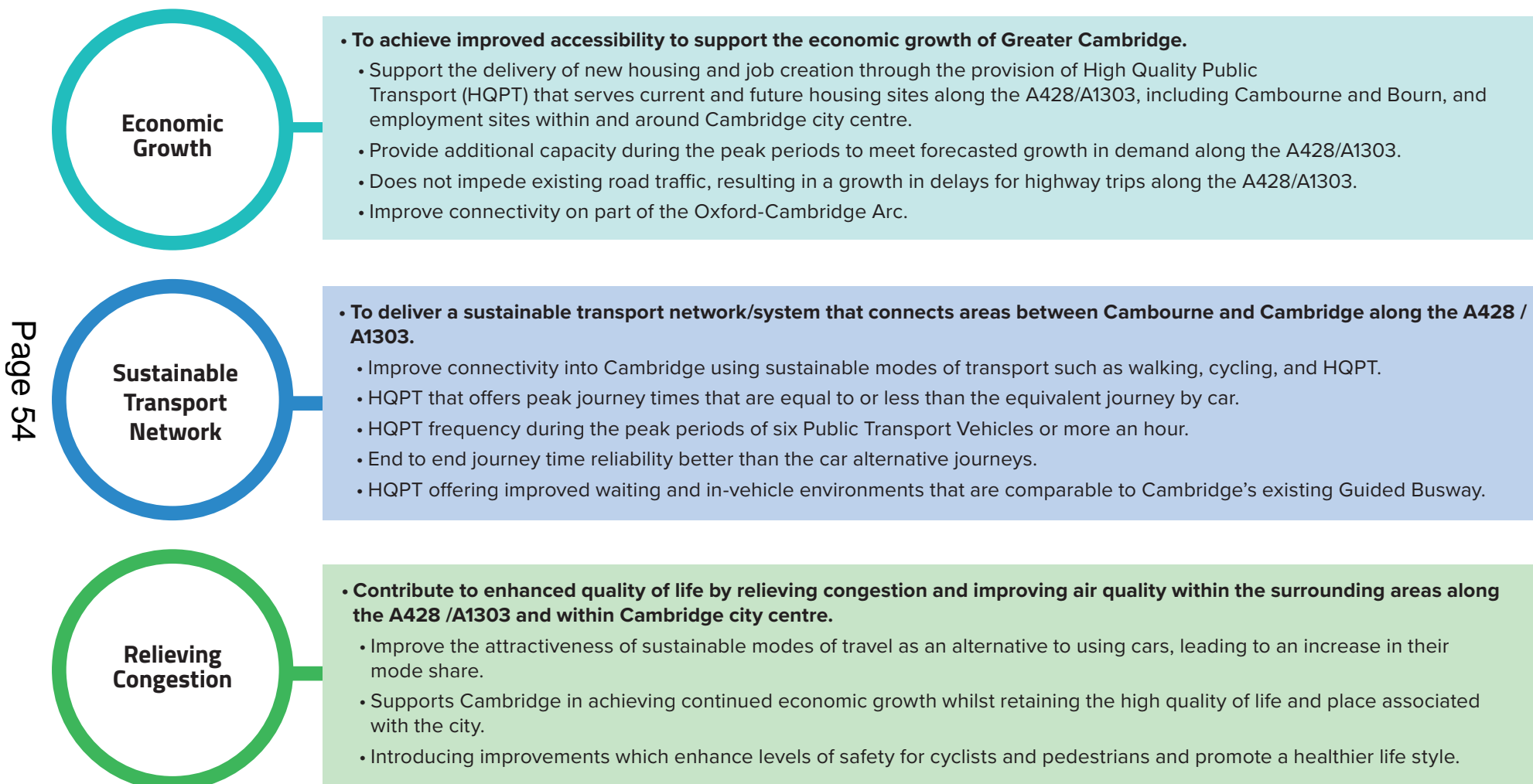
*"It is greatly encouraging, therefore, that the local authorities in each of the arc's key towns and cities are working to bring forward ambitious, evidence-based proposals for improving the effectiveness of city-scale transport based on the concept of mass rapid transit (MRT)"*.

### Project Objectives

The C2C project will provide improved public transport links - connecting people to places of employment, study and key services - and help existing and new communities along the A428/A1303 grow sustainably in the coming years.

By providing new travel choices, and alternatives to the car, the C2C project is intended to manage growing congestion on the A428/A1303, ensuring people have good access to employment opportunities thereby helping to secure Cambridge's continued economic success. Objectives of the C2C project are shown in Figure 2.

Figure 2: Project objectives



## Cambourne to Cambridge Project

The study area for the C2C project is located on the A428 / A1303 route, between Cambridge City Centre and Cambourne which provides a connection to St Neots. The scheme will service communities within the study area including the following:

- Cambourne;
- Bourn Airfield (future development site)
- Caldecote;
- Madingley;
- Hardwick; and

Coton

The project is made up of three core elements:

A **new or existing public transport route**, with public transport priority measures between Cambourne and Cambridge, that avoids general traffic congestion;

- A **new park and ride** site, and;
- **New high-quality cycling and walking facilities.**

Various options have progressed through a series of assessments and refinement, including public consultation. The short-listed options were presented in a SOBC in September 2016, with work being progressed towards the selection of a recommended scheme and the development of an OBC.

This document provides an update on the development of the OBC, to demonstrate progress to the GCP Executive Board prior to submission of the final OBC.

The final OBC will use the five key cases required by Government for major investments:

- The **Strategic Case** sets out the case for change.
- The **Economic Case** demonstrates the value for money of the scheme including the impact on the economy.
- The **Commercial Case** considers how the scheme would be commercially viable, procured and attractive to the market.
- The **Financial Case** outlines how the costs and the scheme are to be funded/financed, including future maintenance and operational costs.
- The **Management Case** sets out how the scheme would be managed to minimise risk and maximise outcomes.





***Would routes be designed to minimise the environmental impact?***

Yes – Environmental impacts have been considered throughout the optioneering stages and whichever option is selected would be subject to further rigorous environmental assessment. This would aim to:

1. Avoid any adverse effects where possible;
2. Minimise adverse effects which cannot be avoided through intelligent design and mitigation measures where suitable; and
3. Only if the previous are not achieved then seek to compensate for any adverse effects which cannot be adequately mitigated on-route.

The results of this assessment would be reported in an Environmental Impact Assessment published in support of any approval process the selected scheme has to progress through.

***Would the introduction of a new public transport route create ecological benefits?***

The off-road route option would apply a 'green lane' design treatment along its length to enhance biodiversity through the creation of habitats. This could be through the planting of new trees and hedges along the route. Landscaping at the Park and Ride site will be put in place in order to reduce any potential visual impacts.

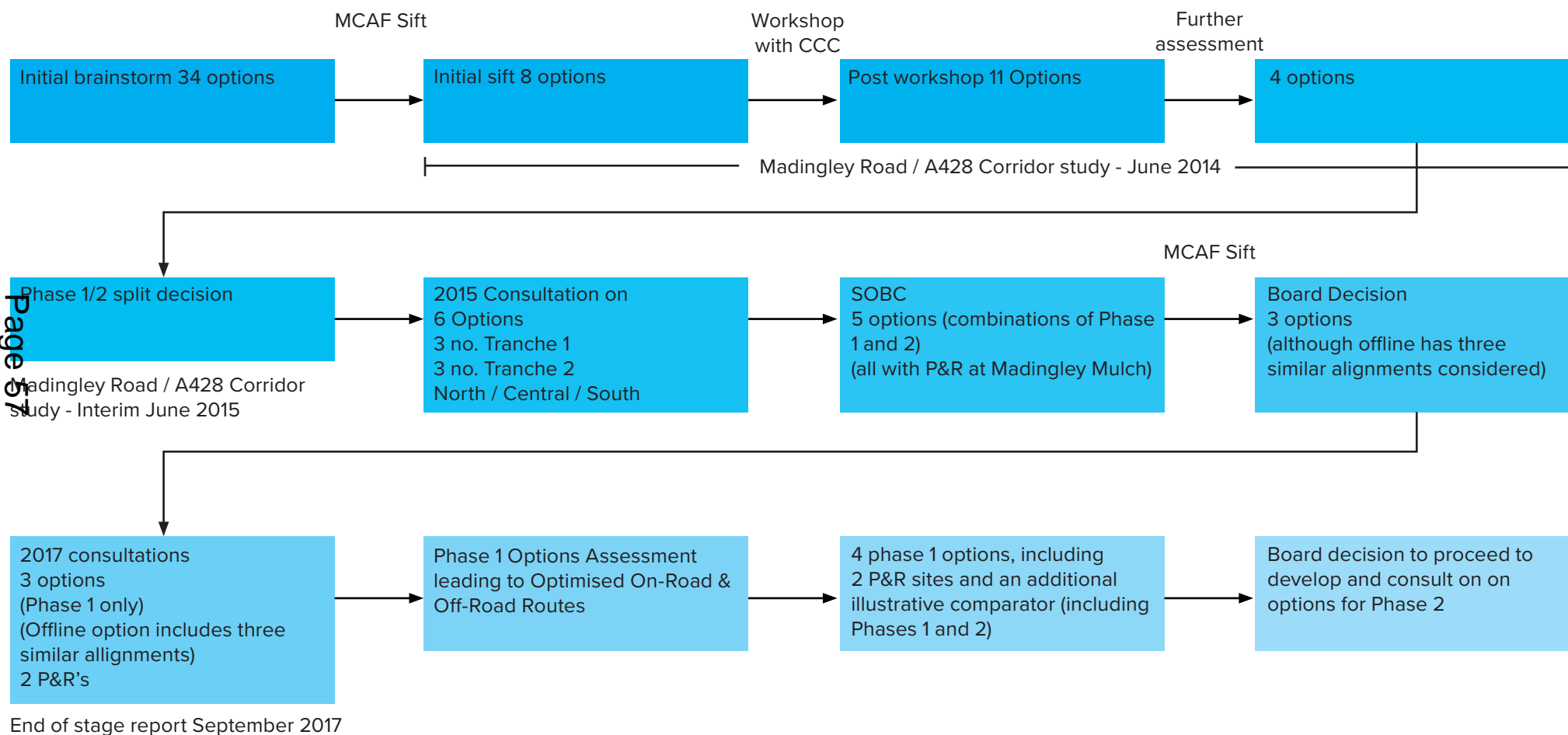
Work on developing plans for the C2C project began in 2014, with the project being prioritised for funding from the City Deal by the GCP in 2015. Since then, the project has undergone significant development to generate options that address challenges to sustainable economic growth whilst harnessing the opportunities to connect local communities to employment opportunities in Greater Cambridge and the region. Options have been identified and evaluated including those that use the existing highway, a new alignment or hybrids which use both existing and new alignments.

The project has been informed by a number of Public Consultations and engagement with stakeholders. Designs have been created or amended in response to this engagement and feedback received.





Figure 3: C2C project development process



## 2. The Project

### The need for the project

Based on current evidence and policy, the key underlying drivers for the need for change along the A428 / A1303 route and for investment in the C2C scheme are:

The A428 is a nationally important route and forms part of the nationally strategically important Oxford-Cambridge Arc which was highlighted in the 2017 and 2019 Budgets and subsequent studies as a priority for growth.

- Large population growth is likely to require the delivery of significant additional housing, much of which is planned to be located to the West of Cambridge along the A428/A1303 route.
- Employment is growing rapidly within Cambridge, notably in destinations on the edge of the city such as West Cambridge and the Biomedical Campus to the South with a need to provide effective transport connections from existing and future settlements.
- The demand generated by the growth in housing and employment will generate ever greater levels of demand for travel in and around Cambridge thereby exacerbating current congestion issues.
- Car ownership in Cambridge is high, with 85% of households having access to a car compared to the national average of 74%.

- The rail network does not serve movements along the A428 / A1303 route.
- The existing A428 / A1303 is inadequate for walking and cycling as a mode of transport into Cambridge.
- Congestion on the route means that current bus services are unable to offer an attractive alternative to private car.
- Without intervention, those living and working in the new developments could become locked into a cycle of car dependency and low use of other modes exacerbating capacity issues along the route.

### ***Spending - Can't the money for an Off-road route be allocated to other transport solutions?***

The Greater Cambridge Partnership Executive Board, at its meeting on January 2015, prioritised the Cambourne to Cambridge project as the highest priority according to economic impact and need for delivery.

Any decision on this project (and any other GCP project), and the allocation of funding, will be made on the overall value for money assessment in the proposal. The GCP Executive Board will have the final say whether or not to progress the project and will make that decision in the context of the overall GCP objectives.



## Current Transport Network Review

Analysis of the A428/A1303 has identified congestion pinch points along the route particularly east of Madingley Mulch roundabout along the A1303.

Main issues that have been identified through the current network analysis are:



Severe congestion along the A428 transport route



Lack of connections to transport interchanges, limiting options to travel sustainably



Poor public transport provision along the route buses offer no competitive advantage over private cars in terms of journey times and reliability



Current Park & Ride site is reaching capacity and congestion on the highway network results in passengers experiencing difficulties accessing the site



There have been high number of serious and slight accidents along the A428/A1303 between 2012-17



Car dependency along the route and demand for car travel is causing congestion and delay, this could restrict growth aspirations



Growth in traffic causes an increase in noise



The historic environment has been degraded by the increased traffic volumes



Cambridge city centre has poor air quality which will only be exacerbated by future travel demand



Current exhaust emissions could impact the important flora in Madingley Wood – a Site of Special Scientific Interest (SSSI)

## Current problems continued:



Large population growth is likely to require the delivery of significant additional housing, much of which is planned to be located to the West of Cambridge along the A428/A1303 route.



The A428 is a nationally important route and forms part of the nationally strategically important Oxford-Cambridge Arc which was highlighted in the 2017 Budget as a priority for growth.



Employment is growing rapidly within Cambridge, notably in destinations on the edge of the city such as West Cambridge and the Biomedical Campus to the South with a need to provide effective transport connections from existing and future settlements.



The demand generated by growth in housing and employment will generate ever greater levels of demand for travel in and around Cambridge, exacerbating current congestion issues



The existing A428/A1303 is inadequate for walking and cycling as a mode of transport into Cambridge.



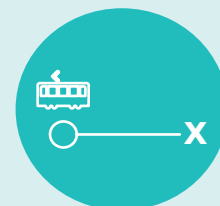
Congestion on the route means that current bus services are unable to offer an attractive alternative to private car.



Without intervention, those living and working in the new developments will become locked into a cycle of car dependency and exacerbating capacity issues along the corridor



Car ownership in Cambridge is high, with 85% of households having access to a car compared to the national average of 74%.



The rail network does not serve the movements along the A428/A1303 corridor.



Exiting buses do not provide reliable journey times

The C2C Project therefore offers:



The opportunity to build on the success of the existing Park & Ride site, by creating more capacity and public transport priority infrastructure that will benefit new and existing bus services



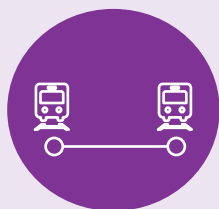
The ability to achieve growth through the use of sustainable modes on this corridor, a frequent, quick and reliable HQPT service with supporting measures is required



The creation of safe cycling and walking routes



A reduction in accidents achieved through managing congestion



Improved connectivity to Cambridge city centre and the rail links there, and encouragement of further growth and development to the western areas of Cambridge



Journey times (including the walking element at either end of the trip and waiting time) comparable with those of the private car



Addresses environmental challenges through a reduction in congestion



Improved connection on a section of the Oxford - Cambridge Arc

## Alignment with planning and policies

A review has been conducted as a part of this Business Case Update to ensure that the options assessed align with published policy. The review takes into account national, regional and local policies, including:

- City Deal Objectives
- Transport Strategy for Cambridge and South Cambridgeshire – 2014
- Cambridgeshire Long Term Transport Strategy – 2015
- The Third Cambridgeshire Local Transport Plan – 2011 - 2026
- South Cambridgeshire Local Plan – 2018
- Cambridge Local Plan – 2018

The illustrative comparator has been assessed against the above policies and was found that it had the best fit due to its ability to facilitate sustainable economic growth by providing high quality, quick and reliable public transport.

### *What is the effect of the scheme on the greenbelt?*

The off-road route lies mainly in Green Belt land.

An assessment of the key planning policy considerations relating to the off-road option concluded that the project's social and economic benefits and the transport objectives was strongly supported by both local and national planning policy. However, this needs to be weighed against the impact in environmental terms, particularly accounting for the location of large parts of the proposed route being situated within the Cambridge Green Belt.

The impacts on the Green Belt will continue to be assessed as the project proceeds.

## Stakeholder engagement

Stakeholder and public involvement is important in the process for option appraisal and assessment. Extensive community and stakeholder engagement has taken place using a range of methodologies. Although the optioneering process is not based solely on popularity, gathering and then reflecting public and stakeholder support and views are a key factor in option selection. As such the robust public consultation has informed and shaped the scheme and optioneering process which has led to the strategic option.

Public and stakeholder involvement has taken place at every major stage in the optioneering process. It has allowed transparency between the emerging major transport scheme and the public, providing key stakeholders and communities the opportunity to raise any concerns and compile direct feedback on the proposals.

Furthermore, research with communities located in proximity to the project has provided an understanding of transport users' needs and the impact that a high quality public transport scheme could have on their travel behaviour.

Table 2 summarises when public consultation has taken place along with the outcomes and impact on scheme development. Stakeholder engagement has been ongoing including discussions with land owners, developers and statutory and non-statutory bodies e.g. Highways England.

Table 2: Consultation to date

Consultation Activity	Outcome / Impact on Scheme Development
<b>2015 Public Consultation</b>	<ul style="list-style-type: none"> <li>The majority of respondents agreed that better bus services are needed, most preferred elements of a potential scheme included: <ul style="list-style-type: none"> <li>An on-road bus lane in bound from Madingley Mulch roundabout into the city centre</li> <li>A bus priority route from Madingley Mulch roundabout to Bourn Airfield along the old A428</li> <li>A bus only route between Cambourne and Bourn Airfield</li> </ul> </li> <li>Alternative options and modifications were taken for further assessment.</li> </ul>
<b>2016 Local Liaison Forum (LLF) Established</b>	<ul style="list-style-type: none"> <li>Continuous engagement with LLF throughout scheme history.</li> <li>New route option suggested and taken forward for further appraisal work.</li> <li>Scoring of options in appraisal was a joint operation undertaken with input from LLF representatives.</li> </ul>
<b>December 2016 Stakeholder Workshop Consultations</b>	<ul style="list-style-type: none"> <li>Local Stakeholder Workshop – 8th December 2016.</li> <li>Cambourne Workshop – 14th March 2017.</li> <li>Local Planning Authority Workshops – January 2017 – May 2017.</li> <li>The start of a formal dialogue between GCP, statutory consultees and local stakeholders.</li> </ul>
<b>July – August 2017 Busway User Research</b>	<ul style="list-style-type: none"> <li>Speed, reliability of journey and frequency of service are key service elements which motivate people to use the service, this has assisted in informing the specification of the proposed scheme.</li> <li>When informed of the potential new bus service between Cambourne and Cambridge, around a third of respondents indicated a fair to strong likelihood of using it.</li> </ul>
<b>August 2017 Stakeholder Workshop Consultations</b>	<ul style="list-style-type: none"> <li>Utilising feedback from the workshop, the Park &amp; Ride locations were narrowed down. This led to further evaluation and two sites: Waterworks and Scotland Farm. These were presented for public consideration in the 2017-18 consultation.</li> </ul>
<b>December 2017 - January 2018 Public Consultation &amp; Focus Groups</b>	<ul style="list-style-type: none"> <li>40% of respondents preferred Option B, an On-Road tidal Public Transport lane</li> <li>33% of respondents preferred Option C, an Off-Road Public Transport route</li> <li>40% of respondents preferred Option A, an On-Road tidal eastbound Public Transport lane</li> <li>Bi-directional bus lanes and an optimised on-road option to include both inbound and out bound bus priority were taken forward for further consideration.</li> <li>The bus lane was removed from the on-road option and cycle provisions were included and formed part of the do minimum option.</li> </ul>
<b>March 2018 – Stakeholder Workshops</b>	<ul style="list-style-type: none"> <li>No preference was shown for a preferred on-road or off-road solution from the options presented.</li> <li>There was a preference for a separate cycle and pedestrian walkway on the on-road option so the pedestrian bridge was taken forward in the ‘Low Cost’ options.</li> <li>The consultees suggested that the proposed bus lane from High Cross junction be removed from the on-road option. As such this has been proposed to be included in a ‘Low Cost’ option.</li> </ul>

# 3. Option Development

This chapter will discuss:

- Option development
- Headline criteria assessed
  - Environmental
  - Social and distributional
  - Strategic economic
  - Summary
- The Emerging Strategic Option

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Options Development and Appraisal since October 2016 has been undertaken in 2 stages:

**Stage 1** – assessed the options that were presented as part of the 2017 public consultation, taking into account responses from the consultation and stakeholder engagement to arrive at the highest scored On-Road route and the highest scored Off-Road routes.

**Stage 2** – the short-listed options were appraised against each other to arrive at a strategic option that has been taken forward through into this Business Case Update.

## Stage 1 – Definition of Preferred On-Road and Off-Road Option

Stage 1 definition of the three options consulted in 2017 were as follows:

- **Option A:** An on-road option which includes the introduction of an inbound bus lane on Madingley Road between Madingley Mulch roundabout and Lady Margaret Road;
- **Option B:** An on-road tidal bus lane on Madingley Road running between Madingley Mulch roundabout and the new entrance to Eddington (High Cross); and
- **Option C:** An off-road public transport route running between Madingley Mulch roundabout and Grange Road, Cambridge.



Photo montage and cross section illustrating how Route A could look



Photo montage and cross section illustrating how Route B could look

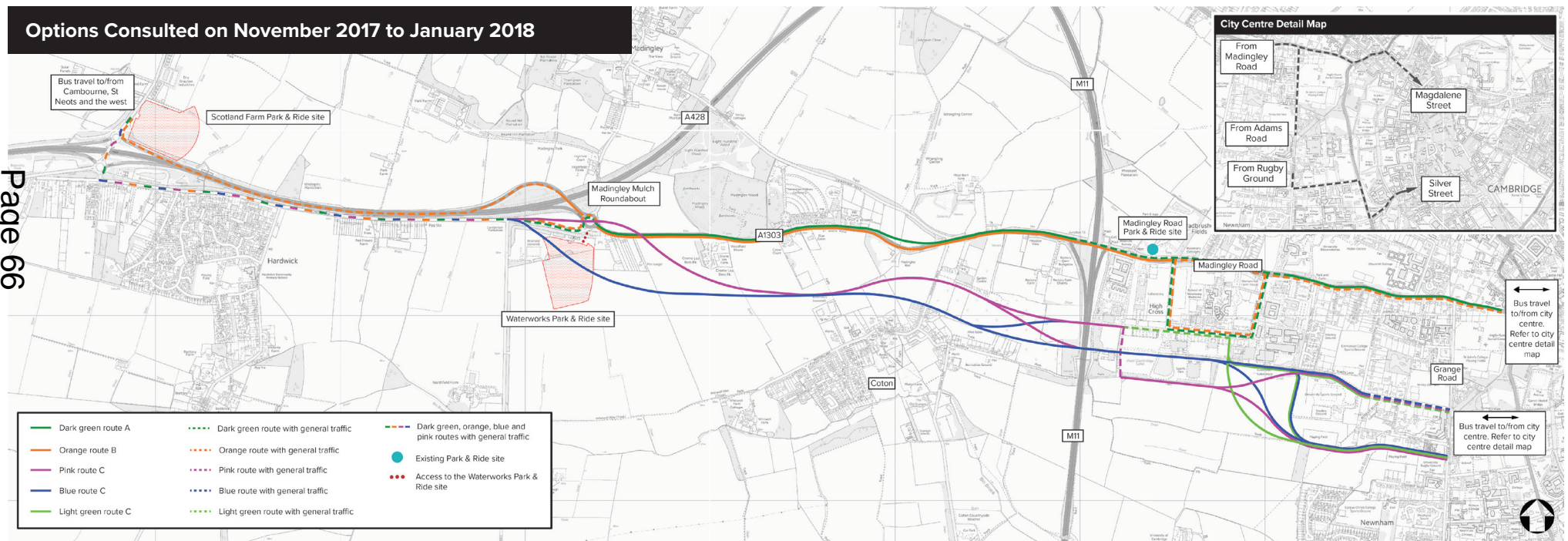


Photo montage and cross section illustrating how Route C could look



Option visualisations produced as part of the 2017 consultation documentation illustrate how each option could look when implemented.

Figure 4: November 2017 - January 2018 consultation options



Source: Consultation leaflet, 2017-2018, (© Crown Copyright. All Rights Reserved. OS License Number 100023205.2018)

Further Option Assessment Summary

The three options presented as part of the public consultation were then assessed to arrive at a specific route alignment for both an on-road and off-road option.

Table 3: Development of Options Stage 2

Option	Development
Option A	<ul style="list-style-type: none"><li>• Option A and Option B were assessed against each other using Mott MacDonald’s in-house Investment Sifting and Evaluation Tool (INSET) to arrive at a preferred on-road option.</li><li>• The findings of the INSET assessment have concluded that the on-road option is Option A.</li><li>• However, a potential “optimisation” of the route has been explored to reflect the aspiration in Option B for some improvements to outbound traffic, and a need to further consider the operation of Junction 13 of the M11.</li></ul>
Option B	<ul style="list-style-type: none"><li>• Option A and Option B were assessed against each other using Mott MacDonald’s in-house Investment Sifting and Evaluation Tool (INSET) to arrive at the highest scoring on-road option.</li><li>• Option B did not score as high as option A. The need for gantries was a significant reason for the differences in scores. Although, this was not in the original proposal by the LLF gantries were included for safety and operational purposes.</li></ul>
Option C	<ul style="list-style-type: none"><li>• Option C was split into the pink, blue and (through West Cambridge) development light green routes. These represented different alignment routes for Option C.</li><li>• The route was broken down into five areas and assessed using INSET to arrive at a recommended Specific Route Alignment</li><li>• The recommended off-road specific route alignment is substantially the “Blue” route through Madingley Mulch, and adjacent to Coton Village and the light green route through West Cambridge, and the former Rifle Range track past the Rugby Ground to Grange Road.</li></ul>

Why are gantries needed on Option B?

Gantries are required to operate the tidal public transport lane by indicating the direction of traffic flow and ensure the safety of vehicles using the route. In practice it would not be acceptable for a relatively lightly used public transport lane to be unsigned as to the direction of traffic. Any other central ‘tidal’ lane in the UK has involved integrated gantries.



### “Optimised” on-road option

This optimisation of Route A reflected the aspiration in Option B for some improvements to outbound traffic, and a need to further consider the operation of Junction 13 of the M11.

The optimisation was modelled to assess the impact of the following changes highlighted in figure 5:

1. Carriageway widening for 200m of west bound bus lane on the approach to Madingley Mulch Roundabout.

2. Signalisation of Cambridge Road Junction

3. Change to M11 junction 13 to allow two right turn lanes from off-slip

4. Park and Ride access relocated to Eddington Avenue, additional eastbound and westbound bus lane and bus gate at approach to High Cross junction

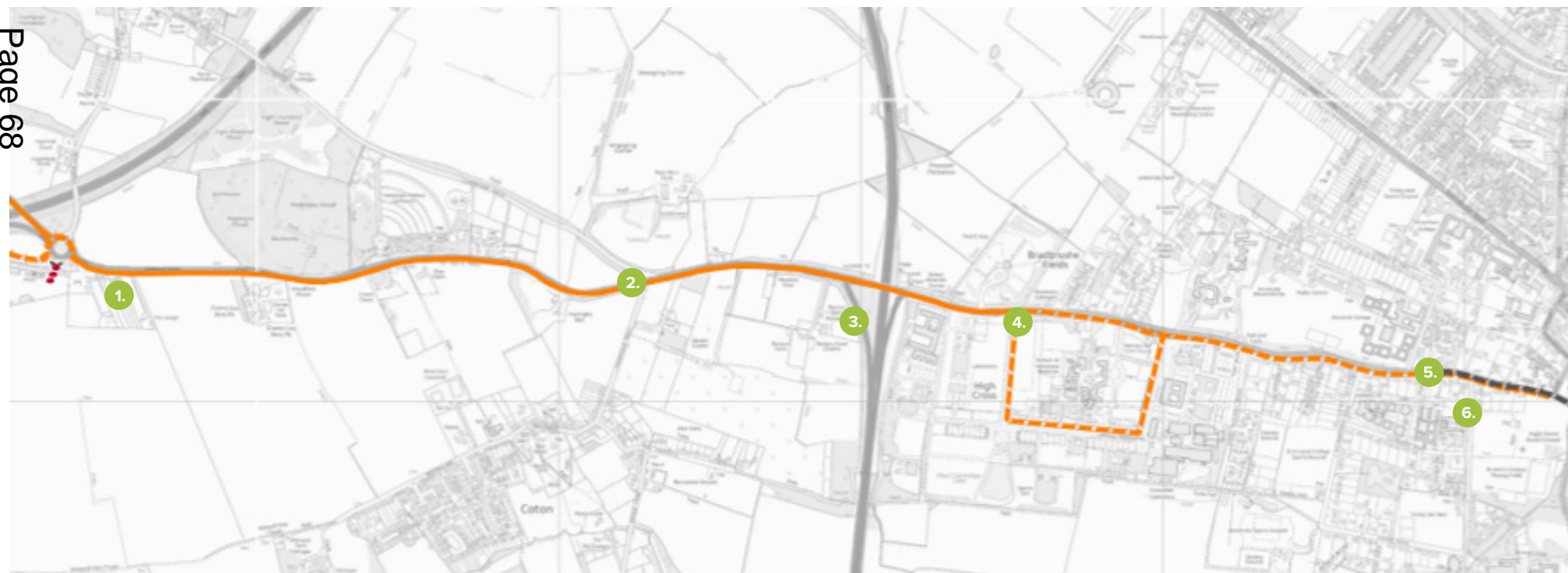
5. Removal of Public Transport lane from West Cambridge development to Storeys Way

6. Signalisation of Grange Road Junction

Apart from Cambridge Road and Grange Road junction signalling, which showed no benefit when modelled, all the other optimisations were included in the final on-road option Low cost a and b.

As a result of the optimisation process and stakeholder engagement, past the junction with High Cross/ Eddington Avenue the proposed public transport lane has been removed from the scheme and cycling improvements are recommended for further consideration by GCP.

Figure 5: Optimised On-Road Option

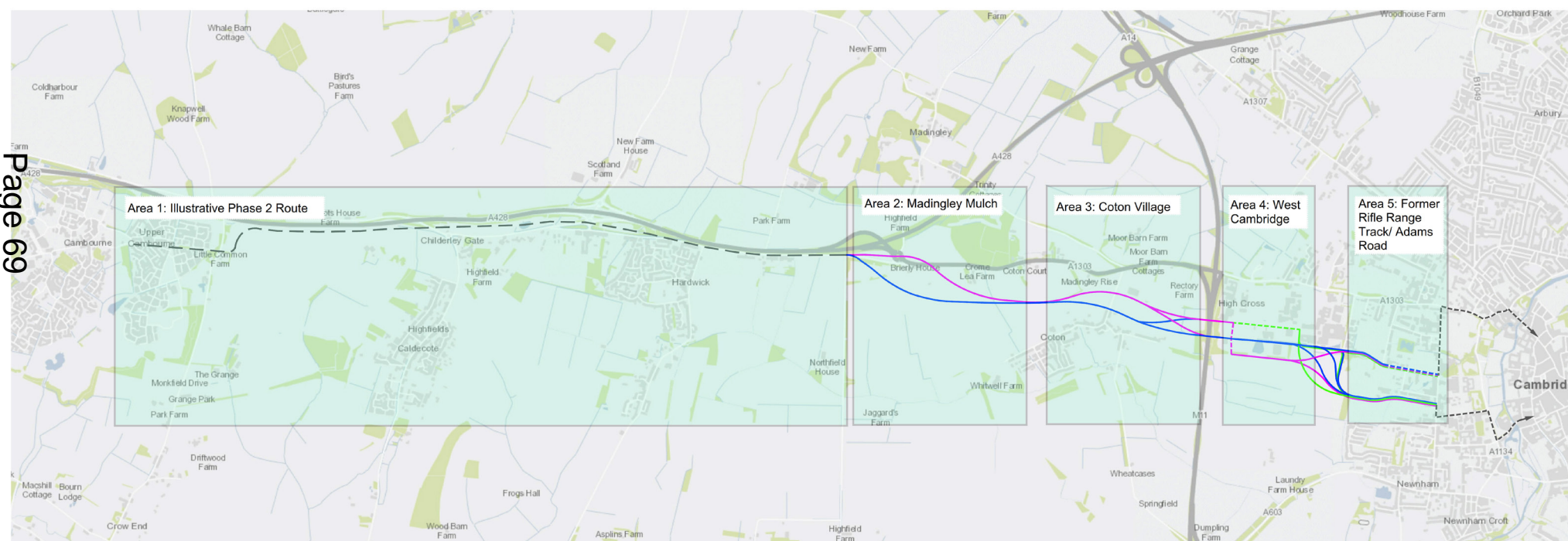


Source: Mott MacDonald (© Crown Copyright. All Rights Reserved. OS License Number 100023205.2018)

## Option C

Figure 6 shows how Option C was broken down into five areas and table 4 shows the alignment selection for each of the 5 areas and the summary of the assessment and why each alignment was chosen.

**Figure 6: Off-road route option areas**



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***Surely, the green route appears to offer the best access arrangements to the West Cambridge site?***

Both Green and Blue route options serve the West Cambridge site directly. The blue route would provide a new separate and additional public transport route passing through the site. The light green route runs through the site itself but would need to be segregated to ensure that public transport vehicles can operate reliably through the site and remain attractive to through passengers.

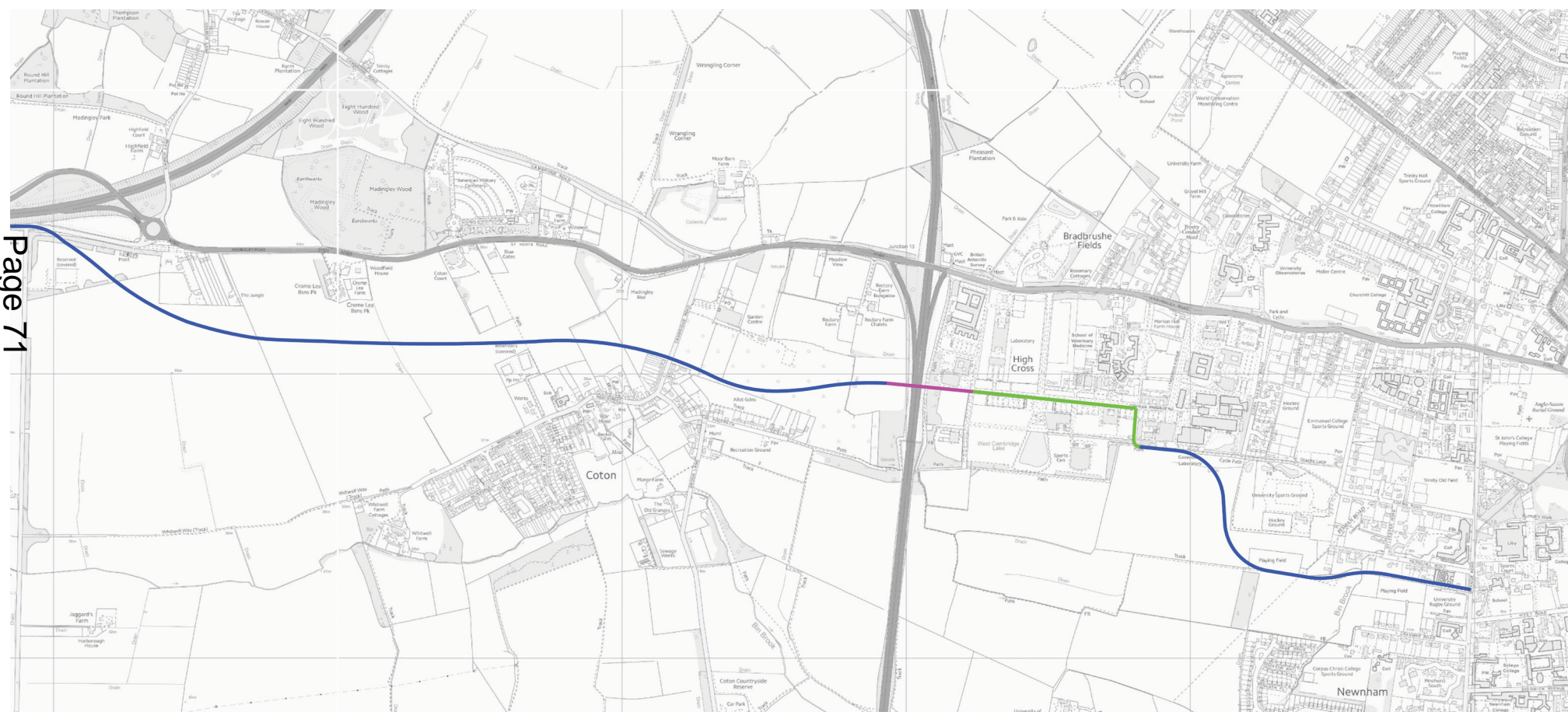
**Table 4: Assessment Specific Route Alignment by Area**

Area	Route section	Details
<b>Area 1 Cambourne</b>	N/A	Phase 2 has not been consulted on so only an illustrative comparator off-road option has been considered at this stage.
<b>Area 2 Madingley Mulch</b>	Blue	<ul style="list-style-type: none"> <li>• Blue route is less costly and disruptive to build.</li> <li>• Blue route is segregated from other traffic, pedestrians, and cyclists.</li> <li>• Public transport vehicles and a future CAM will be able to run more quickly through the section</li> </ul>
<b>Area 3 Coton Village</b>	Blue	<ul style="list-style-type: none"> <li>• Blue Route is better aligned for a CAM stop to serve Coton.</li> <li>• Blue Route lower in landscape so less visible from Coton Village and Red Meadow and can be encompassed into the field edge with landscaping mitigation.</li> <li>• New cleaner public transport vehicles on the Blue Route will be no nearer the houses than the existing buses on Cambridge Road.</li> <li>• Blue Route has less of an impact on landowners</li> <li>• Blue route has less impact on the orchard and juicing business on site.</li> <li>• Blue Route invites less expansion of urban infill.</li> </ul>
<b>Area 4 West Cambridge</b>	Light Green Segregated	<ul style="list-style-type: none"> <li>• The initial green route had shared running through the west Cambridge site along Charles Babbage Road. However, through the development of the scheme it has been discovered that there is sensitive laboratory equipment in close proximity to the blue route. With this taken into consideration the Light green route becomes preferable.</li> </ul>
<b>Area 5 Former Rifle Range Track / Adams Road</b>	Former Rifle Range Track (along access track adjacent to Rugby Club)	<ul style="list-style-type: none"> <li>• Former Rifle Range Track allows for segregated rapid transit infrastructure, providing a quick and reliable route.</li> <li>• Former Rifle Range Track provides additional cycling and walking capacity to support West Cambridge.</li> <li>• Former Rifle Range Track has least impact on residents and most benefits to cyclists passengers and pedestrians.</li> </ul>



Figure 7 below shows the final Recommended Specific Route Alignment following the assessment of each area.

**Figure 7: Phase 1 Recommended Specific Route Alignment**





## Summary

Following the assessment it was concluded that the recommended On-Road route would be the “Optimised” Route A, which includes some outbound public transport priority and removal of the inbound public transport lane east of High Cross / Eddington Road junction. It was proposed that enhanced cycling and walking facilities should be provided in this area, which will be taken forward as a separate scheme.

The recommended Off-Road route was the Blue route through Madingley Mulch and adjacent to Coton Village, the light green segregated route through West Cambridge and the former Rifle Range Track leading to Grange Road.

The recommended options for Phase 1 were combined with a Park and Ride location and were assessed, during the next stage, along with a Strategic Option including both Phase 1 and 2, to provide an Initial Strategic Assessment for the entire project in order to form a recommendation for Phase 1.

