



Report To: Greater Cambridge City Deal Executive Board

18 June 2015

Lead Officer: Graham Hughes, Executive Director of Economy, Transport and Environment, Cambridgeshire County Council

A428/A1303 Madingley Road Corridor Scheme Options and Approval to Consult

1. Purpose

- 1.1 This report sets out the high level options which have emerged from the initial of the A428/ A1303 (Madingley Rise and Madingley Road) corridor technical study. The report explains the background to the option development and seeks authority to carry out a public consultation on these options.
- 1.2 The City Deal Executive Board determined that the corridor scheme will be delivered in two tranches. Tranche 1 (to 2020) will include the part of the corridor which runs from the A428/A1303 junction at Madingley Mulch roundabout, east to Cambridge city centre. Tranche 2 or 3 (up to 2030) would include the part of the corridor which runs from Caxton Gibbet roundabout east to Madingley Mulch roundabout.
- 1.3 This corridor scheme supports the City Deal priority of investing to achieve efficient and convenient movement between new developments and employment sites.
- 1.4 A consultation strategy is appended to this paper. It is proposed to consult on the entire corridor scheme from Caxton Gibbet to the city centre. This ensures that the planning for the corridor is taken forward in a consistent manner demonstrating a clear vision for the whole corridor. Following the consultation the preferred option (or options) will be worked up in more detail and a full business case presented for approval and for further consultation.

2. Recommendations

- 2.1 The Board is asked to:-
 - a. Note the findings from the initial engineering assessment and technical study;
 - b. Approve the public consultation on the options as set out in this report;
 - c. Agree to receive a report on consultation later this year on a preferred option, or options, for full business case development.

3. Reasons for Recommendations

- 3.1 The A428/ A1303 corridor scheme is a high priority scheme for the City Deal programme and a key proposal within the Local Transport Plan 2011-2026.
- 3.2 Wide ranging technical work has identified six shortlisted options (three options to the east of Maddingley Mulch roundabout and three options to the west) that are proposed for public consultation. All options propose a new Park & Ride around Maddingley Mulch. The existing Park & Ride at Maddingley Road is assumed to be retained. The consultation will help with the selection of a preferred option or options for detailed development and approval for further consultation

4. Background

- 4.1 The following map shows the key areas on the corridor:

