The Western Orbital
Response to the Greater Cambridge City Deal’s Public Consultation

[date] 2016

This is a draft of what might potentially be the final version, subject to feedback and amendments.

It is the Local Consultation Version referred to on Page 3.

Feedback is welcome, to comments@cambridgebold.org
What is *CambridgeBOLD*?

*CambridgeBOLD* was formed to co-ordinate a response to the *Greater Cambridge City Deal Executive Board’s* public consultation in October 2015 on the best route for a *new bus & cycle-route between Cambourne and Cambridge*.

It is now also responding to the Western Orbital consultation.

This document has been produced locally. It represents as much as possible a broad consensus of local opinion in the area.

**Why is it called BOLD?**

- we took the name “Bold” from the June 2015 meeting of the City Deal Assembly, when various Assembly-members called for “a bold approach to Cambridge’s transport problems”.
- our proposals are indeed bold, constructive and forward-looking
- with a mixture of light-heartedness and seriousness, we decided that BOLD could perhaps stand for “Brilliantly-Organised, Locally-Designed”

This document is available for download at www.cambridgebold.org
Late 2015: Informal discussions held between the Secretary of CambridgeBOLD and various residents and landowners in the broad area of the Western Orbital

1 January 2015: the pre-consultation draft was circulated to (in alphabetical order):
- Parish Councils: Barton, Coton, Grantchester, Haslingfield, Harston and Madingley
- Residents’ Associations: Gough Way, Millington Road, North Newnham, Old Newnham and Trumpington
- City Councillors: Newnham and Trumpington Wards
- District Councillors: Barton and Haslingfield Wards
- County Councillors: Newnham and Trumpington Divisions

Amendments made based on feedback

17 January: The Local Consultation Version was circulated to those mentioned previously

Feedback

Amendments made based on feedback

Presented to City Deal Board

This is the stage we are at now

CambridgeBOLD
Brickley Organised, Locally Designed idea for the Cambourne Cambridge public transport corridor
The Greater Cambridge City Deal is looking at the possibility of creating a new ‘orbital’ route in the west of Cambridge. This project considers measures including shared, segregated or partially segregated bus facilities either along or parallel to the M11 between Junction 11 (Trumpington) and Junction 13 (Madingley Road) or on a similar alignment.

New or enhanced Park & Ride provision is also being considered so too are public transport priority though pinch points and improved walking and cycling infrastructure. Links to proposals along the A428 transport corridor are also being looked at.

The current budget allocated for this project is approximately £21m.”

W S Atkins was commissioned to produce a “Western Orbital Study Options Report” and “Western Orbital Study Phase 1 Appendices” (both dated September 2015, and available at http://www.cambridgeshire.gov.uk/citydeal/info/2/transport/1/transport/11). The first of these documents expands upon the scope as follows:

“This study … seeks to investigate the options for a high quality public transport solution which:

- Provides congestion free orbital bus capacity for buses
- Links current and potential major employment sites on the edge of the city (Cambridge Science Park, University West Cambridge site, Cambridge North West, the Cambridge Biomedical Campus / Addenbrooke’s Hospital); Bourn and Cambourne
- Removes or reduces the need for private transport or for travelling in and out of the city centre
- Intercepts car traffic into Cambridge from the M11, A10, A603 and B1046 and routes that feed them; and
- Is compatible with emerging proposals for the A428 (Cambourne to Cambridge) scheme, which is being considered as part of a separate study.”

and then further defined the scope as:

“The key aim of the study, as defined in the brief, is therefore:

The interception of car trips from the south / south west of Cambridge into key destinations in the city, including consideration of the potential linkages with orbital capacity including public transport priority between Cambridge North West (Madingley Road) and Cambridge Biomedical Campus (Hauxton Road / Trumpington Park & Ride)

In addition the study includes an initial assessment of the potential usage of and options for a new station at Addenbrooke’s to serve the Cambridge Biomedical Campus and housing development in the south of the city (Trumpington).

