

Technical note

Project:	Cambourne to Cambridge Better Bus Journeys	To:	CCC
Subject:	Considerations for Corridor Option Plans	From:	Atkins
Date:	1 Sep 2016	cc:	

1. Introduction

This note summarises considerations undertaken when preparing the Corridor Option Plans for the Cambourne to Cambridge Better Bus Journeys Project.

2. Considerations

This section of the note identifies initial considerations for the proposed HQPT routes in the A428 corridor, and documents the thought processes involved in determining the areas of land to be shaded in the Corridor Option Plans presented with the reports. Further assessment and consultation regarding the exact alignment of the preferred option will be undertaken in early 2017.

Plans showing the alignments of the routes discussed in this section are presented in Appendix A.

2.1. Route Option 1 Central

This option involves provision of a bus lane on Madingley Road. It is shown as a single line on the Corridor Option Plans, as it is constrained by the corridor, but there may be a requirement for land take on Madingley Road to achieve the minimum width for a bus lane.

2.2. Route Option 1 South

Route option 1 South concerns the link between the A428/A1303 roundabout (referred to as Madingley Mulch) and Grange Road. This link is described in three sections, from East (City) to West (Madingley Mulch)

2.2.1. From Grange Road to West Cambridge

Four possible connections to Grange Road are being considered:

- University Sports Ground/Adams Road
- Herschel Road
- North of Cambridge University Rugby Ground
- North of Cambridge University Rugby Ground/ Cranmer Road

Adams Road

The junction of Wilberforce Road and Adams Road has reduced visibility where the proposed busway would join Adams Road. The proximity to the pond and the constraints on Adams Road, in terms of parked cars, have the potential to make the route unfeasible. It is unlikely that the parking is by local residents as most properties have generous off road parking available therefore objections to necessary TROs would be unlikely.

The junction of Adams Road and Grange Road is already signalised, and existing signals could be modified to give buses a measure of priority. The Coton footpath and Adams Road form part of the national cycle network, and any infrastructure provided would seek to enhance it where possible.

Technical note

Herschel Road

To connect to Herschel Road, this route would run to the south of the University sports fields, therefore avoiding the pond. Parked vehicles on Herschel Road could have the potential to slow services along this route. It is unlikely that the parking is by local residents as most properties have generous off road parking available therefore objections to necessary TROs would be unlikely.

Herschel Road currently has a higher level of on-street parking and is narrower than Adams Road, with limited opportunities for vehicles to pass. The junction between Herschel Road and Grange Road is not signalised.

There is a listed building on Herschel Road, but the impacts of the route on it are unknown at present.

The western section of Herschel Road is privately owned.

North of the University Rugby Ground

This route links with Grange Road to the north of the University Rugby Ground. Some level of disruption to the University Rugby ground could be expected due to the narrow nature of the existing access track. The route may avoid the Top Pitch, or this would need to be relocated.

This route minimises conflict with other traffic, as it has less accesses than Herschel Road and Adams Road, but its overall width may limit opportunities to provide a fully segregated bus route.

The junction with Grange Road has limited visibility due to fences and has a skewed layout, which may require significant realignment to accommodate turning vehicles.

South of the University Rugby Ground / Cranmer Road

This route links with Grange Road to the south of the University Rugby Ground, at Cranmer Road. Parked vehicles on Cranmer Road could have the potential to slow services along this route. It is unlikely that the parking is by local residents as most properties have generous off road parking available therefore objections to necessary TROs would be unlikely.

Cranmer Road currently has a higher level of on-street parking and is narrower than Adams Road, with limited opportunities for vehicles to pass.

2.2.2. West Cambridge - M11 Crossing - Junction at Cambridge Road

The West Cambridge University site is a key employment location in this corridor, and consideration should be given as to how best to serve it. A route through the site is likely to capture more patronage than a route to the south of the site. However, interaction with other traffic may generate slower journey times and reliability issues, unless a dedicated bus-only corridor can be secured through the site. The watercourse on the West Cambridge site (which runs parallel to Charles Babbage road to the south) is to be avoided if possible to reduce the engineering complexity of any alignment through the site.