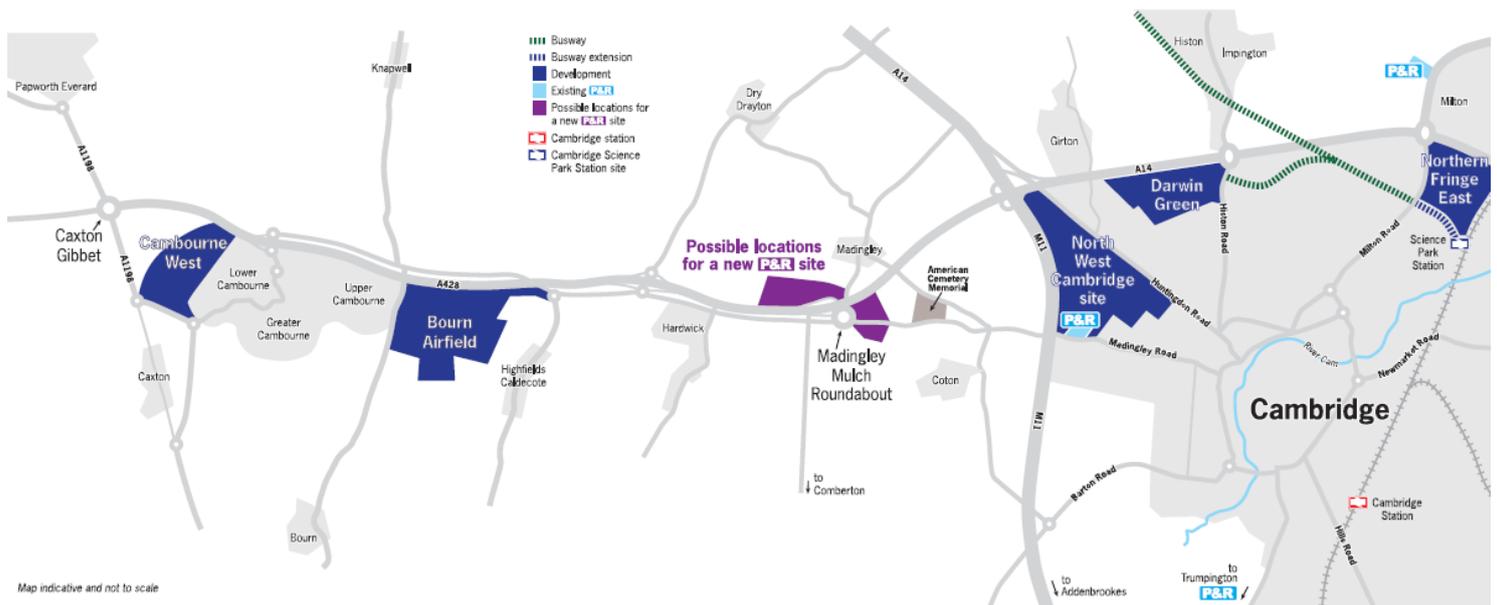


Figure 1: Key locations on A428/Maddingley Road Corridor

- 4.2 The A428 east of Caxton Gibbet dual carriageway replaced the previous single carriageway road in 2007 (now named St Neots Road). The A428 connects to Maddingley Rise (A1303) which in turn becomes Maddingley Road.
- 4.3 The Transport Strategy for Cambridge and South Cambridgeshire was prepared in parallel with the Cambridge and South Cambridgeshire Local Plans that were submitted for examination in March 2014. There are a number of developments underway, agreed or proposed along the corridor within these Local Plans. These include Cambourne West and Bourn Airfield new village, (identified in the submitted South Cambridgeshire Local Plan) Cambridge West and Cambridge North West. The Transport Strategy identifies a number of transport schemes to address existing and future issues, including measures to mitigate the impacts of the strategic development proposals on this corridor.
- 4.4 Congestion has been identified in the Local Transport Plan as a barrier to growth along the corridor. In particular the Maddingley Mulch roundabout is a congestion hotspot at peak times. The A1303 toward the City centre is also

busy. At peak times up to 80% of the length of A1303 has queuing traffic. 7.5% of all car trips into Cambridge currently use the A1303. The American Cemetery is a key site requiring sensitive treatment.

- 4.5 The corridor is served by the X5 coach from Oxford and local buses from St Neots and Cambourne to Cambridge. In addition there are Park & Ride services to/from Madingley Road. The only bus priority infrastructure on the route is a stretch of eastbound bus lane on Madingley Rise up to the M11 over bridge.
- 4.6 The corridor beyond Caxton Gibbet from St Neots is outside the scope of this scheme. Currently this section of the A428 is a single carriageway road which experiences delays at Caxton Gibbet of up to 10 minutes in the morning peak. In late 2014 the government announced its intention to upgrade this stretch of the A428 to a dual carriageway and Highways England are currently investigating possible alignments.
- 4.7 There is limited cycling infrastructure along the corridor. There are significant crossing movements of cyclists across Madingley Road reflecting the range of educational and business facilities that span this part of the route. A key parallel cycling route is available along the Coton Path which runs to the south of the corridor and includes a bridge over the M11.
- 4.8 Early business case work has identified that improvements to the Madingley Road corridor (depending on the scale of these improvements) could result in a cost benefit ratio (BCR) of 2.5 to 1 based on a reference case scheme cost of £44m. This BCR exceeds the threshold of 2:1 which is considered by the Department for Transport as 'high' value for money.
- 4.9 As part of the City Deal priority setting an economic impact analysis identified the corridor as critical for housing and employment site development.
- 4.10 Improvements to the A428 corridor to help link existing and proposed residential areas to key employment locations in the City Centre and on the north and south sides of Cambridge are an important part of both the Transport Strategy and the development strategy contained in the submitted Local Plans. Public transport links are already planned or exist to the north via the University's North West Cambridge site, Darwin Green and Orchard Park to the Science Park, Northern Fringe East regeneration area and the new Chesterton Station.
- 4.11 The Western Orbital proposal linking the A1303 to Addenbrookes campus is a separate City Deal scheme however Members should note that there is a relationship with the A428/ 1303 corridor scheme including:
 - Possible positive impacts on business case if Western Orbital demand is partly serviced by the A428/1303 corridor scheme;
 - Potential impacts on alignment of the A428/1303 corridor scheme in order to integrate with Orbital scheme.

5. Considerations

- 5.1 A total budget of £59m was allocated by the City Deal Board from the existing first tranche funding of £100m for the section of the corridor from Madingley Mulch to Cambridge city centre. Additionally, £9m is available - subject to a full business case - for public transport measures on Madingley Road, funded

from the Growth Deal. This creates a potential total available budget for the Tranche 1 sections of the scheme of £68m.

- 5.2 The option development work to date is in line with the Department for Transport technical scheme appraisal methodology (known as WebTAG). This approach:
- Allows for clearly unfeasible options to be sifted out at an early stage;
 - Allows for early public consultation;
 - Avoids abortive work on detailed design for proposals which are clearly unacceptable;
 - Provides robust basis for identification of preferred option;
 - Ensures that the shortlisted schemes are all potentially deliverable from a technical perspective.