The results of this assessment are presented in the following sections. A summary of the options assessed is shown below:

- Do Minimum – Committed Schemes
- Low Cost a – Recommended optimised on-road Phase 1 + Park and Ride at Waterworks
- Low Cost b – Recommended optimised on-road Phase 1 + Park and Ride at Scotland Farm
- Do Something 1a – Recommended off-road Phase 1 Madingley Mulch Roundabout to Grange Road + Park and Ride at Waterworks
- Do Something 1b – Recommended off-road Phase 1 Madingley Mulch Roundabout to Grange Road + Park and Ride at Scotland Farm
- Illustrative Comparator – Recommended off-road Phase 1 and Phase 2 Cambourne to Grange Road Park and Ride at Waterworks for comparative purposes



## Stop Locations

Will there be stops at villages along the route?

As part of Phase 1 the current proposal is to have a stop serving West Cambridge although specific services patterns will need to be agreed with operators. However, there are opportunities for other stop locations to be added as the scheme progresses, should there be sufficient passenger demand.

### Does the scheme end at Grange Road?

The segregated off-road element of the scheme finishes at Grange Road with services continuing on to City Centre, railway station and other popular destinations via the established street patterns based on public demand.

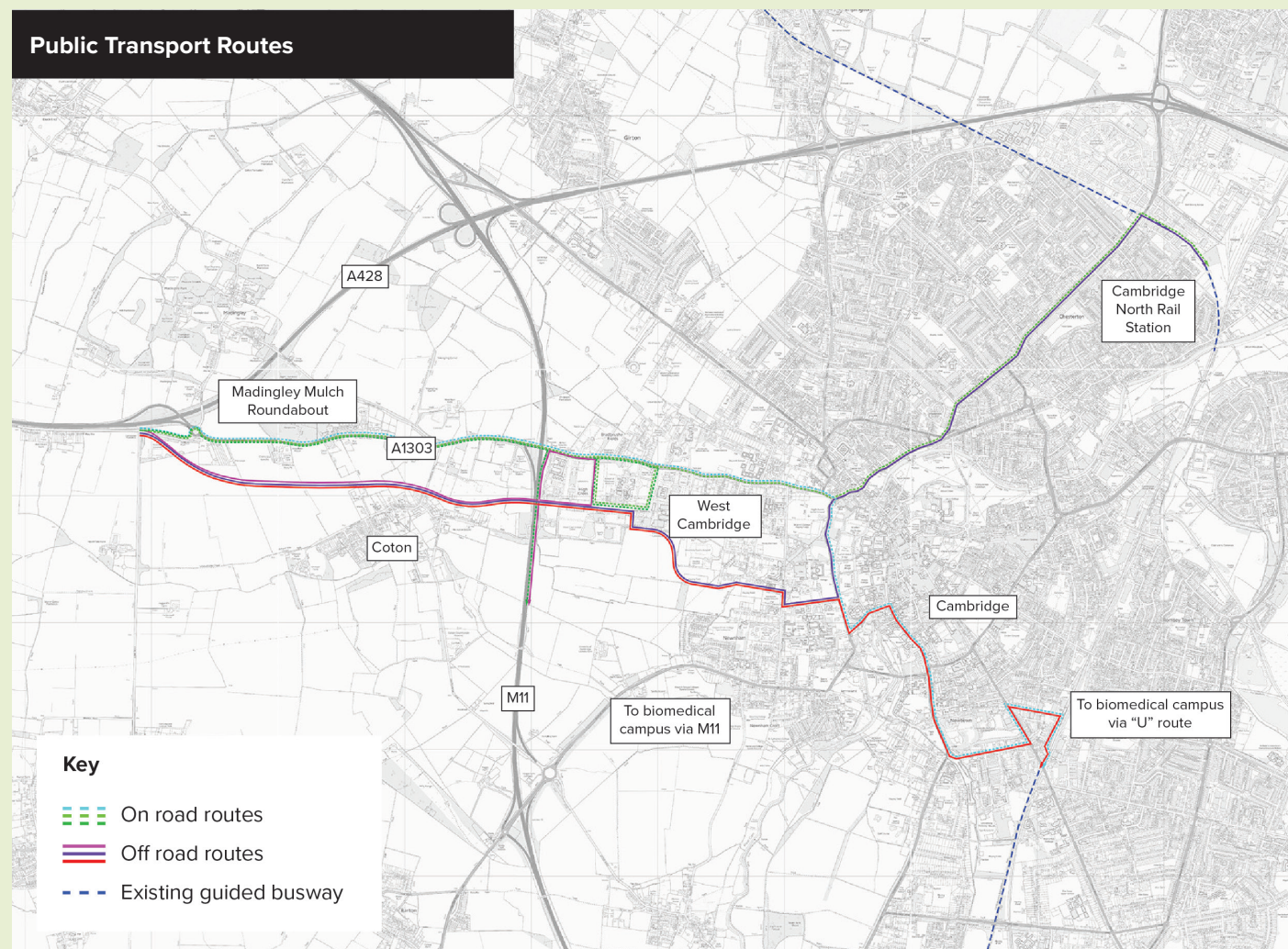
This Business Case Update modelling assumes three routes, to Cambridge Biomedical Campus, Addenbrookes and the Cambridge Science Park following a desire for these areas to served being a common theme identified during consultation. The Universal Bus service is one example of a route that might be followed.

The recommended segregated option brings public transport vehicles on a dedicated track to the closest possible point within central Cambridge (even closer than the existing busway). This will ensure that public transport vehicles bypass the queues and unreliability between Cambourne and this point.

Further work will continue alongside operators to ensure the routes modelled at the final OBC stage represent the most appropriate scenario.

Additional routes could be considered, such as the route via West Cambridge and the new developments at Eddington and Darwin Green to the Cambridge Science Park.

Figure 8: Public Transport Modelled for Business Case Update



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## Economic Appraisal

A Value for Money (VfM) assessment that incorporates both the monetised impacts and the non-monetised assessment of each option has been carried out.

The VfM assessment used to inform the assessment of the illustrative comparator takes into account a number of factors such as direct user benefits (e.g. savings in time in using the scheme), and indirect benefits/costs such as delays or faster journey times for car users. Also operating and maintenance costs are considered as are potential fare incomes. These are then weighed against wider effects such as wider economic benefits including housing and growth.

The overall approach to the C2C project economic appraisal is being undertaken in two steps (see figure 10), with the results from the first step informing the illustrative comparator as reported in this Business Case Update.

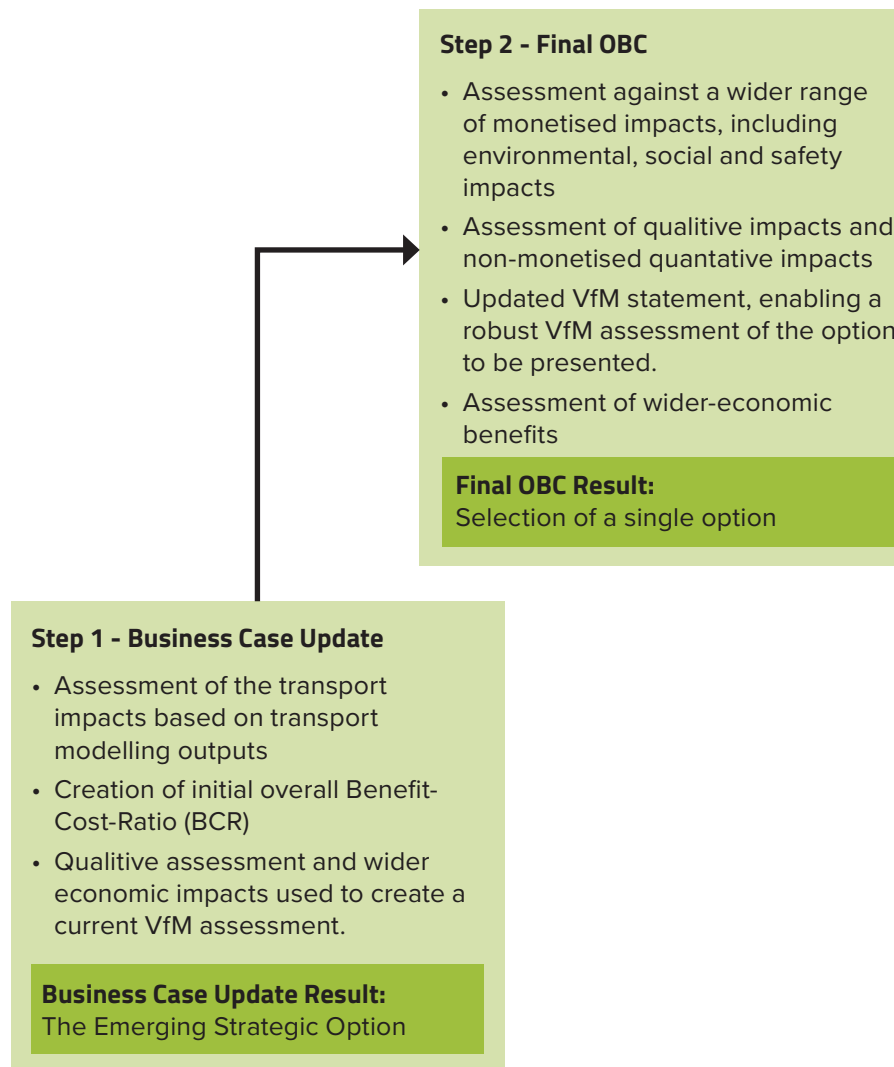
The principal tool used to undertake the appraisal is a strategic level traffic model. Model outputs are affected by growth assumptions, such as housing and employment; and decisions relating to other transport schemes, such as the closure of Madingley Road Park and Ride site and other committed transport schemes.

Benefits were determined through the strategic traffic model which reflect the predicted changes in traffic flow. These are categorised as direct economic benefits.

Direct benefits are calculated for all users including commuters and business users. These benefits are based upon changes in travel time, vehicle operating costs, user charges and delays during construction.

Other economic benefits will be calculated in full as part of the preparation of the final OBC, which include, but are not limited to, the detailed assessment of environmental impacts, social impacts, and safety impacts.

Figure 9: Economic Appraisal Process





## Wider Economic Benefits

Wider economic benefits (WEBs) are the additional, non-transport related benefits to the economy which could be delivered by the scheme and are central to the strategic case for the scheme and the need for investment. An initial assessment has been carried out on the scheme, that included:

- Land utilisation benefits:

Contributing towards bringing forward development associated with the schemes and the creation of jobs.

- Access to more productive jobs:

The remaining Gross Value added (GVA) benefits derived from those jobs created in Greater Cambridge which support existing UK residents to access more productive jobs than they may currently hold.

- Reductions in spatial inequalities and structural unemployment:

The welfare benefits/Government cost savings associated with any jobs created in areas with high levels of deprivation and reductions in long term structural unemployment.

- Option and non-use values:

The benefits relating to the value residents place on having access to opportunities due to the schemes (option values) and that they may place on a public transport service even if they never intend to use it (non-use values).

The full appraisal of each option based on their WEBs

would be carried out as part of the preparation of the final OBC. However, the results from the previous studies for C2C project examining the WEBs for a fully segregated option from Cambourne to Cambridge can be used to support the strategic option.

The results show that at a Greater Cambridge level, a high quality segregated option from Cambourne to Cambridge (used as the illustrative comparator in this report) could support an additional £22.6m GVA per year and a total of £680m over 30 years.

When considering the scheme's GVA benefits at a Greater Cambridge level against the scheme costs, the illustrative comparator has the potential to deliver a **“Local WEBs ratio” of 3.68.**



### Benefit Cost Ratios (BCRs)

BCRs provide an indication of value for money which can be used to compare scheme options using economic, social and environmental impacts that can be expressed in monetary terms. WebTAG outlines the calculation of two BCRs:

- An initial BCR – based on transport user benefits
- An adjusted BCR – incorporating wider economic impacts

Table 5 shows the direct economic benefits generated by each of the scheme options, as well as the wider economic impacts for the C2C project that are additional to these transport user benefits. These have all been calculated in line with WebTAG (the Government's web-based Transport Appraisal Guidance).

Table 6 presents the initial BCRs and adjusted BCRs for each option based on the Present Value of Benefits included in Table 6, set against the options' costs.

Conventional transport schemes are appraised primarily on the basis of the BCR, which reflect existing and committed developments and associated travel demand. One of the reasons to allocate City Deal funds is to enable Cities to plan the infrastructure needed to unlock future development and enable growth. The Wider Economic Benefits better reflect the potential growth that the scheme will facilitate. Therefore, whilst the standard BCRs are low, they do not take into account the wider economic benefits and form just one element of the final VfM assessment and therefore should not be read in isolation.

### Non-monetised Benefits Assessment

At this stage in the development of the C2C project, the economic appraisal and VfM assessment focuses on the monetised transport user benefits to produce the initial BCR, as well as incorporating wider economic impacts for an adjusted BCR. However, a full VfM assessment should be based on the consideration of non-monetised benefits as well, both quantitative and qualitative. At this stage in the scheme's development, the options non-monetised impacts have been assessed using a multi-criteria model (INSET).

Using INSET, options were assessed against list of 37 criteria. Each criteria was scored on a scale of 1 to 7. Table 7 summarises the results showing lower scores as yellow, changing to purple for higher scores.

**Table 5: Summary of economic impacts (£'000s)**

Benefit (£'000s)	Low Cost a	Low Cost b	Do Something 1a	Do Something 1b	Illustrative Comparator
Transport User Benefits (PVB)	2,213	2,604	23,411	18,990	20,763
Wider economic impacts (PVB)	323	380	3,388	2,753	3,005
<b>Total PVB</b>	<b>2,537</b>	<b>2,985</b>	<b>26,799</b>	<b>21,742</b>	<b>23,768</b>

**Table 6: Benefit / Cost Ratios**

Benefit	Low Cost a	Low Cost b	Do Something 1a	Do Something 1b	Illustrative Comparator
Initial BCR	0.03	0.03	0.19	0.15	0.11
Adjusted BCR	0.03	0.04	0.22	0.17	0.13

**Key**

- 1 Lowest
- 2
- 3
- 4 Neutral
- 5
- 6
- 7 Highest

**Table 7: INSET Assessment RAG Summary**

		Do Minimum	Low Cost a	Low Cost b	Do Something 1a	Do Something 1b	Illustrative Comparator
<b>1. Policy Fit</b>	Cambridgeshire LTP3	●	●	●	●	●	●
	Highways England Road Investment Strategy	●	●	●	●	●	●
	Greater Cambridge and Peterborough SEP	●	●	●	●	●	●
	Greater Cambridge City Deal	●	●	●	●	●	●
	South Cambridgeshire Draft Local Plan	●	●	●	●	●	●
	Cambridge City Draft Local Plan	●	●	●	●	●	●
<b>2. Contribution to Economic Growth</b>	Labour market and activity	●	●	●	●	●	●
	Supporting house construction	●	●	●	●	●	●
	Business investment and growth	●	●	●	●	●	●
	Cambridge positive image	●	●	●	●	●	●
	Future potential growth post 2031	●	●	●	●	●	●
	Capacity	●	●	●	●	●	●
<b>3. Contribution to Improved Transport Network</b>	Reliability of journey	●	●	●	●	●	●
	Route flexibility - Links into existing bus routes	●	●	●	●	●	●
	Walking and cycle connectivity	●	●	●	●	●	●
	Impact on existing traffic	●	●	●	●	●	●
	Journey times	●	●	●	●	●	●
	Service frequency	●	●	●	●	●	●
	Mode share	●	●	●	●	●	●
	Connectivity to Park and Ride	●	●	●	●	●	●

4. Contribution to Quality of Life  
page 78

		Do Minimum	Low Cost a	Low Cost b	Do Something 1a	Do Something 1b	Illustrative Comparator
4. Contribution to Quality of Life	Environment impacts - Landscape Impact	●	●	●	●	●	●
	Environment impacts – Noise	●	●	●	●	●	●
	Environment impacts - Air Quality	●	●	●	●	●	●
	Environmental impacts - CO2 emissions	●	●	●	●	●	●
	Environmental impacts – Biodiversity	●	●	●	●	●	●
	Environmental impacts – Heritage	●	●	●	●	●	●
	Environmental impacts – Green Belt	●	●	●	●	●	●
	Safety	●	●	●	●	●	●
	Accessibility	●	●	●	●	●	●
5. Scheme Deliverability	Scheme Cost	●	●	●	●	●	●
	Engineering feasibility - construction method	●	●	●	●	●	●
	Land acquisition required	●	●	●	●	●	●
	Impact on local road network during construction	●	●	●	●	●	●
	Future-proofing	●	●	●	●	●	●
	Legislative Powers	●	●	●	●	●	●
	Scheme Maintenance and Renewals	●	●	●	●	●	●
6. Stakeholder Support	Public acceptability	●	●	●	●	●	●
<b>Overall Score</b>		<b>145</b>	<b>155</b>	<b>156</b>	<b>170</b>	<b>170</b>	<b>178</b>

Source: Mott Macdonald

Table 8 shows how the options rank based on this assessment.

**Table 8: INSET Assessment Results**

Option	INSET Scoring Summary Ranks
Do Minimum	Ranked 6th
Low Cost a	Ranked 5th
Low Cost b	Ranked 4th
Do Something 1a	Ranked 2nd
Do Something 1b	Ranked 2nd
Illustrative Comparator	Ranked 1st

Source: Mott Macdonald



The following headings set out a brief summary of some the headline criteria assessed and the reasoning behind the INSET scoring shown above.

## 1. Environment

The environmental criteria taken into account covered:

- Landscape
- Noise
- Air Quality
- Carbon / Greenhouse gases
- Biodiversity
- Heritage

Green Belt

From an environmental perspective there are essentially two options (one on-road and one off-road) with two park and ride options for the scheme. This summary of the assessment outlines the key environmental issues that each scheme option faces.

In addition to previous reports, the ongoing appraisal was informed by the following activities (completed since the End of Stage Reports issued in September 2017):

- Stakeholder Engagement with landowners and local authority environmental specialists
- Geophysical surveys for archaeology of 13 hectares of Farmland West of the M11 along pink and blue route options and of the route between West Cambridge and the former Rifle Range Track across the West Fields

- Arboricultural survey of the former Rifle Range Track, with special emphasis on the potential impacts on three trees which have Tree Preservation Orders (TPO) located just north of the former Rifle Range Track and of the TPO areas along the St Neots Road between the Waterworks site and Scotland Farm Road
- Early schematic design for a possible crossing over Bin Brook looking at the flood levels and what level of flood storage would be required to ensure no deterioration in flood risk
- Heritage Study on the Conservation Areas in West Cambridge and Coton shared with Historic England
- Development of a Green Bridge concept design as an option for the crossing over the M11
- Additional photographic information of views of the routes from different viewpoints in winter and summer. The results have informed the further development of the Green Land Concept and potential landscaping and ecological treatment
- Ecological surveys of winter birds and habitat surveys for badgers covering Phase 1 and Phase 2 options
- Ecological surveys for summer covering, amongst other receptors breeding birds, Great Crested Newts, Badgers, Bat roosts, invertebrates, Water Voles and Otters covering Phase 1 and Phase 2 options.

A full Environmental Impact Assessment will be completed as part of the planning and consent process.





## 2. Park and Ride Options

With regard to noise, air quality, carbon/greenhouse gases and Green Belt issues there is no significant difference between the two Park and Ride sites, each would have similar effects on these environmental issues.

The Waterworks site has greater potential sensitivity in relation to landscape, biodiversity and heritage than Scotland Farm. The Waterworks site has higher biodiversity value than Scotland Farm site due to the latter site being intensively farmed and the former left being relatively undisturbed and having a grouped Tree Preservation Order (TPO) covering part of the site which would be impacted by access roads.

Information from the geophysical and desk studies of heritage in the area shows the Waterworks site has specific area of interest, whereas Scotland Farm may have potential but there is no direct evidence to indicate the presence of heritage assets on the site.<sup>2</sup> The Waterworks site has potential for more impact on distant views of the site (particularly at night) than the Scotland Farm site, although both introduce some visual intrusion to their surrounding areas of similar scale.

Either location would be required to go through further environmental assessment alongside the final recommended option.

2. Due to access constraints no surveys have been possible on the Scotland Farm site



## Natural England Consultation Response

### Environmental Concerns

#### Off-line

This off-line route option appears to be sufficiently distance from designated sites and therefore unlikely to have any adverse impact on these.

#### On-line

Options A and B are located in close proximity to this (Madingley Wood SSSI) nationally designated site and proposals could have an adverse impact, through direct and indirect effects, on the notified features of the ancient woodland.

## Historic England Consultation Response

### Heritage Concerns

#### Off-line

We consider that the harm associated with either of the options for Route C could be minimised or avoided subject to a robust mitigation strategy.

#### On-line

The proposal by reason of the proximity to the cemetery and loss of verge would result in irreversible, adverse impacts upon the approach, setting and layout of the cemetery site.

## Low cost On-Road a and b options

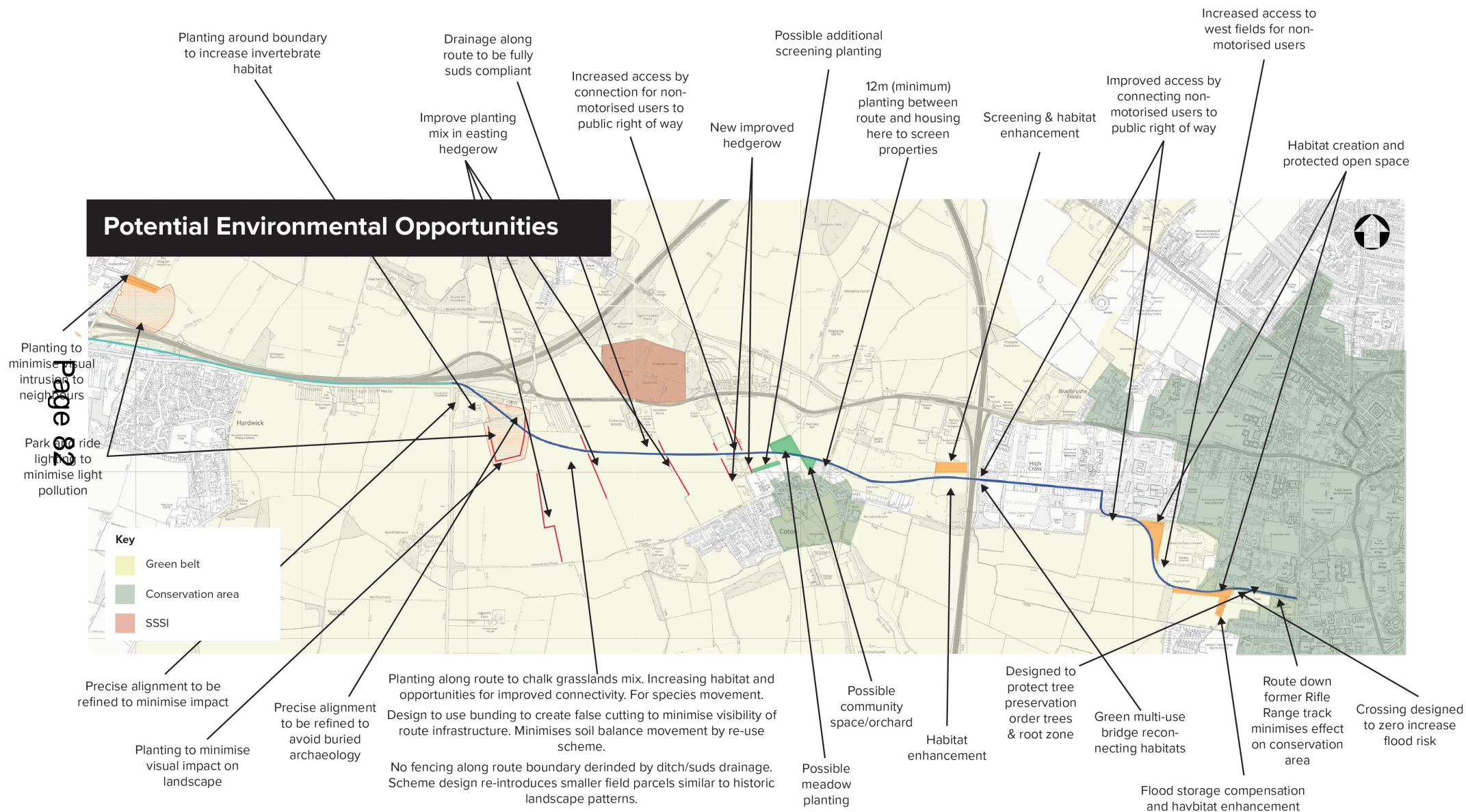
The most significant environmental receptors in the area are located immediately adjacent to the route for either option, namely the Madingley Wood SSSI and the American Cemetery. The route option requires numerous trees along the Madingley Road to be removed. This will potentially affect the setting of the Cemetery in a negative way, as raised by Historic England. Natural England have also raised concerns about the potential to increase impacts on the SSSI. There is limited potential to make any significant change to the design to mitigate these effects.

Due to the potential loss of trees along Madingley Road there are some adverse effects on the landscape character immediately along the road.

## Off-Road

The maps on the following pages highlight the environmental opportunities and constraints that have been identified through the option development process.





## Illustrative Environmental Opportunities

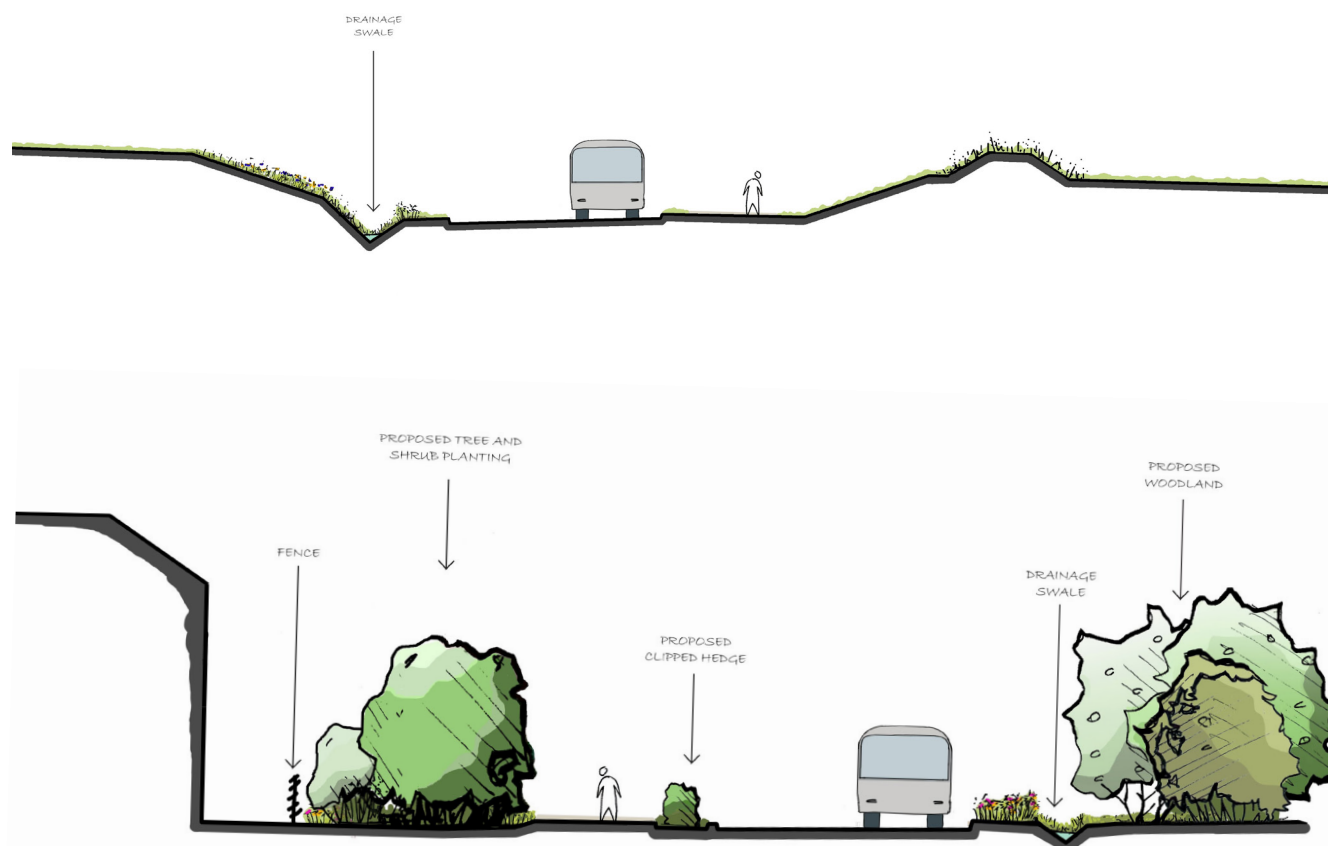
Through option development a number of mitigation treatment methods are being developed. These will be developed with assistance of stakeholders as the project progresses.

### Phase 1 Cross section

A possible opportunity within the phase 1 option could be placing the route in shallow cutting at strategic locations. This may help to screen the route and vehicles passing along it from surrounding properties and viewpoints and could reduce the need for screening planting that would highlight the position of the route crossing the fields.

### Coton Village Cambridge Road Junction

Cambridge Road is currently 12m away from the properties at the northern extremity of Coton. The recommended route is proposed to also be set a minimum of 12m from the adjacent properties on Cambridge Road, therefore no public transport vehicles will be closer than existing. This gives opportunity to allow the creation of a landscape buffer between the route and the property boundary which could help to link habitats, screen potential views towards the route and enhance biodiversity.





## Possible Landscape and Ecological Treatment

### Wildflower Meadow/ Orchard

There is an opportunity to include a number of landscape and environmental measures such as the creation of an orchard near Coton. This could provide a new publicly accessible amenity and offset the loss of orchard trees elsewhere along the route and increase overall habitat of this type. In addition to this there could be the introduction of a wildflower meadow which could provide a positive environmental feature to enhance the biodiversity of the area.

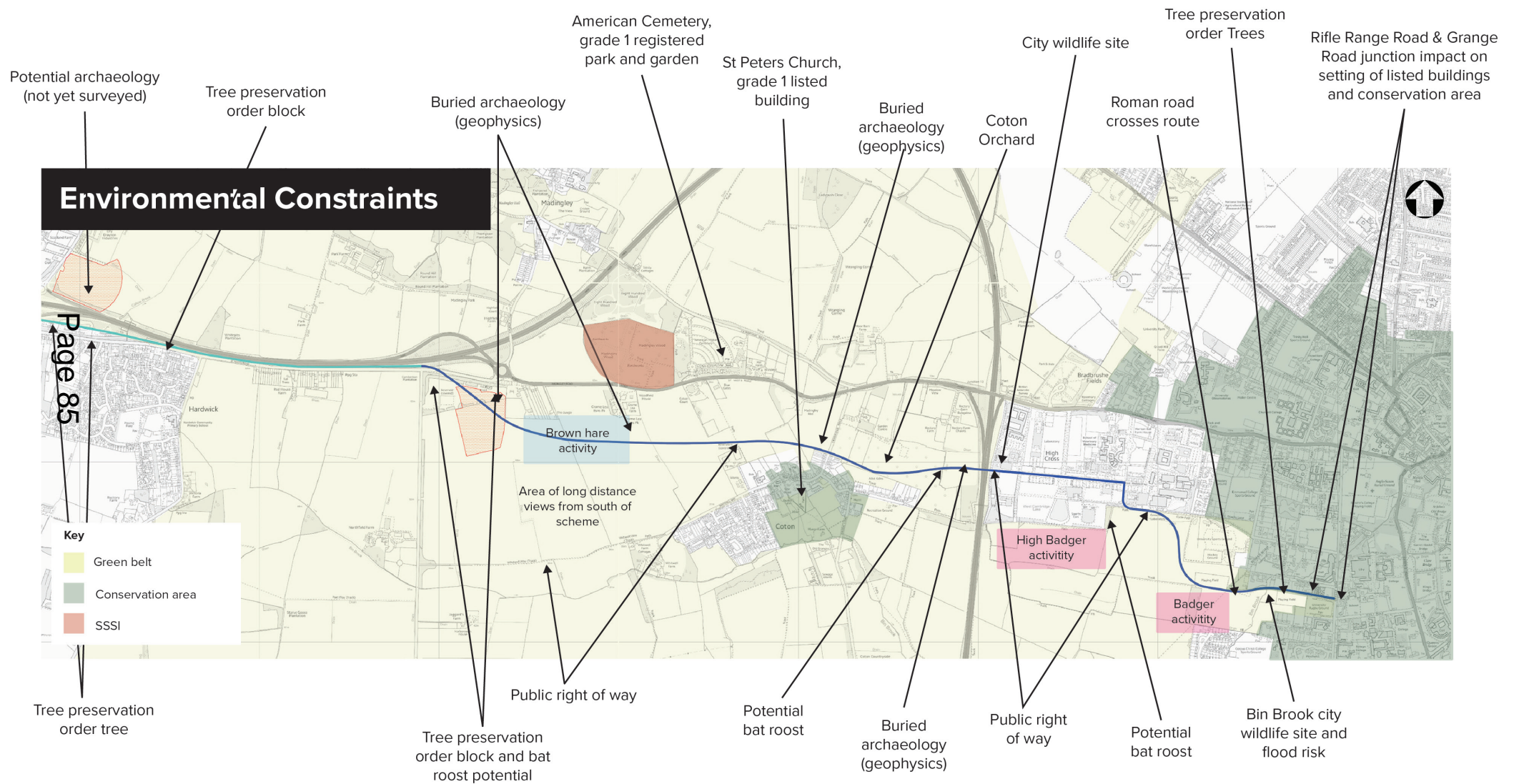


### Grange Field Wild Flower Meadow

Within the Grange field site there is an opportunity to include a meadow and pond, this could enhance the biodiversity and seasonal variation of the area, whilst preserving the openness of the green belt and views across the West Fields.









### Do Something 1a and 1b

The main impacts of either option are on the landscape, on biodiversity and on the heritage /archaeology and Green Belt.

The route options through the Green Belt are deemed to be not-inappropriate development for Green Belt, and the effect on openness and access to the countryside will be enhanced by the mitigation planned for the route to be a “green lane” through the Green Belt.

There are no significant environmental issues related to the various route options (blue, pink, green) through West Cambridge as this site is largely developed with few sensitive environmental receptors affected by the scheme.

### Illustrative Comparator

The two routes from Cambridge to the Park and Ride sites are discussed under Do something 1a and 1b above.

Almost all environmental issues reflect a neutral potential effect, with heritage showing some potential adverse effect due to the route crossing an area not yet impacted by modern developments and highways.

### 3. Land and Property

Land and property would be acquired or used for the project in a number of different ways, including:

- Temporary use of land and property;
- Permanent acquisition of land and property;
- The safeguarding and survey of land and property; and
- Permanent acquisition of rights over land and property.

Temporary use of land and property is required where it is needed for construction purposes, but not for the future operation of the project. Permanent acquisition of land and property is required for both the siting of the permanent structures, equipment and its operation and maintenance, it is also required for landscaping and mitigation measures, including those of drainage, environment and severance.

The land required to accommodate the various options assessed is proposed to be the following:

- Land that is required for the construction of the project, for the construction and safeguarding of works to be carried out, together with all construction work sites and working areas; and
- Land which will need to be acquired for the permanent structures and equipment associated with the Project, or land over which rights will be required to maintain, operate and safeguard its operation.

The project would seek to minimise land take, whilst ensuring that the extent is sufficient for the purposes of the construction and operation of the Project, including working areas and worksites. As the project progresses the amount of land required will further be defined and further assessment work will be required to inform the land and property requirements for the scheme.

All property interests will be identified as the scheme is developed and any further land interest identified will be incorporated within the existing stakeholder engagement.

## Community Impacts

Community Impacts also known as Social and Distributional Impacts (SDI) are assessed in order to confirm whether or not any specific social groups are particularly disadvantaged by transport investment. A full SDI appraisal will be undertaken alongside the wider Environmental Impact Assessment when a final scheme is defined. For now we have undertaken a brief review of local demographic characteristics.

### 4. Social and Distributional Impacts

Figure 11 and Figure 12 provide an appraisal of the distribution of income and indices of multiple deprivation along the corridor that the project follows. They confirm that Cambourne is relatively deprived compared to the rest of the corridor area and, as such, that connecting it to Cambridge provides access to employment in Cambridge for the low income groups in Cambourne. The areas crossed by the scheme are generally relatively advantaged amongst the 20% of highest earning areas of the country.

Figure 10: IMD Overall Deprivation Quintiles

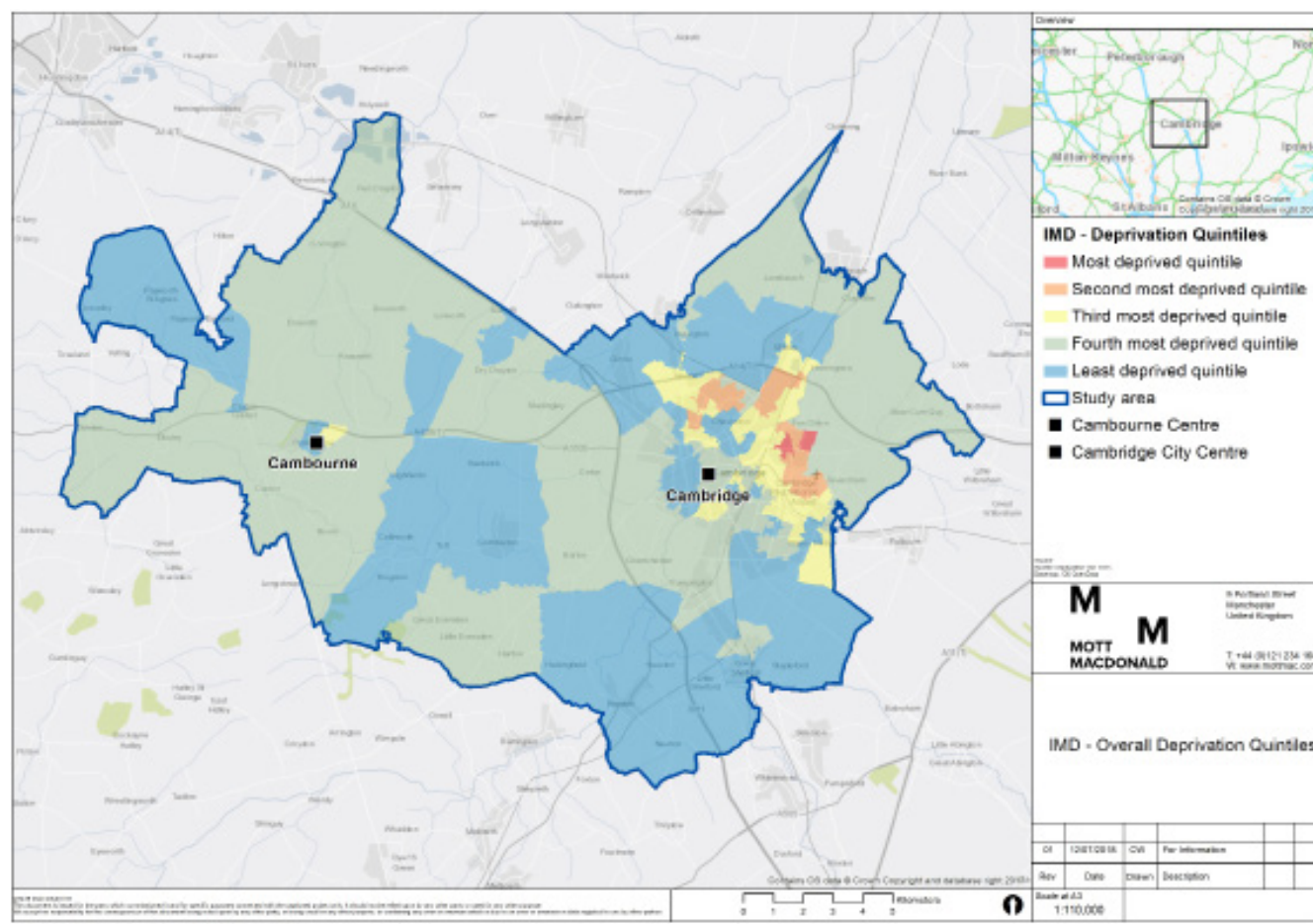
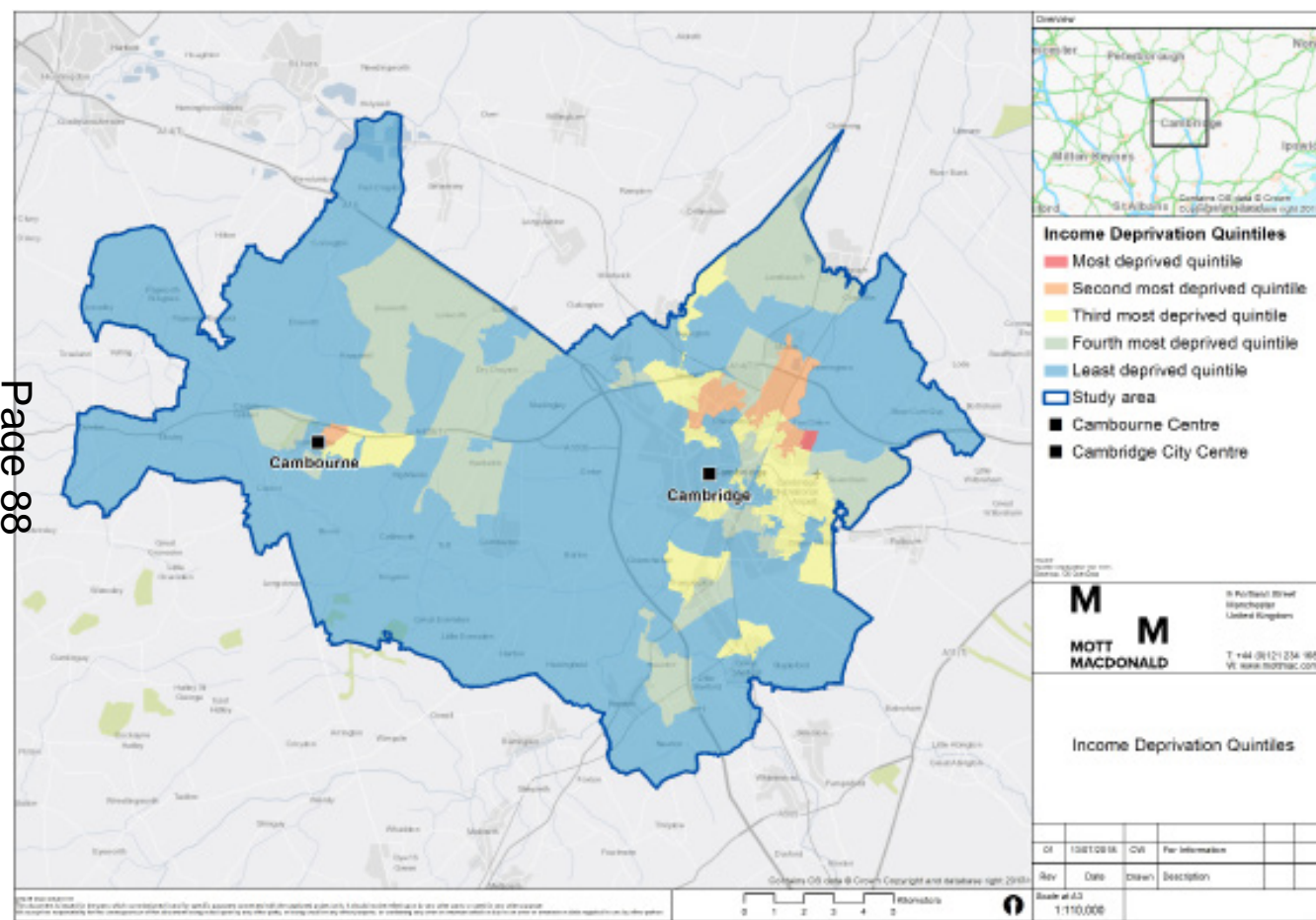


Figure 11: Income Deprivation Quintiles



Source: Mott Macdonald

## 5. Strategic Economic Case

The proposed scheme would significantly improve East-West connectivity and presents an opportunity to support Cambridge's growing population and workforce in conurbations to the west of the city, whilst managing the growing travel demand. The C2C project would help to connect such growing communities, whilst enabling them to evolve and access the increasing number of jobs and opportunities in the city and on its periphery.