Routing along this section is also somewhat dependent on which road has been used to gain access to Grange Road. Given the range of possible connection points to the West Cambridge site, there is a wide area shown in the Corridor Option Plans to the south of the site which may be used to gain this access (although this does not mean the entirety of the fields would be built over). The existing hedge line which runs approximately 220m south of the West Cambridge site may be used for screening purposes.

The exact location of the new bridge across the M11 will be dependent on the alignment of the route to the east and west of the motorway, and also the cost and complexity of embankment construction. The northernmost point of crossing is likely to be in line with Charles Babbage Road, while the southernmost is likely to be just south of the woodland on the western side of the motorway. Bridges further north have the potential of having the least expensive earthworks for the new structure. There is a level difference between the motorway and the embankments at the crossing point, and subject to ground investigation, this may minimise the extent to which abutments may need to be built up. The motorway at this location is slightly

Technical note

wider than further south, and therefore the bridge deck may need to span further, with a subsequent increase in cost.

West of the M11, the route should travel north of Coton village in order to avoid residential properties. It is envisaged that a signalised junction and a bus stop would be provided at Cambridge Road.

Depending on the exact location of the bridge over the M11, and the alignment towards Cambridge Road, the route would pass, upon an alignment, through Coton Orchard.

2.2.3. From Cambridge Road (north of Coton) to Madingley Mulch P&R

There are a range of viable alignments from Cambridge Road to Madingley Mulch.

The northernmost route would run from Cambridge Road to the south of Crome Lea Business Park. This option would pass through a total of five fields, potentially causing severance.

The southernmost route option would run north of the reservoirs north of Coton. This route passes through five fields, however is aligned further south, to run along the northern boundary of the reservoirs in order to avoid severance where possible. It has not been determined how close the route can run to the reservoirs at this stage, as no information on the structures and their foundations is readily available, however this route intends to run as close as possible.

All routes would likely involve screening by means of planting for the purposes of landscape mitigation (and potentially generating a cutting) to limit the visibility of the route from the adjacent countryside. There are no known engineering constraints (beyond topography) at this location, so the exact routing would be relatively flexible.

For Option 3 (1 South 2 South), the Park and Ride site could be located south east Madingley Mulch roundabout, between Crome Lea Business Park and the Madingley Mulch business. Access to the Park and Ride for vehicles could be gained from Madingley Road, whereas buses could have dedicated accesses to the east and west of the site.

This Park and Ride would be of a similar size to the Trumpington Road Park and Ride. The shaded area shown on the Corridor Option Plans also includes an area to the south of the Park and Ride which could be used to provide environmental mitigation in the form of landscaping.

2.3. Route Option 1North (also applicable to 1Hybrid)

Route option 1North concerns the link between Madingley Mulch P&R, between the roundabout and Madingley Wood, and Madingley Road to the east of Cambridge Road. Madingley Wood, a SSSI (Site of Special Scientific Interest), is a sensitive site that any route from the P&R site would avoid. Also within the vicinity of the link is the American Cemetery.

All route options from the P&R avoid the SSSI, and therefore are required to run through the 800 wood, towards Cambridge Road. There are known archaeological remains adjacent to the northern boundary of the SSSI site, which should be avoided if possible.

Another alternative is to follow the embankment of the A428, west of the 800 wood. This option may be unfeasible due to the engineering challenges of passing between the A428 bridge and Trinity Cottages. The small distance between the bridge and the cottages means significant modifications to the bridge abutments may be required if the buses were to follow this route.

After crossing Cambridge Road, the route runs to the north of Cambridge Road until it re-joins the A1303 to the west of the existing M11 bridge (junction 13). Several route options are possible for this section, the southernmost one involves running parallel to Cambridge Road, to the south of Moor Barn Farm. Changes in land levels and the proximity to the American Cemetery prevent the route running immediately adjacent to Cambridge Road.

The northernmost alternative passes to the north of Moor Barn Farm. This option was designed to provide a greater distance between the route and Madingley Wood. It allows for the pedestrian footpath to the north to

Technical note

be accommodated via a small diversion rather than a separate crossing point. It also avoids the severance of Moor Barn Farm and maintains access to Madingley Road but leads to more severance of the fields north of Cambridge Road. As land falls away from Cambridge Road, this route has the potential to be screened better to minimise landscape impact.