Shortlist development

- 5.3 The short listing excluded options beyond Caxton Gibbet which will be addressed by the Highways England plans and the city centre itself which is being addressed through the City Centre Capacity Study within the City Deal.
- 5.4 In terms of phased delivery in line with the earlier Board decision, the scheme consists of 2 tranches –the corridor between Madingley Mulch and the city centre which is planned to be delivered by 2020 (in Tranche 1 of the City Deal) and the corridor west of Madingley Mulch to Caxton Gibbet that could be delivered at later stages of the City Deal programme (Tranches 2 or 3 up to 2030) dependent on development proposals.
- 5.5 **APPENDIX 1** provides a **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats, analysis for each option.
- 5.6 Cycling and walking enhancements are integral scheme objectives. Therefore these high level options for consultation are framed in the context of the intention to provide high quality cycling and walking routes. The detail of the cycling and pedestrian enhancements will emerge through the later detailed design stage of the preferred option. All the shortlisted options do offer the opportunity to achieve better integration of cycling and walking facilities for example through linking up with proposals from new developments or through ensuring good access to existing facilities such as the Coton Path which will remain a key route in the corridor.

Scheme Options for Consultation

Tranche 1 Options East of Maddingley Mulch

Option 1A

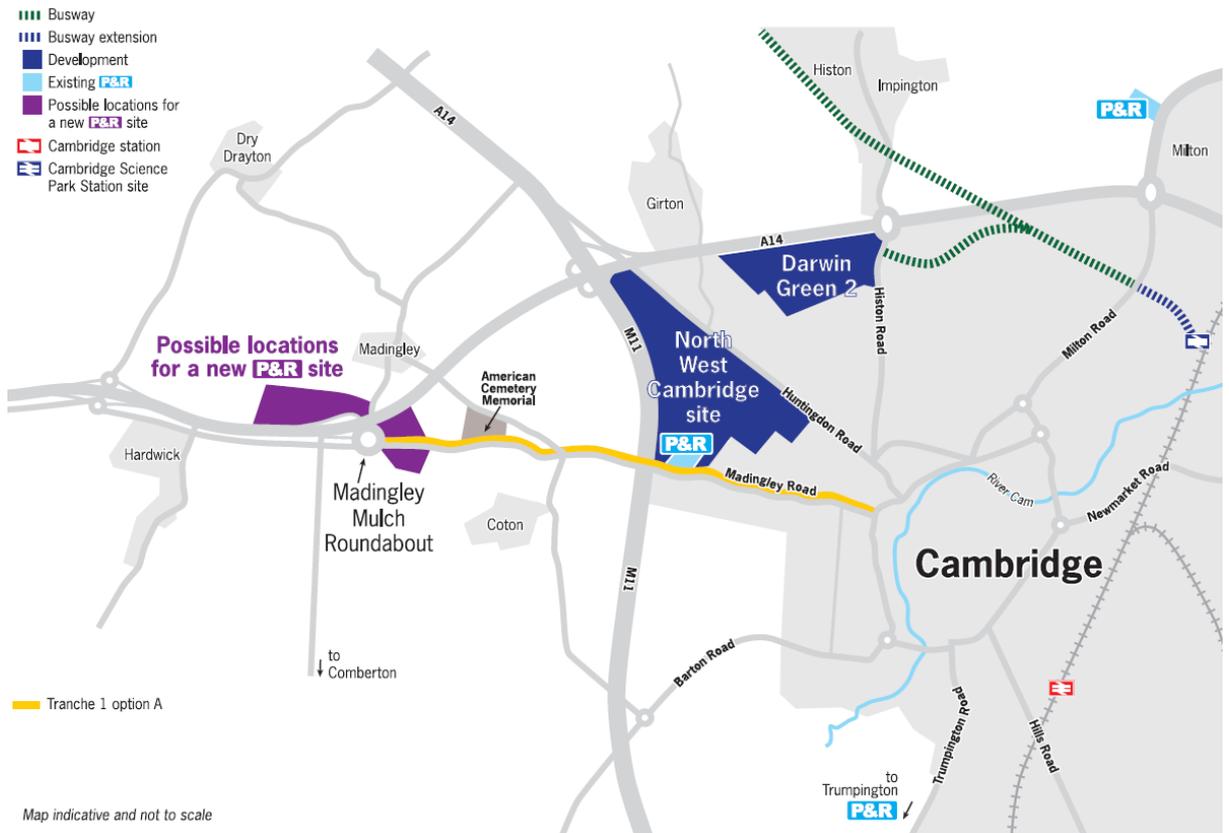


Figure 2: Option 1A

- 5.7 Option 1A has a Park & Ride at Maddingley Mulch and new traffic lights on the Maddingley Mulch roundabout to control the operation of this roundabout. Beyond the roundabout a dedicated inbound on road bus lane runs through Maddingley Rise and Maddingley Road to the existing P&R site and into town.
- 5.8 This is the lowest cost option that offers some benefits by introducing bus priority in the form of a bus lane in Maddingley Rise and Maddingley Road, which are the sections in the corridor where queues currently form. An inbound only bus lane is proposed as there are width constraints on Maddingley Road, and this is the direction in which the worst congestion occurs. Estimated Cost: £18m