The strategic economic benefits of the scheme are as follows:

- The total attributable proportion of remaining jobs (mainly B-use jobs relating to research and development, and light industry) to be created over 2016-2031 by a fully segregated scheme from Cambourne to Cambridge would be in the region of **800 jobs**;
- The total attributable proportion of housing in the region of **900 dwellings**;
- The C2C project would support around **£22.6m of GVA per annum**, equivalent to **£679.3m of GVA over a 30-year time horizon**; and
- Around **£198.1M of these strategic benefits** would be net additional to the UK.

Over and above these benefits, the delivery of major new developments such as Bourn Airfield (3,500 houses) are dependent on the provision of suitable access as enabled by this scheme.

## Option Assessment Summary

Taking into account the initial BCR and adjusted BCR calculations, the best performing option in terms of route alignment from Madingley Mulch roundabout to Grange Road, is the Do Something 1a option – Off-road alignment with Waterworks Park and Ride (or Scotland Farm Park and Ride, subject to Phase 2 recommendation).

The results from the multi-criteria INSET assessment further demonstrate the strength of this option in meeting a wider range of criteria.

Whilst the options for Phase 2 are yet to be fully appraised and are subject to public consultation, the current assessment confirms that extending the scheme west to Cambourne would deliver additional benefits.

When taking into consideration the potential Wider Economic Benefits this option could deliver, it is clear that the Illustrative Comparator could deliver significant benefit at both at a national and local level. This further highlights the importance and need for investment in C2C in order to delivery economic growth both to the region and nationally.

Figure 12: Summary

### Comparison of monetised benefits for full segregated option Cambourne to Cambridge vs full on-road option

#### Value for Money of Emerging Recommended Option: Based on current growth forecasts vs on-road option

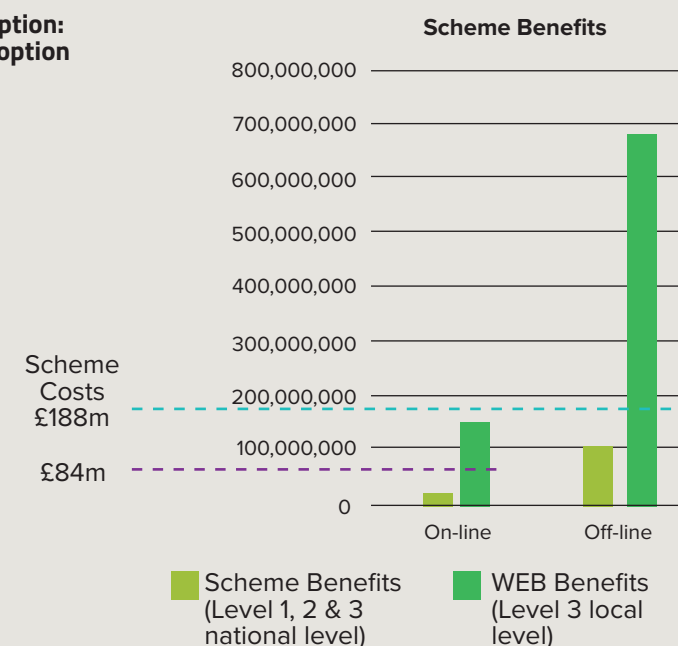
**Level 1** = Conventional Transport Benefits  
>> Provides BCR

**Level 2** = Wider Economic Impacts related to transport scheme (ie not land-use changes)  
>> Provides adjusted BCR

**Level 3** = Wider Economic Benefits associated with land-use changes.  
**National level**  
>> Guides assessment of Strategic Case

**Level 3** = Wider Economic Benefits associated with land-use changes.  
**Local level**  
>> Guides assessment of Strategic Case

Costs are Present Value Costs including Capital and Operating Costs

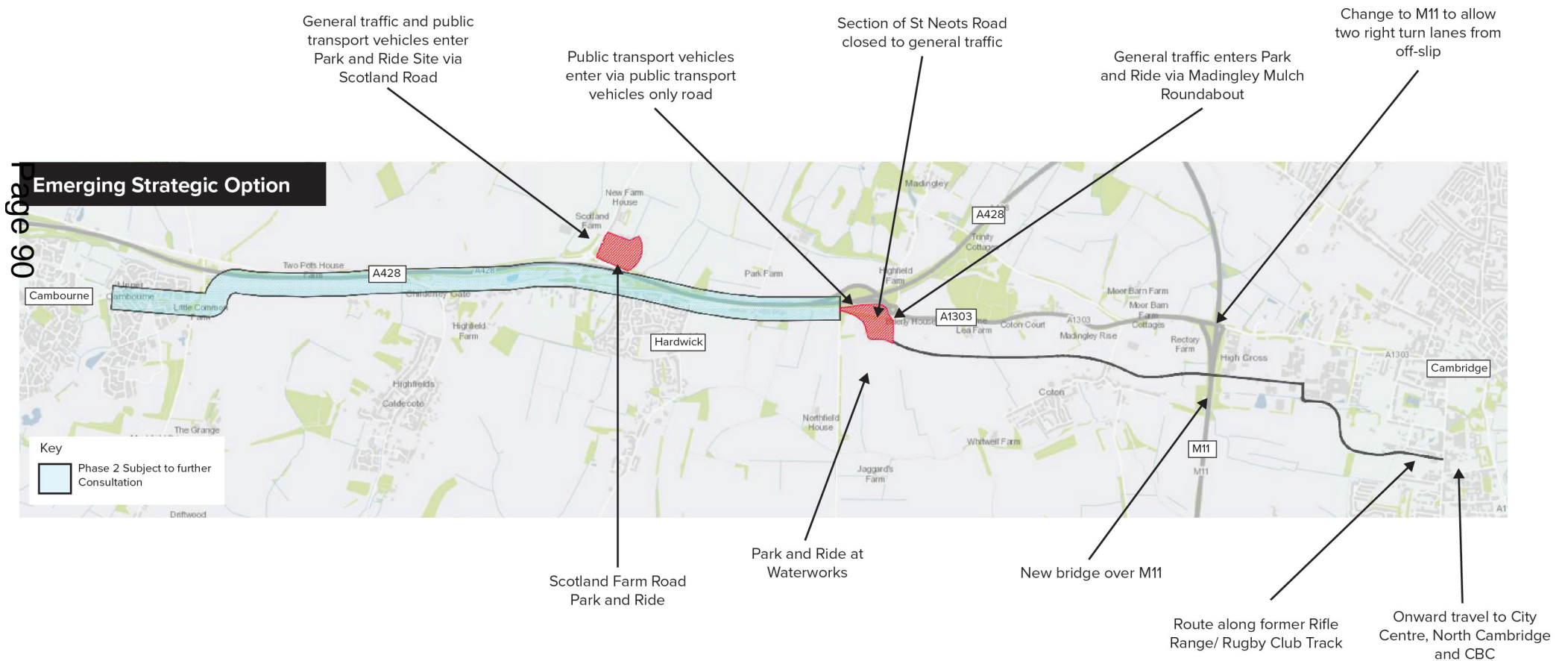




## Description of Emerging Strategic Option

The following figure shows the various features of the Emerging Strategic Option

**Figure 13: Emerging Strategic Option**



## Phase 2

The following figures show indicative layouts that could be developed for consultation. In all options it is assumed that the section between Cambourne and through the proposed Bourn Airfield Development is a segregated off-road route (see figure 15).

The options for the remaining section include:

- Option 1: Off-Road Segregated (figure 16)
- Option 2: On-Road Junction Priority (figure 17)
- Option 3: On-Road with Public Transport Priority (figure 18)

Specific options for the Phase 2 section between Cambourne and Madingley Mulch have yet to be consulted on and as such consideration and

assessment of all options should be undertaken to the same extent as Phase 1. Once the phase 2 route option has been consulted on a preferred Park and Ride could be selected. An updated BCR and VfM assessment will need to be undertaken in order to arrive at a final preferred option as part of the final OBC.

Figure 14: Phase 2 Schematic - Cambourne to Bourn Airfield

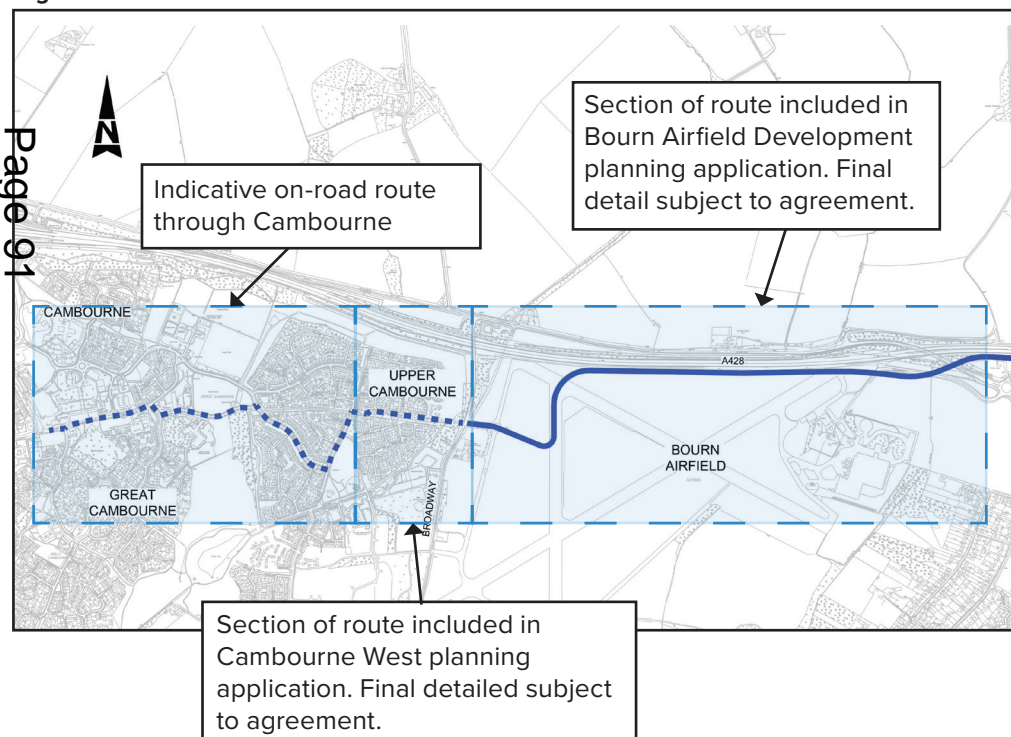
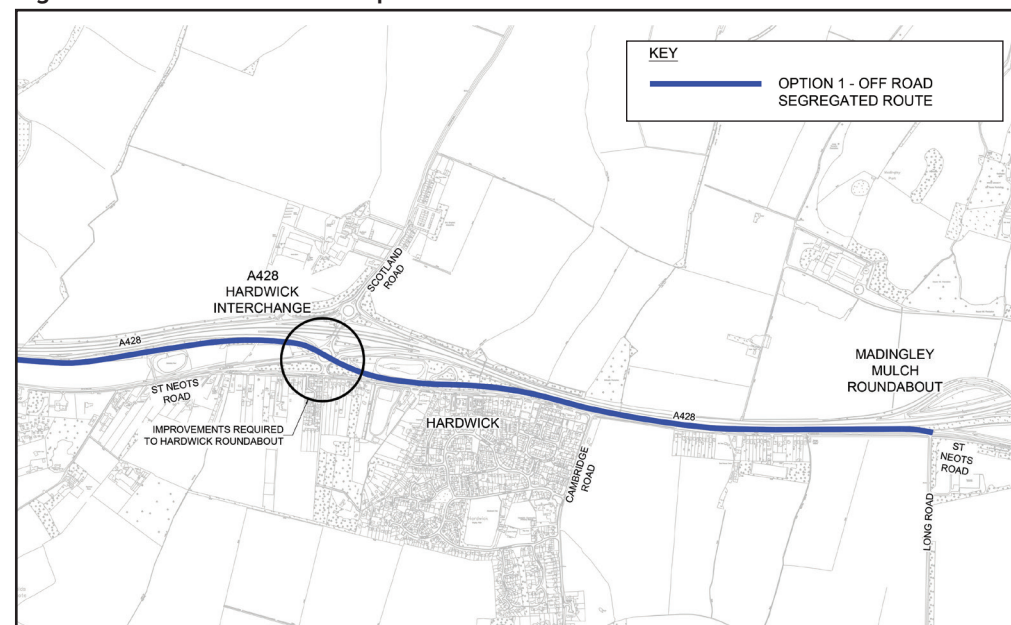
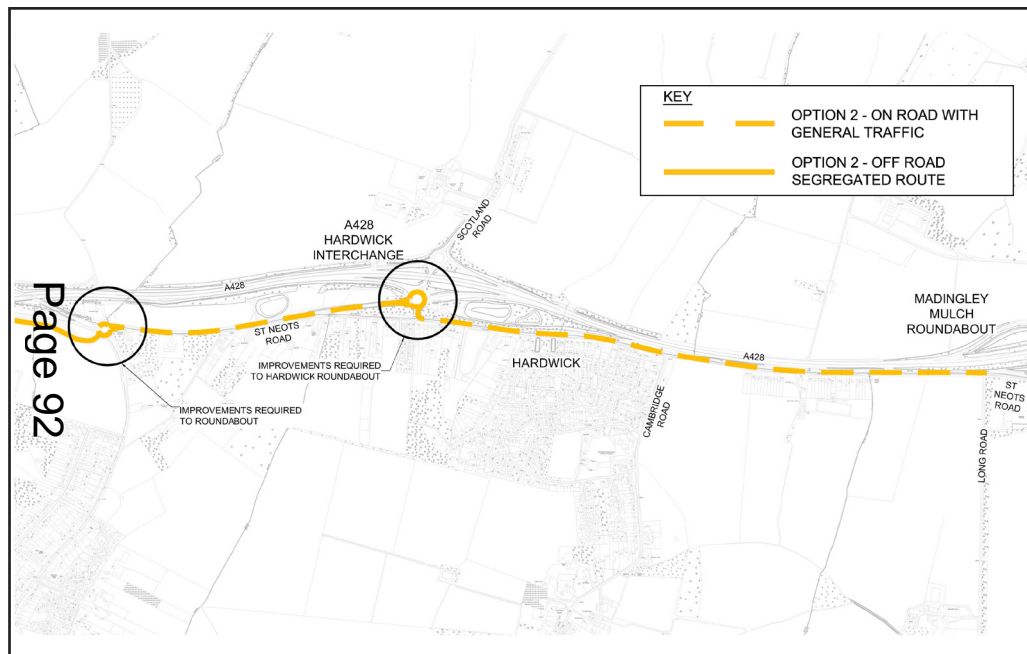


Figure 15: Phase 2 Schematic - Option 1



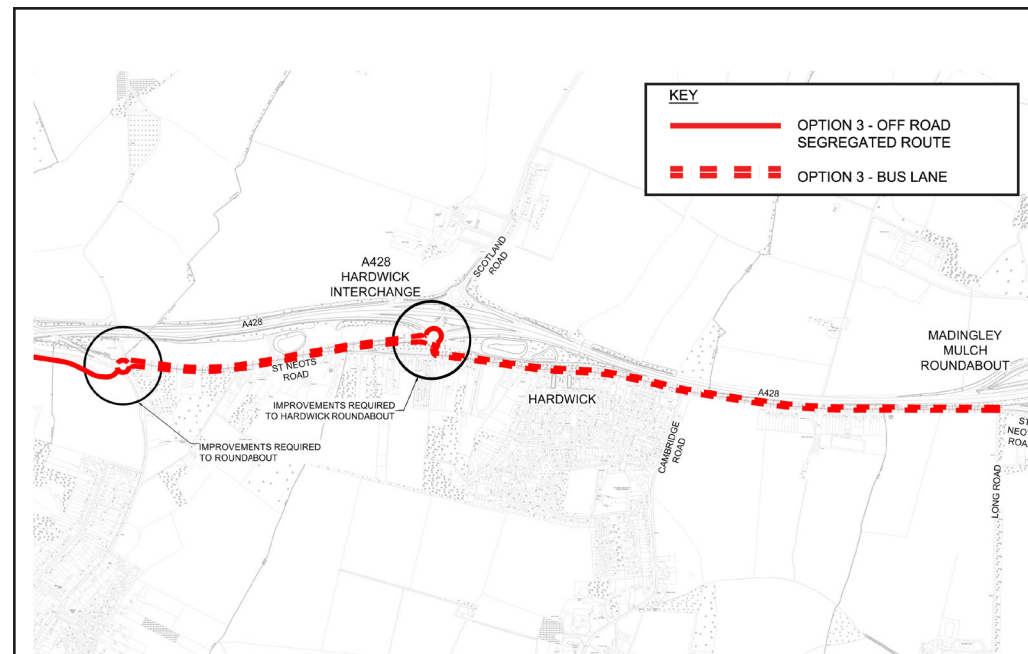
Source: Skanska (© Crown Copyright. All Rights Reserved. OS License Number 100023205.2018)

Figure 16: Phase 2 Schematic - Option 2



Source: Skanska (© Crown Copyright. All Rights Reserved. OS License Number 100023205.2018)

Figure 17: Phase 2 Schematic - Option 3



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# 4. Delivering the Scheme

## Update on Option Costs

### Introduction

An assessment of affordability, overall scheme costs and funding certainty has been undertaken. It outlines how the costs and the scheme are to be funded/financed, including future maintenance and operational costs.

Scheme costs have been developed based upon the latest designs. The scheme cost is considered proportionate and affordable to the scale of the issues identified and the predicted benefits of the scheme.

Base cost estimates have been produced, these include preparation costs, the design, construction, land acquisition, inflation and other costs.

These indicative costs of each of the shortlisted options considered within this Business Case Update can be found in Table 9 adjacent. The range of costs shown indicate the potential cost difference depending on the final choice of Park and Ride site.

Costs for options including the Scotland Farm Park and Ride site would increase if a segregated access were to be required to allow for future CAM vehicles. At present the access is with general traffic from Scotland Road but a segregated access could require a new structure over the A428.

Table 9: Scheme Option Costs

Option	Total Cost adjusted for Risk (£000's)
Low Cost (On Road)	47,377 to 49,472
Do Something 1 (Off Road Phase 1)	90,185 to 99,882
Emerging Strategic Option (Off Road Phase 1 and Phase 2)	157,841

Table 10 shows the breakdown of costs for the illustrative comparator with risk allowance.

Table 10: Base Costs Adjusted for Risk – Illustrative Comparator

Cost Item	Illustrative Comparators (£000's) Adjusted for Risk Costs
Construction	£105,731
Testing and commissioning	£881
Preparation costs	£22,027
Statutory undertakings	£1,100
Land costs	£11,100
Inflation	£17,002
<b>TOTAL</b>	<b>£157,841</b>

### Maintenance and Operating Costs

The potential financial costs of ongoing maintenance include:

- General inspection of the public transport route and regular maintenance / replacement
- Replacement of asphalt to footways, maintenance tracks and new highway works
- General street cleaning
- Landscaping maintenance
- Gully cleaning

Replacement of street lighting fittings e.g. ticket vending machines

Maintenance of stop fittings

Maintenance of traffic signals

Maintenance of toilet building at Park and Ride site.

As is usual in calculations of Whole Life Cost, a 60 year period has been used. As such, the assessment of maintenance costs assumes a period from opening year of 2024 to 2084 with a budget of £24.358m. This equates to yearly maintenance cost of £406,000 per year. There are peaks and troughs with the maintenance as some of the works are carried out as part of annual highway maintenance, others such as planning and resurfacing is carried out periodically as and when the top surface reaches the end of its design life.

Operating costs and transport infrastructure have been included in the maintenance costs outlined above.

### Vehicle Operator Costs

Operators using the existing guided busway pay an access charge to Cambridgeshire County Council to use the infrastructure. Cambridgeshire County Council pays to maintain and operate the infrastructure whereas the Bus Operator pays to maintain and operate the vehicles themselves. It is currently expected that this project will operate in a similar manner. Further considerations around the Combined Authority approach to public transport franchising may also be relevant in this context.

Whilst detailed calculations of expected fare revenues have not been calculated for this Business Case Update, these will be undertaken for the final OBC. At present a worst case has been assumed when calculating BCRs for this scheme whereby the infrastructure owner is assumed to bear the cost of maintenance.



## Funding

The total estimated scheme costs for the Emerging Strategic Scheme of £158m are deemed affordable based on successfully securing funding from the identified funding sources as follows:

- £120m would be sought from City Deal:
  - Of which £59m is currently allocated as part of the agreed funding pot.
  - £61m could be sought from the City Deal future investment programme.
- At least £38m is being sought from developers through S106 contributions:
  - Of which £8.7m has been secured in principle through a S106 agreement with Cambourne West.

## Managing the Project

Cambridgeshire County Council (CCC) has delivered a number of large-scale transport projects across the County in recent years, investing over £200m in transport schemes to address congestion, support growth and encourage use of sustainable travel modes. The delivery of these projects demonstrates CCC's ability and experience in relation to major infrastructure projects. This valuable experience has not been without challenges, but these have provided valuable learning in the planning and delivery of future projects including C2C.

The delivery of C2C Project is overseen by the Greater Cambridge Partnership (GCP), who are the scheme promoters.

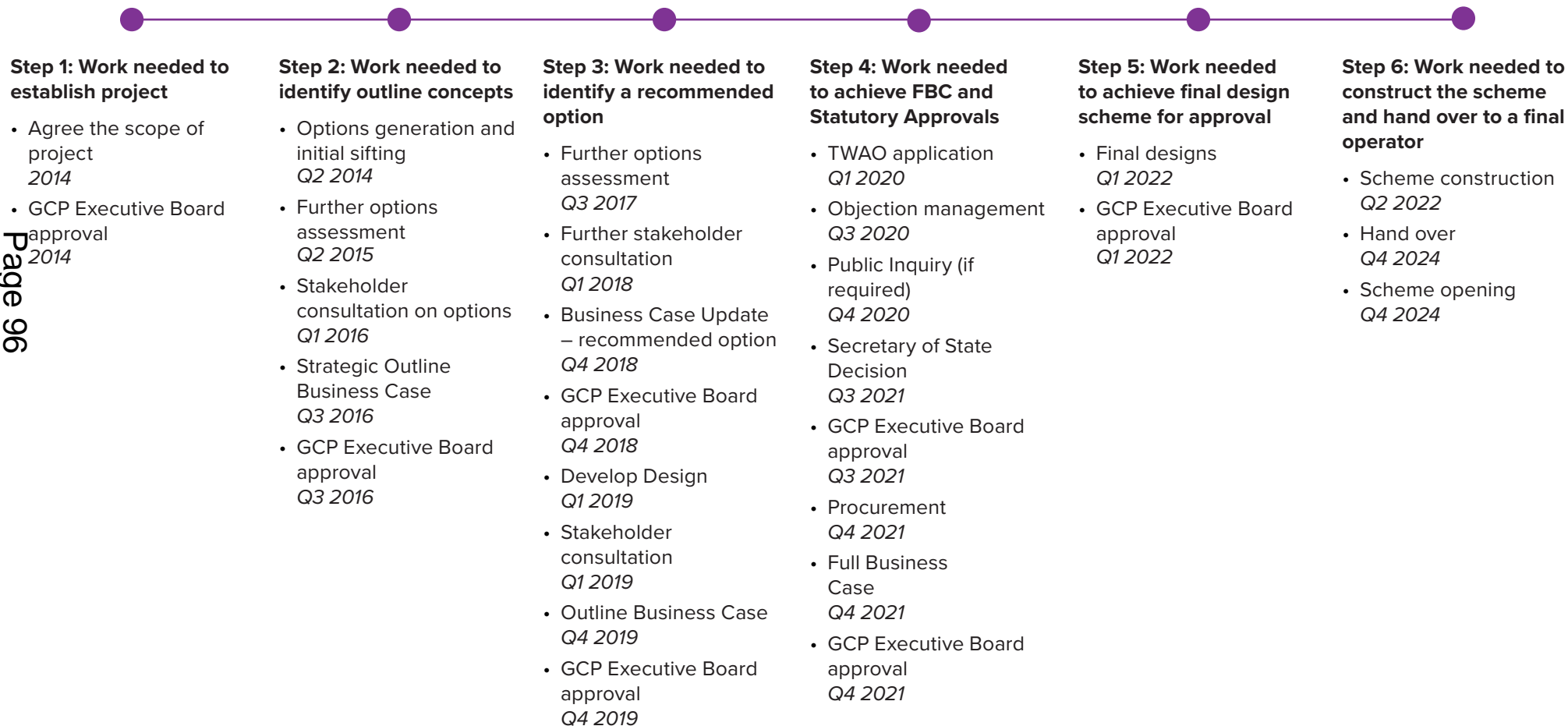




## Way Forward

The high-level project milestones to date and moving forward are shown in Figure 19. This will be subject to ongoing review and approval by GCP board.

Figure 18: Key Milestones





## Summary

On the basis of this Business Case Update it is recommended that the GCP Executive Board should, for Phase 1, proceed to develop an off-road route from Madingley Mulch roundabout to Grange Road, and, subject to consultation on the section between Madingley Mulch roundabout and Cambourne, proceed to develop a Phase 2 route from Cambourne to Madingley Mulch Roundabout with a Park and Ride site either at Waterworks or Scotland Farm.

The choice of Park and Ride location can be best made once plans for Phase 2 of the scheme (west of Madingley Mulch Roundabout) have been subjected to public consultation and further stakeholder engagement and assessment.

When taking into consideration the potential Wider Economic Benefits this option could deliver, it is clear that the illustrative comparator could deliver significant benefit at both at a national and regional level. This further highlights the importance and need for investment in C2C to deliver economic growth both to the region and nationally. The recommended solution would operate successfully in its own right but could be readily incorporated into a future CAM network.



# Glossary

**BCR:** Benefit Cost Ratio, is an indicator of the overall value for money of a project or proposal.

**Committed Schemes:** Schemes that are outside the control and scope of the proposed project being put forward and are due to be delivered during the forecast period.

**Conservation Area:** An area designated under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 as being of special architectural or historic interest and with a character or appearance which is desirable to preserve or enhance.

**Countryside:** The rural environment and its associated communities.

**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.

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

**Environmental Impact Assessment (EIA):** A formal, structured process of evaluating the likely environmental impacts of a proposed scheme, considering inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

**Full Business Case (FBC):** The culmination of the final phase is the Full Business Case, made up of five cases:

- Strategic Case
- Economic Case
- Financial Case
- Commercial Case
- Management Case

An investment committee will consider the Full Business Case then make a recommendation to ministers. Ministers will decide whether a proposal should proceed to implementation.

**Gross Value Added (GVA):** A measure of the economic productivity of an area.

**HQPT:** A system that provides high levels of speed, reliability and capacity, enabling quick, frequent and reliable journeys.

**Heritage Asset:** A building, monument, site, place, area or landscape of historic value.

**Illustrative Comparator:** The option which has been presented at this stage of the business case for comparative purposes.

**INSET:** Investment Sifting and Evaluation Tool. Mott MacDonald's evaluation tool used in the optioneering process. INSET is an enhancement and expansion of EAST.

**Landscape:** The appearance of land, including its shape, form, ecology, natural features, colours and elements and the way these components combine. In towns 'townscape' describes the same concept.

**Landscape Character:** The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.

**Landscape Feature:** A prominent eye-catching element, for example, wooded hilltop or church spire.

**Landscape Sensitivity:** The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.

**Land Use:** The primary use of the land, including both rural and urban activities.

**LLF:** Local Liaison Forums provide for regular dialogue between the project team and members of the local community during the course of any major transport project, ensuring interested parties are kept informed and can continue to have their say outside of formal consultation processes.

**Multi Criteria Assessment Framework (MCAF):**

Multi-Criteria Assessment Framework used in the optioneering assessment process.

**Methodology:** The specific approach and techniques used for a given study.

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

**Modal Shift:** A shift from one transport type to another e.g. road travel to rail travel.

**Movement:** People and vehicles going to and passing through buildings, places and spaces. The movement network can be shown on plans, by space syntax analysis, by highway designations, by figure and ground diagrams, through data on origins and destinations or pedestrian flows, by desire lines, by details of public transport services, by walk bands or by details of cycle routes.

**Outline Business Case (OBC):** Is the second phase of the process which reconfirms the conclusions of set out in the Strategic Outline Business Case (SOBC). The OBC focuses on the detailed assessment of the options to find the best solution.

**Project:** Public Transport improvements connecting Cambridge with towns and villages to the west. Including infrastructure to be delivered as part of this scheme as well as the City Centre Access Scheme and other developments.

**Receptor:** Something that makes up the environmental baseline e.g. humans or other biological species, elements of the physical environment including water, air, soil, assets that make up the cultural heritage of an area.

**Former Rifle Range Track:** Access track adjacent to Cambridge Rugby Club.

**Scheme:** Public Transport infrastructure delivered between Cambourne and Grange Road as part of this business case/planning application.

**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.

**Social and Distributional Impacts (SDI):** considers the variance of transport intervention impacts across different social groups.

**Sustainable / 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.

**Transport Appraisal Guidance (TAG):**

The DfT's Transport Appraisal Guidance (often referred to as WebTAG)

**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 detractor).

**Wider Economic Benefits (WEB):** improvements in economic benefits that are acknowledged, but which are not typically captured in traditional cost-benefit analysis.



**Summary Position Paper**

**Cambridge Autonomous Metro and the A428 Corridor**

**Produced for the Greater Cambridge Partnership Joint Assembly by Arup on behalf of the Cambridgeshire and Peterborough Combined Authority (CPCA) and the Greater Cambridge Partnership (GCP)**

**15 November 2018**

## **1. Background**

1.1. The Cambridgeshire and Peterborough Combined Authority (CPCA) appointed Arup in August 2018 to undertake the role of critical and technical friend over an initial four-month period in connection with the development of the Cambridge Autonomous Metro (CAM) programme. Arup's critical and technical friend role has been focused initially on reviewing existing technical work produced by Steer, Mott MacDonald and others that have been involved in developing the technical and economic analysis to date. The teams have been evaluating different components for the development of the network, in particular:

- Steer have been commissioned by the CPCA to deliver a Strategic Outline Business Case (SOBC) for the CAM network;
- Mott MacDonald have been commissioned by the GCP to deliver SOBCs for the GCP corridors; and
- Arup have been commissioned separately by the GCP to produce a City Access Strategy for Cambridge.

1.2. The Arup commission for the CPCA is to be a critical and technical friend of the SOBC being produced by Steer for the end of the year and, to act as a technical advisor to the Mayor and the CPCA on matters relating to the CAM. The SOBC that is being produced will focus on the development of the whole CAM network which includes the central section as well as the branches and corridors that extend beyond the city centre. The SOBC is being produced to support discussions with Government about how the project could be taken forward. It is based on the principles of the Treasury "Five Case Business Case" approach including the strategic case; economic case; financial case; commercial case; and, management case. More detailed updates on the SOBC will be provided on instruction by the client team. It has been agreed that future work on the development of the CAM will be led jointly by both the CPCA and GCP.

## **2. Purpose of the Paper**

2.1. The purpose of this paper is to provide a short overview of the case for the CAM and to provide a specific update on one of the proposed corridors of the future CAM, the A428 corridor. In doing so, this paper provides:

- an overview of the strategic need for the CAM and the contribution the A428 corridor makes to the overall case for the CAM;
- an explanation of the process of review that has been undertaken for the A428 corridor; and
- A recommended way forward for the A428 corridor at West Fields and Coton.

2.2. The paper has been produced by Arup on behalf of the CPCA and is a summary of the review work undertaken to date. It supports the paper that has been produced by the GCP giving an update on progress with developing the business case for the A428 Cambourne to Cambridge (C2C) Better Public Transport project.



## Strategic Overview of the case for the CAM

2.3. The case for the CAM is focused on a number of specific objectives which are summarised below:

- Unlocking economic growth in and around Cambridge;
- Providing a mechanism to accelerate the delivery of housing;
- Addressing city wide congestion and its environmental consequences; and
- Connecting people with jobs from across the wider Cambridge region.

2.4. Cambridge has been identified by central Government as one of the most important drivers for economic growth in the UK, through the expansion of major science and tech research facilities. Termed the '*Silicon Fen*', the area is comparable to major global tech clusters, including MIT and Kendall Square and Silicon Valley in the USA, where industries agglomerate around talent and higher education. Given the positive contribution the Cambridge economy makes to the economic productivity of the UK, it is paramount that Cambridge is able to maintain its poll position in attracting, nurturing and retaining the best talent from around the world.

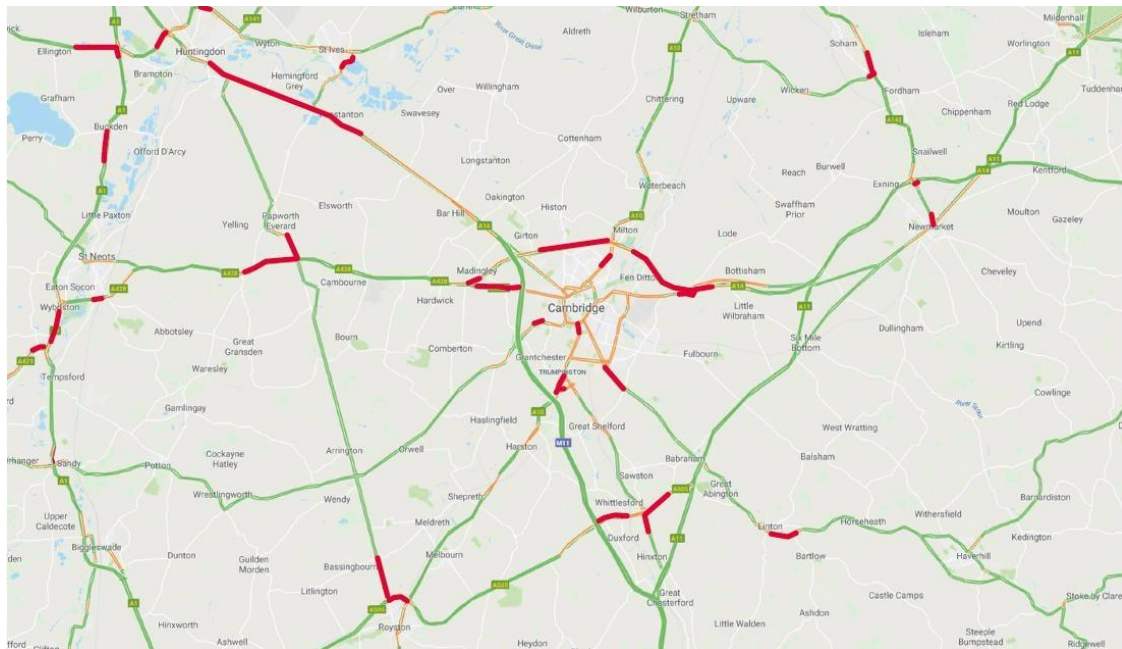
2.5. In support of this, the National Infrastructure Commission recognise the Cambridge – Milton Keynes – Oxford as a national priority. To secure the Arc's long-term economic success, the National Infrastructure Commission in its Partnering for Prosperity report highlight the importance of delivering improved infrastructure and new homes to create places where people will want to live and work. There are several major development sites; both housing and commercial, which are in the pipeline in Cambridge and across the wider region which will support and nurture strong economic growth. Enhanced public transport solutions will be a key factor in facilitating delivery of these schemes.

2.6. Whilst there has been a significant attempt to alleviate congestion in the city, it is apparent that without major intervention, productivity and inward investment could be held back from future growth. Cambridge suffers from high levels of road traffic congestion. Figure 1 shows AM peak time congestion in the Cambridge region, with those sections of the road network in red and orange having high levels of congestion.