Outcomes of this study should also be compatible with the schemes emerging from the A428 Cambourne to Cambridge transport proposals, which are being considered separately.”
On this and the next page, we have quoted the key observations made by W S Atkins. The bold emphasis is ours.

We then draw conclusions, which guide our thinking.

In its Appendix, in section A3, W S Atkins commented that:

• “The largest traffic flows for both the AM and PM peaks are between Junction 11 and Junction 12 on the M11, reaching up to 3500 vehicles on the road per hour in each direction. High flows are also present around each junction.

• The A1309 experiences high traffic flows during the AM peak northbound to Addenbrooke’s Road (with up to 2000 vehicles on the road per hour) in addition to high traffic flows during the PM peak southbound to Junction 11.

• Both Barton Road and the A603 experience slight AM peaks eastbound to the City Centre and slight PM peaks westbound, although these flows never exceed 1000 vehicles on the road per hour. **The Barton Road queue therefore could be due to the pedestrian crossing or interaction with Grange Road.**

• Grantchester Road shows no significant AM or PM peaks.

There is a lack of priority for bus services along the Western Orbital area. **No buses travel along the M11**, therefore bus services connecting peripheral locations are indirect and passengers usually need to travel into Cambridge and out again.”

*continued overleaf*...
In its Options Report (starting at page 11), W S Atkins commented that:

2.4 “On the M11 in the morning peak, congestion is particularly prevalent northbound on the approach to the junction 13 off-slip road at Madingley, resulting in high levels of journey time variability. A similar situation emerges southbound on the motorway with queues on the junction 11 slip road impacting on journey time reliability.

2.5 In the evening peak, the southbound M11 to junction 11 performs relatively well in comparison to the congestion experienced in the morning. By comparison, Northbound to junction 13 there are problems at three locations resulting in variable journey times: merging onto the M11 at junction 11, Barton on-slip at junction 12, and the northbound off-slip at junction 13.

2.6 The A10, from the junction with the A505 to the M11 shows relatively stable journey times in the morning peak, with the main cause of variability being the level crossing at Foxton. East of the M11 there is increasing congestion as a result of motorway traffic joining the A10 at M11 junction 11, with increased delays and hence journey time variability.

2.7 The A603 eastbound from its junction with the A1198 is relatively free flowing in the morning peak until it reaches the village of Barton when delays start to impact more on journey time variability. The greatest impact is east of M11 junction 12 southbound off-slip caused by vehicles from the motorway entering the city along Barton Road.

2.8 For both the A10 and the A603, the delays caused by outbound flows in the evening peak are less significant.

2.9 The key aspects of the highway network performance in the area can be summarised as:

- significant journey time variability along radial routes in the morning peak, both east and west of the M11 particularly at:
  - A1309 Trumpington Road;
  - A10 Foxton Level Crossing;
  - A603 Barton Road/Grange Road/Grantchester Street; and
  - M11 Barton Road Junction.
- congestion on the M11 particularly at the off-slips southbound at junction 11 and northbound at junction 13 in the morning peak;
- low traffic speeds in the morning peak, particularly approaching / at junctions of the M11; and
- average morning peak delays on the M11 slip roads of 1.5 to 2 minutes northbound, and 1.5 minutes southbound; on the A603 eastbound delays of approximately 13 minutes; and on the A10 eastbound delays of approximately 16 minutes in excess of free flowing conditions.”
Our conclusions from W S Atkins work

The following conclusions guide our thinking:

1. **The M11 itself flows adequately (the problem is with the queues at the junctions, which we shall discuss next)**

   This leads to the conclusion that there is no need for an off-road bus route running parallel to the M11 (and probably also that there is only marginal gain from enabling buses to run along the hard shoulder, though we would not be averse to that). Some maths illustrates this:

   - it is 4 miles between Junctions 13 and 11. The maximum speed a bus over 12 metres length is allowed to go is 60mph. So its quickest journey-time between those two junctions is 4 minutes.
   - if the weight of traffic on the M11 was so bad that it slowed the bus to 50mph, it would take 4 minutes 48 seconds
   - we can’t envisage that the cost, effort and disruption of a parallel off-road bus route, just to save a maximum of 48 seconds, is worthwhile.