Option 1B

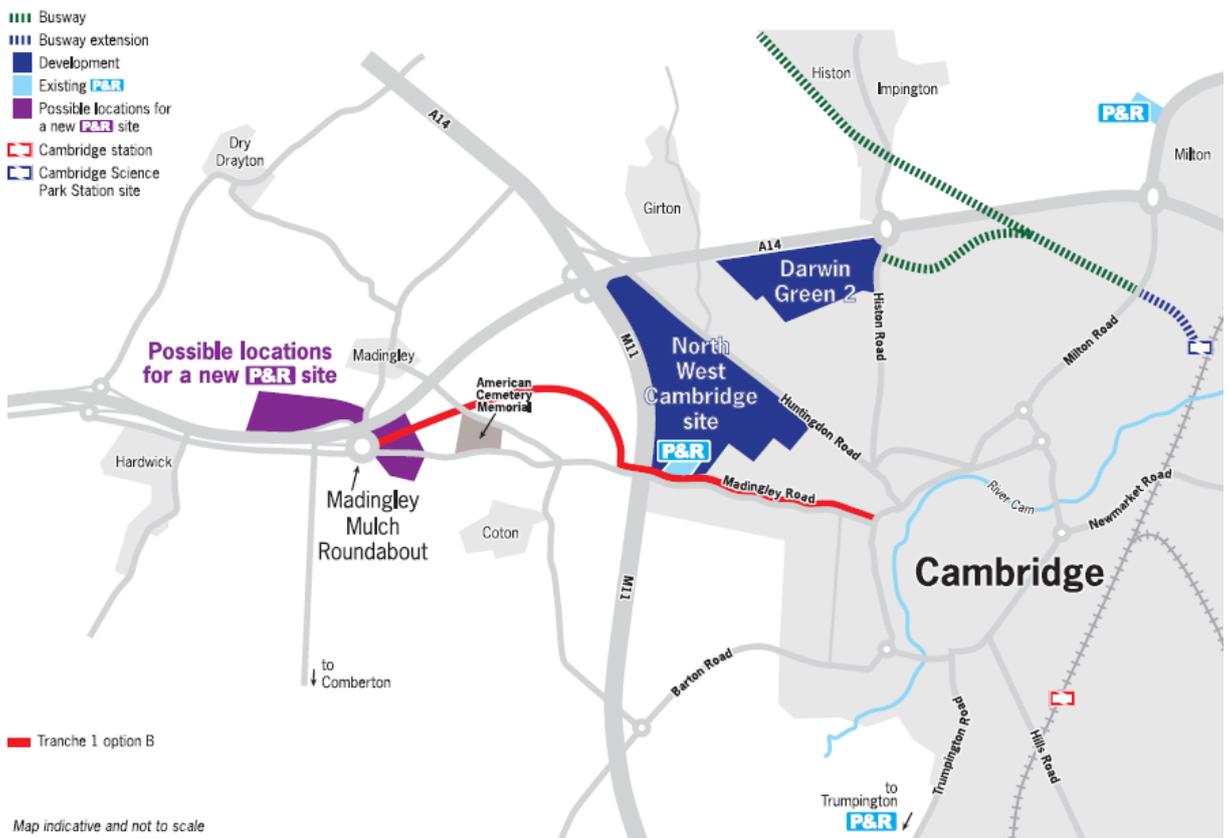


Figure 3: Option 1B

- 5.9 Option 1B also has a P&R at Madingley Mulch. In this option the route loops north (above the American Cemetery) re-joining Madingley Rise just west of the M11. Then as with Option 1A a segregated bus lane would run from the existing P&R site into town. Current proposals for the new off line link are indicative and detailed route options would need to be developed if this option is preferred.
- 5.10 This option offers the benefit of a segregated high quality public transport link from the new P&R at Madingley Mulch to the M11, which is able to bypass queues at Madingley Mulch both in the AM and PM peaks. Given the high cost of providing a new crossing over the M11, the example uses the existing bridge at J13 and then joins the new eastbound bus lane on Madingley Road. Estimated Cost: £20m