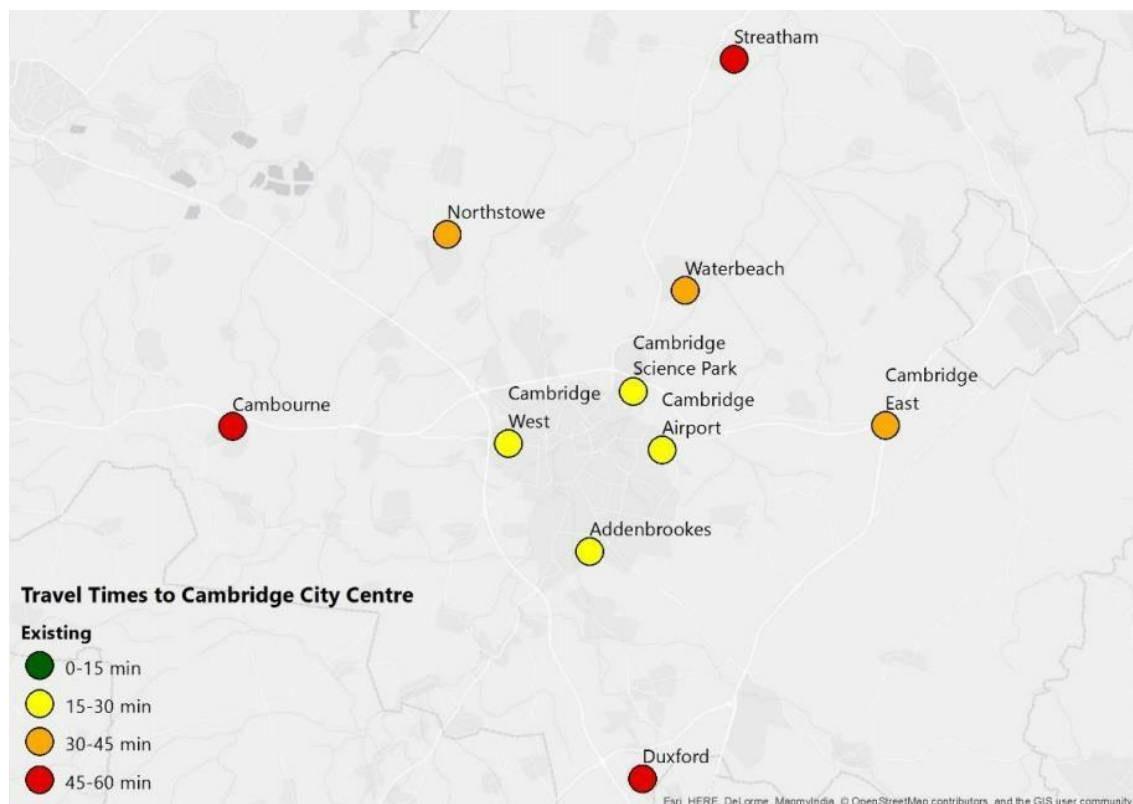
2.7. Congestion has a number of negative impacts including the concentration of harmful emissions caused by standing traffic; longer journey times and delays which affect the economic efficiency of the area and the perception that it is difficult to move around, which can impact on inward investment and future growth. In addition, from a residents perspective, congestion can impact on everyday life and can potentially limit access to new opportunities. Figure 2 illustrates the existing journey times to central Cambridge from a number of surrounding locations. Cambourne for example, can be up to 60 minutes journey time from Cambridge to Duxford at peak times, for a distance of around 11 miles.

2.8. A transport solution, in the form of a Metro, for Cambridge City Centre and its surrounding environs has the ability to tackle ongoing and increasing congestion issues in the city centre. This has the potential to create the capacity for future growth without adding further to congestion levels across the region.

**Figure 1: AM Peak time congestion in the Cambridge region**

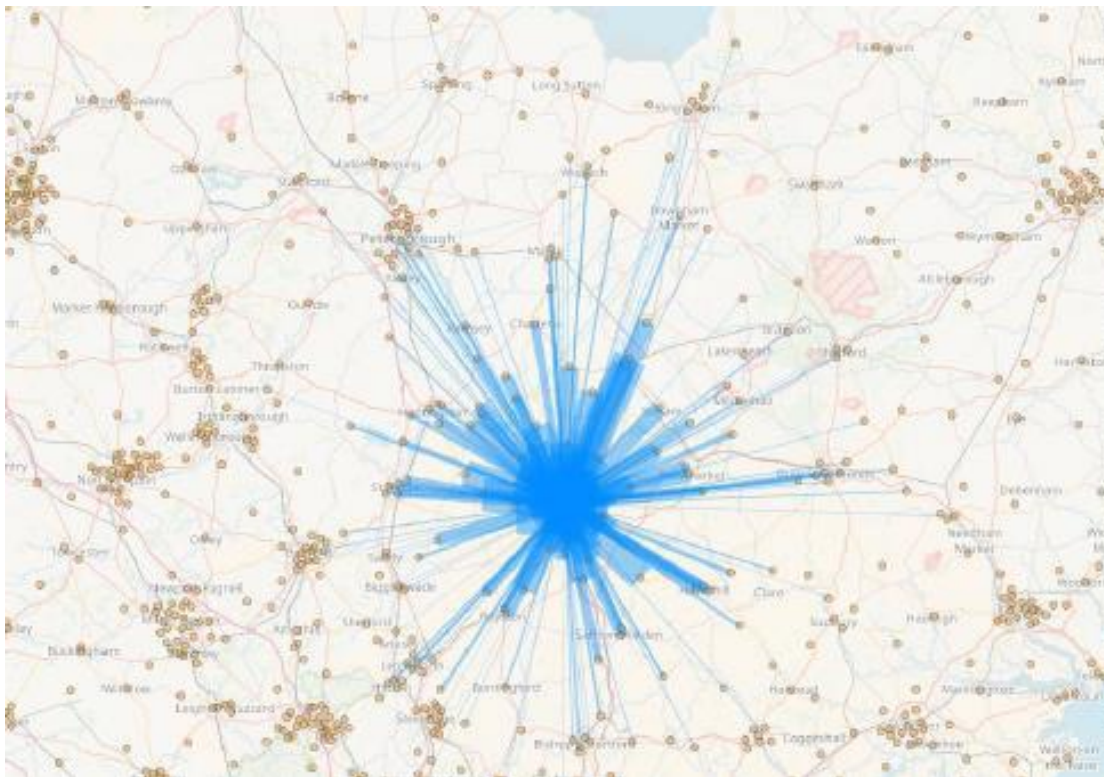


**Figure 2: Existing travel times to Cambridge city centre**



2.9. Locations where this future economic growth can take place are spread across the city and the wider region and there is a need to ensure these growth areas are well connected to each other, alongside the creation of good links to the city centre and main transport nodes such as the rail station. It is the connectivity between these important economic elements of the city that will help drive economic growth, without adding further to congestion. These growth areas also need to be connected to areas of existing and future housing, allowing people to benefit from the new opportunities that are created. The labour market area for Cambridge spreads across a wide area as shown on Figure 3.

**Figure 3: Origins of journeys to work in Cambridge within an hour's journey time**



2.10. The availability and affordability of housing is a critical issue in the Cambridge region that has the potential to be a constraint on future growth. There is also a need to ensure the wider region is well connected to Cambridge in order for people to access existing and new job opportunities, helping to spread the economic benefits of Cambridge across a wider area. Using investment in transport solutions to help unlock new housing sites and connect areas of existing housing to Cambridge is a major priority for the future.

2.11. A system like the CAM has the ability to address these challenges by providing connections through the city and beyond, allowing areas of existing jobs and economic activity, to be connected with new growth areas, the city centre, main rail station and residential. There are several major development sites; both housing and commercial, which are in the pipeline in Cambridge and across the wider region that will support and nurture strong economic growth. Enhanced public transport solutions will be a key factor in facilitating delivery of these schemes. The ability for transport to unlock the

maximum growth potential of the Cambridge region is of national significance to the UK economy.

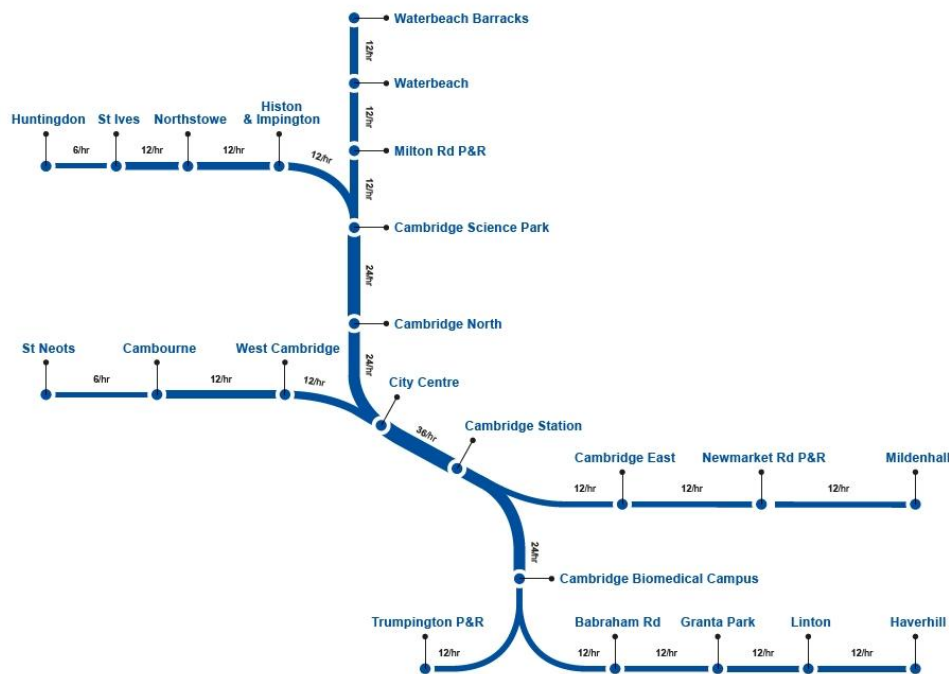
### **3. Development of a CAM network**

3.1. The emerging business case for the CAM is based on the development of a new rapid transit system for the Cambridge region that is capable of responding to the specific challenges of the region that have been described above. Through Arup's review process, the principles for a successful business case for a CAM system have become much clearer, and include:

- i. The need to provide high levels of connectivity to the city centre of Cambridge and the station area, without adding to existing congestion and helping to reduce congestion levels in the city overall. This requires the creation of dedicated routes for the CAM network through the centre of Cambridge, using a network of new small tunnels that would connect with routes on the surface extending beyond Cambridge.
- ii. The need to provide levels of connectivity and journey times on the approaches to Cambridge that encourage significant behaviour change towards greater use of public transport. This relies on dedicated routes for the CAM network that allow for high levels of frequency and journey time reliability operated by a rapid transit type system.
- iii. The creation of a network that has the flexibility to serve a number of different destinations beyond Cambridge, including areas with significant planned or potential housing growth. This requires a network with flexibility to operate on different routes outside of Cambridge and is not limited to serving the city of Cambridge alone. There are a number of different rapid transit technology solutions that could achieve this and which are being investigated through the SOBC process.
- iv. For the network to directly address the transport challenges of major growth areas allowing development to come forward in an acceptable way.
- v. To have the potential for the network to be delivered in phases, with the potential for early phases to operate independently and deliver benefits early whilst having the ability to be connected into a larger network at a later date.
- vi. For the network to operate as a whole, with high levels of frequency and connectivity that allow people to connect through the City and beyond. Operated as a single system with an integrated approach to operations and ticketing, allowing high levels of service reliability and performance to be achieved.
- vii. For the network to be affordable with methods of funding identified that allow the scheme to be delivered in a timescale that addresses the challenges whilst delivering the benefits that are required.

3.2. Figure 4 illustrates the CAM concept, which is subject to ongoing development and refinement as part of the SOBC process.

**Figure 4 – Illustrative CAM Concept**



#### **4. Review of the potential for CAM west of Cambridge**

- 4.1. One of the corridors that has been identified for major improvements in public transport is the corridor to the west of Cambridge which connects Cambridge to Cambourne and is referred to as the A428 corridor.
- 4.2. The objective for this corridor is to improve public transport connectivity between Cambridge and areas to the west that deliver a major reduction in journey times and improvements in reliability that will change travel behaviour. There is also a need to improve accessibility and connectivity to the University of Cambridge western facility, and areas of proposed development at Bourn Airfield, as well as ongoing development at Cambourne and St Neots which could benefit from improved transport connections. In achieving these objectives, there is a need to ensure any impacts on existing local communities are minimised.
- 4.3. The need for public transport improvements along the A428 corridor has been prioritised by the GCP and has already undergone public consultation in 2016 and 2017/18. During these consultations the following issues emerged:
  - The potential for adverse impacts in the existing areas of the West Fields and the village of Coton;
  - Number and location of service stops; and
  - Location of park and ride facilities as not to impact on the surrounding environment
- 4.4. In response to these, Arup was asked by the CPCA to undertake a review of the different proposed routes along the A428, drawing on work undertaken to date and testing assumptions where appropriate. The objective of this work was to review the



current route options that had already been developed by the GCP and their consultants and consider how these could be incorporated into the wider CAM network, without compromising their ability to be delivered as an early phase. This recognises that improvements on the A428 corridor could happen earlier but they need to be planned and designed in a way that they can be incorporated in the CAM at a later date. In parallel with this there was also a need to develop solutions that could address the concerns raised by local residents during the consultation process.

4.5. In undertaking the strategic review of the A428 preferred corridor (based on GCP published materials) Arup considered the following proposals:

- **Route A** – A new dedicated off-road route alignment between Madingley Mulch roundabout and Grange Road
- **Route B** - An on-road bus priority option on Madingley Road running between the Madingley Mulch roundabout and the new entrance to Eddington (High Cross).
- **Route C** – The principle of an additional northern off-road alignment between Madingley Mulch and West Cambridge.

4.6. These route options are illustrated on Figure 1 below.

Figure 1: Indicative routes in the A428 corridor for review



4.7. Arup defined a series of key metrics that enabled a comparison and review of the three primary route options along the A428 corridor. The information to conduct this comparison was derived from various pieces of technical analysis and advice provided by Steer, Mott Macdonald and Arup. The key metrics formed part of a high-level assessment of the route options, allowing their respective merits and risks to be easily assessed. A summary of the results of this analysis is set out in the table below with a red, amber, green status for the three options against each of the metrics.

## Summary Assessment of Route Options

Metric	Option		
	Route A	Route B	Route C
Timeline	Deliverable by 2025 (Business case assessments and public consultation have been undertaken) ●	Deliverable by 2025 (May be delayed due to additional consultation or CPO appeals) ●	Not feasible for delivery by 2025 (Will require additional consultation, assessment and route specification) ●
Local population impacts	Encroaching on Coton (Potential visual and future development opportunities, but also provides direct stop access) ●	Impacts Limited (Some major houses alongside A1303, but the road is existing) ●	Far from Coton (Potential visual and future development opportunities, but also provides no direct stop access) ●
Planning & environmental constraints	Minor Impacts No national designations Some local designations Within Green belt ●	Variable Adjacent to Cambridge American Cemetery and Memorial - Grade I SSSI & Ancient woodland, Grade II* Within Green belt ●	Variable Proximate to Cambridge American Cemetery and Memorial - Grade I SSSI & Ancient woodland, Grade II* Within Green belt ●
Journey time (Madingley RA to Cambridge CC)	Fastest - 7-8min (Entirely segregated with a non-level crossing of the M11) ●	Slowest - 14min (Due to lack of traffic segregation, could be improved with route segregation) ●	Highly Variable - 9-14min (Dependent on interaction with M11) ●
Benefit implications	Highest BCR PV Benefits of ~£20-25m ●	Lowest BCR PV Benefits of ~£2-3m (lower due to lack of segregation) ●	Mid BCR PV Benefits of ~£10-20m (dependent on interaction with M11) ●
Cost implications	High Cost PV Cost £120-150m ●	Low Cost PV Cost £75-100m ●	Highly Variable Cost PV Cost £120-200m ● Tied to how route interacts with M11
Important considerations	Local impact could be reduced by cutting and covering a portion of the alignment that runs proximal to Coton however this could lead to dramatic cost increases	Cost implications of widening Madingley road to create segregated lanes would be very high due to acquisition costs but fully exploring alternative arrangements including digital capacity management shall be ensured  May not require major changes to Madingley Road roundabout	Implications for future infill towards a route further away from road and existing development  Unclear how route would cross M11.  <div> <span>● - Positive</span>  <span>● - Caution</span>  <span>● - Concern</span> </div>

Development implications	Major development sites are to the west of Madingley roundabout where all three routes considered would converge, therefore development would most likely not impact the three proposed routes differently.
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4.8. From this assessment it is clear that the merits of the different options vary significantly across the different metrics. For example, Route B is the slowest in terms of potential journey time because of the interfaces with existing road traffic and Route C performs poorly in terms of timescale for delivery. The currently proposed corridor (Route A) is the most attractive in terms of programme, planning and environmental constraints, as well as journey time. However, with Route A, a number of issues needed to be addressed in terms of mitigation, which are discussed in more detail below.

4.9. The route proposed by Cambridge Past Present and Future (CPPF) and other groups', for a route which extends north alongside the M11 to the Girton interchange and then proceeds west on road along the A428 corridor. A high-level review has identified:

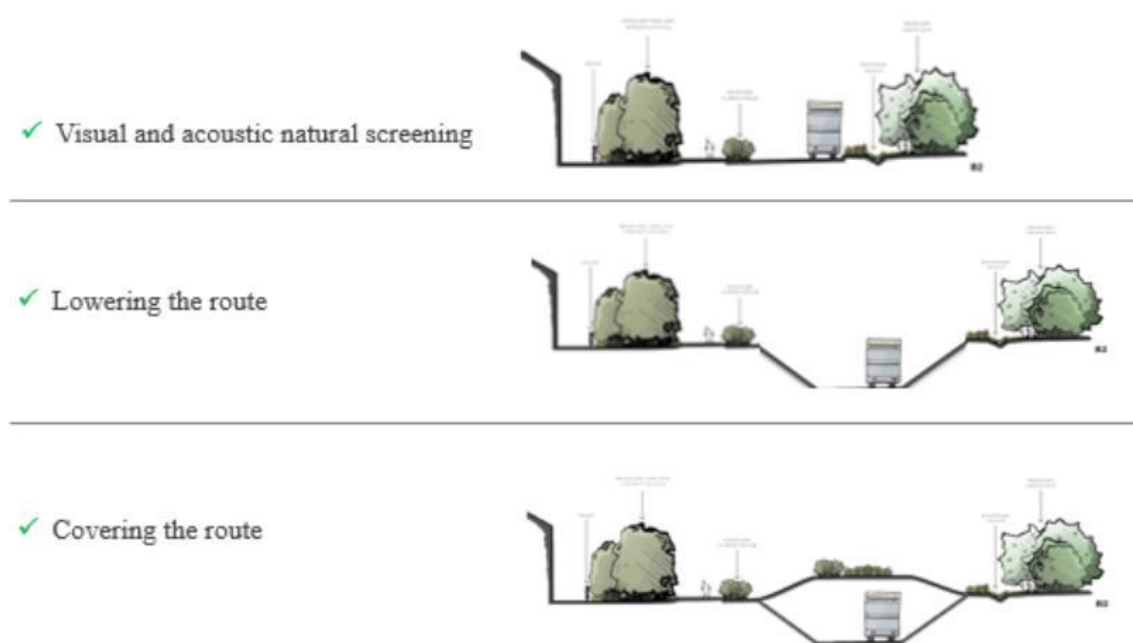
- the route would introduce an interface with an already congested road and junction which would require a significant upgrade;
- the route and journey times would be longer than alternatives; and
- the option would have a higher cost.

4.10. For these reasons, this option was not considered to perform as well as Route Option A.

4.11. Two possible areas of mitigation were considered for the West Fields area. The first mitigation would be to position the tunnel portal north of West Fields and avoid the permanent route encroaching onto West Fields. The second option would be to extend the tunnelled section further west, serving West Cambridge through an underground station, which would be a more expensive option. Further work on these options should be undertaken as part of the continued development work of the CAM project.

4.12. Three mitigation options have been identified for Coton and are illustrated below. These options focus on the ability to screen the route of the CAM through natural screening, lowering of the route and covering the route. These options are illustrated below on Figure 5. Further work on these design solutions should be undertaken as part of the continued development work of the CAM project.

**Figure 5 - Mitigation measures around Coton village**



## 5. Conclusions and Next Steps

5.1. The Strategic Outline Business Case (SOBC) for the CAM, which will follow HMT green book guidance is being produced for the end of the year/beginning of 2019. This is now being produced under the joint guidance and leadership of the CPCA and GCP.

5.2. In relation to the A428 corridor, as requested by the CPCA, Arup has undertaken a high level review of route options and concluded that:

- The process undertaken to date to determine the route is robust and the optimal solution for the corridor is confirmed;
- The route is reclassified as a CAM route to serve the wider network, and not an independent guided busway corridor;
- The vehicle operating along the A428 corridor will comply with the principles of the CAM;
- The route will continue to be designed to align and integrate with the overarching CAM network, comprising one of the phases of the CAM network; and
- Options for mitigating the impact of the scheme at West Fields and Coton will be incorporated into scheme design for the SOBC.

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# Agenda Item 7



## CITY ACCESS AND BUS SERVICE IMPROVEMENTS UPDATE

**Report to:** Greater Cambridge Partnership Executive Board

6<sup>th</sup> December 2018

**Lead officer:** Peter Blake – GCP Director of Transport

### 1. Introduction and Purpose

- 1.1 In June 2018, two papers were presented in parallel to the Board. The first presented an interim update on analysis to define a future world class public transport network for Greater Cambridge, which this paper further develops. The second introduced options for demand management that might provide the necessary road space to deliver those improvements and, in some cases, provide a revenue stream to fund a significant enhancement of services or improvements to local infrastructure.
- 1.2 In the interim, complementary work has been underway to examine the need for a Clean Air Zone for Cambridge and to develop a Spaces & Movement Supplementary Planning Document (SPD) that seeks to secure the right balance of public space between pedestrians, cyclists and vehicles.
- 1.3 This paper updates the Executive Board on these various workstreams with a focus on developing options for securing a step-change in public transport, reducing congestion and improving air quality in and around Cambridge. It sets out a vision and high-level specification for the future public transport network which will deliver a meaningful reduction in congestion by making public transport the mode of choice. It also considers the technical work undertaken since the last report to evidence the changes required to meet the City Deal traffic reduction target and considerably improve traffic and transportation in Greater Cambridge.

### 2. Recommendations

- 2.1 The Executive Board is recommended to:
  - (a) Note the work to date on the City Access programme;
  - (b) Agree to undertake a second big conversation exercise to obtain public feedback on the options to invest in and significantly improve public transport and manage demand for road space contained within the report; and
  - (c) Continue to work on developing a final package of City Access proposals and public transport improvements, incorporating public feedback, for the Executive Board's consideration in 2019.

### 3. Feedback from Joint Assembly

- 3.1 The Joint Assembly was supportive of these proposals but commented on the need to ensure the public transport offer included much improved provision for villages not on the CAM network, and the importance of walking and cycling as part of the mix of options when looking at competitiveness of different travel modes. The Joint Assembly expressed a range of views on the options for demand management. They emphasised the importance of bringing to life the public transport improvements

during the proposed engagement, and using this to ask meaningful questions about both public transport and demand management choices. However, there was a consensus in support of asking the public and the business community for their views on options for demand management.

#### **4. City Access – Purpose, Vision and Objectives**

- 4.1. The City Access project is designed to reduce congestion in the city centre, improve public transport, cycling and walking, and significantly improve air quality in Cambridge.
- 4.2. The strategy for achieving this includes the following elements:
  - Supporting the transition to sustainable transport (public transport, bike, foot) making travel easier especially for those coming in regularly from outside the city.
  - Making public transport vehicles significantly more reliable and attractive including the delivery of a segregated rapid transit system to avoid public transport queuing behind cars.
  - Developing cycling and walking as significantly more attractive options.
  - Reducing city centre and cross-city vehicular journeys by providing attractive alternatives.
  - Delivering enhancements to the public realm and city centre environment.
  - Providing better information to help travellers make more informed choices.
  - Potentially generating funds through pricing measures to deliver a step change in public transport provision.
- 4.3. Measures to monitor and track progress of the City Access project include:
  - A reduction in car traffic (10-15 per cent reduction on the 2011 figure, equating to a reduction of some 24 per cent over today's levels).
  - A shift to public and sustainable forms of transport, including an increase in cycling numbers.
  - Reduction in journey times and improved frequency of public transport services to/from key locations.
  - Enhanced air quality and emission volumes.
  - Improved public realm.

#### **5. Feedback from the first Big Conversation**

- 5.1. Our Big Conversation analysis<sup>1</sup> shows that the GCP's strategic aims for improving transport are supported or strongly supported.
- 5.2. Feedback from this previous conversation is a driving rationale for the City Access focus on improving public transport and improving congestion. Asked to identify the biggest challenges in travelling in the Greater Cambridge area, respondents told us:
  - Traffic and congestion slowing [their] journey (63 per cent City; 77 per cent South Cambridgeshire)
  - Lack of public transport (36 per cent City; 62 per cent South Cambridgeshire)
  - Safety of alternatives (41 per cent City; 26 per cent South Cambridgeshire)
- 5.3. Reliability is most frequently cited as the reason for the choice of travel mode (41 per cent). In addition, of those who do not use alternative modes, the top three reasons were due to: speed, reliability and price of public transport.
- 5.4. South Cambridgeshire residents (where public transport use is much lower than in the City) noted that more frequent and faster services, lower fares and more park and ride options were the most likely things to influence their mode of travel.

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<sup>1</sup> GCP Big Conversation: Summary Report of Survey findings, January 2018

## 6. The Scale of the Challenge

### Capacity and Growth Analysis

- 6.1. Greater Cambridge is a national economic success story, an important contributor to UK Plc and host to some of the most productive and innovative parts of the UK economy. The role of the Greater Cambridge Partnership (GCP) is to support the continued economic success of the Greater Cambridge area and to ensure that everyone in Greater Cambridge can access the opportunities offered by that growth.
- 6.2. In doing so, the GCP is working, and will continue to work, closely with the Mayor and Combined Authority of Cambridgeshire & Peterborough.
- 6.3. Congestion is a major problem and it threatens the liveability and attractiveness of Cambridge to residents, employees and visitors alike. Economic analysis published in the Cambridgeshire & Peterborough Independent Economic Review (CPIER) suggests that at current rates of transport infrastructure investment, the ability to deliver planned growth is threatened<sup>2</sup>. This led the authors of the CPIER report to conclude that the Greater Cambridge area was the key investment priority in the short/medium term to deliver the region's growth aspirations. The GCP's business stakeholder engagement supports this observation.
- 6.4. People are spending too much of their time in traffic jams; congestion has an impact on people's quality of life, on the local environment and on business productivity. Almost a quarter of people's commuting time in Cambridge is spent in traffic jams<sup>3</sup>. Since so little of the network is segregated for public transport this also affects bus users. Bus delays are significant. In the 2017 Big Conversation, Greater Cambridge residents told us that the reliability of journey times was one of the principal reasons for the mode they chose, and one of the most common reasons not to use alternative modes than car<sup>4</sup>.
- 6.5. The GCP has a target of 10 to 15 per cent reduction in city centre traffic flows over 2011 levels, as part of the city deal negotiations that resulted in the £500m devolution funding. Traffic has grown considerably since 2011, this target now equates to a reduction of some 24 per cent over today's levels or the equivalent to one in four cars off the road. By 2031 employment is forecast to rise by 30 per cent. If all new workers adopted the same travel behaviours as today's workers, an additional 26,000 commuting trips would need to be accommodated on the road network (Appendix 1).
- 6.6. Most of this employment growth will be located outside of the city centre in areas that are not currently well served by public transport. For most residents west of the M11 or north of the A14, Addenbrooke's/ Cambridge Biomedical Campus (CBC) and other employment locations to the south are an impractically long public transport commute. There are some 30,000 new homes planned to the north and west of Cambridge, and around 20,000 new jobs at CBC, Babraham Research Campus and Granta Park.
- 6.7. Without intervention it is very likely that the majority of these 44,000 new employees will drive to work, which in the worst-case scenario could imply up to 44,000 additional cars on the road: a 50 per cent increase in car-based commuter traffic on current traffic volumes.

### Air Quality

- 6.8. At the same time, there is increasing concern about the impacts of air quality on health across Greater Cambridge. Air pollution is linked to cancer, asthma, stroke, heart disease, diabetes, obesity and

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<sup>2</sup> Recommendation #7, CPRI Final Report (p. 13, September 2018). Accessed online: <http://www.cpier.org.uk/media/1669/cpier-report-140918-iii-na-highresdownload.pdf>

<sup>3</sup> 2017 UNRIX International Traffic Scorecard. The Ranking analyses congestion in 1,360 cities worldwide using big datasets from connected cars and devices.

<sup>4</sup> GCP Big Conversation: Summary Report of Survey findings, January 2018

dementia. The health problems resulting from exposure to air pollution have a high cost to people who suffer ill health and premature death. Emerging analysis commissioned to consider the case for a Clean Air Zone in Cambridge has estimated that around 50 deaths each year in Cambridge are attributable to poor air quality; around 5 per cent of all deaths. Poor air quality can also deter people from walking and cycling.

- 6.9. As well as these personal costs, poor air quality imposes additional costs on health services and to business. Nationally, the costs of polluted air are estimated at £20 billion every year. World Health Organisation guidelines, currently under review, are that there is no safe level for the effect of Particulate Matter (PM) emissions on human health.

### **Quality of Place**

- 6.10. Too often streets are designed for cars, not people. Much of the congestion in Cambridge can be attributed to the heavy reliance on private vehicles. Cambridge's city centre streets should be for active travel, social interaction, and space-efficient modes that enable the efficient movement of people to where they want or need to be. Relying on cars, particularly those carrying only one passenger, will only continue to make Cambridge's streets even more congested, undermining the quality of the beautiful, unique historic environment.
- 6.11. A Supplementary Planning Document is under development which addresses the question of managing the urban environment of Cambridge and the relative priority of walking, cycling and motorised traffic. A public consultation is planned in 2019.

### **Social Equity and Inclusion**

- 6.12. Some parts of Greater Cambridge are being held back by a lack of any viable public transport at all. In some places, people are cut off from opportunities that the rest of the city has to offer by poor public transport access or walk and cycle connections. Poor transport connections compromise economic fairness by limiting access to jobs, education and training. This in turn can isolate people and communities and lead to a less socially integrated city.

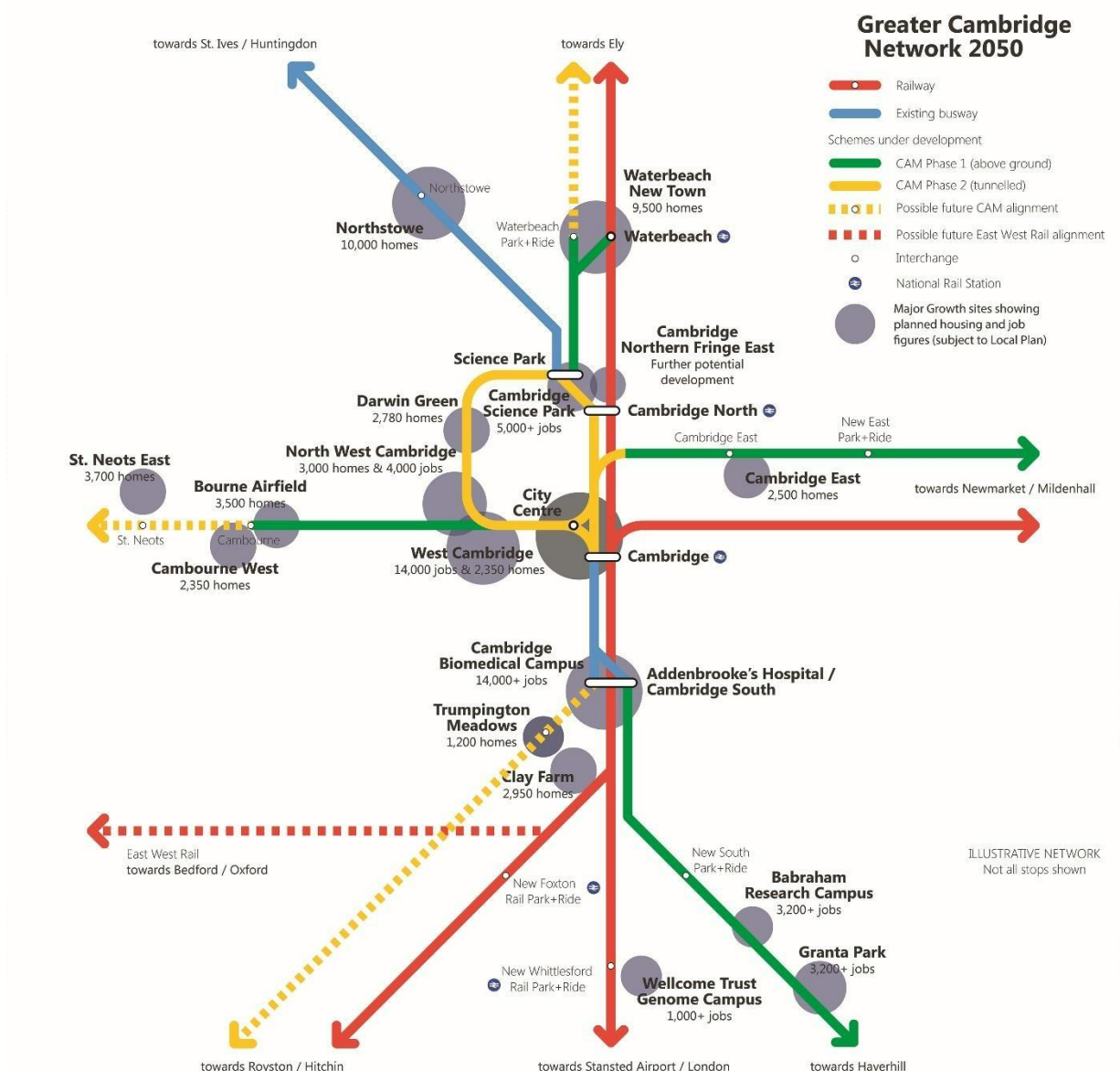
## **7. Delivering a World Class Public Transport System**

- 7.1. To achieve both journey time/congestion and air quality improvements, a step change in provision and uptake of public transport, cycling and walking is required, alongside a significant reduction in car use. High quality public transport services that connect seamlessly to other forms of active, efficient and sustainable travel are required across the city to provide alternatives to car use.
- 7.2. This means development of a world class transport system that makes it easy to get into, out of, and around Cambridge in ways that enhance the environment and retain the beauty of the City. It will require not only the provision of infrastructure and services, but complementary measures such as integrated ticketing, clear wayfinding and accessible information to ensure seamless and integrated journeys.
- 7.3. Our vision is for a public transport system that:
- offers a genuine alternative to the car;
  - is rapid, reliable and, where possible, segregated from cars;
  - is an integrated network of bus, rail and mass transit services, including timetable, ticketing and information;
  - focuses on better serving the key employment centres outside of the city centre: Cambridge Science Park, Cambridge Biomedical Campus, West Cambridge and the cluster around Cambridge Airport;
  - is both affordable and feasible to deliver and sustain.

## Infrastructure Investment: the Backbone of the System

- 7.4. GCP is currently working jointly with the Mayor and Combined Authority of Cambridgeshire and Peterborough to develop proposals for a metro (rapid-transit) system for Cambridge, enabling fast, reliable and high-capacity services for large catchments of the City. The metro is designed as a concentric network, where lines travel in and out of the city core. The metro lines are proposed to operate over ground, until they meet the inner city, at which point they will need to go underground to maintain journey speeds.
- 7.5. The above-ground segregated elements will be faster and less expensive to deliver and, as such, are proposed for early delivery between 2023 and 2025. The full Cambridgeshire Area Metro (CAM) network delivery is still being programmed but not expected to be operational until the end of the decade.

**Figure 1: Future mass transit network**



- 7.6. These CAM Phase 1 schemes, segregated surface level routes, will deliver a significant improvement in public transport accessibility to the major out of centre employment sites that are currently very poorly served. They will also offer the ability for those commuting from further afield to park and continue their journey in on rapid public transport, or in future to get an on demand autonomous vehicle to the station or transport interchange.



## **Transformed Services to Support New Infrastructure**

- 7.7. The public and sustainable transport network of the future needs to look and feel different so that it is genuinely attractive. The fundamental building block of this is getting journey times and frequencies right. At the moment, for too many people, making a journey by car is the rational choice for them to make. Their car is either faster (on a good day), cheaper (in terms of the out of pocket costs for a single journey), or both. For some people, parking is free and relatively easy. Set against this, public transport can often take longer, and be less comfortable. Some find it confusing and frustrating. Cycling and walking is too often an unsafe, inconvenient or unpleasant experience. When all of this is weighed up, it is not surprising that the majority of commuters choose to travel by car. For individuals this is an understandable decision but the collective impact of those decisions is bad for everyone and the position is untenable.
- 7.8. To convince people to move away from their cars there must be a step-change improvement of the performance of alternative modes on paper (in terms of journey time and financial costs) but also in terms of the user experience. Getting the offer right means a virtuous cycle where more people are attracted to public transport, walking and cycling, taking car traffic off the road which in turn makes space for public transport to run more freely, and delivers an increase in revenue available to support investment in services. At the moment the reverse is happening: public transport services are not performing and so more people are driving, causing congestion that further undermines public transport services.
- 7.9. This requires the GCP to proactively intervene, with both incentives and disincentives including:
- (a) Significant improvements to service frequency and journey speeds on public transport: targeted at the most important travel to work flows now and in future and at the park and ride sites.
  - (b) Better out of hours services – including through trialling autonomous vehicles on the Guided Busway – to serve those working irregular hours.
  - (c) An improvement in the look and feel of the network: providing integrated information on public transport; delivering integrated ticketing; improving real time information; upgrading the quality of experience; and introducing a clean, green public transport vehicle fleet.
  - (d) Improvements to cycling infrastructure in terms of safety and user experience, with segregation wherever possible.
  - (e) Reprioritising public space to make walking safer, easier and more pleasant way to get around.
  - (f) A safe, comfortable and productive way of travelling: for example provision of Wi-Fi on public transport and comfortable safe waiting spaces with integrated services such as parcel collection to make life easier for all residents.
  - (g) Providing feeder and last mile provision at key transport interchanges for example around campus employment sites and in the city centre, including linking residents from around Cambridgeshire into the CAM network and travel hubs. This means considering secure cycle parking, cycle sharing and safe walking routes to and from public transport services and potentially autonomous vehicles at campus sites.
  - (h) Integrating this provision into future planned development, minimising the need to use cars wherever possible.

## **Priorities for Service Improvements**

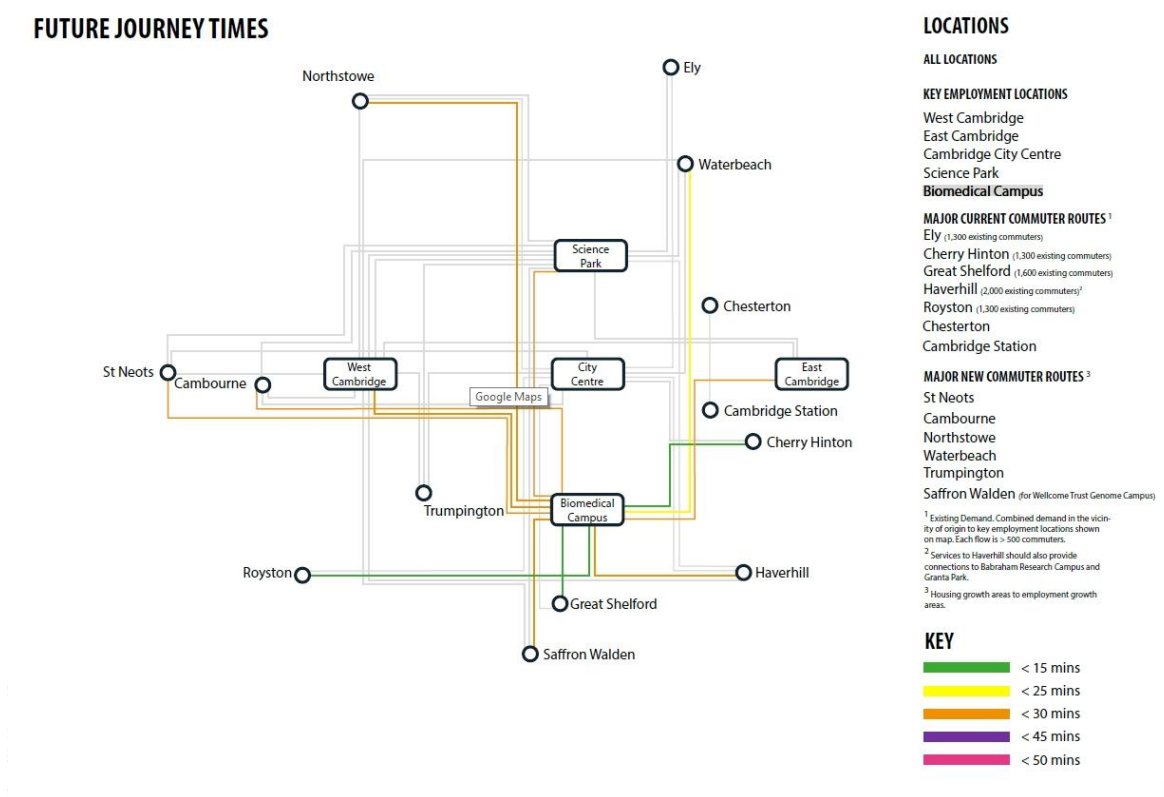
- 7.10. Public transport competitiveness analysis demonstrates that early delivery of the above-ground elements of CAM will deliver a step-change in the attractiveness of public transport. Phase 1 will serve important out of town employment locations that are currently very poorly served by public transport, delivering a step change for those sites. However, the first phase stops short of the city centre (because there is not space to easily segregate public transport without a significant reduction in traffic in the centre, or tunnelling).