2.4. Route Option 2 Central

Route option 2 Central concerns the link between Cambourne West and Madingley Mulch, via Cambourne and Bourn. Due to the length of this link, for the purpose of this assessment, it has been broken down into two sections.

2.4.1. From Cambourne West to Bourn Roundabout

Achieving bus rapid transit through Cambourne presents engineering challenges, as this is an established settlement. The project team are working with the local planning authority and with the Cambourne West developers to seek potential solutions.

There is the potential for the installation of a bus link from Sterling Way in Upper Cambourne to Broadway. Correspondence with SCDC has highlighted the potential for this bus link to be secured through the proposals for Cambourne West as there is presently a contribution and requirement to deliver the bus link in the draft Heads of Terms for Cambourne West.

Bourn Airfield is yet to be developed, hence there is the potential to introduce a rapid bus transit route through this development from its design stage. The project team have discussed with the developer how this may be achieved.

2.4.2. From Bourn Roundabout to Madingley Mulch

From Bourn Roundabout, the route would join St Neots Road. Buses will travel on St Neots Road (with minor junction realignments at the Petrol Station roundabout). Two possible interventions are available to achieve bus priority on St Neots Road. The first involves closing down the eastern arm of the Long Road/St Neots Road junction to general traffic (via rising bollards or similar), which would avoid rat-running through the corridor as an alternative to the A428 main carriageway. The second would involve providing a segregated route adjacent to the existing St Neots Road, which may require the realignment of the existing highway or land take at certain locations to accommodate.

2.5. Route Option 2 South

Route option 2 South concerns the link between Cambourne West and Madingley Mulch, via Bourn and Cambourne. Due to the length of this link, for the purpose of this assessment, it has been broken down into three sections.

2.5.1. From Cambourne West to Bourn Roundabout

This section would be similar to that for Option 2 Central above.

2.5.2. Highfields Caldecote

Three options have been considered for bypassing Highfields Caldecote. All options have been shown on the Corridor Option Plans, however it is considered that north of Highfields Caldecote is the most likely option at this stage.

North of Highfields Caldecote

This route option runs north of the existing airfield buildings and across Highfields Road to the north of the village. This route option is considered to be the most direct and fastest given its segregated nature.

Through Highfields Caldecote

This option enters the village, therefore being the shortest of all three routes which have been considered. It has the potential to offer a pick up point in the centre of Highfields, therefore attracting further patronage from this location. However, journey times through the village will likely be slower than on a segregated route, and this increased journey time could reduce attractiveness of the overall route.

Technical note

South of Highfields Caldecote

This route runs to the south of Highfields Caldecote. Initial study into this route highlighted the location of Hardwick Wood and Caldecote Meadows as SSSI sites; both of which are located to the south of the village. Therefore the route has the potential to run to the north of the Caldecote Meadows, along the residential boundary, to meet Hardwick Road. To the east of Hardwick Road the route runs to the north of Hardwick Wood. In order to avoid the SSSI sites to the south of the village the alignment of this route option runs through the eastern edge of a wildlife site. Without a significant detour to the south, it is not possible to avoid the wildlife site.

2.5.3. From Highfields Caldecote to Madingley Mulch P&R

This section runs from Hardwick to the north of Jaggards farm and across Madingley Road to the P&R site. An alternative is to bypass the farm to the south, but this would increase the length of the route and would involve crossing Bin Brook at an angle, which could prove more costly. As a result, the route to the north of Jaggards farm has been shown on the Corridor Option Plans.

3. Summary and Conclusions

The note has documented the processes used to determine the area of possible route locations which is shown on the Corridor Option Plans.

The overall aims of Cambourne to Cambridge Better Bus Journeys Study have been taken into consideration when establishing possible routes. Namely, there is a need to provide fast and reliable bus services between Cambourne and Cambridge. The routes chosen are considered to provide a balance between fast and direct access to the City and the potential to absorb trips from the settlements and business hubs adjacent to the route without compromising environmental sustainability.

In addition to the overall study objectives, the routes also take into account environmental constraints (e.g. SSSI sites), and attempt to minimise disruption to private property (where this does not directly conflict with the two other considerations above).