Option 1C

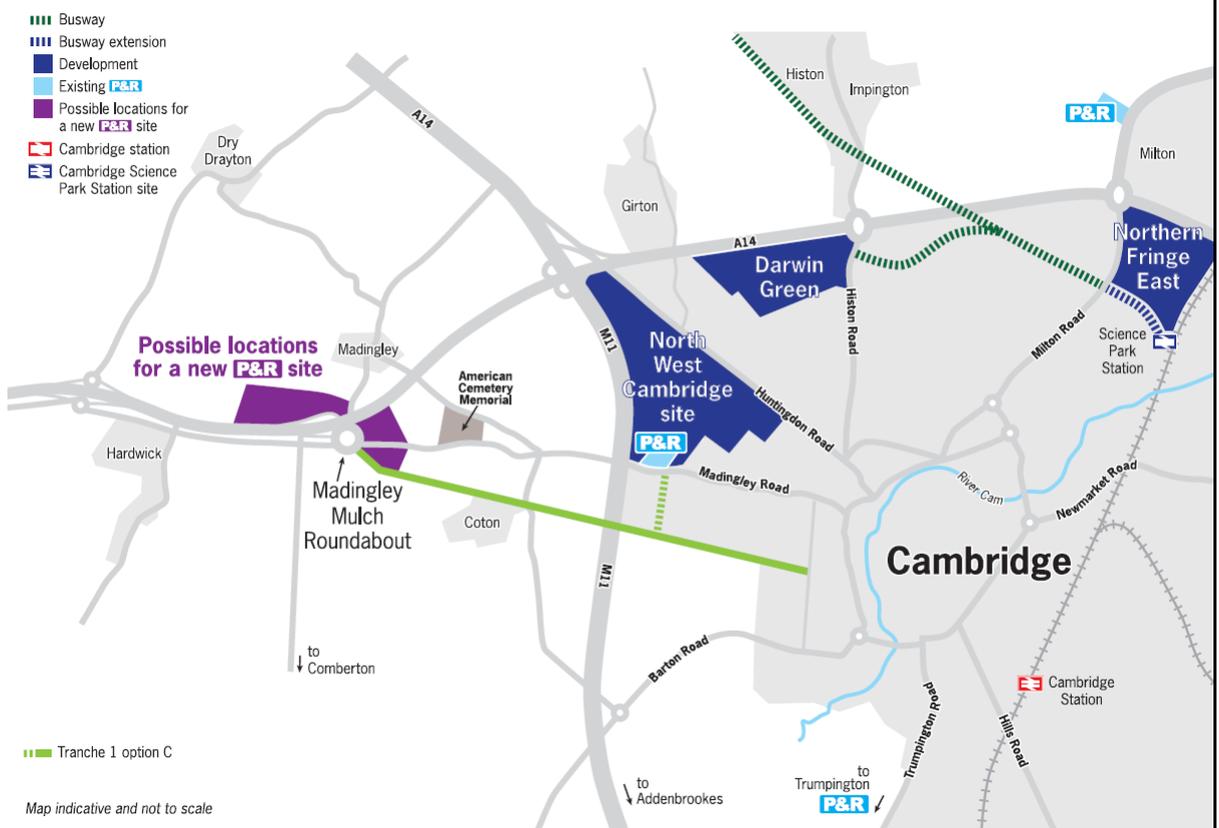


Figure 4: Option 1C

5.11 As with the other options Option 1C starts at the Madingley roundabout P&R but in this case continues off-road to the south with a new crossing over the M11 and a Busway running on land to the south of Madingley Road and the West Cambridge development to Grange Road, therefore by-passing Madingley Road altogether, with buses reaching the City Centre via West Road and Silver Street, with appropriate traffic management measures. Current proposals are indicative and detailed route options would need to be developed if this option is preferred and to recognise the sensitive arising from this option.

5.12 The clear benefit of this option is a fully segregated route as far as the city centre, thus bypassing the two sections of the route with the longest queues and offering both AM and PM benefits in these sections. However to do this effectively a new bridge over the M11 (proposed south of J13) is required, which makes this example considerably more expensive than other options. This option would provide the quickest and most reliable bus journeys in both directions and retain Madingley Road for cyclists and other traffic, offering more general network benefits. Estimated Cost: £67m

Journey Time Impacts of each option 1A to 1C

5.13 Table 1 shows the impact of each option on public transport and general traffic journey times. Journey times are based on averages only and do not reflect variability which may extensively increase journey times on occasions.

Option (Tranche 1)	Public Transport (minutes)	Highway (minutes)
Do Nothing	17	12
Option A	Between 9 and 10	Between 12 and 13
Option B	8	11
Option C	5	11

Table 1: AM Peak Hour Eastbound Average Journey Time Comparison - Madingley Mulch to edge of City Centre

5.14 Table 1 suggests that Option C delivers the greatest reduction in public transport journey times. Although all the options offer bus priority along all or part of the route, the highest journey time benefits are achieved through full segregation of buses by avoiding potential delays of buses mixing with general traffic. In addition segregation provides reliability and predictability in journey times.

All options have minimal or positive impacts on journey times for general traffic.