- 7.11. GCP in partnership with the Combined Authority is working on a Strategic Outline Business Case for Cambridgeshire Autonomous Metro that includes a tunnelled central section to connect the Phase 1 routes and deliver a comprehensive network connecting South Cambridgeshire with the City Centre and the major employment campuses.
- 7.12. CAM and rail will be the backbone of the future public transport network, but they will always need to be supported by conventional and, potentially in future, on-demand feeder bus services as well as good cycling and walking routes.
- 7.13. This section focuses on what supporting public transport services are needed in addition to Phase 1 CAM to deliver the city centre decongestion that residents and businesses need, and that was committed in the City Deal.

*Prioritising Major Commuter Flows for Maximum Congestion Reduction*

- 7.14. The best way to quickly reduce congestion in the city centre is to focus investment where there are the biggest flows of people travelling to and from work. Commuter trips may be the easiest trips for travellers to change their behaviour because they are regular and frequently repeated. For individuals they are usually the most frequent trip made, and the majority of cars on the road at peak congestion times are commuters.
- 7.15. We have carried out competitiveness analysis to identify and prioritise the public transport service improvements that will make public transport a better option than car for the most possible commuters. Those services will be one focus of public transport investment.
- 7.16. The package would include a mixture of service frequency enhancements, journey time improvements and targeted fare reductions. This information will be fed into the Bus Services Review currently under deliberation by the Cambridgeshire & Peterborough Combined Authority and detailed proposals developed.
- 7.17. The figure below shows work in progress to define the service levels that are required to deliver that improvement. Appendix 3 sets out these in detail, including comparison with current services. This targeted package can include, for example enhanced services to the Cambridge Biomedical Campus site:
- **Haverhill to CBC:** increased service frequency from a bus every 15-20 minutes to a bus every 10-15 minutes, improving journey time from 45-60 minutes to less than 30 minutes.
  - **Great Shelford to CBC:** Services at least every 15 minutes, and travel times less than 15 minutes.
  - **East Cambridge to CBC:** Service frequencies of at least 15 minutes, with travel times improving from 30-45 minutes to less than 30 minutes.
  - **Cherry Hinton to CBC:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, and travel times less than 15 minutes.
  - **Royston to CBC:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
  - **Cambourne to CBC:** Increased frequencies from a service every 30 minutes or more to one every 15-20 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.
- 7.18. If we can persuade current commuters to change routes by offering them a genuinely more attractive service we will go a long way towards addressing peak time congestion. Achieving these levels of service would mean that another 15,000 commuters would have a better journey to work by public transport than car.

7.19. **Figure 2: Work in progress representation of future bus services (one view of an interactive map in development)**



- 7.20. Someone traveling shorter distances to work, such as Waterbeach to the Cambridge Biomedical Campus, would be able to get to work in under 25 minutes; a significant reduction from their journey time today which can take up to 1 hour 15 minutes and require a change.
- 7.21. West Cambridge, where 14,000 planned new jobs are planned, could be served by outstanding public transport. Someone traveling longer distances such as from Haverhill would have the benefit of turn up and go services between 7:30-8:30am and a maximum total journey time of up to 50 minutes; more than halving today's actual travel times.
- 7.22. The future services are designed to significantly improve public transport journey times between out of centre locations. Despite only being around 10 miles apart, people living in Cambourne today working in Cambridge Science Park, would take between 80-110 minutes to get to work leaving at 8am using today's public transport network. The future services described above would enable them to get to work in under 30 minutes by public transport which would be a more competitive option than by car.

*Provision of Services for Smaller and Rural Areas*

- 7.23. Whilst the focus of congestion reduction is those biggest commuter flows, it will also be important to provide a good base level of service to residents of smaller towns and villages. Residents of the smaller towns and villages in South Cambridgeshire will not be left out of the step change in public transport we will deliver.
- 7.24. Investment in smaller places is likely to be focused on linking them with public transport nodes either:
- by providing a base level of conventional bus feeder services to link those villages to CAM phase 1 routes, travel hubs or the city centre; or

- where conventional services are unlikely to be viable, exploring the provision of on-demand bus services.

#### *Provision of Cycle and Pedestrian Links*

- 7.25. The focus of this section is the public transport offer, but for many we expect that cycling or walking will be the mode of choice and in a lot of cases cycle travel times compare favourably with car already. Cambridge is the city with the highest rate of cycling in the UK but more can and will be done to support people to cycle. The principal focuses of this will be:
- providing better, safer routes for people in South Cambridgeshire to cycle and walk into the city (including the proposed Greenway network);
  - providing safer more attractive routes across the city centre;
  - providing bikeshare facilities at travel hubs and in the city centre for the last leg of a public transport journey;
  - ensuring safe walking and cycling routes to access and leave travel hubs and CAM stops; and
  - providing more, and more secure, cycle parking in the city centre.

#### **Deliverability: Funding and Road Space**

- 7.26. The provision of viable, attractive public transport should significantly improve ridership and, as a result, revenues should also increase. However, most cities are not able to support a fully self-supporting bus network. London's bus network, which has very high ridership, runs at a net annual operating deficit of £600m and is therefore cross-subsidised by income from other sources. In Greater Cambridge the estimated revenue cost of an enhanced public transport network is £20m per annum. In the medium term, a new source of funding will need to be identified.
- 7.27. Delivery of a world class public transport system involves a likely doubling of public transport capacity by 2031<sup>5</sup>. There will be scope to rationalise and make more efficient use of buses and road space but there will also need to be substantial additional vehicles on the roads in particular cleaner, electric vehicles.
- 7.28. The journey times set out above cannot be achieved in today's city centre traffic and in much of the city centre there is not the physical space to provide full segregation with car traffic levels as they are. To deliver those improvements we will need to make more space for public transport in the city centre, by reducing the number of cars on the road.
- 7.29. The Strategic Outline Business Case for CAM is being developed and will give more detail on the optimal layout of the city centre network, but even with the delivery of a tunnelled central section (estimated at 2029), it will always be the case that more of the city centre's road space must be directed towards cycling, walking and public transport.
- 7.30. The next section considers options to deliver that reallocation of road space and revenue support through a range of demand management approaches.
- 7.31. Alongside this, it is proposed to consider other sources of funding to ensure all options are explored.

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<sup>5</sup> Based on a 'policy on' scenario in 2031 where public transport is the future mode of choice for all, including all additional new commuters associated with 44,000 new jobs in Greater Cambridge.

## Demand Management Options

- 7.32. Managing the demand for car travel is an important component in any transport network focused on sustainable modes. To meet the target of 24 per cent reduction in car traffic by 2031, there needs to be more than simply the provision of services and investment in infrastructure (supply). There must be efforts made to manage demand itself.
- 7.33. Demand management can be based on physical measures (such as access or parking restrictions) or price-based measures (for example parking charges or road pricing). All offer a means of reducing the number of vehicles, and could have several important consequences for Cambridge:
- Reduced congestion in the city centre and around major employment centres, leading to improved reliability, competitiveness and viability of public transport; more road space for public transport, cycling and pedestrians; and improved air quality.
  - A potential source of revenues that could be ring-fenced for public transport service or infrastructure improvements, including the costs of maintaining highway assets. These improvements would further attract people away from car travel, creating a virtuous cycle.
- 7.34. In any scenario it is envisaged that a baseline package of measures would be implemented that would include the measures listed in Box 1, below. These measures will contribute to demand reduction targets but are very unlikely to be able to achieve them alone. However, none of these interventions are expected to be able to reduce demand to manageable levels either individually or collectively or raise the funds to pay for new, enhanced public transport services.

### Box 1: Baseline demand management interventions

- Investment in delivering the world class public transport system outlined in Section 4 above, to make sustainable travel more attractive and convenient.
- Targeted on-street parking restrictions (such as residents parking zones)
- Working with employers to reduce the amount of workspace car parking offered, with incentives to transfer workplace parking to more economically productive uses.
- Some element of physical restrictions and road space reallocations in the city centre to discourage through traffic and increase space available for public transport, cycling and walking (the Spaces & Movement SPD is underway and will report in Spring 2019 with specific recommendations).
- Traffic signal optimisation to prioritise bus, cycle and pedestrian movements across the network to reduce delays and improve flow.

- 7.35. Road space prioritisation – reducing the amount of road space allocated to private vehicles and instead prioritising for public transport and active modes of transport – could help to manage demand in the city centre. The benefit is that by in effect prioritising traffic types, it enhances the reliability of public transport, in turn enhancing its attractiveness as a mode; and shifting more of the burden of congestion and travel delays to general traffic. Road space allocation can be in the form of specific modes, in specific lanes, or prioritised in terms of time of day. Physical demand management measures can also counteract a ‘creep back’ of car traffic and have been used to good effect in London with large scale reallocations of road space to bus and cycle priority following the introduction of the Congestion Charge.
- 7.36. Traffic modelling carried out to test the impact of strategic road closures in the city centre suggest that more traffic will re-route around the centre than switch to sustainable modes – traffic displacement rather than traffic reduction. This may be part of the solution to allow reallocated road space and improved public realm but is unlikely to be sufficient alone to meet traffic reduction targets.



- 7.37. Another option is price-based demand management. Preliminary analysis has been carried out to understand the likely impact of price-based measures in terms of congestion reduction, mode shift and revenue generating potential. These measures are:
- Parking charges (on & off street)
  - A Workplace Parking Levy
  - Pollution charging (in parallel with developing proposals for a Clean Air Zone)
  - Intelligent charging (which might be specified in several different ways).
- 7.38. Preliminary modelling of charging impacts on traffic suggest that various options have the potential to deliver the target traffic reduction of 24 per cent over current levels. Competitiveness analysis suggests that the combination of CAM Phase 1, transformed bus services and demand management would make public transport the best option for around 45,000 current commuters (which represents 85% of the most popular commuter routes). New residents of Cambourne, Northstowe, North West Cambridge, Waterbeach, East Cambridge and Trumpington working in Cambridge Science Park, CBC, West Cambridge or the City Centre would all have, competitive public transport commuting options (Appendix 4).
- 7.39. Charging, depending on how it is set up, could generate between £40m and £60m annual net revenue. This revenue stream offers significant potential to support public transport service improvement costs and raising the potential to make further investments in transport infrastructure such as feeder services to access CAM, lower fares, significant improvements in road and cycleway maintenance, or leverage to fund investment in public transport infrastructure.
- 7.40. A summary of the pros and cons of various physical and pricing demand management options is contained in Appendix 5.

## **8. Other Funding Sources**

- 8.1. Other sources of funding could be explored to deliver the revenue required to support a significant enhancement in public transport provision. This could include wider tax or levy options. Whilst providing revenue, such sources would not deliver a reduction in road use and other measures would be required to free up road space for public transport services.

## **9. Equity and Equality**

- 9.1. Although the scheme options are at an early stage, elements including pricing will clearly have differential impacts depending on individuals' specific circumstances, including income. Likewise, the quality (or otherwise) of public transport provision can have profoundly different impacts on different groups of people.<sup>6</sup> It is important that more detailed work on potential measures clearly identify impacts, both positive and negative, of these measures on different groups of people and makes explicit the likely equalities impact of any measures proposed. The equity implications will be one of the key criterion by which options are assessed and compared.
- 9.2. Consistency and fairness for those living outside the city boundary, compared with those living within the city is important. ANPR data suggests that around 50 per cent of all recorded trips in Cambridge start and end within Cambridge.<sup>7</sup> This is a principle we would want to test through the recommended public engagement.
- 9.3. The Public Sector Equalities Duty places a requirement on the public sector to actively promote equality for groups sharing characteristics protected under law as well as to avoid increasing inequality or discrimination faced by people with those characteristics. Protected characteristics under the Equalities

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<sup>7</sup> Eliasson, J Centre for Transport Studies Stockholm. *Is Congestion Pricing Fair?* 2016

<sup>8</sup> Cambridge ANPR survey report, Oct 2017

Act 2010 are: age; sex; gender identity; race; religion; sexual orientation; marital status; pregnancy & maternity; and disability. In addition to those characteristics protected by law it is good practice to consider disproportionate impacts on those with low incomes.

- 9.4. A preliminary Equalities Screening Assessment has been carried out and will be updated as technical work progresses on any or all options for demand management. The recommended public engagement event would seek public and stakeholder comment on the equality and equity implications of different options.

**Table 1: Preliminary equalities screening of City Access public transport and demand management strategy**

Protected characteristic / target group	Preliminary impact screening
<b>Age</b>	<ul style="list-style-type: none"> <li>Both young and old people are less likely to own and drive cars, and more likely to be reliant on public transport.</li> <li>Measures that provide a revenue stream to support better public transport services and/or facilitate the reallocation of road space that improves public transport or walking/cycling provision are likely to positively promote equality for the young and old.</li> <li>The negative health impacts arising from air pollution due to vehicle emissions are disproportionately damaging for children and older people.</li> </ul>
<b>Sex</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Gender identity</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Race</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Religion</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Sexual orientation</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Marital status</b>	<ul style="list-style-type: none"> <li>No anticipated equalities impact of demand management mechanisms.</li> </ul>
<b>Pregnancy &amp; maternity</b>	<ul style="list-style-type: none"> <li>Potential for both minor positive and minor negative impacts.</li> <li>People travelling babies are more likely to be encumbered when travelling and may prefer to use a car where possible.</li> <li>For those without access to a car, more and better public transport is likely to make use of public transport with a small baby easier and more accessible.</li> </ul>
<b>Disability</b>	<ul style="list-style-type: none"> <li>Likely to have mixed impacts.</li> <li>It is assumed that blue badge holders will be exempt from road pricing mechanisms which minimises the scope for negative equalities impacts.</li> <li>Physical demand management may have negative equalities impacts if disabled people are prevented from using cars to access parts of the city.</li> <li>Those with disabilities that do not qualify for a blue badge (for example, those with autism) may nevertheless find use of public transport challenging. Measures that increase the cost or difficulty of car use for these groups may have adverse equalities impacts.</li> <li>On the other hand, for those disabled people that are reliant on public transport (including but not limited to those with visual impairments) demand management measures that improve public transport have the potential to positively promote equality.</li> </ul>
<b>Low income</b>	<ul style="list-style-type: none"> <li>Likely to have mixed impacts.</li> <li>In many places there is a link between deprivation and exposure to poor air quality. This can be masked when looking at formal deprivation data which looks at neighbourhood level because, in general, pollution levels are worse along main roads and in many neighbourhoods, this will be where the cheapest housing is located.</li> <li>Nationally, the poorest groups in society are much less likely to have access to a car and much more likely to be solely reliant on public transport or to make more PT journeys.</li> <li>Demand management measures that improve the provision of high quality public transport therefore have the potential for positive equalities impacts.</li> <li>Air quality measures can have a greater impact upon people with older cars</li> <li>Shift workers and commuters travelling outside of normal hours can be more heavily reliant upon the private car given limited public transport options.</li> </ul>

## **10. Phasing and Implementation**

- 10.1. Phasing will be a critical element of any package development. A substantial and sustained improvements in public transport, walking & cycling travel alternatives is required as a precursor to implementation of other City Access measures.

## **11. Vision and Principles of a Second Big Conversation**

- 11.1. Experience from the first Big Conversation demonstrates that congestion is a major issue facing those who live, work and travel in Greater Cambridge. To better understand the impact of different options for tackling this, and to give local people the opportunity to engage in the early stage of thinking, it is proposed to undertake a second phase of public engagement.
- 11.2. The second Big Conversation would have a dual focus – to better understand the potential impacts of public transport service improvements, and of different options for tackling congestion and managing demand for road space. It would set out the planned public transport improvements, the offer to different groups of people including those who currently rely on the car, and seek feedback on funding options and priorities, and how different options around services (e.g. frequency and pricing) would support modal shift. It would also show how, by themselves, these improvements are unlikely to be enough to create the journey-time and cost improvements that support modal shift, and seek views on how we could reduce congestion and use different demand management techniques to free up road space and potentially fund a better public transport system.
- 11.3. The conversation could also explore the public appetite for examining other sources of funding for improvements to local public transport services including council tax or business levy.
- 11.4. At this stage the conversation would be about the principles of how we manage demand rather than consulting on the specifics of any scheme. At the same time, it will be important to bring to life the public transport offer and choices, as well as how any demand management system could work. This would be an opportunity to engage people living in, working in and visiting Cambridge on how best to tackle the issues set out in this paper. As well as exploring practical, equality and financial impacts the conversation would also look at well-being and quality of life impacts, including air quality.
- 11.5. It will be important to obtain robust feedback to support future decisions. In particular, given the potential equality impacts, we need to ensure that we hear from harder-to-reach groups. As well as offering the opportunity to attend events and fill out a survey to all who are interested, we envisage that the conversation will include an independent survey covering a representative sample of people.
- 11.6. One option for exploring a cross section of views would be to ask an independent body to run a citizens' assembly. These typically involve around 100 participants, selected so as to be representative of the impacted groups, who meet to understand the evidence and discuss and propose a solution. They are advisory in nature, offering the opportunity to understand the issues in greater detail.
- 11.7. In addition, specific business engagement events and meeting organisations with particular needs, for example the police and ambulance service would be included. The conversation should engage the whole travel area, not just the area covered by the GCP, and we will be looking at how best to achieve this – e.g. by advertising the survey more widely, and by running events outside the area.
- 11.8. Preliminary examples of the questions we would ask as part of the conversation were set out in the Joint Assembly Report. Following comments from the Assembly, the questions will be revised following any Board decision to proceed with the engagement. This will include an independent QA.

## **12. Summary**

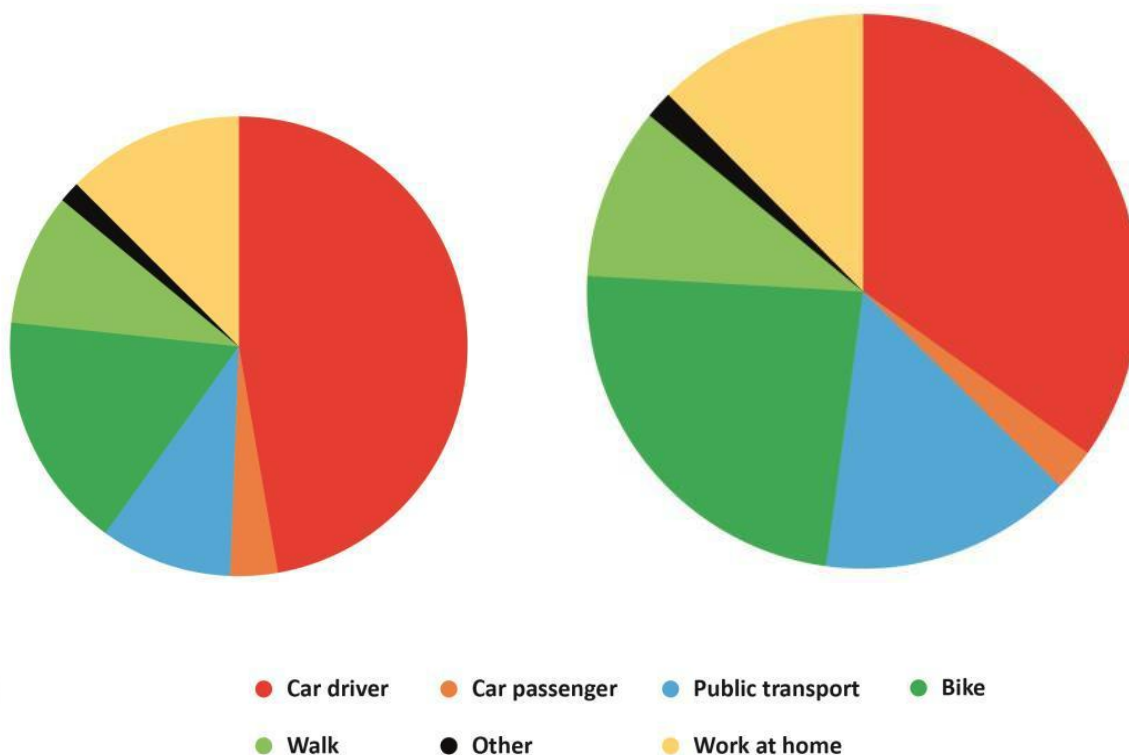
- 12.1. This paper seeks to provide greater shape and definition to the vision, principles and definition of a world class public transport system for Greater Cambridge. It is predicated on providing fast, reliable public transport routes into and through the city, prioritising commuter traffic for mode shift and supporting the public transport system with world class cycling and walking facilities. This will improve quality of life for residents and employees, support Cambridge's continued economic success and improve air quality and thereby health outcomes in the City.
- 12.2. This public transport system will require both infrastructure investment and service improvement. To deliver a truly world class system is likely to require significant ongoing subsidy as well as increased road space and priority. The paper further sets out the range of options for achieving this through physical and price based demand management mechanisms.

## Appendix 1: Implications of growth for public transport, walking and cycling

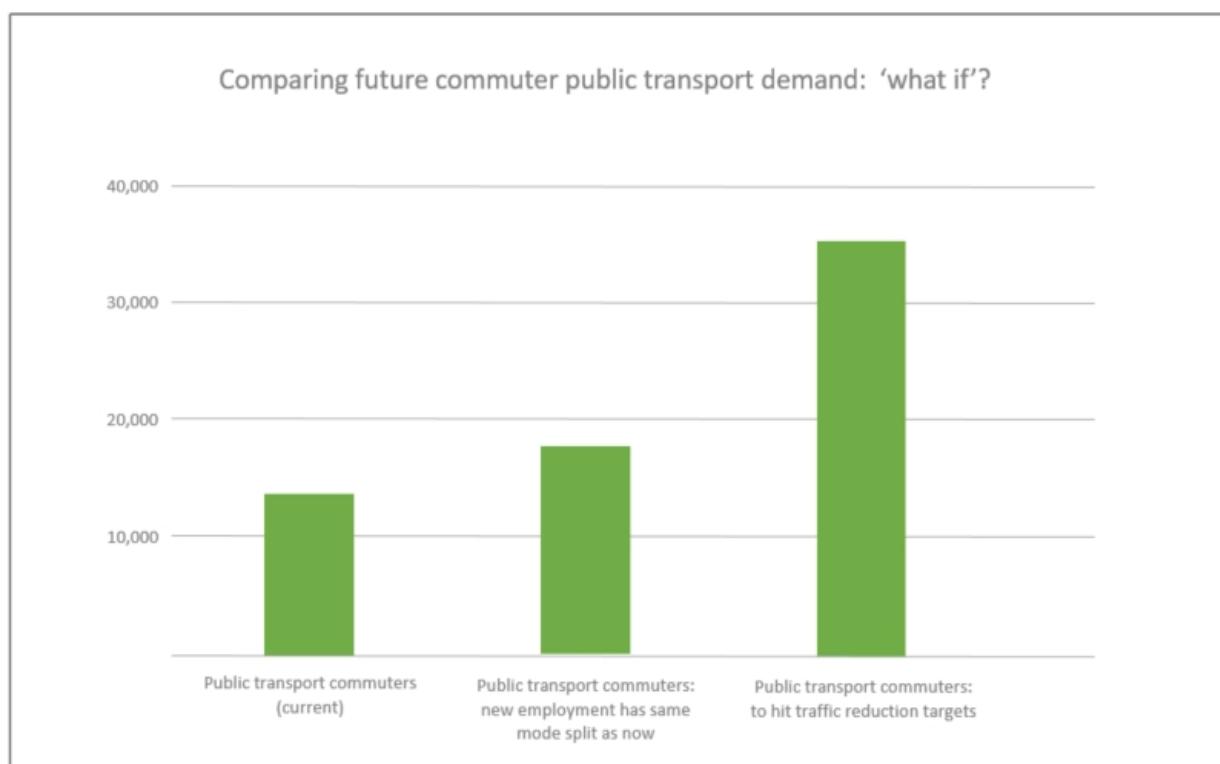
A significant growth in walking, cycling and public transport is required as Greater Cambridge continues to grow:

**2011: 88,000 jobs in Greater Cambridge**

**2031: 132,000 jobs in Greater Cambridge**



### Analysis of public transport demand in different scenarios:





## **Appendix 2: Public transport competitiveness analysis for key employment locations**

Generalised cost analysis has been undertaken for key commuter routes in Greater Cambridge. This can then be used to test whether current routes offer a competitive public transport option compared to the private car, and the impact of different interventions on that competitiveness.

The values presented here are ratios expressing the relative difference between generalised cost by public transport and generalised cost by private car. Positive values denote that public transport has a higher generalised cost (private car is a more attractive option than public transport); negative values denote that public transport has a lower generalised cost (public transport is a more attractive option than private car).

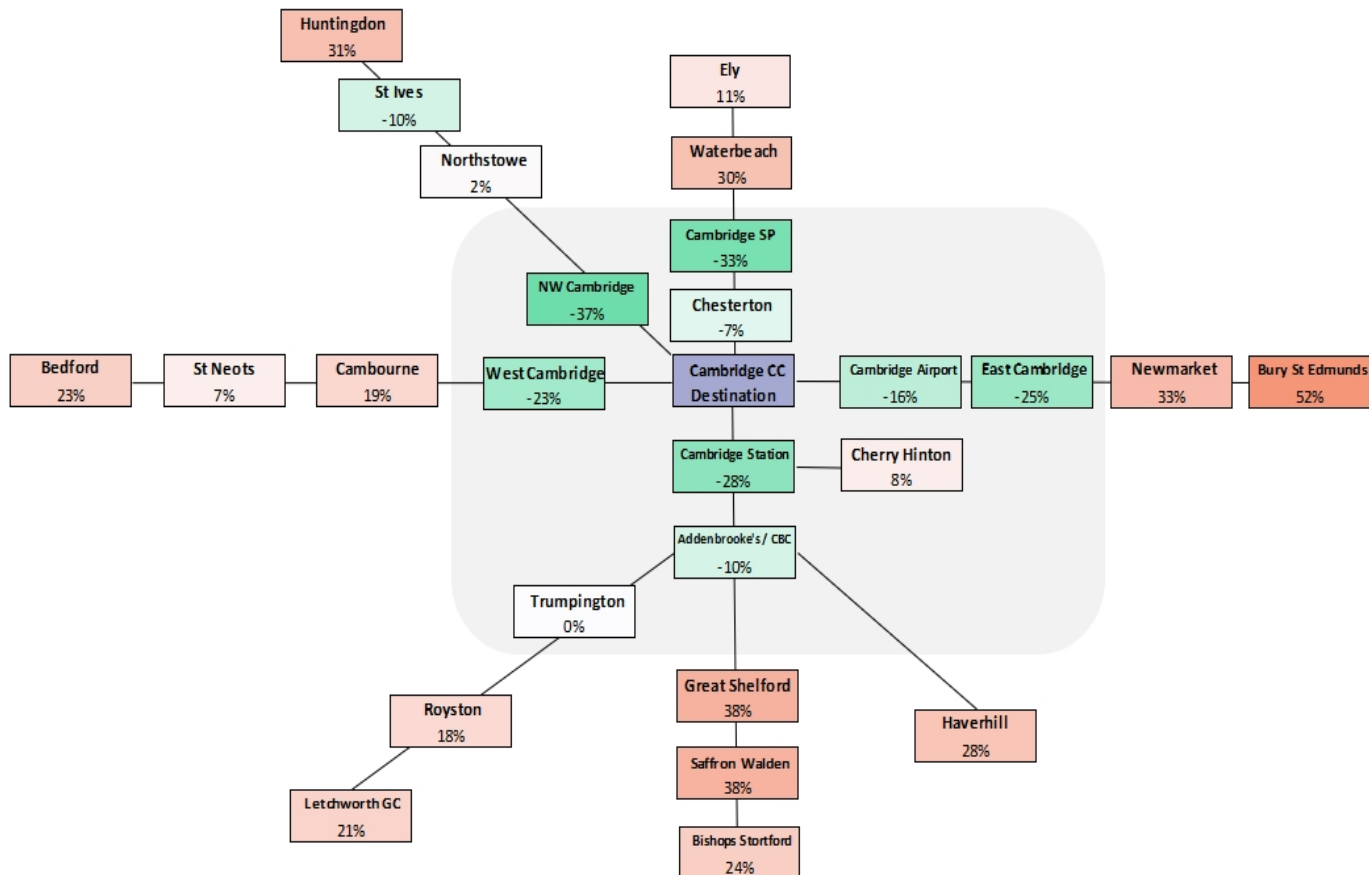
Competitiveness analysis has been undertaken for key employment locations in four scenarios:

- Now – the current situation
- With GCP public transport routes
- With GCP public transport routes and public transport service improvements
- With GCP routes, service improvements and demand management changes

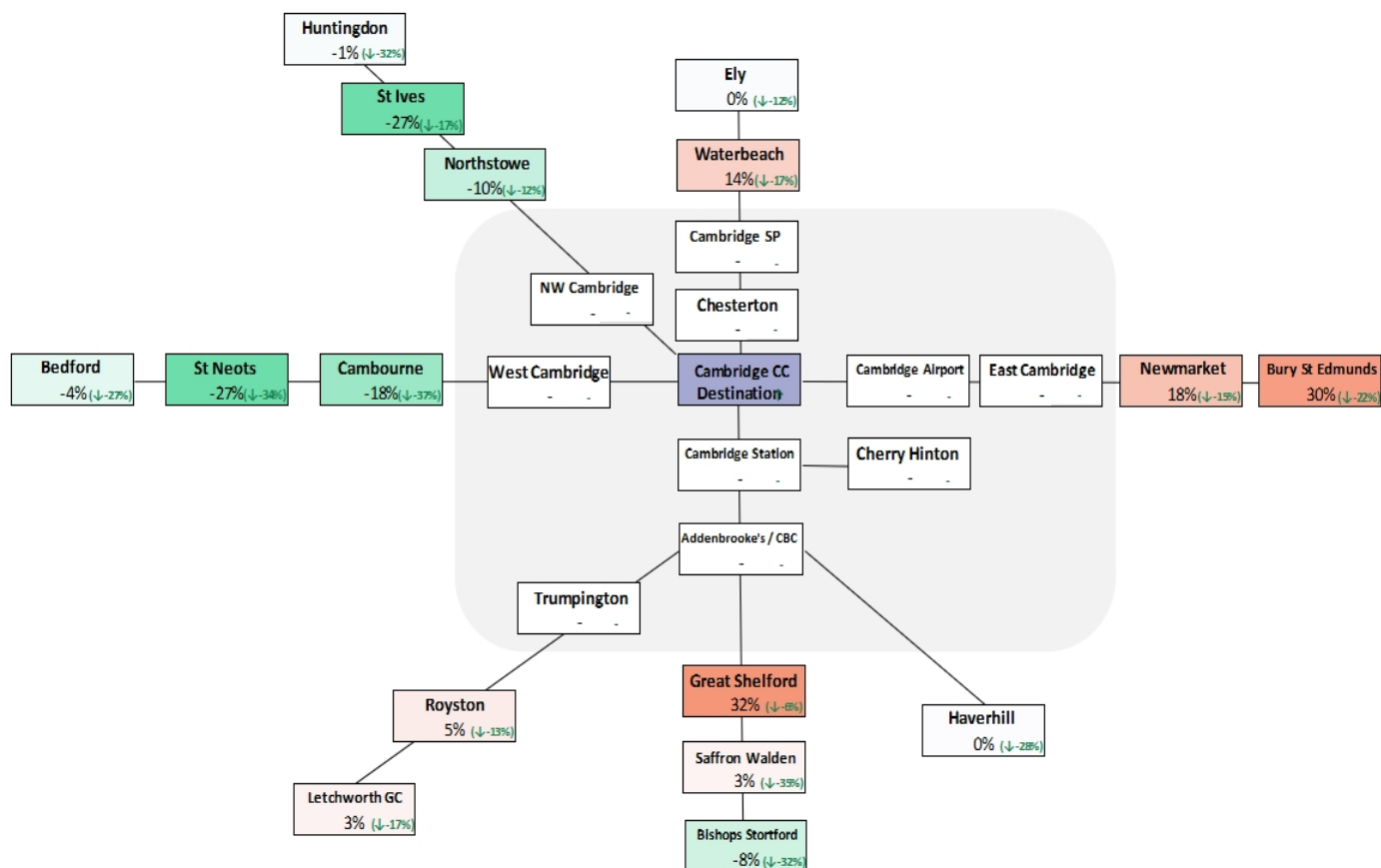
The results are set out below.

## A: City Centre

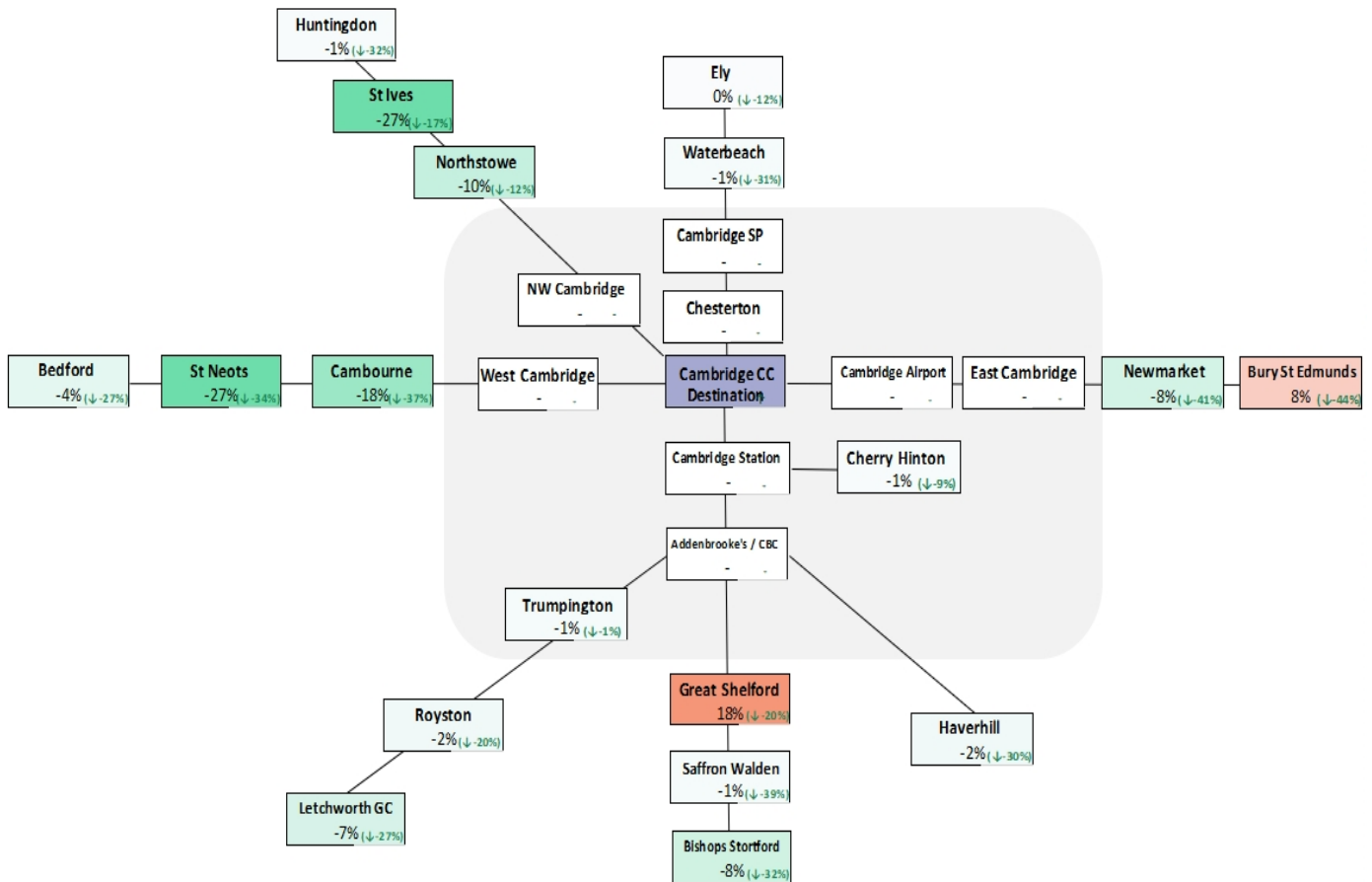
Now



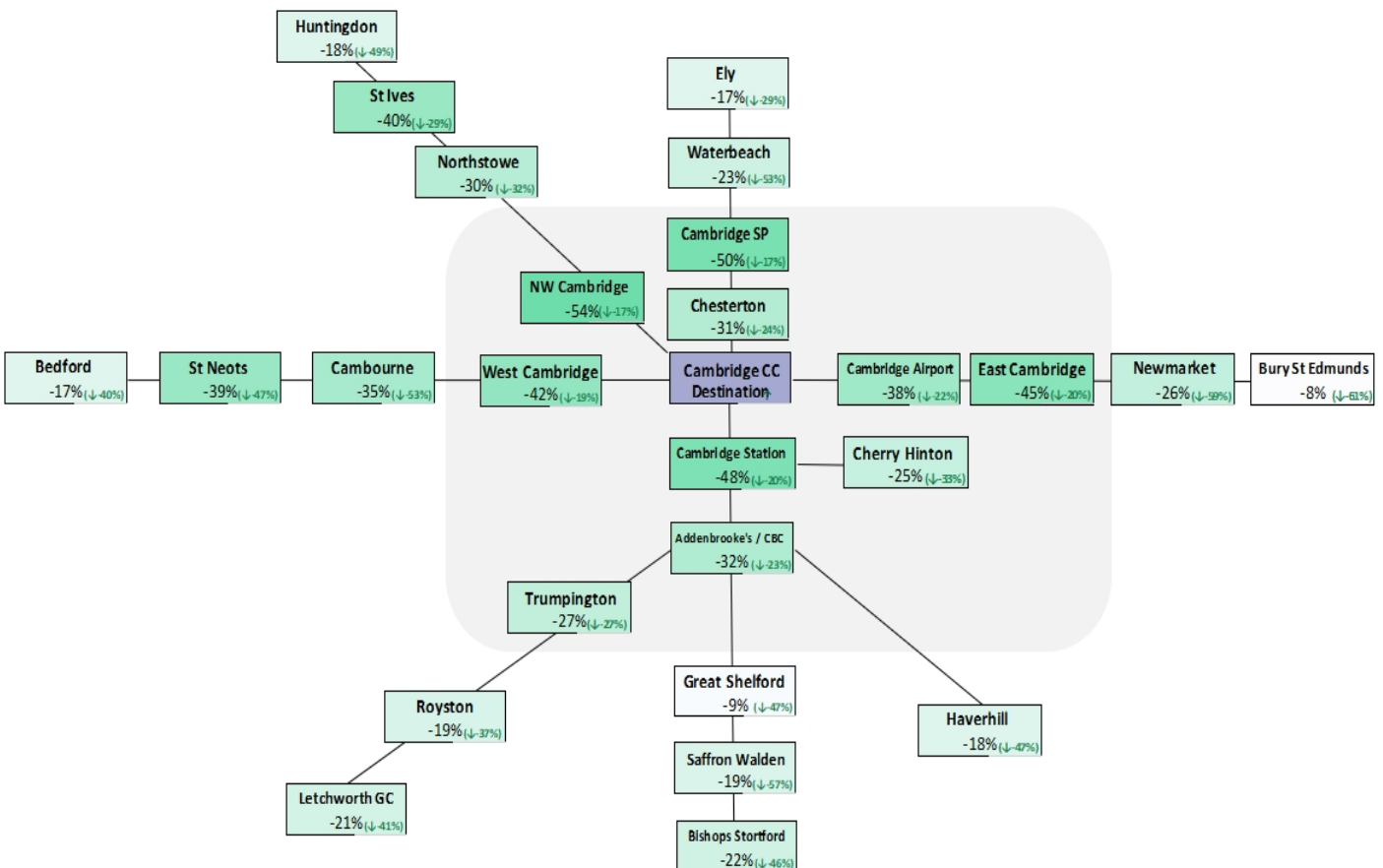
With GCP public transport routes



With GCP public transport routes and public transport service improvements

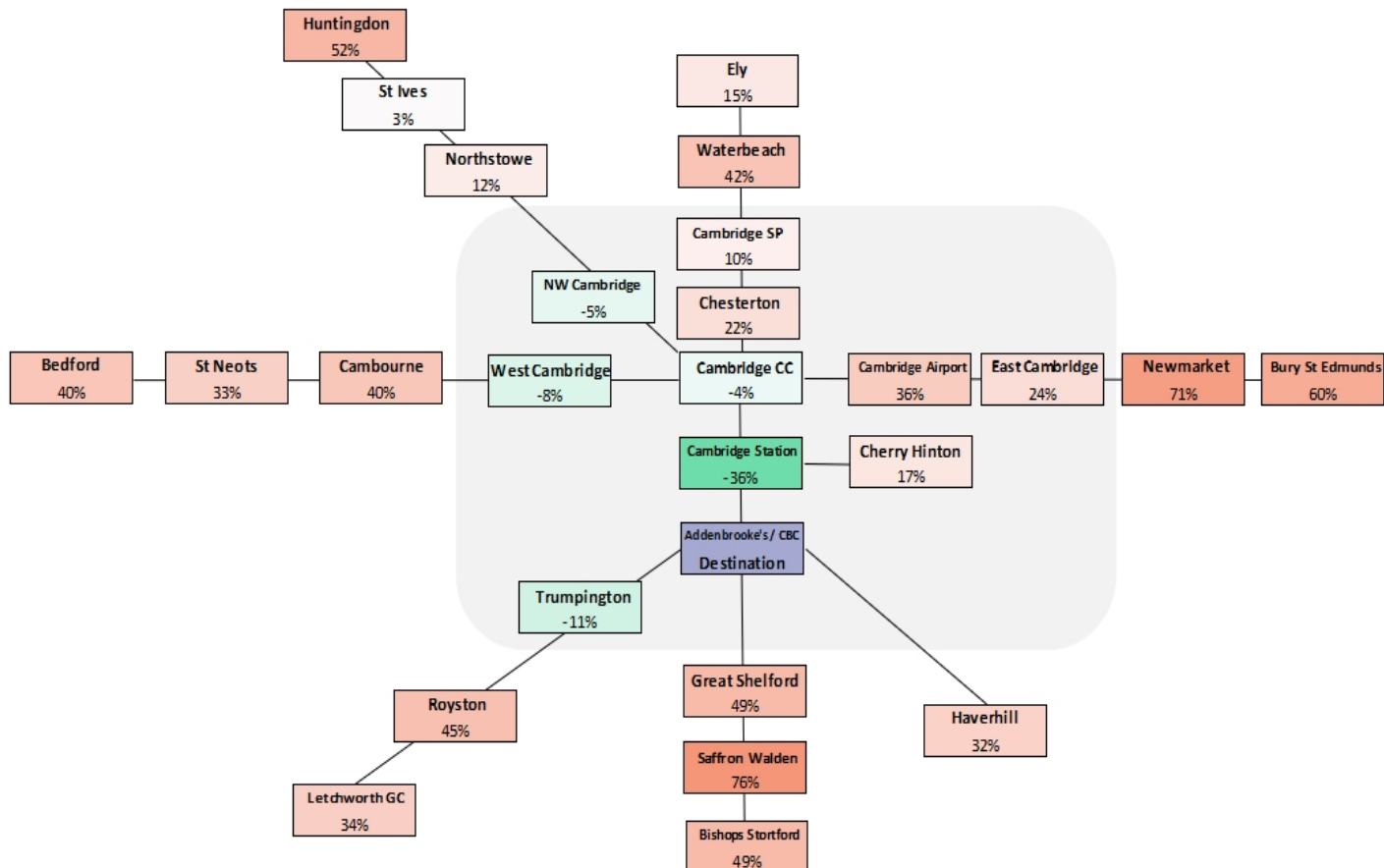


With GCP routes, service improvements and demand management changes

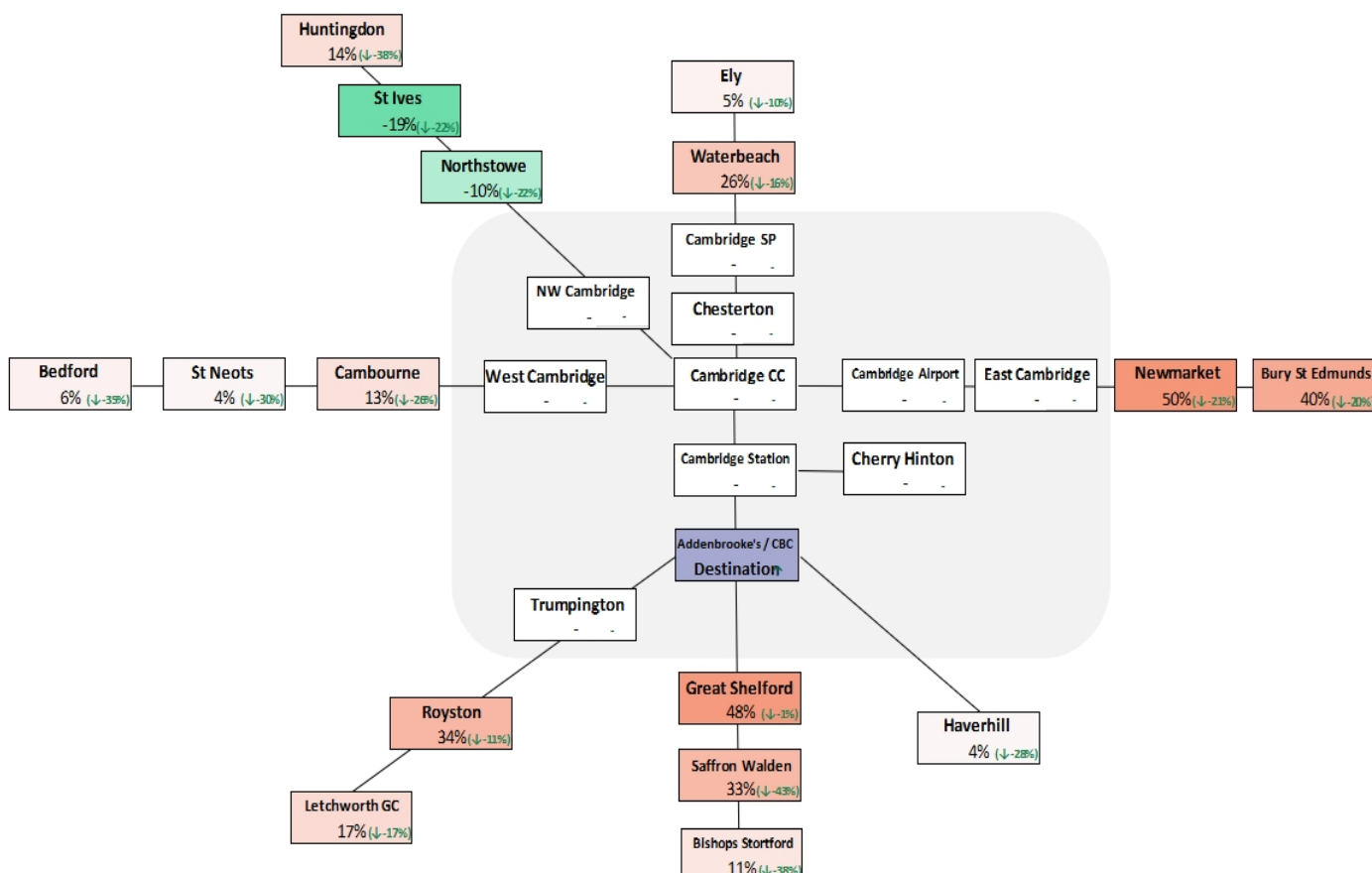


## B: Cambridge Biomedical Campus / Addenbrooke's Hospital

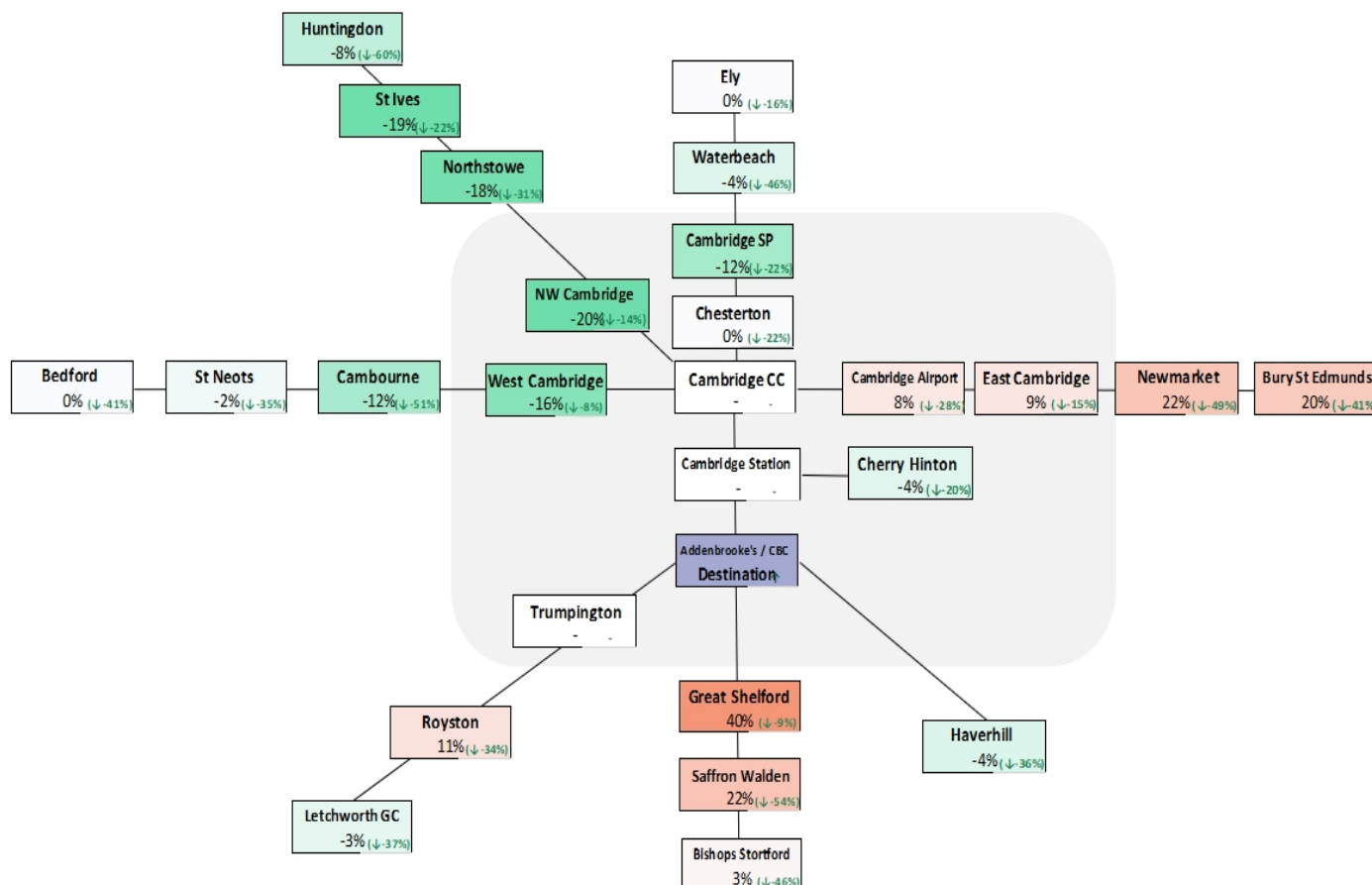
Now



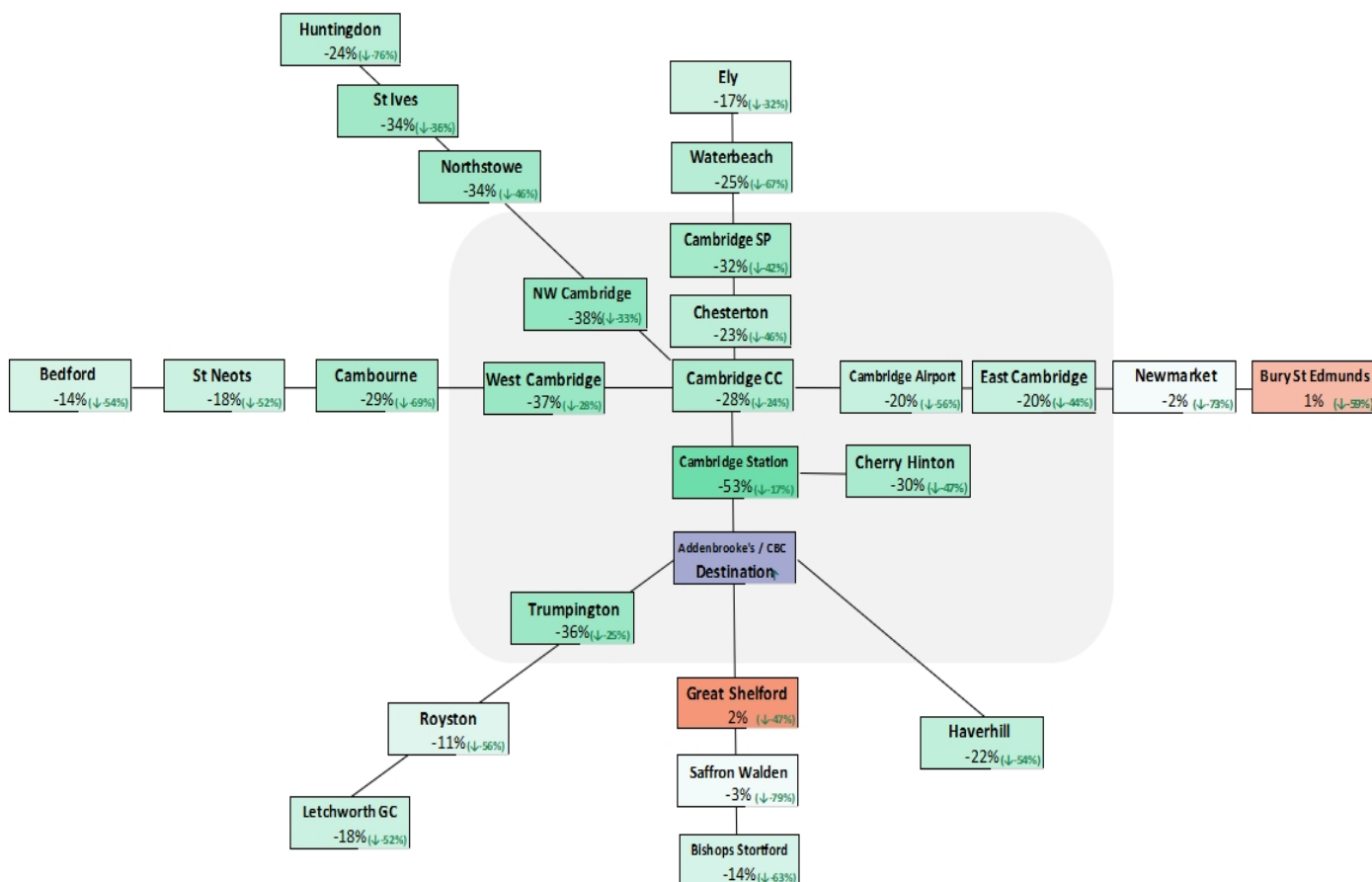
With GCP public transport routes



With GCP public transport routes and public transport service improvements



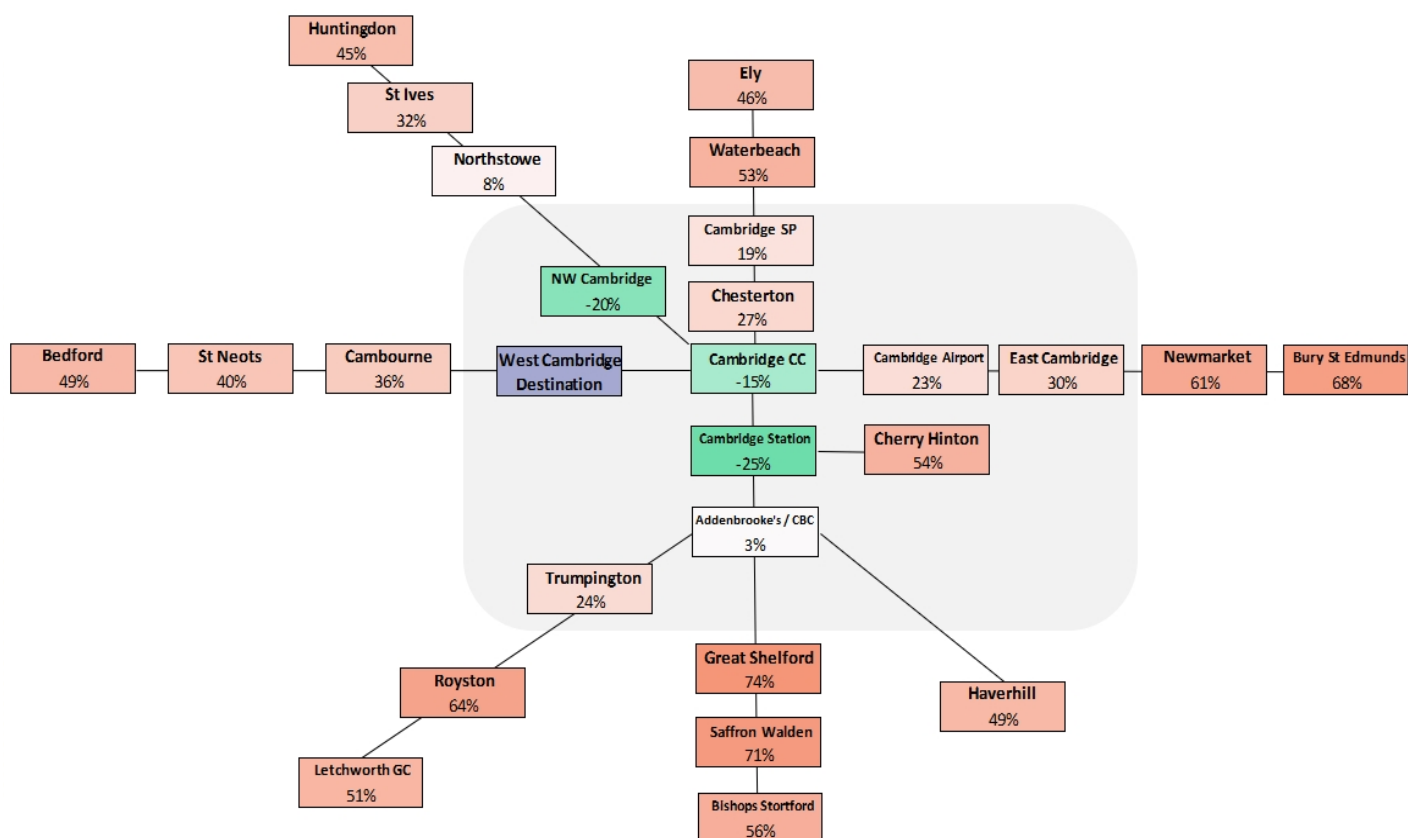
With GCP routes, service improvements and demand management changes



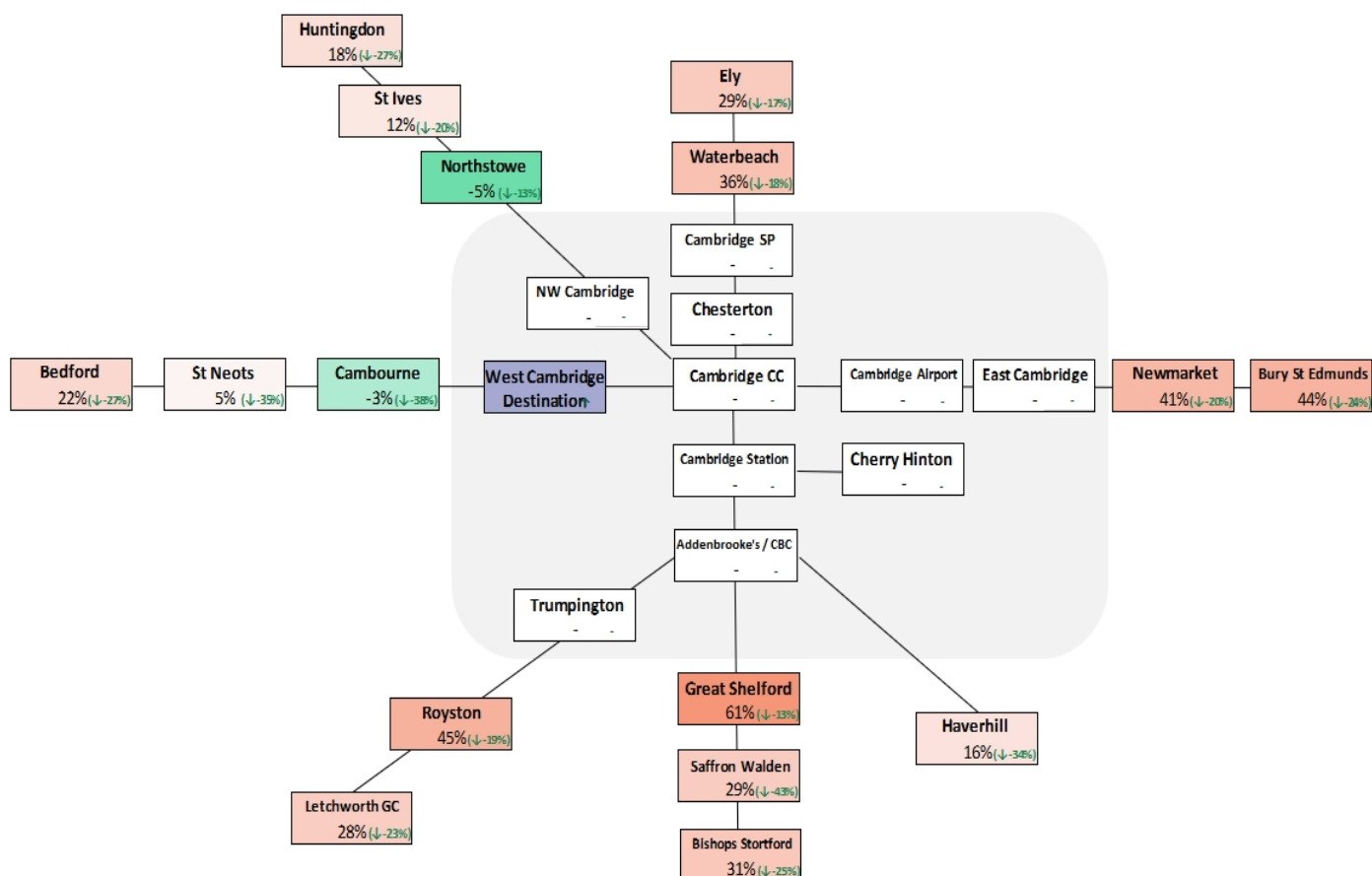


## C: West Cambridge

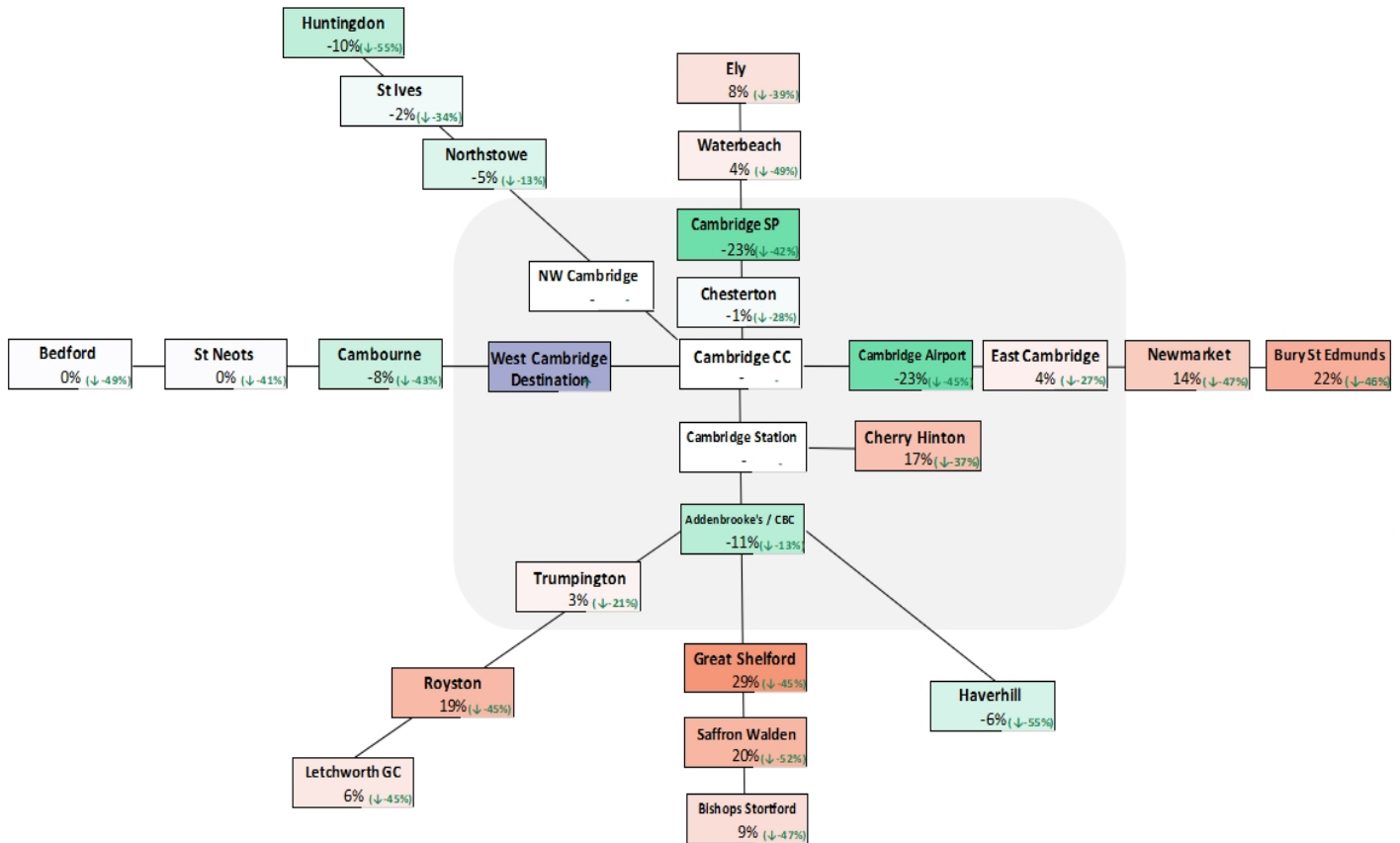
Now



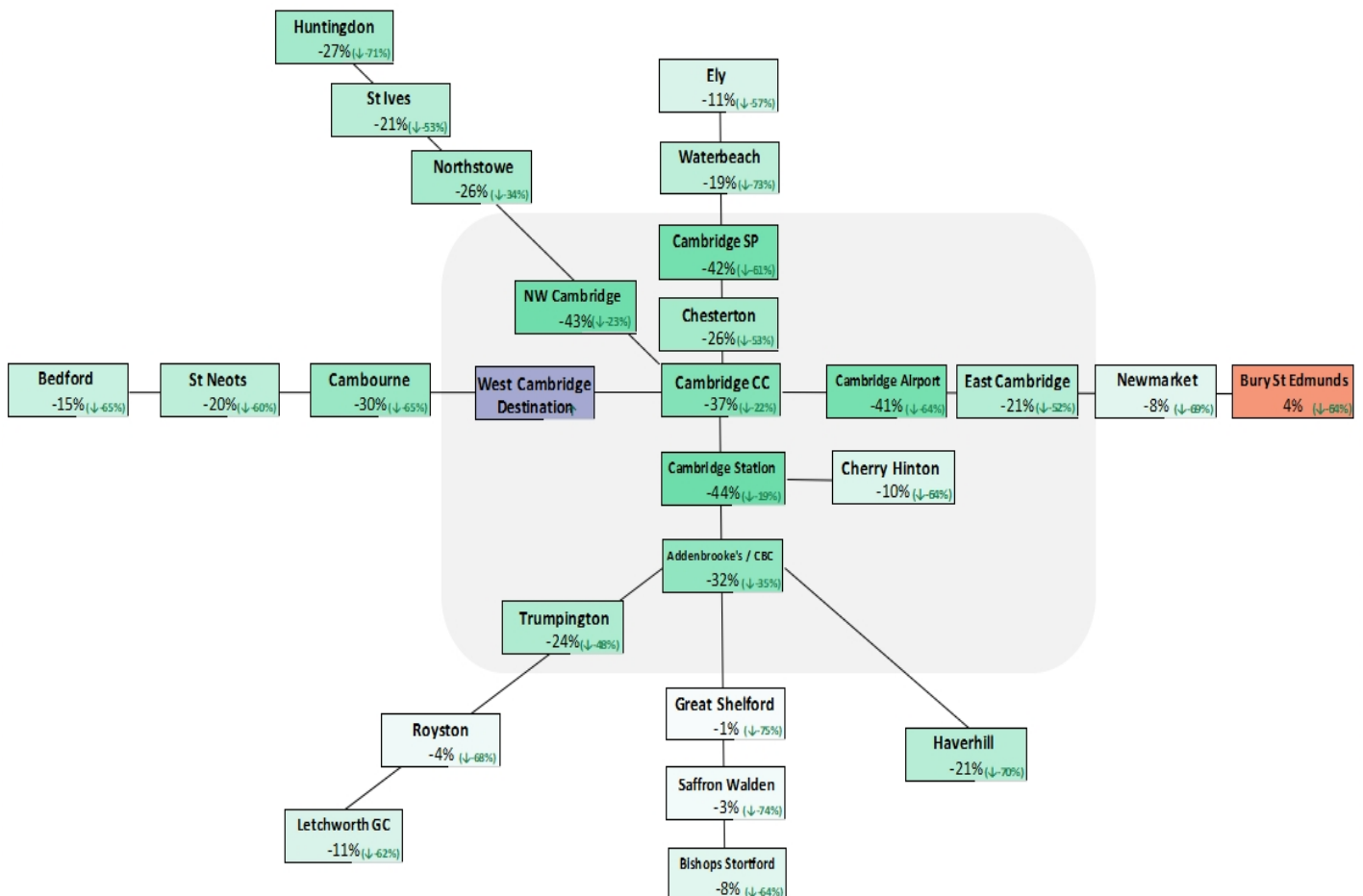
With GCP public transport routes



With GCP public transport routes and public transport service improvements

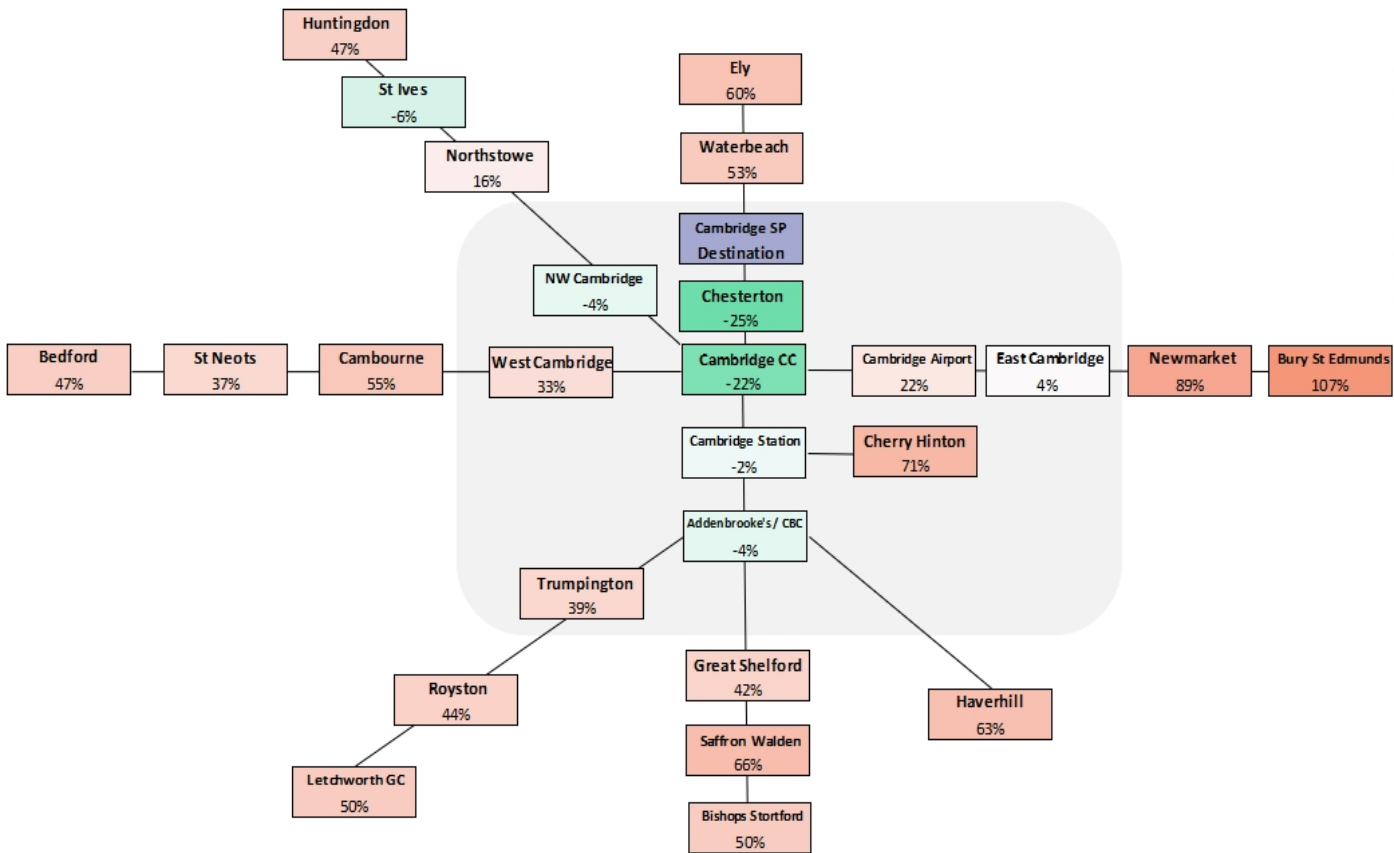


With GCP routes, service improvements and demand management changes

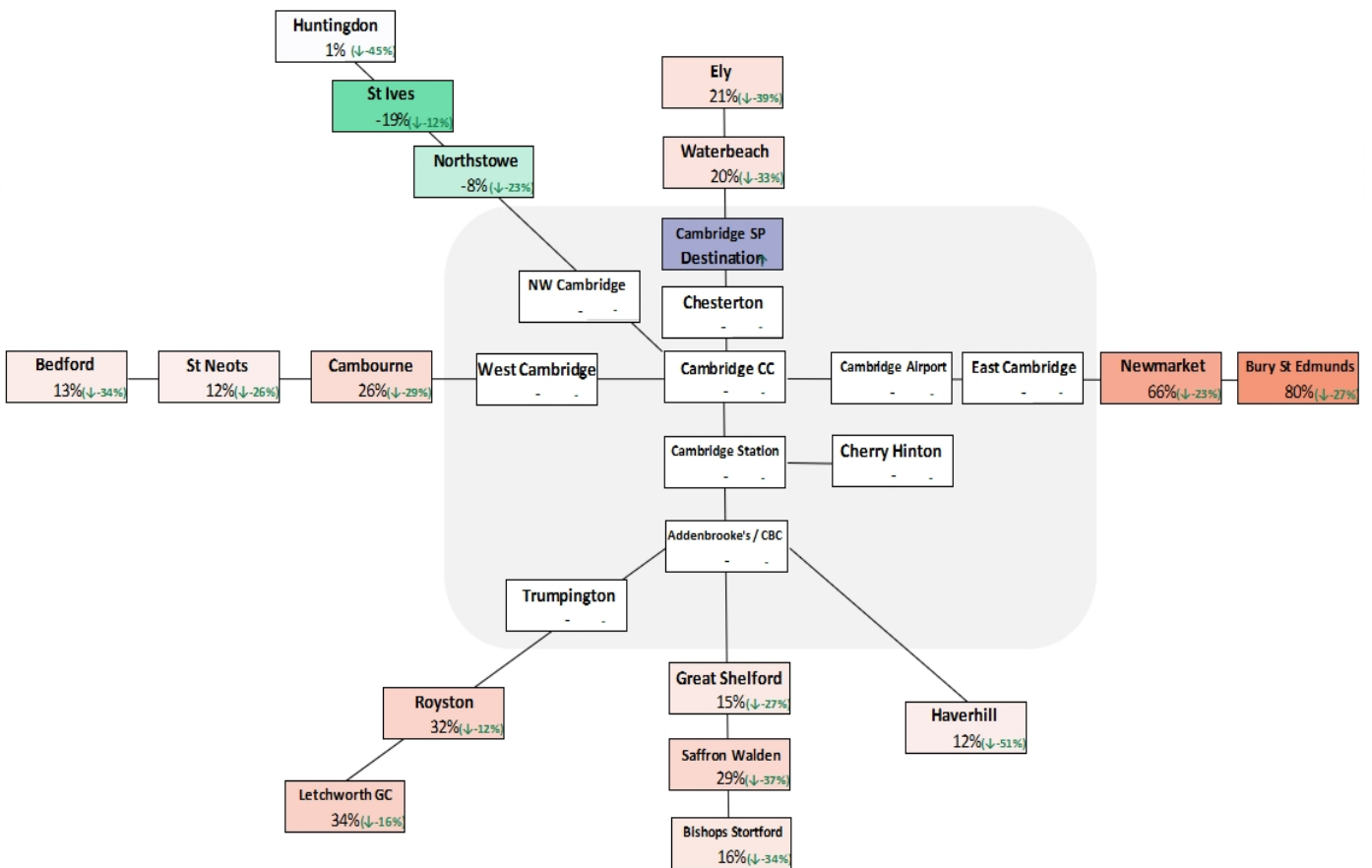


D: Cambridge Science Park

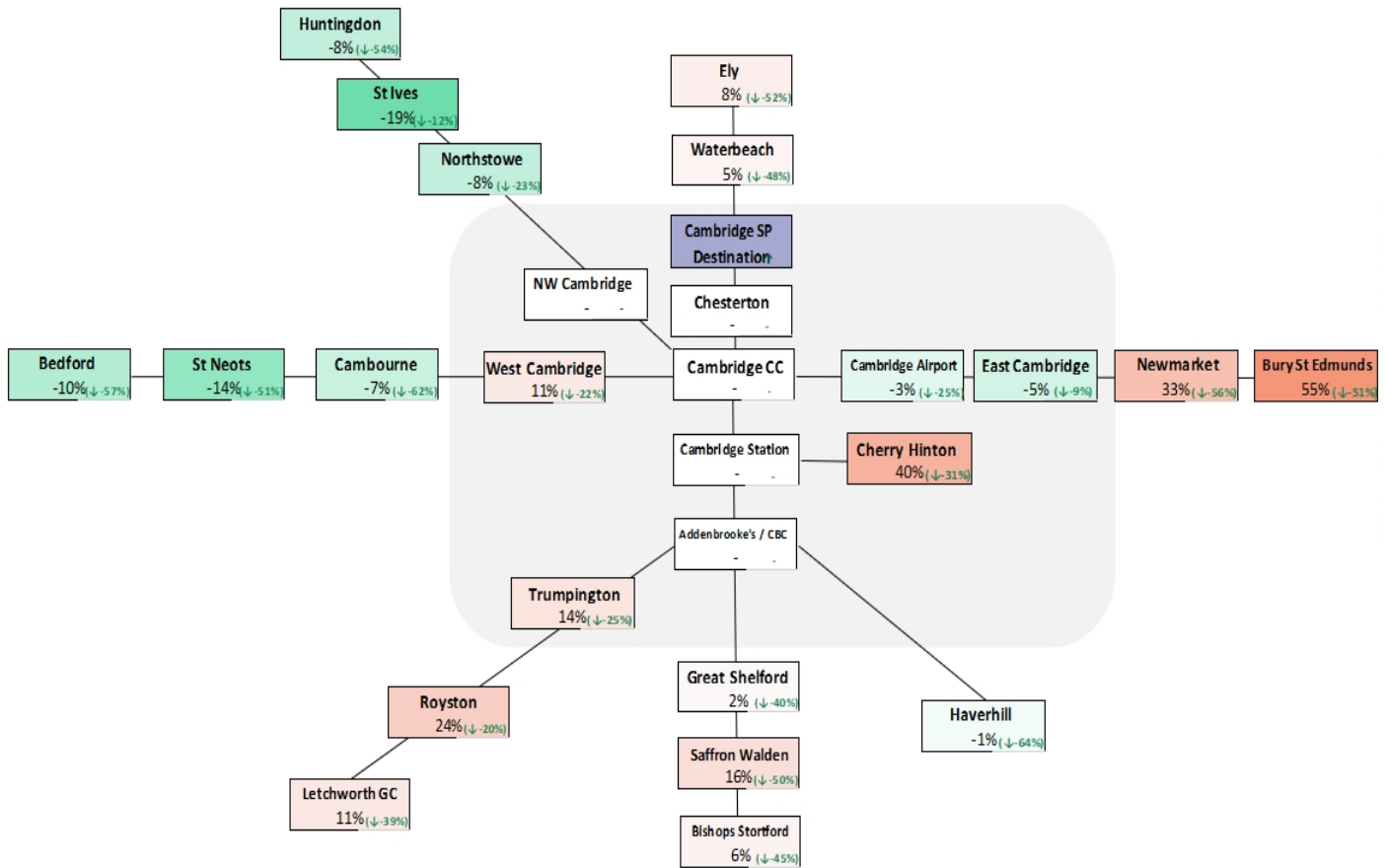
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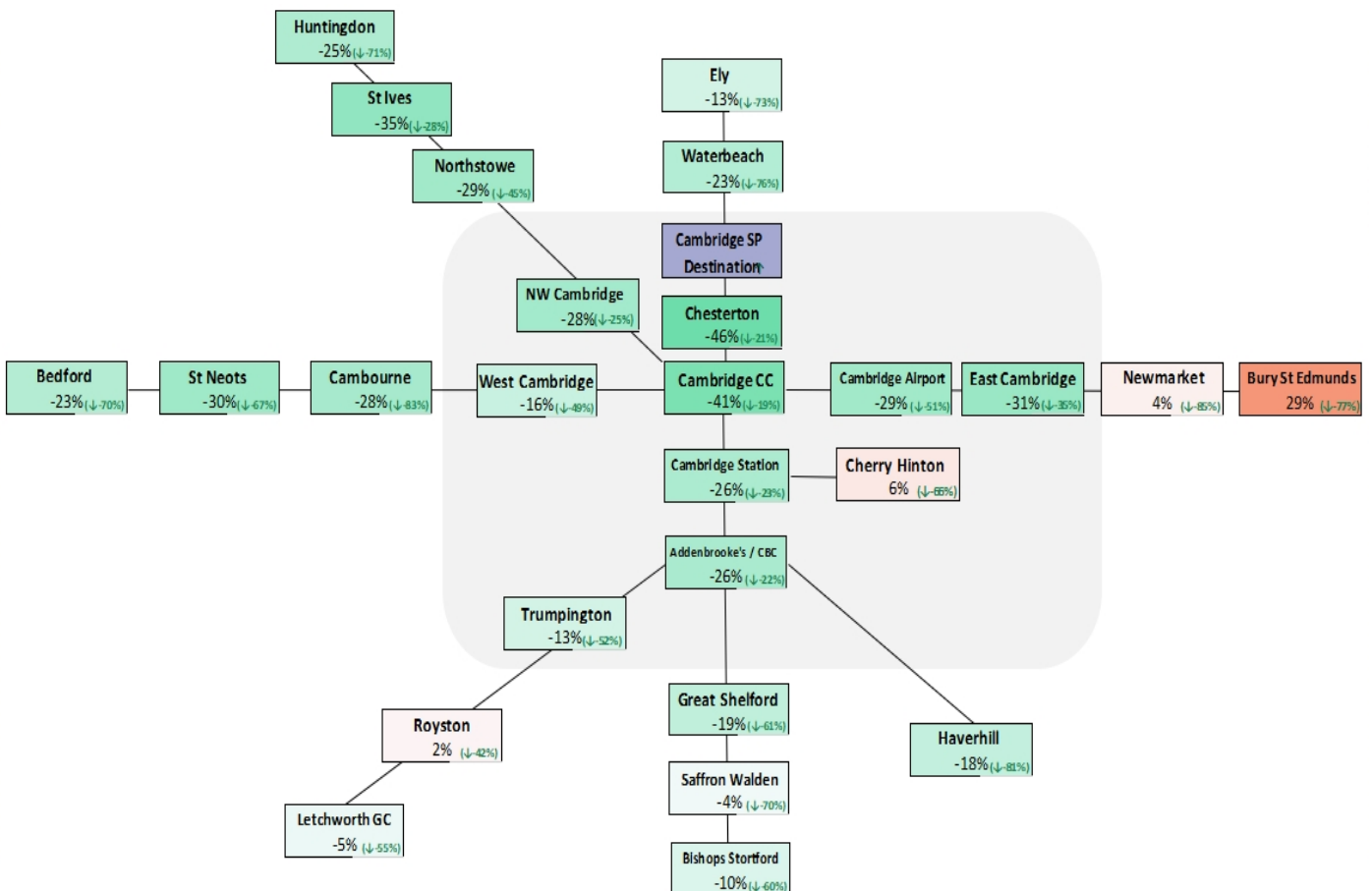
With GCP public transport routes