Tranche 2: Options West of Madingley Mulch

Option 2A

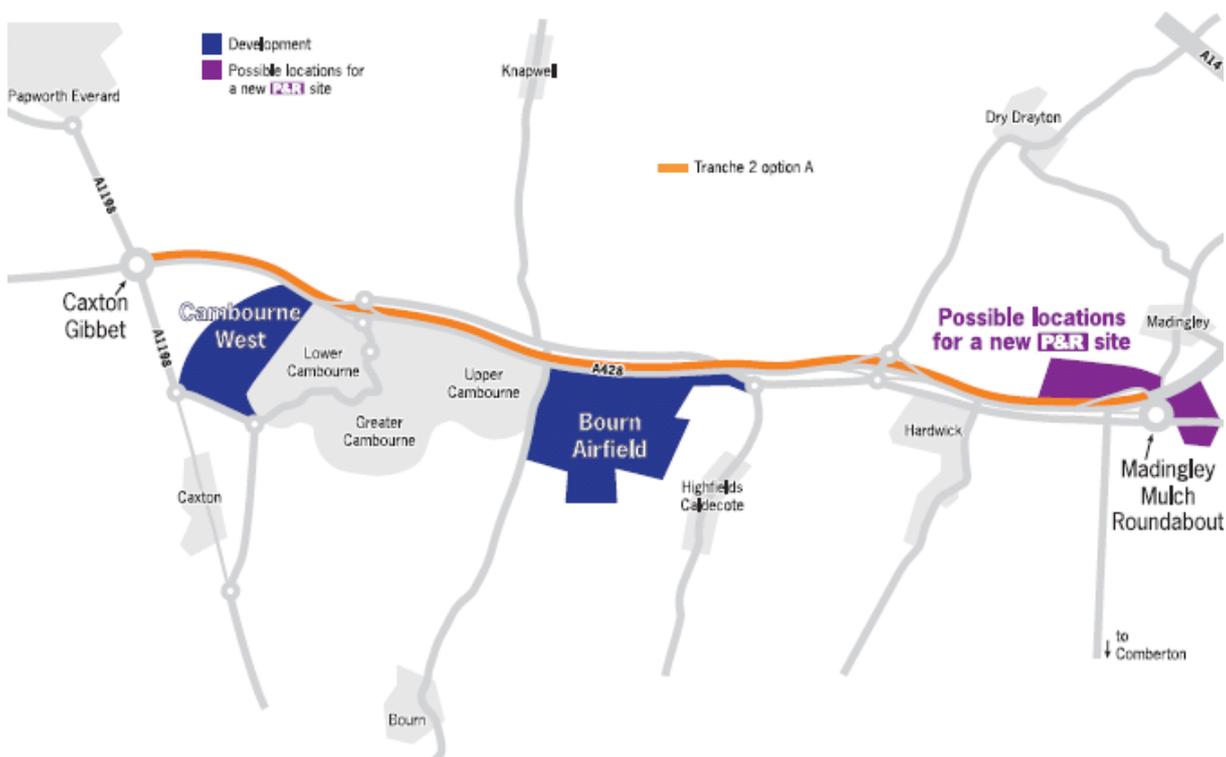


Figure 5: Option 2A

5.15 Option 2A is an on road option using the existing dualled A428 road to the new P&R at Madingley Mulch. In effect it is a do minimum option reflecting that currently congestion is not significant on the A428 itself. However a priority access route off the A428 for vehicles/and local buses to the new P&R site would be required to ensure priority for P&R users. It would not provide an easily accessible service to the existing and proposed settlements on the

route but would rely on local buses and the new interchange at the new P&R.
Estimated Cost: £ nominal