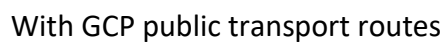
With GCP public transport routes and public transport service improvements



With GCP routes, service improvements and demand management changes

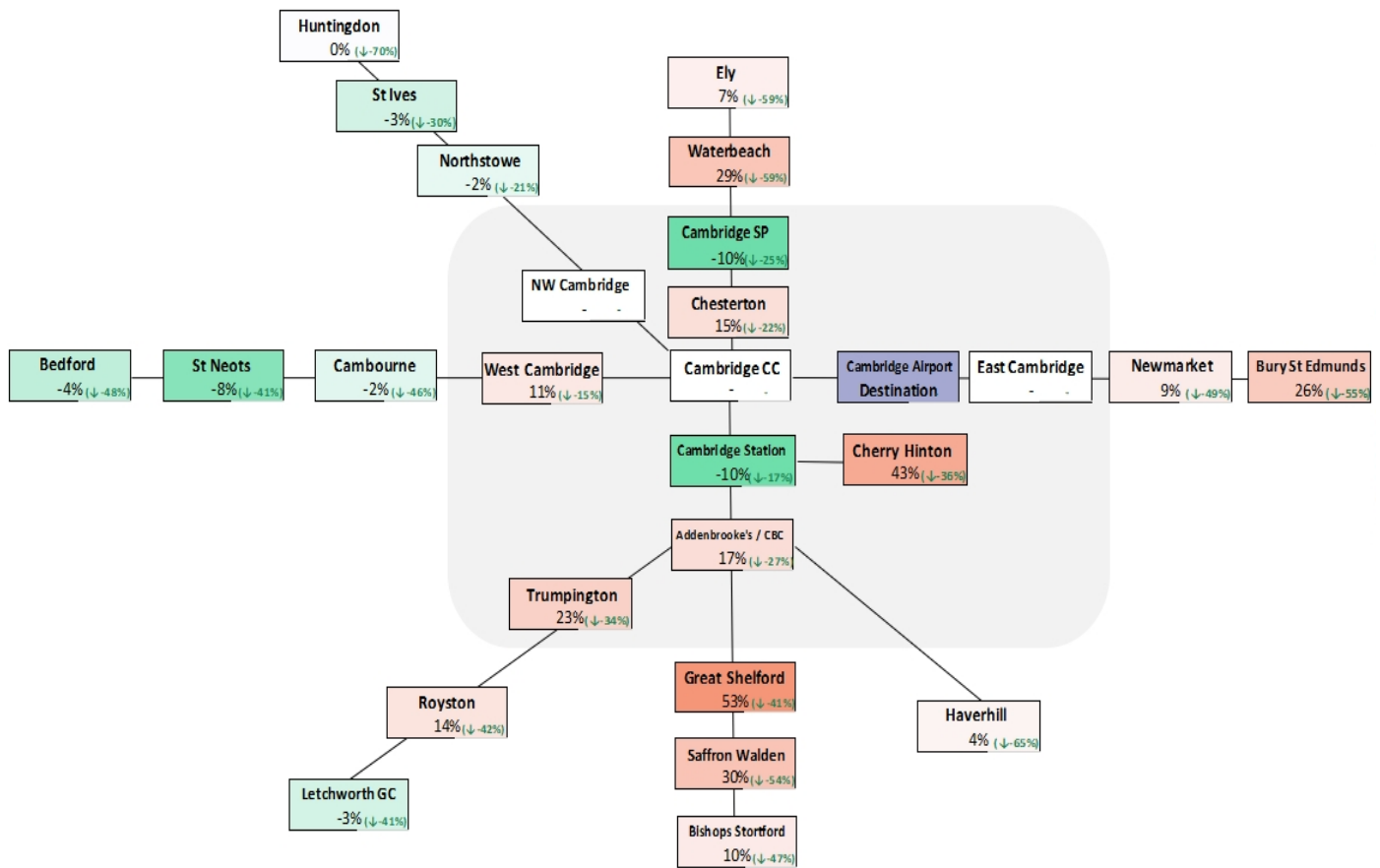


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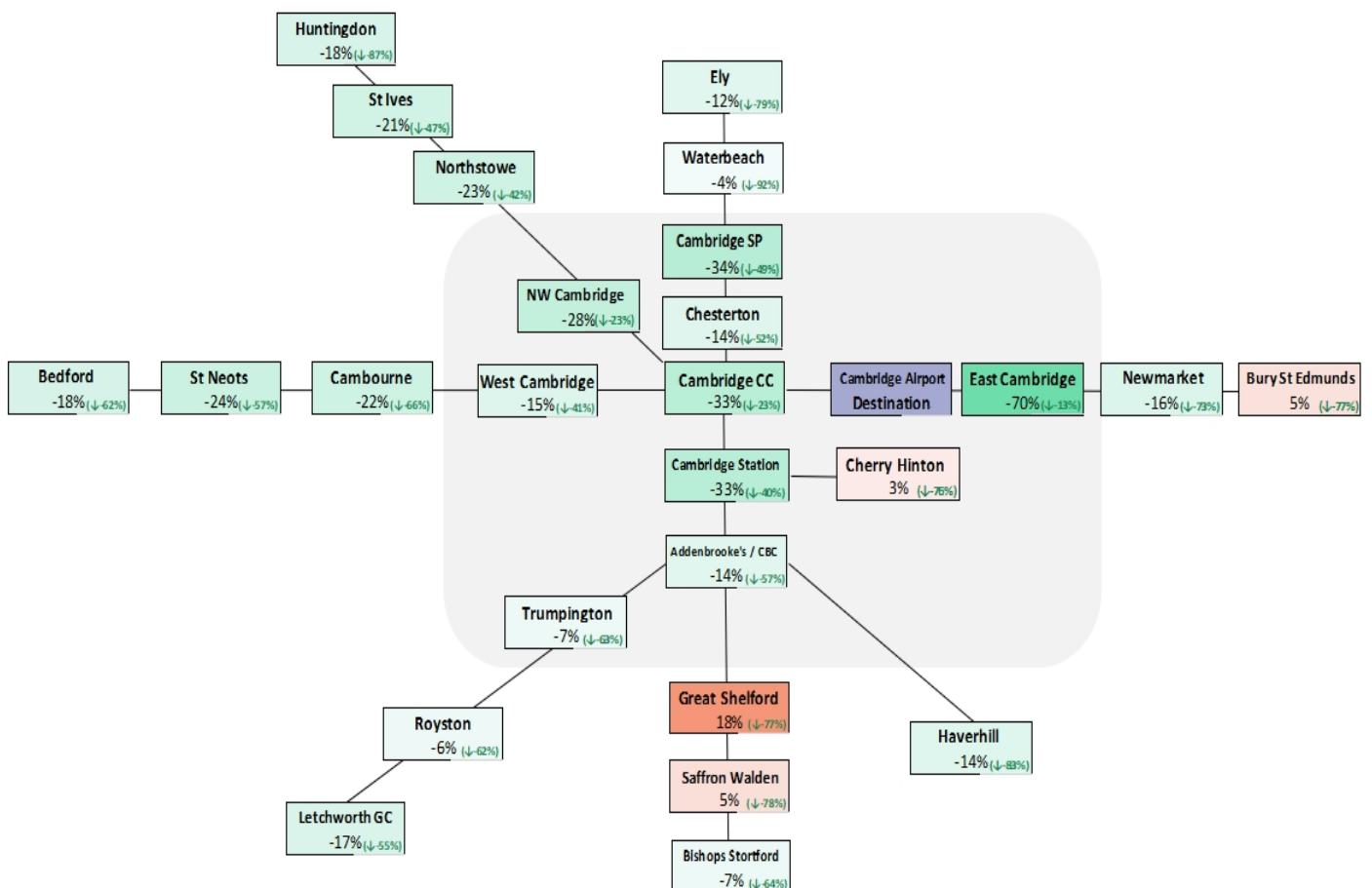




With GCP public transport routes and public transport service improvements

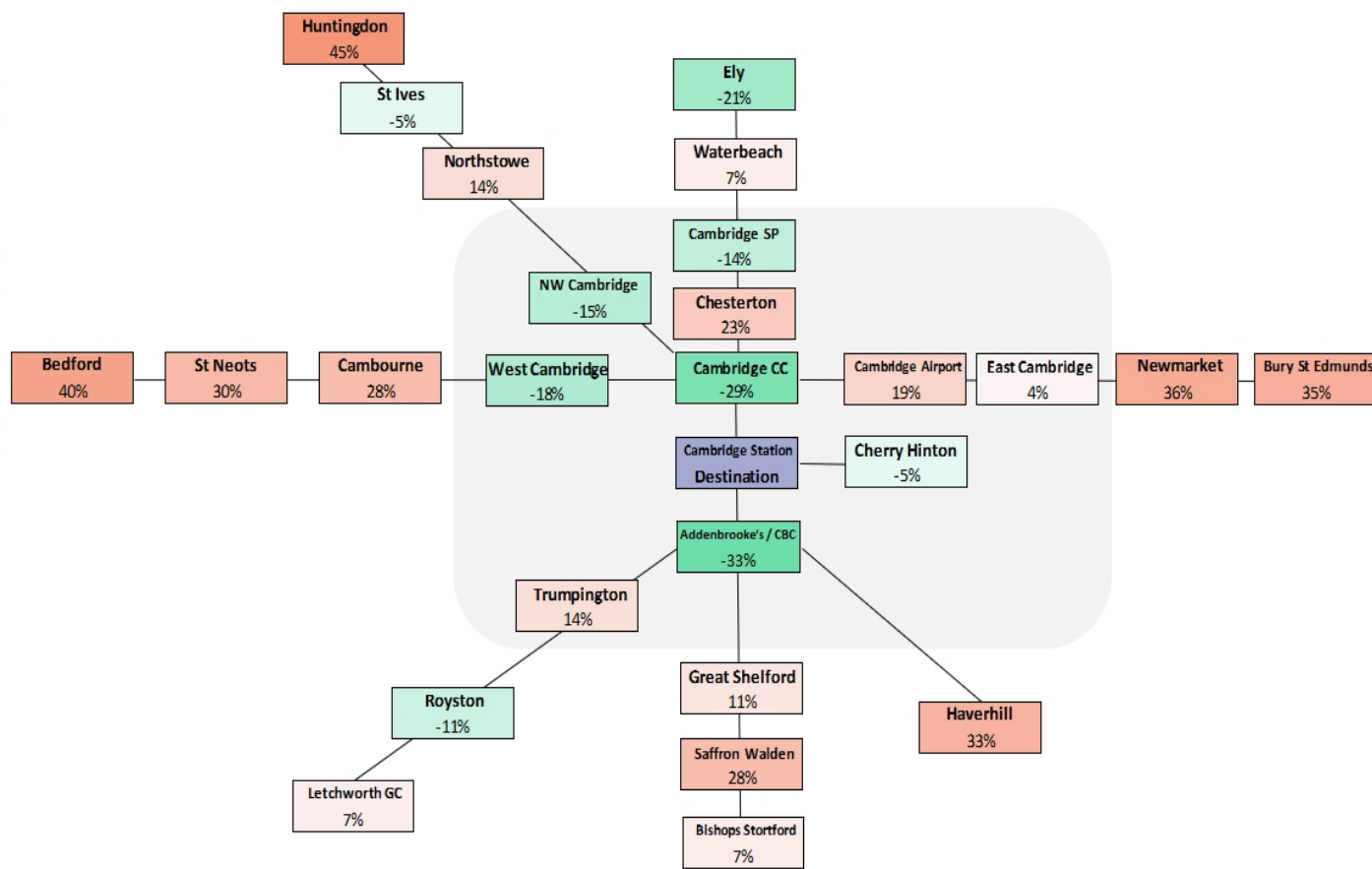


With GCP routes, service improvements and demand management changes

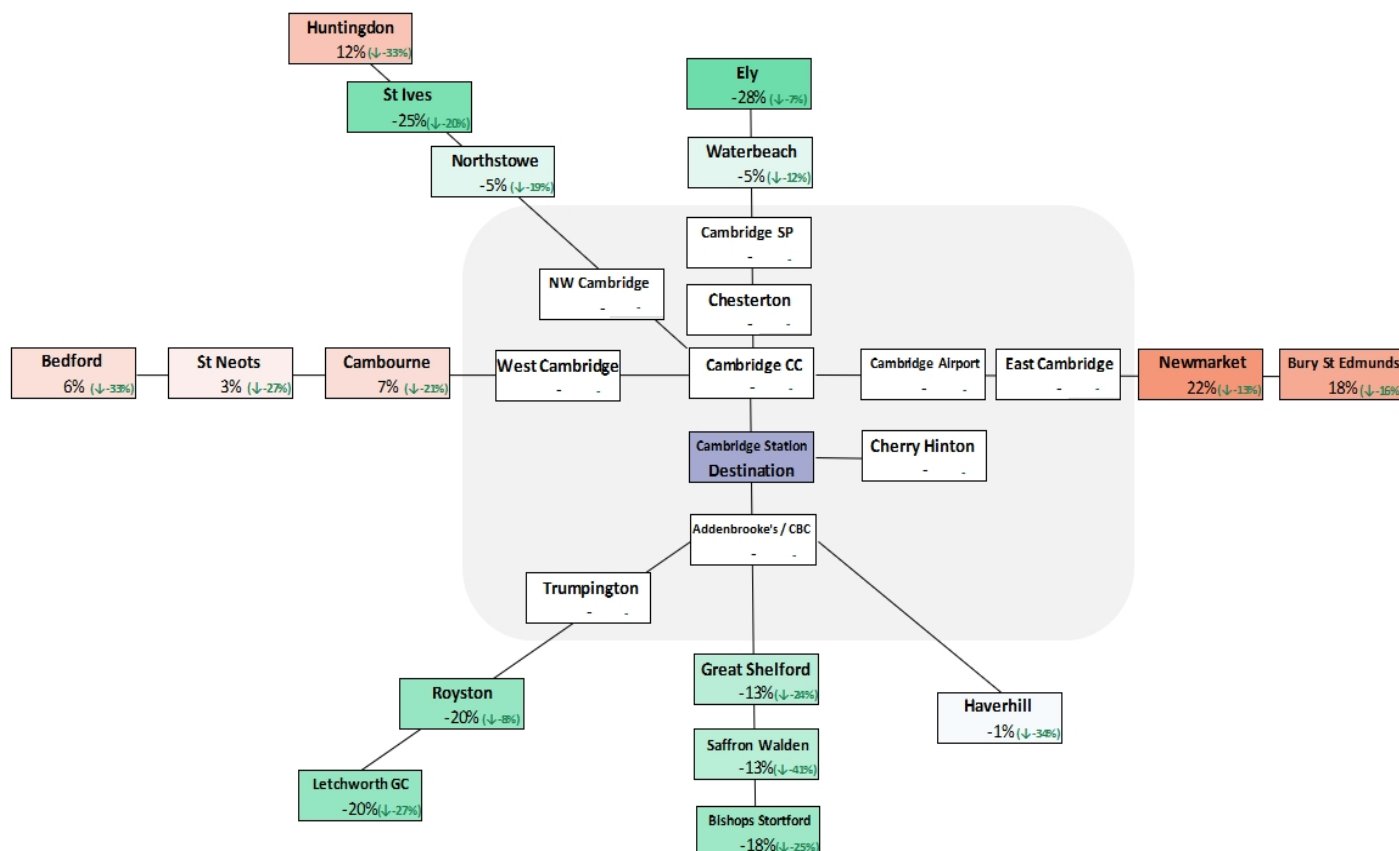


## F: Cambridge Station

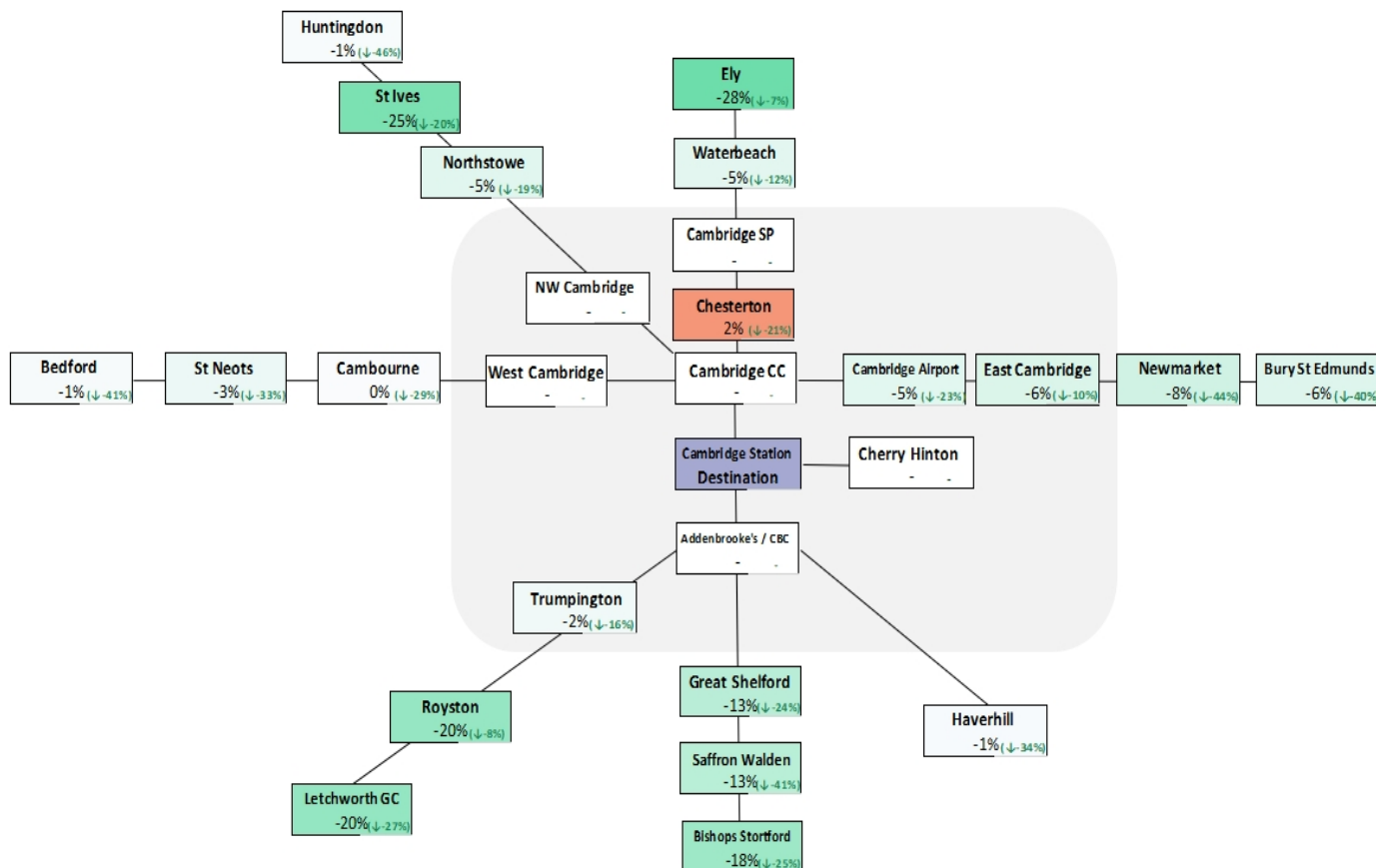
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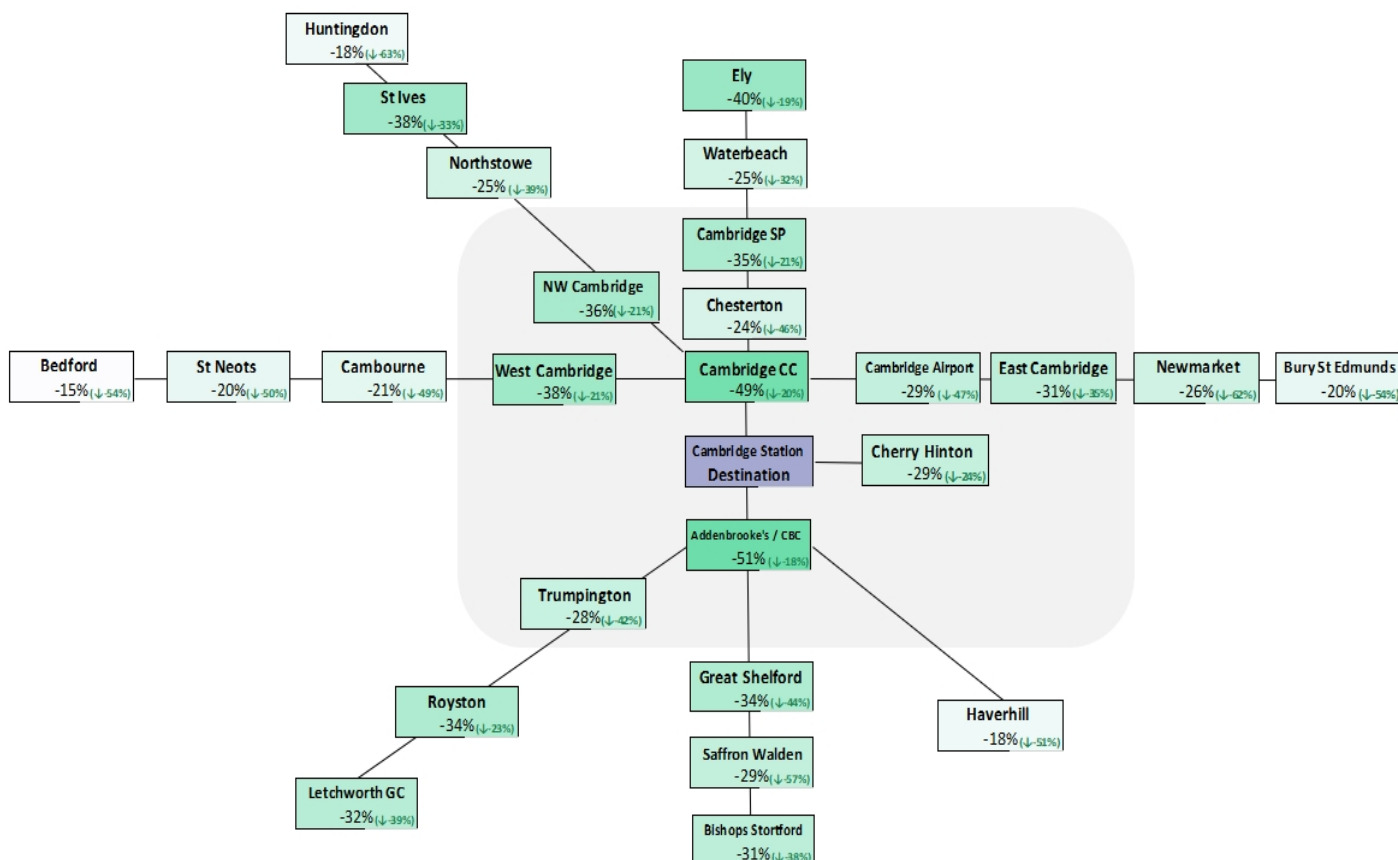
With GCP public transport routes



With GCP public transport routes and public transport service improvements



With GCP routes, service improvements and demand management changes



### Appendix 3: Prioritised list of public transport service improvements

The recommendations in this appendix result from a generalised cost analysis. The purpose of the work was to develop a high level view of how competitive public transport is with car, for key commuter flows (derived from an analysis of Census travel to work data). Further, to think about what investment might be necessary to make public transport competitive than car in future, to indicate the order of magnitude of change required. These investments can then be prioritised by how many commuters are travelling from A to B now, or because they are future strategic growth locations.

This appendix gives the headline findings of that analysis, which can inform a number of current and future investments such as the bus services review and traffic signals review.

#### a) Priority improvements to serve the biggest current demand flows

Improvements are ordered from highest to lowest demand for flows with at least 500 commuters as analysed from the journey to work data from the 2011 Census.

- **Cambourne to Cambridge city centre:** increased frequency from a service every 30 minutes or more to every 15 minutes, improving journey time from 30-45 minutes to less than 30 minutes.
- **Haverhill to CBC:** increased service frequency from a bus every 15-20 minutes to a bus every 10-15 minutes, improving journey time from 45-60 minutes to less than 30 minutes.
- **Northstowe to Cambridge city centre:** Service frequencies of at least a bus every 20 minutes, and marginal improvements to existing travel times of 25 minutes, as provided by CAM.
- **Great Shelford to CBC:** Services at least every 15 minutes, and travel times less than 15 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).
- **Ely to Cambridge city centre:** Services at least every 30 minutes, with vehicle travel times between 15-30 minutes.
- **Great Shelford to Cambridge city centre:** Services at least every 15 minutes, and travel times improving from 30-45 minutes to 15-30 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).
- **East Cambridge to CBC:** Service frequencies of at least 15 minutes, with travel times improving from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures as well).
- **Cherry Hinton to CBC:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, and travel times less than 15 minutes.
- **Royston to Cambridge city centre:** Service frequencies of at least a bus every 20-30 minutes, and marginal improvements to existing travel times of 25-30 minutes.
- **Trumpington to Cambridge city centre:** Maintain existing frequencies of a service every 10 minutes with improved travel times from 15-30 minutes to less than 15 minutes.
- **Haverhill to Cambridge city centre:** Maintain existing frequencies of a service every 15-20 minutes, improved travel times from over 60 minutes to 30-45 minutes.

- **Royston to CBC:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
- **Cherry Hinton to Cambridge city centre:** Maintain existing service frequencies of less than 10 minutes, and marginal improvements to travel times between 15-30 minutes.
- **Northstowe to Cambridge Science Park:** Increased frequencies from a service every 20-30 minutes to one every 15-20 minutes, and maintained travel times between 15-30 minutes.
- **Chesterton to Cambridge Station:** Increased frequencies from a service every 15-20 minutes to one every 10-15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
- **Cambourne to CBC:** Increased frequencies from a service every 30 minutes or more to one every 15-20 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.
- **Ely to Cambridge Science Park:** Increased frequencies from a service every 30 minutes or more to one every 10-15 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.

#### **b) Priority improvements to serve future growth centres**

The following improvements are intended to serve locations that are identified as major growth sites with greater than 5000 homes or jobs at both origin and destination. These are ordered by existing demand as analysed from the journey to work data in the 2011 Census.

- **Haverhill to CBC:** As identified above.
- **Northstowe to Cambridge Science Park:** As identified above.
- **Cambourne to CBC:** As identified above.
- **Cambourne to Cambridge Science Park:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 45-60 minutes to less than 30 minutes.
- **Northstowe to CBC:** Maintain frequencies for a service every 20-30 minutes, and improved travel times from 45-60 minutes to less than 30 minutes.
- **Cambourne to West Cambridge site:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
- **Northstowe to West Cambridge site:** Maintain frequencies for a service every 20-30 minutes, and marginal improvements on existing travel times of less than 30 minutes.
- **Haverhill to Cambridge Science Park:** Increased frequencies from a service every 20-30 minutes to a service every 15-20 minutes, and improved travel times from longer than 60 minutes to less than 45 minutes.
- **Waterbeach to Cambridge Science Park:** Increased frequencies from a service every 30 minutes or more to a service every 10-15 minutes, with maintained travel times of less than 15 minutes. (This route may only be competitive with car with price-based demand management measures).
- **Waterbeach to CBC:** Increased frequency from every 30 minutes to every 15 minutes, improving journey time from 40+ minutes to 25 minutes.

- **Haverhill to West Cambridge site:** increased frequency from a service every 30 minutes to a bus every 10-15 minutes, improving journey time from 100 minutes to 50 minutes.
- **Waterbeach to West Cambridge site:** Increased frequency from a service every 30 minutes or more to every 15-20 minutes, with improved travel times from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures).

The following improvements are intended to serve locations identified as major growth sites with at least one of the sites with greater than 5000 homes or jobs, and one growth site with less than 5000 homes or jobs. These are ordered by existing demand as analysed from the journey to work data in the 2011 Census.

- **Cambourne to Cambridge city centre:** As identified above
- **Northstowe to Cambridge city centre:** As identified above.
- **East Cambridge to CBC:** As identified above.
- **Haverhill to Cambridge city centre:** As identified above.
- **East Cambridge to Cambridge Science Park:** Maintain frequency of a service at least every 15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
- **Waterbeach to Cambridge city centre:** Increased frequency from a service every 30 minutes or more to 20-30 minutes, with improved travel times from 30-45 minutes to 15-30 minutes.
- **West Cambridge site to Cambridge Science Park:** Increased frequency from a service every 20-30 minutes to one every 15-20 minutes, with travel times maintained at 15-30 minutes. (This route may only be competitive with car with price-based demand management measures).
- **Cambridge Science Park to CBC:** Increased frequency from a service every 20-30 minutes to a service every 15-20 minutes, with travel times maintained at 15-30 minutes.
- **St Neots to Cambridge Science Park:** Increased frequency from a service every 30 minutes or more to one every 15-20 minutes, with improved travel times from 45-60 minutes to less than 30 minutes.
- **Saffron Walden to CBC:** Increased frequency from a service every 30 minutes or more to one at least every 15 minutes, and improved travel times from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).
- **St Neots to CBC:** Services at least every 30 minutes, and improved travel times from over 60 minutes to less than 30 minutes.
- **Trumpington to Cambridge Science Park:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.
- **St Neots to West Cambridge site:** Increased frequency from a service every 30 minutes or more to one every 15-20 minutes, with improved travel times from 15-30 minutes to less than 15 minutes.
- **East Cambridge to West Cambridge site:** Increased frequency from a service every 15 minutes to one every 10 minutes, with maintained travel times of 30-45 minutes. (This route may only be competitive with car with price-based demand management measures).
- **Saffron Walden to Cambridge Science Park:** Increased frequency from a service every 30 minutes or more to a service every 10-15 minutes, and a travel time of 45-60 minutes to less than 30 minutes.



- **Cambridge Science Park to West Cambridge site:** Increased frequency from a service every 30 minutes or more to a service every 10-15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.
- **Trumpington to West Cambridge site:** Increased frequency from a service every 10-15 minutes to one every 10 minutes or less, with maintained travel times of 15-30 minutes.
- **CBC to West Cambridge site:** Maintain frequency of a service every 10-15 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.
- **Saffron Walden to West Cambridge site:** Increased frequency from a service every 30 minutes or more to a service every 15-20 minutes, with improved travel times from 45-60 minutes to less than 30 minutes.
- **St Neots to Cambridge City centre:** Increased frequency from a service every 30 minutes or more to a service every 15-20 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.

## Appendix 4: Growth areas – competitiveness of public transport

### Now

From/To	Cambridge CC	Addenbrooke's / CBC	Cambridge SP	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-37%	-5%	-4%	-5%	-20%	-15%
Cambourne	24%	61%	91%	66%	42%	47%
Trumpington	0%	-11%	39%	56%	24%	14%
East Cambridge	-25%	24%	4%	-57%	30%	4%
Waterbeach	84%	151%	98%	161%	157%	80%
Northstowe	2%	12%	16%	19%	8%	14%

### With GCP public transport routes

From/To	Cambridge CC	Addenbrooke's / CBC	Cambridge SP	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-37%	-5%	-4%	-5%	-20%	-15%
Cambourne	-18%	13%	26%	18%	-3%	7%
Trumpington	0%	-11%	39%	56%	24%	12%
East Cambridge	-25%	24%	4%	-57%	30%	4%
Waterbeach	26%	38%	35%	88%	48%	7%
Northstowe	-10%	-10%	-8%	-2%	-5%	-5%

### With GCP public transport routes and service improvements

From/To	Cambridge City Centre	Addenbrooke's Hospital / CBC	Cambridge Science Park	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge		-20% (-14%)				
Cambourne	-18% (-37%)	-12% (-51%)	-7% (-62%)	-2% (-46%)	-8% (-43%)	0% (-29%)
Trumpington	-1% (-1%)		14% (-25%)	23% (-34%)	3% (-21%)	-2% (-16%)
East Cambridge	-37% (-12%)	9% (-15%)	-5% (-9%)		4% (-27%)	-6% (-10%)
Waterbeach	-1% (-36%)	-4% (-46%)	5% (-48%)	29% (-59%)	4% (-49%)	-5% (-12%)
Northstowe	-10% (-12%)	-18% (-31%)	-2% (-23%)	-2% (-21%)	-5% (-13%)	-5% (-19%)

### With GCP public transport routes, service improvements and demand management

From/To	Cambridge CC	Addenbrooke's Hospital / CBC	Cambridge Science Park	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-54% (-17%)	-38% (-33%)	-28% (-25%)	-28% (-23%)	-43% (-23%)	-36% (-21%)
Cambourne	-35% (-53%)	-29% (-69%)	-28% (-83%)	-22% (-66%)	-30% (-65%)	-21% (-49%)
Trumpington	-27% (-27%)	-36% (-25%)	-13% (-52%)	-7% (-63%)	-24% (-48%)	-28% (-42%)
East Cambridge	-45% (-20%)	-20% (-44%)	-31% (-35%)	-70% (-13%)	-21% (-52%)	-31% (-35%)
Waterbeach	-23% (-53%)	-25% (-67%)	-23% (-76%)	-4% (-92%)	-19% (-73%)	-25% (-32%)
Northstowe	-30% (-32%)	-34% (-46%)	-29% (-45%)	-23% (-42%)	-26% (-34%)	-25% (-39%)

## Appendix 5: Key features of Demand Management Options

	Workplace Parking Levy (WPL)	Intelligent Charging	Parking Controls	Toxicity Charge (T-Charge)	Physical measures
<b>Feedback from business (as recorded at Big Conversation business briefings unless otherwise stated)</b>	<ul style="list-style-type: none"> <li>Some business saw WPL as an opportunity to develop land currently used for parking. Many businesses were opposed to WPL because of the impact on low paid staff. Examples include Colleges with low paid staff working outside office hours who park at the College</li> </ul>	<ul style="list-style-type: none"> <li>Recognition that some form of congestion charging is required and support for it being 'intelligent'. Marked preference for this over WPL</li> </ul>	<ul style="list-style-type: none"> <li>Some support for more parking controls. Some businesses supported expansion/extended hours of existing P&amp;R sites and new P&amp;R sites</li> </ul>	<ul style="list-style-type: none"> <li>Some recognition that pollution/emissions need to be tackled</li> </ul>	<ul style="list-style-type: none"> <li>'Tackling Peak Time congestion' (summer-autumn 2016) resulted in negative feedback from businesses. In particular 'The least popular option was the introduction of the 6 Peak-time Congestion Control Points'</li> </ul>
<b>Big Conversation (Resident feedback from the Systra survey)</b>	<ul style="list-style-type: none"> <li>The Systra residents' survey indicates that this is a low scoring demand management option (significantly below Intelligent Charging)</li> </ul>	<ul style="list-style-type: none"> <li>The Systra residents' survey indicates that this is the highest scoring demand management option (above parking controls and WPL).</li> </ul>	<ul style="list-style-type: none"> <li>The Systra residents' survey indicates that this is a low scoring demand management option (significantly below Intelligent Charging)</li> </ul>	<ul style="list-style-type: none"> <li>The Systra residents' survey indicates that this is the second highest scoring demand management option (well above parking controls and WPL).</li> </ul>	<ul style="list-style-type: none"> <li>Not explicitly addressed in the Big Conversation survey, although previous attempts to manage demand through physical measures have been poorly received by the public.</li> </ul>
<b>Demand Impact</b>	<ul style="list-style-type: none"> <li>A £1000 WPL is extremely unlikely to meet the desired 15% demand reduction (impact is estimated at 2%). This is partly because only 40% of the levy is assumed to be passed on to employers.</li> <li>Experience from Nottingham suggests that a WPL may have a supply effect with a reduction in available car parking space in the run-up to implementation as employers reduce their parking spaces to avoid the levy. In this way it could act as a catalyst to physical demand management.</li> </ul>	<ul style="list-style-type: none"> <li>Significant impact on demand as this measure can lead to the targeted reduction of 15% from baseline by 2030. This is a particularly effective long-term measure as all vehicles will be charged and the measure is thus not affected by the significant clean-up in the vehicle fleet over time.</li> </ul>	<ul style="list-style-type: none"> <li>Parking controls will lead to some reduction in flows, but are unlikely to meet demand reduction target either alone or in combination with WPL.</li> <li>Parking controls furthermore need to be more aggressive as people that are among this group in our model are already subject to parking charges and are therefore likely to be among a less price sensitive user class.</li> <li>Increasing city centre parking charges by £5 per use could lead to an estimated 4% traffic demand reduction.</li> </ul>	<ul style="list-style-type: none"> <li>Potential to reduce flows at early stages of scheme as a significant proportion of vehicles are defined as polluting. As pool of polluting vehicles however decreases over time a T-charge becomes ineffective. Can reduce flows of 12,000 in the 'Road and Parkin Charge' scenario – will however at no point in time meet target reduction.</li> </ul>	<ul style="list-style-type: none"> <li>For targeted road closure schemes, demand reduction is estimated to be approximately 8%.</li> <li>Prohibiting car traffic from most of the city centre inside the inner ring road could reduce morning peak demand by around 24%.</li> </ul>

Potential Revenue Impact	<ul style="list-style-type: none"> <li>WPL can be a relatively effective tool for generating revenues (model outputs suggest that a £1000 charge could generate £13m).</li> </ul>	<ul style="list-style-type: none"> <li>Will provide a significant source of income for the council in all scenarios as all vehicles are charged (net revenue estimates vary from ~£40 to ~£90 million depending on scheme definition).</li> </ul>	<ul style="list-style-type: none"> <li>An increase of city centre parking charges by £5 per use could lead to an estimated £16m annual additional revenue.</li> </ul>	<ul style="list-style-type: none"> <li>Will provide a healthy source of revenue at early stages as pool of polluting vehicle are still a significant proportion of the total vehicle fleet (can produce a maximum of £25m in 2021). Revenues will however gradually decrease to zero over time as fleet cleans up.</li> </ul>	<ul style="list-style-type: none"> <li>None directly</li> <li>May be indirect increases in public transport farebox revenue if demand for public transport is boosted because of physical demand management measures.</li> </ul>
Equality Impact	<ul style="list-style-type: none"> <li>Disadvantaged people are less likely to be in employment – but it may form an unintended barrier to unemployed people being able to afford to find and take paid employment.</li> <li>Furthermore, employers are most likely to bear the costs of a WPL.</li> <li>Small businesses may find the cost harder to absorb than big business. This impact could be mitigated by exempting small business.</li> </ul>	<ul style="list-style-type: none"> <li>Significant and positive impacts as high revenues can be invested in PT improvements that is relatively popular among disadvantaged health, income and age groups.</li> <li>However low-income groups that have no option of using PT will be particularly negatively affected by a charge as they will spend a higher proportion of their income on the scheme.</li> </ul>	<ul style="list-style-type: none"> <li>As with an intelligent charging, disadvantaged people could benefit more from parking controls due to their higher PT uptake.</li> <li>However low-income groups that have no option of using PT will be particularly negatively affected by a charge as they will spend a higher proportion of their income on the scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Compared to Intelligent Charge, disproportionately affects lower income groups as this group is more likely to drive high emitting vehicles. This is due to higher prices for more modern, low polluting cars.</li> <li>Some positive impacts at beginning of scheme as initial revenues can be invested in PT which is used disproportionately by disabled, older and/or lower income groups. This positive effect however fades as revenues decrease.</li> </ul>	<ul style="list-style-type: none"> <li>Physical demand management measures may have negative equalities impacts on those that are physically impaired and need to drive.</li> <li>Physical demand management measures remove choice from the driving public.</li> </ul>
Pros: opportunities and benefits	<ul style="list-style-type: none"> <li>The main pro is the potential to impact commuter behaviours including modal shift if businesses choose to pass on the charge.</li> <li>There is also the likelihood that some businesses will be incentivised to release car parks for more productive uses (e.g. housing or employment) providing windfall and infill sites in the city centre and at key employment locations.</li> </ul>	<ul style="list-style-type: none"> <li>Greatest potential to deliver the 10-15% reduction in traffic, modal shift and the other City Access objectives</li> <li>Significant potential for funding for improved, subsidised public transport and sustainable alternatives which helps to address concerns about low paid workers</li> <li>Potential modal shift to sustainable transport options</li> <li>Potential flexibility may allow change over time. This could provide a means of adjustment in</li> </ul>	<ul style="list-style-type: none"> <li>Potentially an effective way to achieve modal shift to sustainable transport options</li> <li>Reduced parking might over time lessen problems caused by queues for car parks if there is sufficient modal shift</li> <li>Space freed up from parking can be used in ways that contribute to the GCP aims</li> </ul>	<ul style="list-style-type: none"> <li>Health benefits and public realm benefits from reduced emissions</li> <li>Through traffic may avoid the area and thus reduce congestion</li> <li>Vehicle owners (businesses and individuals) may change their vehicles over time</li> <li>This may encourage new delivery operations e.g. electric fleet, freight consolidation</li> </ul>	<ul style="list-style-type: none"> <li>Can influence congestion and public realm in specific areas</li> <li>This may lead to improved air quality and better health outcomes.</li> <li>It could contribute to a safer and more welcoming environment for walking and cycling with congestion reduction benefits as well as the health benefits of increased activity levels.</li> </ul>

		<p>response to feedback from those affected</p> <ul style="list-style-type: none"> <li>• Could be managed in conjunction with the T-charge thus increasing efficiency</li> </ul>		<ul style="list-style-type: none"> <li>• Could be managed in conjunction with Intelligent Charging thus increasing efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Potential modal shift to sustainable transport options</li> </ul>
<p><b>Cons</b></p>	<ul style="list-style-type: none"> <li>• Relatively small potential for funding improvements ('carrots') in comparison to Intelligent Charging.</li> <li>• Very limited impact on overall demand due to low propensity of workplace parking</li> <li>• Business opposition</li> <li>• For those businesses that don't release land but choose to pay the Levy, it is not clear what proportion would absorb a Levy as a business overhead (which would be likely to have minimal traffic reduction impact) and what proportion would pass the cost on to individual drivers.</li> </ul>	<ul style="list-style-type: none"> <li>• There is a perception that this option would negatively impact those travelling from outside the city more than those living in Cambridge. The ANPR survey results show around 90,000 trips (50% of total – 24-hour survey period) are "internal to internal". This suggests that the impact would fall on both groups in almost equal measure.</li> </ul>	<ul style="list-style-type: none"> <li>• The impact on overall demand due to parking charges is limited and will not be able to meet the demand targets in isolation</li> <li>• The revenue potential of this mechanisms is significant but not as great as that of intelligent charging</li> <li>• Effective use of parking controls for demand management may reduce revenues, with a negative impact on City and County Council budgets (particularly significant for City given its relatively high proportion of overall budget).</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of displacement rather than behavioural change</li> <li>• Will become increasingly obsolete in the coming years as the overall vehicle fleet transitions to clean vehicles</li> <li>• As the charge becomes obsolete the demand impact will be reduced to negligible and revenues will also be virtually eliminated</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of displacement rather than behavioural change</li> <li>• Strong previous business opposition</li> </ul>
<p><b>Main impacted group</b></p>	<ul style="list-style-type: none"> <li>• Businesses in the affected area</li> <li>• People working for businesses in the affected area</li> </ul>	<ul style="list-style-type: none"> <li>• All drivers in charging area</li> </ul>	<ul style="list-style-type: none"> <li>• All drivers needing to park. Does not impact through traffic (except potentially where affected by increased queues for car parks caused by limited parking)</li> </ul>	<ul style="list-style-type: none"> <li>• All drivers of vehicles that attract the T-charge</li> </ul>	<ul style="list-style-type: none"> <li>• All drivers in affected area</li> </ul>
<p><b>Implementation timeframe</b></p>	<ul style="list-style-type: none"> <li>• 18-24 months, including business consultation</li> </ul>	<ul style="list-style-type: none"> <li>• c.3 years, including statutory consultation</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to City decision-making</li> </ul>	<ul style="list-style-type: none"> <li>• c.3 years, including statutory consultation</li> </ul>	<ul style="list-style-type: none"> <li>• 18-24 months, including business consultation</li> </ul>





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# Agenda Item 9



## QUARTERLY PROGRESS REPORT

**Report To:** Greater Cambridge Partnership Executive Board 6<sup>th</sup> December 2018

**Lead Officer:** Niamh Matthews – Head of Strategy and Programme

### 1 Purpose

- 1.1 To update the Executive Board on progress across the Greater Cambridge Partnership (GCP) programme.

### 2 Recommendations

- 2.1 The Executive Board is recommended to:
- (a) Note the update on the proposed GCP Apprenticeship Service procurement exercise.
  - (b) Note the update on GCP cycling projects (Annex A).
  - (c) Note the communications update (Annex B).
  - (d) **Agree** to the joint procurement of a transport consultancy framework (Annex C).

### 3 Officer comment on Joint Assembly recommendations and issues raised

- 3.1 The Joint Assembly noted progress on the GCP's programme, as detailed in the report. In relation to the skills procurement exercise, the Joint Assembly was reassured that officers were working with procurement experts to review the process and documentation to help understand why the exercise had not been successful and would take steps to ensure a more positive outcome from the next exercise.

### 4 Programme Finance Overview (November 2018)

- 4.1 The table below gives an overview of the 2018/19 Budget:

Funding Type	2018/19 Budget (£000)	Expenditure to Date (£000)	Forecast Outturn (£000)	**Forecast Variance (£000)	Status*		
					Previous <sup>1</sup>	Current	Change
Infrastructure Programme	25,953	7,786	20,707	-5,246			
Operations Budget	3,790	1,126	3,000	-790			

\*Please note, RAG explanations at the end of this report \*\*Forecast Variance against 2018/19 budget

<sup>1</sup> Throughout this report references to "previous status" relates to the progress report last considered by the Joint Assembly and Executive Board

## Housing and Strategic Planning

### “Accelerating housing delivery and homes for all”

Indicator	Target	Timing	Progress/ Forecast	Status		
				Previous	Current	Change
Housing Development Agency – new homes completed	250	2016 - 2018	301			↔
Delivering 1,000 additional affordable homes**	1,000	2011- 2031	851			↔

\*\*Based on housing commitments as at 22<sup>nd</sup> November 2018. On rural exception sites and 5 year land supply sites in the rural area

#### 5 Breakdown of Housing Development Agency Completion Locations and Tenure Types

Scheme Name	Local Authority	Ward/Area	Actual Affordable Completions 2016/17	Actual Affordable Completions 2017/18	Tenure Breakdown**
Colville Road	City Council	Cherry Hinton	25	0	25 AR
Water Lane	City Council	Chesterton	0	14	14 AR
Aylesborough Close	City Council	Arbury	20	0	20 AR
Clay Farm	City Council	Trumpington	0	104	78 AR & 26 SO
Homerton	City Council	Queen Edith's	39	0	29 AR & 10 SO
Fen Drayton Road	SCDC	Swavesey	20	0	20 AR
Horseheath Road	SCDC	Linton	4	0	4 AR
Hill Farm	SCDC	Foxton	15	0	15 AR
Ekin Road	City Council	Abbey	0	6	6 AR
Hawkins Road	City Council	Kings Hedges	0	9	9 AR
Fulbourn Road	City Council	Cherry Hinton	0	8	8 AR
Uphall Road	City Council	Romsey	0	2	2 AR
Bannold Road	SCDC	Waterbeach	0	11	11 AR
Cambridge City Housing Company	City Council	Arbury & Chesterton	0	24	24 AR
<b>Total New Homes</b>			<b>123</b>	<b>178</b>	

\*\* AR – Affordable Rent  
SO – Shared Ownership

## **6 Delivering 1,000 Additional Affordable Homes**

- 6.1 The methodology agreed by the Executive Board for monitoring the 1,000 additional homes means that only when housing delivery exceeds the level needed to meet the Cambridge and South Cambridgeshire Local Plan requirements, can any affordable homes on eligible sites be considered as 'additional' and count towards this target. As reported to the Executive Board previously, the Greater Cambridge housing trajectory published in both Councils' Annual Monitoring Reports (AMRs) in December, shows a comprehensive assessment of planned housing delivery and actual completions (taking into account developer updates). The Greater Cambridge housing trajectory published in December 2017 shows that it is not anticipated that there will be a surplus in terms of delivery over and above that required to meet the housing requirements in the Local Plans until 2020/21.
- 6.2 Until 2020/21, affordable homes on eligible sites being completed are counting towards delivering the Greater Cambridge housing requirement of 33,500 dwellings. Therefore it is estimated, based on current information, that any affordable homes on eligible sites anticipated to be delivered from 2020/21 can be counted towards the delivery of the 1,000 additional affordable homes. The date at which it is anticipated that there will be a surplus in terms of housing delivery over and above that required to meet the housing requirements in the Local Plans will be reviewed annually, taking account of anticipated housing delivery as set out in the Greater Cambridge housing trajectory.
- 6.3 The table in the Housing and Strategic Planning section (section 5) shows that on the basis of known planning permissions and planning applications with a resolution to grant planning permission, 851 affordable homes on eligible sites are likely to be delivered towards the target of 1,000 by 2031, consistent with the approach to monitoring agreed by the Executive Board. In practice this means that we already expect to be able to deliver 85% of the target on the basis of current decisions alone. However, this is shown as Amber because the projection for practical reasons is drawn only from known sites.
- 6.4 Since May 2018, there has been a change in circumstances in South Cambridgeshire in relation to five year supply, which has implications on the future contribution to the target from 'five year supply' sites. On 21<sup>st</sup> May 2018, South Cambridgeshire District Council published an update on its five year housing land supply that demonstrated that it could deliver a five year housing land supply for 2018-2023. On 3rd September 2018, the Cambridge City Council and South Cambridgeshire District Council published the Inspectors' Reports on their Local Plans. The Inspectors concluded that both Local Plans are 'sound' and that the Councils can demonstrate 5.8 years supply for 2018-2023. The South Cambridgeshire Local Plan was adopted on 27<sup>th</sup> September 2018 and the Cambridge Local Plan was adopted on 18<sup>th</sup> October 2018. As a result 'five year supply' sites are no longer being permitted by the Council and a number of planning appeals on 'five year supply' sites have been dismissed by the Planning Inspectorate or withdrawn by the applicant. Therefore there has been no change in the last quarter in the number of affordable homes anticipated on eligible sites; it remains at 851 dwellings. Future additional eligible affordable dwellings will therefore be on rural exception sites.
- 6.5 Overall the housing trajectory (published in December 2017) shows that 38,080 dwellings are anticipated in Greater Cambridge between 2011 and 2031, which is 4,580 dwellings more than the housing requirement of 33,500 dwellings. There remains 13 years of the period to 2031 outstanding during which affordable homes on other eligible sites will continue to come forward as part of the additional supply, providing additional affordable

homes that will count towards this target. However, due to the nature of rural exception sites and windfall sites, these cannot be robustly forecast up to 2031. Historically there is good evidence of rural exception sites being delivered at a rate of around 50 dwellings per year, therefore we can be confident that the target will be achieved.

## Skills

“Inspiring and developing our future workforce, so that businesses can grow”

Indicator	Target/ Profile	Progress	Status		
			Previous	Current	Change
Secondary school/UTC's KS3 & KS4 events	34	36			↔
Special needs events	4	4			↔
Post 16 (KS 5) events run in schools/UTC's	15	8			↔
Business School Brokerage Service	1	1			↔
Multi-school events - Opps Ahead/Primary School Fair/ARU	2	2			↔
Apprenticeship events/interactions (students + parents)	43	43			↔
Apprenticeship CPD (no of schools)	3	3			↔
Business Apprentice Employer Interaction (B2B)	3	3			↔
Local Labour Market Information	10	10			↔

Update on current Form the Future activity

### 7 Update on the GCP Apprenticeship Service

- 7.1 The GCP Apprenticeship tender was launched on Monday 27<sup>th</sup> August and closed on 27<sup>th</sup> September.
- 7.2 Four bids were submitted through Cambridgeshire County Council's procurement portal and they have now been scored and moderated. The outcome of the moderation was that the panel decided it could not recommend any of the submissions to be put forward to run the service. The quality of the bids was not strong enough to give the panel enough confidence to appoint any of the providers.
- 7.3 The outcome is clearly disappointing but officers are keen that we don't lose any further momentum. Officers are working with procurement colleagues to understand how the tender process can be adapted in order to get back out to the market as soon as possible.
- 7.4 Depending on the quality of the next round of tenders, officers are aiming to have appointed a provider by February/March 2019. Officers will keep with Joint Assembly and Executive Board up to date with the outcome of the process.



## Smart Places

“Harnessing and developing smart technology, to support transport, housing and skills”

Project	Target Completion Date	Forecast Completion Date	Status		
			Previous	Current	Change
T-CABS (CCAV3 Autonomous Vehicle Project)	Dec 2020	Dec 2020			↔
Smart Panels – Phase 2	Dec 2018	Dec 2018			↔
MotionMap – Phase 2 (Enhancements)	2019	2019			↔
Digital WayFinding – Phase 2 (Development)	2019	2019			↔
ICP Development – Phase 2	Mar 2019	Mar 2019			↔
Pedestrian and cycle sensor trials	2019	2019			↔
Update report on integrated ticketing opportunities	Dec 2018	Mar 2019			↔

### 8 T-CABS (C-CAV3 Autonomous Vehicle Project)

- 8.1 Following the successful C-CAV3 (Centre for Connected and Autonomous Vehicles, funding round 3) bid for government and industry funding for the development of autonomous public transport solutions, a new project is underway. The project is developing AVs to run out of hours on the Cambridgeshire Guided Busway to the Cambridge Biomedical Campus and Trumpington Park and Ride. The project will result in 5 or 6 vehicles running a trial service.
- 8.2 A project initiation meeting was held in July and an outline plan has been agreed which will see the initial vehicle pilot underway in mid-2019 and the trial service commencing by end 2019. The first quarter review was held in Cambridge on the 24<sup>th</sup> September and the feedback was positive.
- 8.3 As was reported in the October progress report, the Smart Cambridge team has been working on a collaborative bid with Milton Keynes and industry partners to the Government’s Innovate UK fund to extend the current CCAV3 autonomous vehicle project to better integrate autonomous shuttles into the public transport offering. Unfortunately, we heard on Thursday 22<sup>nd</sup> November, that we have been unsuccessful in the latest round of funding for C-CAV4 for Connected and Autonomous Vehicles. Whilst this is disappointing, officers were pleased to have been shortlisted in such a highly competitive field and will continue to look for opportunities to further develop this work. This outcome will not impact on the progress of the C-CAV3 project.

### 9 Smart Panels – Phase 2

- 9.1 Smart Panels showing content from the Intelligent City Platform (iCP) such as real time bus and other data streams are now displayed in 7 sites providing valuable information for travellers. 12 further organisations have shown interest in deploying the panels and we expect Vantage House in Huntingdon to be the first of these to proceed. A further round of publicity to raise the profile of the travel information applications is being planned for the end of November/early December, hoping to reach a wider audience. As part of this

exercise, we will be following up the organisations who have already shown interest in the Smart Panels.

## **10 MotionMap – Phase 2 (Enhancements)**

- 10.1 Downloads of the MotionMap app from the Apple store and GooglePlay have now exceeded 1150. Work is ongoing to address user feedback with a package of enhancements and is expected to be completed in November with deployment to follow shortly afterwards.

## **11 Digital Wayfinding – Phase 2 (Development)**

- 11.1 Large digital screens are now live at the Station Gateway and Trumpington Park and Ride. The new devices provide travel information including real-time bus information, walking routes into town (where applicable) and give visitors access to onward travel information. The Trumpington Park and Ride device allows ticket purchase via Chip and Pin and, if under £30, via contactless. The software is also mobile wallet compatible for Apple Pay and Android Pay if the Client Merchant account supports it. There is also the option to dispense rail tickets.
- 11.2 Work is ongoing with the supplier to refine the solution using feedback from users, and further evaluation is ongoing which will be used to improve and add additional features as appropriate. We are working with Visit Cambridge and the BID to ensure a unified traveller experience. In terms of wider rollout, the main focus is on the Emmanuel St. /Drummer St. interchange where plans for improved tradition and digital wayfinding are being drawn up. A list of further potential sites is being discussed with Visit Cambridge.

## **12 ICP Development – Phase 2**

- 12.1 Work is in progress to extend the platform to accommodate additional data sources and also to allow the use of the data by other applications.

## **13 Pedestrian and Cycle Sensor Trials**

- 13.1 The programme has conducted an 'Expression of Interest' (EoI) in relation to pedestrian and cycling sensors since we have limited data about these modes as present. The EoI resulted in useful insights into current and emerging technologies, and a specification is being prepared with the aim of conducting one or more live trials to obtain significantly improved data which will help to shape future schemes. We are currently investigating a number of potential testbed sites, including a trial run in conjunction with the proposed Mill Road Bridge Closure.

## **14 Update report on integrated ticketing opportunities**

- 14.1 A review of the integrated ticketing opportunities available to the Programme was previously undertaken. An update to this review will now be carried out to test changes to the market and to understand the current situation since the delivery of the last report in 2016. The integrated ticketing market has developed significantly over the last two years, so an updated review will ensure that the programme follows the latest and most suitable solutions for the region.

## Transport

“Creating better and greener transport networks, connecting people to homes, jobs, study and opportunity”

### 15 Transport Delivery Overview

					Status		
Project		Delivery Stage	Target Completion Date	Forecast Completion Date	Previous	Current	Change
Tranche 1							
Ely to Cambridge Transport Study		Completed					
A10 cycle route (Shepreth to Melbourn)		Completed					
Cambridge Southeast Transport Study (formerly A1307)		Design	2025	2024			↔
Cambourne to Cambridge / A428 Corridor		Design	2024	2024			↔
Milton Road		Design	2021	2020			↔
City Centre Access Project		Design	2020	2020			↔
Chisholm Trail Cycle Links	Phase 1	Construction	2020	2020			↔
	Phase 2	Design	2022	2022			↔
Cross-City Cycle Improvements	Fulbourn / Cherry Hinton Eastern Access	Construction	2019	2018			↔
	Hills Road / Addenbrooke’s corridor	Completed	2017	2018			↔
	Links to East Cambridge & NCN11/ Fen Ditton	Construction	2018	2018			↔
	Arbury Road corridor	Construction	2018	2018			↔
	Links to Cambridge North Station & Science Park	Construction	2018	2018			↔
Histon Road Bus Priority		Design	2022	2019			↔
West of Cambridge Package		Design	2021	2021			↔
Greenways Quick Wins		Construction	2020	2020			↔
Ely to Cambridge Transport Study		Design	2019	2019			↔
Cambridge South Station		Baseline Study	2018	2018			↔

Residents Parking Implementation	Project Initiation	2021	2021			↔
Greenways Development	Design	2018	2018			↔
Rural Travel Hubs	Project Initiation	2021	2021			↔
Travel Audit – South Station and biomedical campus	Baseline Study	2019	2019			↔

## 16 Transport Finance Overview (to 2<sup>nd</sup> November 2018)

Project	Original Approved Total Budget (£'000)	Revised Total Budget (£'000)	Change (£'000)	2018-19 Budget £'000	2018-19 Outturn £'000	2018-19 Variance £'000	2018-19 budget status		
							Previous	Current	Change
Cambridge Southeast Transport Study (formerly A1307)	141,082	140,000	-1,082	1,397	2,350	+953			↔
Cambourne to Cambridge / A428 corridor	59,040	59,040	0	2,900	2,300	-600			↔
Milton Road bus priority	23,040	23,040	0	800	330	-470			↔
City Centre Access Project	9,638	9,888	250	3,995	2,525	-1470			↔
Chisholm Trail	9,269	9,269	0	5,320	2,320	-3,000			↔
Cross-City Cycle Improvements	8,934	8,934	0	4,500	4,000	-500			↔
Histon Road Bus Priority	4,280	7,000	2,720	224	330	+106			↔
West of Cambridge package (formerly Western Orbital)	5,900	5,900	0	600	1,200	+600			↔
Greenways Quick Wins	0	4,650	4,650	3,000	3,000	0			↔
Programme Management & Early Scheme Development	3,200	3,200	0	800	800	0			↔
Ely to Cambridge Transport Study	2,600	2,600	0	892	32	-860			↔
Cambridge South Station	1,750	1,750	0	925	925	0			↔
Residents Parking Implementation	1,191	1,191	0	219	219	0			↔
Rural Travel Hubs	700	700	0	75	70	-5			↔
Greenways Development	500	500	0	244	244	0			↔
Travel Audit – South Station and biomedical campus	150	150	0	62	62	0			↔
<b>Total</b>	<b>271,274</b>	<b>277,812</b>	<b>6,538</b>	<b>25,953</b>	<b>20,707</b>	<b>-5,246</b>			↔

- 16.1 The explanation for variances is set out in the following paragraphs.

***Cambridge Southeast Transport Study (formerly A1307)***

- 16.2 The £953k variance is due to revised forecasts, based on a formal proposal by consultants for design development of Phase 1 and Phase 2, and extended survey work, including Phase 2 walkovers.

***Cambourne to Cambridge / A428 Corridor***

- 16.3 Currently the anticipated underspend is likely to be £600k as this project is still on hold whilst being reviewed by the Combined Authority. A further extended period of hold has been required until December 2018. Subject to this being agreed, consultation on Phase 2 options is programmed for early 2019, placing a further delay of 3 months in the programme.

***Milton Road – Bus Priority***

- 16.4 The forecast outturn spend is £470k less than originally planned with construction costs now moving into 2019/20. The programme looks to commence detailed design in spring 2019 with mobilisation with construction starting in mid-2020.

***City Access Programme***

- 16.5 As several work streams in the City Access programme have been delayed to allow for other work to be completed, the budget is expected to be underspent this year. At this stage the anticipated underspend is in the region of £1,470k against the overall budget of £3,995k. This includes all workstreams under City Access including City Centre Spaces and Movement and Residents Parking Implementation.
- 16.6 The increase in the Revised Total Budget for City Access reflects the fact that the City Centre Spaces and Movement budget (£150K) and Electric Vehicle Charging (£100K) were previously shown as separate budget lines and have now been amalgamated into it.

***Chisholm Trail***

- 16.7 Underspend of £3 million is forecast for 2018/19 against the original spend profile due to delays in discharging pre-commencement planning conditions. The construction contract has now been let to Tarmac for work on Chisholm Trail Phase One and the Abbey-Chesterton Bridge, a little later in the financial year than originally planned.

***Cross-City Cycle Improvements***

- 16.8 The forecast outturn spend is £500k less than originally planned as some expenditure will go into 2019/20 to cover final contractor bills, and any minor alterations and amendments being made to completed schemes. All schemes now under construction or complete.

***Histon Road – Bus Priority***

- 16.9 The forecast outturn spend is £106k more than originally planned. This is due to the detailed design phase starting in this financial year, bringing forward additional costs and therefore impacting potential outturn spend. The overall budget has been increased to £7M following approval by the GCP Executive Board of the construction cost estimate of £6M. The forecast to the end of the financial year assumes that the final preliminary design is submitted to the Executive Board in December 2018 and that construction begins in 2019.

***West of Cambridge Package of Interventions (formerly Western Orbital)***

- 16.10 The forecast outturn has increased to £1.2m (from £600k) to reflect the requirement to complete the Trumpington Extension works in 2018/19. A public consultation on the further expansion of Park and Ride capacity in the area is now planned for November and December 2019. The planning hearing for the existing extension works was held in October 2018 by the Joint Planning Committee and the application was approved.

***Ely to Cambridge Transport Study***

- 16.11 The study is now complete and all technical reports received. This project has an underspend of £860k as no further consultant costs are anticipated. The Combined Authority now has the responsibility of taking forward the recommendations.

***Rural Travel Hubs***

- 16.12 An underspend is due to a change in scope of the Sawston hub. The Sawston hub has not gone to the stage of detailed design and consultation. Three feasibility studies are being undertaken on sites to the east, west and south of Sawston.



## **Note to reader – RAG Explanations**

### **Finance Tables**

- **Green:** Projected to come in on or under budget
- **Amber:** Projected to come in over budget, but with measures proposed/in place to bring it in under budget
- **Red:** Projected to come in over budget, without clear measures currently proposed/in place

### **Indicator Tables**

- **Green:** Forecasting or realising achieving/exceeding target
- **Amber:** Forecasting or realising a slight underachievement of target
- **Red:** Forecasting or realising a significant underachievement of target

### **Project Delivery Tables**

- **Green:** Delivery projected on or before target date
- **Amber:** Delivery projected after target date, but with measures in place to meet the target date (this may include redefining the target date to respond to emerging issues/information)
- **Red:** Delivery projected after target date, without clear measures proposed/in place to meet the target date

## EXECUTIVE BOARD FORWARD PLAN OF KEY DECISIONS

Notice is hereby given of:

- Decisions that that will be taken by the GCP Executive Board, including key decisions as identified in the table below.
- Confidential or exempt executive decisions that will be taken in a meeting from which the public will be excluded (for whole or part).

A 'key decision' is one that is likely:

- a) To result in the incurring of expenditure which is, or the making of savings which are, significant having regard to the budget for the service or function to which the decision relates; or
- b) To be significant in terms of its effects on communities living or working in the Greater Cambridge area.

Executive Board: 20 March 2019		Reports for each item to be published: 8 March 2019	Report Author	Key Decision	Alignment with Combined Authority
Foxton Level Crossing and Travel Hub	To consider options and give approval to proceed with public consultation.	Peter Blake	Yes	CA LTP Passenger Transport Strategy	
Output of Studies into Rail Capacity and Cambridge Biomedical Campus	To receive an update and information on the output of the studies.	Peter Blake	No	CA LTP Passenger Transport/ Interchange Strategy	
Milton Road	To consider results of the public consultation and give approval to any proposed modifications to the final preliminary design for Milton Road and to approve the outline business case as a basis for the detailed engineering design and final business case.	Peter Blake	Yes	CA LTP Passenger Transport Strategy	

Rural Travel Hubs and Rural Bus Service Improvements	To receive an update on the Rural Travel Hubs Pilot project.		Peter Blake	No	CA LTP Passenger Transport Strategy
GCP Future Investment Strategy	To agree a prioritised list of projects for future investment.		Rachel Stopard	Yes	CA Prospectus/ 4-year plan
GCP Quarterly Progress Report	To monitor progress across the GCP workstreams, including financial monitoring information.		Niamh Matthews	No	N/A
Executive Board: 27 June 2019		Reports for each item to be published: 17 June 2019	Report Author	Key Decision	Alignment with Combined Authority
West of Cambridge Package (M11 J11 Park and Ride)	To consider the full outline business case for the proposed Park and Ride Expansion at Junction 11.		Peter Blake	Yes	CA LTP Passenger Transport / Interchange Strategy
Chisholm Trail Cycle Links	To approve construction of phase 2 of the scheme, subject to planning permission.		Peter Blake	Yes	CA LTP Walking and Cycling Strategy
City Access	To receive an update on progress to date and consider feedback from the public consultation exercise.		Peter Blake	No	CA LTP Passenger Transport / Interchange Strategy
GCP Quarterly Progress Report	To monitor progress across the GCP workstreams, including financial monitoring information.		Niamh Matthews	No	N/A

Executive Board: 3 October 2019		Reports for each item to be published: 23 September 2019	Report Author	Key Decision	Alignment with Combined Authority
A428 Cambourne to Cambridge	To consider a detailed scheme for progression to planning consent and powers for consent of the works.		Peter Blake	Yes	CA LTP Passenger Transport Strategy
GCP Quarterly Progress Report	To monitor progress across the GCP workstreams, including financial monitoring information.		Niamh Matthews	No	N/A
Executive Board: 12 December 2019		Reports for each item to be published: 2 December 2019	Report Author	Key Decision	Alignment with Combined Authority
West of Cambridge Package (M11 J11 Park and Ride)	To consider detailed design proposals prior to seeking consent to obtain planning powers.		Peter Blake	No	CA LTP Passenger Transport Strategy
A10 Waterbeach to Science Park	To receive an update on the project and, if necessary, provide a steer on next steps.		Peter Blake	No	CA LTP Passenger Transport / Interchange Strategy
East Cambridge Corridor	To receive an update on the project and, if necessary, provide a steer on next steps.		Peter Blake	No	CA LTP Passenger Transport / Interchange Strategy
City Access	To receive an update on the project and, if necessary, provide a steer on next steps.		Peter Blake	No	CA LTP Passenger Transport / Interchange Strategy
GCP quarterly progress report	To monitor progress across the GCP workstreams, including financial monitoring information.		Niamh Matthews	No	N/A

### Corresponding Meeting Dates

<b>Executive Board meeting</b>	<b>Reports for each item published</b>	<b>Joint Assembly meeting</b>	<b>Reports for each item published</b>
20 March 2019	8 March 2019	27 February 2019	15 February 2019
27 June 2019	17 June 2019	6 June 2019	24 May 2019
3 October 2019	23 September 2019	12 September 2019	2 September 2019
12 December 2019	2 December 2019	21 November 2019	11 November 2019

## **Annex A. Cycling Projects Update**

- 1.0 A number of cycling projects have been approved as part of GCP Tranche One, and these are all well underway, with a total budget allocated of almost £24million. The projects support the ambitious target of 40% of all trips in Cambridge made by bike by 2023, and 20% of all trips made by bike in South Cambridgeshire by 2023. More people cycling supports public health, air quality and congestion reduction objectives. Improved cycling infrastructure generally brings benefits too for pedestrians.

### ***Cross City Cycling***

- 1.2 In June 2016 the Executive Board approved five cycling infrastructure projects for implementation in Cambridge, under the overall project name of 'Cross City Cycling', with a budget of £9.3m. The projects are on track to be completed by June 2019, and currently spend is over £6.5m.
- 1.3 Arbury Road has been built in a series of phases and includes raised/stepped red cycle lanes, resurfaced footways, new zebra crossings, narrowed and resurfaced main carriageway, mini roundabouts removed in favour of new raised table junctions, and new hedge and tree planting. Works are currently underway near Mansel Way, which includes removal of a set of traffic signals. In due course improvements to cycling facilities in Arbury Road will provide a link between Histon Road and Milton Road, thus providing the spine of a high quality cycling network in north Cambridge.
- 1.4 Construction work in Fulbourn Road commenced early in 2018 to provide raised/stepped red cycle lanes and widened areas of shared use paths, to make cycling a safer and more attractive transport option for local residents, and for commuters heading to ARM and Capital Park. Additional land is being procured adjacent to the Robin Hood pub so that floating bus stops can be installed to improve cycle safety further. Funding for Greenways Quick Wins has allowed the Fulbourn Road improvements to be extended along Yarrow Road, to link Fulbourn Road to the Fulbourn Greenway.
- 1.5 The first phase of Links to Cambridge North Station was completed in early 2018 and comprised of new red advisory cycle lanes, as available space meant this was the only option. For the next phase under construction at present, there is much more space within the highway cross section and so kerb protected cycle lanes are being built, including new tree planting and verges, with parking retained, and resurfaced footways. Lots of issues have arisen relating to statutory undertakers plant needing relocating or protecting which has made for relatively slow progress on site, and extensive areas of temporary works, though once complete this will be amongst the very best examples of high quality cycling infrastructure in the city.
- 1.6 Construction work is also underway on the Links to East Cambridge and National Cycle Network Route 11 project in Fen Ditton. Footways and cycleways are being widened to improve the network for walking and cycling in this area, as well as adding new crossings. Works at Hills Road to extend the raised/stepped cycle lanes to the Addenbrooke's roundabout and to improve the Hills Road/Long Road junction, completed in early 2018.



### ***Chisholm Trail (and Abbey-Chesterton Bridge)***

- 1.7 The projects suffered considerable delay through the planning and planning condition discharge processes, which meant land deals needed to be extended, and further costs incurred.
- 1.8 With the finalisation of land deals relating to the works compound areas, the construction contract for Chisholm Trail Phase One and Abbey-Chesterton Bridge was let to Tarmac in October. Tarmac have been actively inputting on issues of buildability and value for nine months.
- 1.9 In the period leading up to Christmas, the activity on site will include setting up works compounds, building the haul road from the main compound (located off Ditton Walk) to the bridge, and other preparatory works. In 2019 the more significant construction works will commence on the new bridge and jetty. The programme duration is 18 months, with completion in April 2020. Some planning conditions still need to be discharged for The Chisholm Trail, so works around Newmarket Road will take place later in the programme.
- 1.10 Phase Two of The Chisholm Trail skirts the railway line on both the east (Romsey) and west (Petersfield) side from Coldhams Lane to Cambridge Station via quiet streets, land owned by Network Rail and new housing developments (Mill Road depot and Ridgeons). The Project Team are working closely with Network Rail/Govia Thameslink to bring forward the first section of Phase Two as part of the works being delivered when Mill road is closed in May 2019.

### ***Greenways***

- 1.11 £500,000 has been allocated for 2017/18 and 2018/19 to develop the 12 Greenway routes through public consultation, and to move towards agreed alignments and scope for each route. The first two route consultations completed recently, and three further consultations are now underway. Linton Greenway has been agreed as part of the South East Cambridge Transport Strategy consultation. The other consultations are on track to take place by the start of summer 2019, to enable the Executive Board to consider the recommendations in late summer 2019.
- 1.12 At the Executive Board meeting on 11<sup>th</sup> October 2018 it was agreed that proposals to improve the link between Melbourn and Royston would be included in the Melbourn Greenway. Officers will continue to engage with Hertfordshire County Council regarding a partnership funding arrangement as any new bridge over the A505 would sit in both Cambridgeshire and Hertfordshire.
- 1.13 In response to feedback received at the early engagement events for the 12 Greenways, officers developed a 'Quick Wins' Programme of schemes that could be delivered over the next two financial years. A £4.65m package was approved by the Executive Board. The programme consists of new and improved links to Greenways, as well as improved sections of Greenways. Delivery has commenced on this work.

### ***Other Cycling Projects***

- 1.14 The Cycling Projects Team actively pursues funding opportunities to improve and enhance the cycle network in Cambridgeshire. Currently funding is in place from S106 developer

contributions, the Combined Authority, Highways England and various Department for Transport programmes.

- 1.15 A Local Cycling and Walking Infrastructure Plan (LCWIP) is being developed which will provide a prioritised list and map of future projects. The team are also one of just two local authorities feeding into a revised national cycling infrastructure design guide.

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# GCP comms update

Q2 July - September 2018

## Consultation & engagement

**5**

Public consultations

- Making space for people
- Barton Greenway
- Haslingfield Greenway
- Milton Road
- Histon Road



**22** public meetings  
approx. **500** conversations



**24,000** leaflets distributed

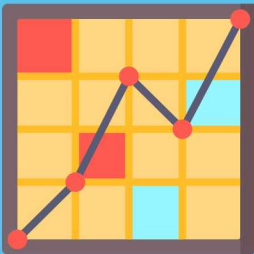


**2,822** survey responses



**11,474** emails sent

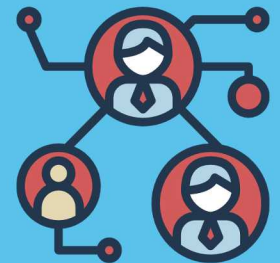
## Web & social



**17,585** website visits  
**36,292** unique pageviews



**3,078** followers across  
three social media channels



Avg **1,909** people  
reached per post

## In the news



**49** media mentions

### Four new park and ride sites to be built around Cambridge

Consultation to launch on Milton Road improvement plans

Cambridge hits the Smart Cities big time

Work begins on cycling improvements between Cambridge and Fen Ditton

### Greater Cambridge businesses to hear 'smart' travel technology benefits



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### **Annex C: Joint Procurement of a Transport Consultancy Framework**

The delivery of the Partnership's transport investment programme is dependent upon support from transport consultancy and professional services' providers. They support the officer team with business case development, technical design and wider scheme development. At the present time such services are procured on an ad-hoc basis which is ineffective, does not deliver value for money and limits the development of longer term relationships necessary to support delivery of the Partnership's programme.

Following discussions with Cambridgeshire and Peterborough Combined Authority and Cambridgeshire County Council, it is proposed to jointly procure a transport consultancy and professional services framework upon which each of the parties can draw on to support local delivery. The joint framework will deliver value for money and allow for longer term relationships to be established with a small number of consultants, improving local delivery. If agreed by the Executive Board, the framework will be procured in accordance with OJEU and County Council guidelines.



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