Option 2B

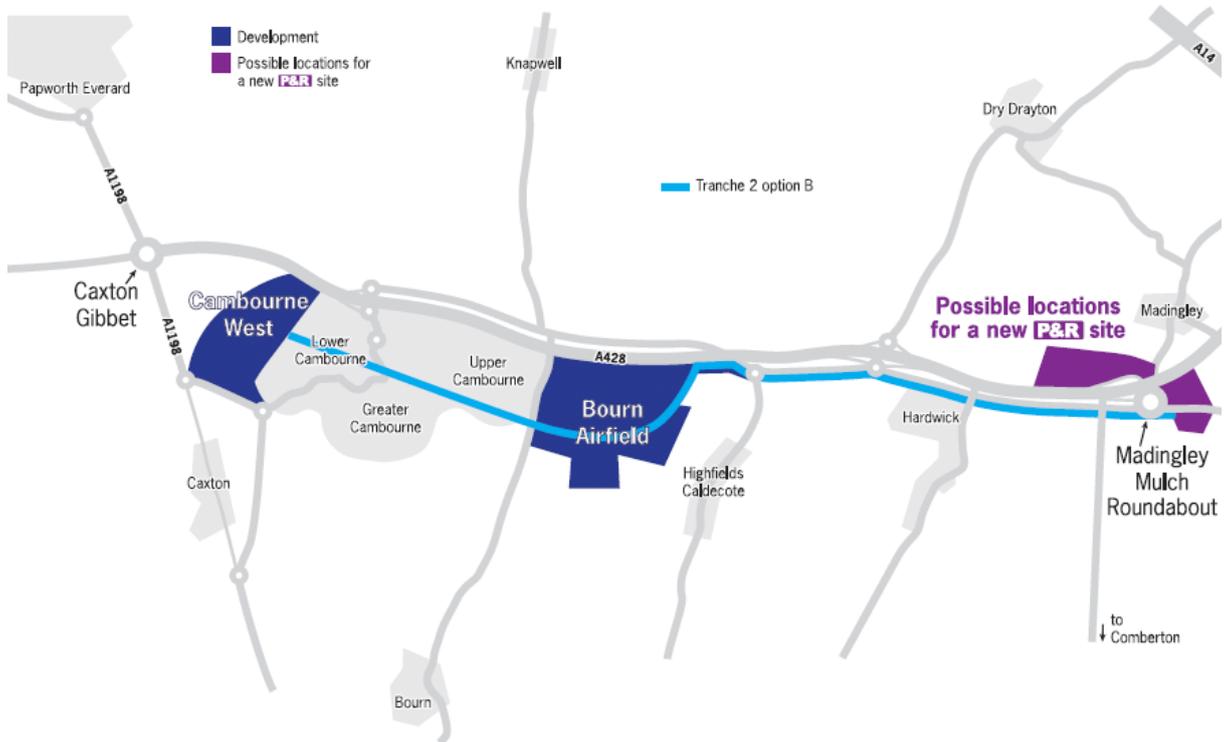
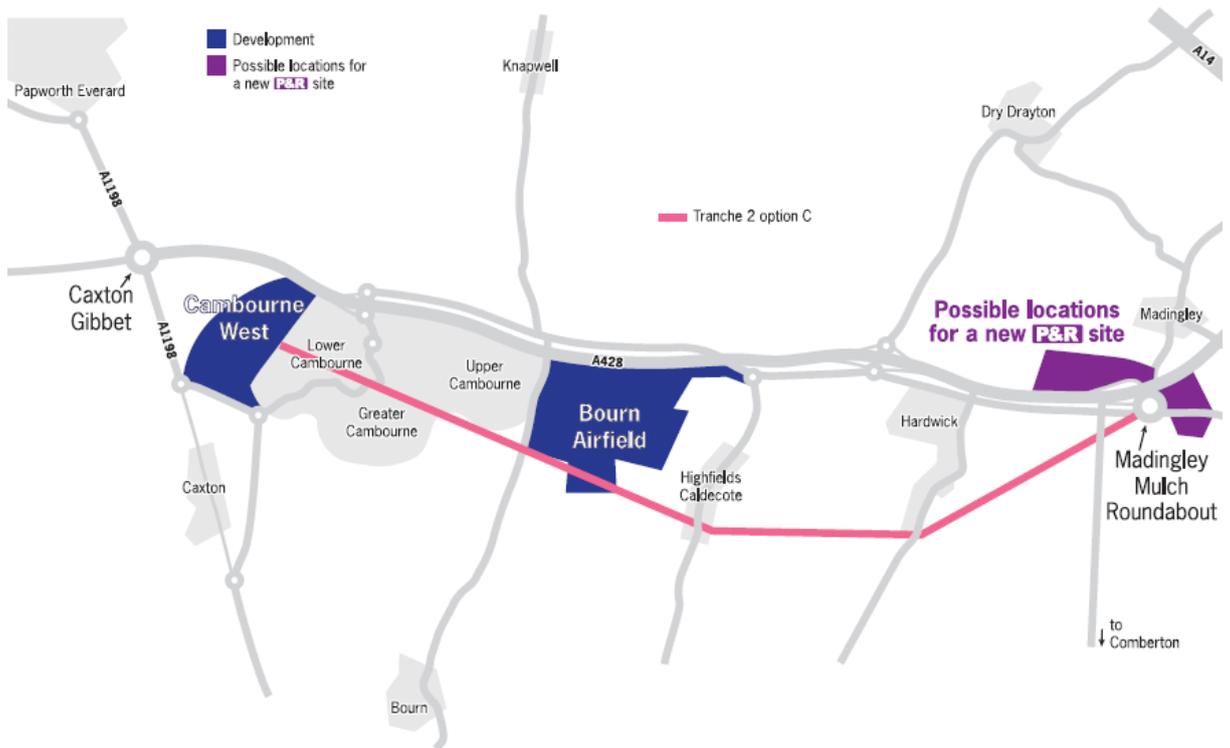


Figure 6: Option 2B

5.16 Option 2B involves a bus road connecting Cambourne and the new development at Bourn Airfield, with services then running via St Neots Road to the P&R at Madingley Mulch. Priority measures on St Neots Road would be conventional bus priority measures including ensuring priority at roundabouts. It would also be possible to create high quality cycle facilities along St Neots Road. It should be noted that the submitted South Cambridgeshire Local Plan envisages a dedicated bus/cycle link between Cambourne West and Bourne Airfield. Current proposals for the link are indicative and detailed route options through the settlements would need to be developed if this option is preferred. Estimated Cost: £11m

Option 2C



Map indicative and not to scale

Figure 7: Option 2C

- 5.17 Option 2C is a dedicated bus route through Cambourne and Bourn Airfield, which after leaving the airfield continues off-road to the south of Hardwick providing a dedicated busway link via the Park & Ride and Madingley Mulch. Current proposals for the link are indicative and detailed route options would need to be developed if this option is preferred. Estimated Cost: £26m
- 5.18 Table 2 shows the impact of each option for public transport journey and for general traffic.

Option (Tranche 2)	Public Transport (minutes)	Highway (minutes)
Do minimum	25	7
Option A/	Between 8 and 25 depending on service pattern	7
Option B	Between 10 and 11	7
Option C	8	7

Table 2: AM Peak Hour Eastbound Average Journey Time Comparison – Caxton Gibbet to Madingley Mulch

- 5.19 As in Tranche 1 options, the fully segregated off line route offers greatest public transport journey time reductions with all options having minimal impact for general traffic. Again unreliability and unpredictability are also key issues which are not necessarily reflected in average journey times.

6 Next Steps

- 6.1 The recommended next step is for a public consultation to be carried out on the options as set out in this report with the aim of identifying a preferred option for more detailed development and further public consultation. Identifying a preferred option at this stage reduces the risk of abortive work. Although significant detail on the scheme proposals remains to be developed, the consultation will be clearly directed at principles and concepts.
- 6.2 An alternative approach is for further development work to be done on the scheme options prior to any consultation. In addition to the time required to develop each option, it is also the case that some detailed issues may be contingent on other City Deal schemes such as the City Centre Access and Capacity Study, potentially adding further delay. This approach would not be in line with standard practice for major scheme development because it inevitably results in significant additional cost investigating proposals which do not move beyond the concept stage.

7 Consultation responses and Communication

- 7.1 The development of technical work to date has not been subject to any formal consultation process. However as part of the feasibility assessment a number of informal engagements have taken place. These include:
- A technical workshop involving officers of the County, District and City councils
 - Individual engagements with interested local Members;
 - Stakeholder meetings with affected parties such as the Highways England;
 - Regular update presentations through the Transport Technical Group involving the various council partners.
- 7.2 The purpose of these informal engagements has been to identify any fundamental 'red lines' or unknown risks which could impact the high level feasibility assessment.
- 7.3 It is proposed that a consultation process is undertaken as set out in **APPENDIX 2**. A summary of the consultation approach proposed is as follows:
- Consulting on the entire corridor scheme from Cambourne to Cambridge to ensure that the scheme is taken forward in a consistent planned manner but emphasising that the section of the scheme to the west of Madingley Mulch is dependent on further funding and adoption of relevant Local Plans;
 - A multi staged approach focusing initially on key stakeholders before wider consultation is undertaken;
 - While the entire Greater Cambridge area will be included within the consultation, specific focus will be on the areas directly impacted on the proposals as set out in **figure 8**:

Table 3 sets out the target dates for completion of the Tranche 1 scheme:

Target completion date for each phase of scheme												
	Mar 2015	Jun 2015	Oct 2015	Mar 2016	May 2016	Oct 2016	Dec 2016	Mar 2017	Mar 2018	Jul 2018	Dec 2019	May 2020
Phase												
Outline Option Development	☑											
Approval City Deal Board outline options		☑										
Public Consultation on outline options			☑									
Preferred option business case development				☑								
Approval City Deal Board for preferred option					☑							
Public consultation on preferred option						☑						
Approval City Deal Board final scheme							☑					
Preferred Option detail design								☑				
Preferred option statutory approvals									☑			
Mobilisation of contractor										☑		
Construction											☑	
Snagging and hand over												☑
Planning Phase		Tolerances +/- 2 months										
Pre-Construction Phase		Tolerances +/- 3 months										
Construction Phase		Tolerance +/- 6 months										

Table 3: Target dates for project planning and delivery

8 Implications

9.1 In the writing of this report, taking into account financial, legal, staffing, risk management, equality and diversity, climate change, community safety and any other key issues, the following implications have been considered: -

Financial: The scheme development and implementation is funded for the City Deal funding stream.

Legal: There are no legal implications in this report.

Staffing: Project management is undertaken by Cambridgeshire County Councils Major Infrastructure Delivery Scheme.

Risk; A full project risk register forms part of the Project Plan.

Equality & Diversity: There are no equality or diversity implications in this report.

Climate Change: There are no climate change implications in this report.

Community Safety: There are no community safety implications in this report.

Background Papers

APPENDIX 1 – SUMMARY SWOT ANALYSIS OF A428/1303 OPTIONS

APPENDIX 2 – CONSULTATION STRATEGY

The following document was used in the preparation of this report:

Madingley Road / A428 Corridor Study Interim Report:

<http://www.gccitydeal.co.uk/citydeal/info/2/transport/1/transport/5>

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