2. **The junctions (at 13 and 11) are the problem; it is queuing at their slip-roads that is the main cause of journey-time delay and non-reliability**

   - So we propose ways of fixing that – see later

3. **The A603/Barton Road is bad**

   - W S Atkins states that “on the A603 eastbound [there are peak-time] delays of approximately 13 minutes”
   - W S Atkins thinks that “the Barton Road queue … could be due to the pedestrian crossing or interaction with Grange Road”, so we suggest appropriate changes to the traffic lights etc along Barton Road
   - we also support a Park & Cycle by Junction 12 to offer an alternative to commuters (and also to be proposed as a school bus pick-up/drop-off by St. John’s, King's and other schools in the western side of Cambridge), though note that there is only one location for this that we can support

4. **A Park & Ride is needed on the A10, west of M11 Junction 11**

   This is justified because (to quote W S Atkins) “on the A10 eastbound [there are] delays of approximately 16 minutes in excess of free flowing conditions”, partly due to the sheer volume of traffic
Summary of our six recommendations – map

1. M11/A428 link as per Highways Agency’s recent “Statement of Common Ground” with Coton Parish Council; this will reduce c. 20% of the cars queuing at the M11 Junction 13 north-bound slip-road

2. Buses to use a new bridge, which CambridgeBOLD proposed as part of its Cambourne-to-Cambridge submission, and which the City Deal has seen already in a W S Atkins report

3. Changes to traffic signals etc along the Barton Road

4. New Park & Cycle at Junction 12, plus off-road cycle connection

5. Buses to exit the M11 immediately after crossing the river, as per a possibility already seen by the City Deal in a W S Atkins report, and link directly (and off-road) to the Guided Busway at the Trumpington Road Park & Ride, and then travel onwards to the Biomedical Campus

6. New Park & Ride just outside the M11
Our six recommendations
1. **M11 → A428 northbound link**

- As part of the A14 upgrade project, Highways England agreed a *statement of common ground* with Coton Parish Council.
- In this document, Highways England proposed further modifications to the Girton Interchange (not as part of the A14 project, but potentially for a later date).
- These would provide (in Highways England’s own words) “a possible future solution” to enable further interchanges at that junction.
- The map below was produced by Highways England; the pink lines are its suggestion and the red dotted line is our over-writing, to show our recommendation.
- As a minimum, we are calling for the lower of the pink lines to be constructed, and for this to be done on an accelerated timetable (ideally, we’d like all the pink routes constructed).
- We believe it would be relatively cheap, as it is a simple ‘inside curve’ that would not involve any bridges or crossing of any other carriageway.
- It would eliminate the need for northbound M11 drivers who want to proceed west on the A428 from queuing at the Junction 13 slip-road, and thus help declog the M11.
2. New bus bridge, just north of Junction 13

- The City Deal commissioned a “M11 Bus-only Slip roads” feasibility report from W S Atkins (21 August 2015)
- see http://www.gccitydeal.co.uk/citydeal/downloads/download/S/bus-only_slip_roads
- At Page 53, this included an “Option 6” for a new bus-only bridge over the M11 immediately north of Junction 13 – see the plan on the top right. The report stated that:
  “This option consists of a new structure to the north of Junction 13 for buses to join the M11 prior to general traffic. Initial option review recognised that this could offer wider benefits if provided with one of the options currently being reviewed as part of the A428 Cambridge City Deal Study”
- In its response to the Cambourne-to-Cambridge busway consultation, CambridgeBOLD proposed that this bridge was constructed to take buses off-road from Cambourne (and a new Park & Ride, west of the City) into a new bus ‘hub’ at North West Cambridge, for onward journeys into the centre of the City
- With additional bus-only slip-roads (see lower map) this bridge could also take buses on and off the M11
- Buses could then enter and exit the M11 without having to use Junction 13, which is increasingly being known as “bottle-neck bridge”
- This would achieve a major part of the Western Orbital project’s objectives
3. Changes to Barton Road traffic signals etc

- As previously mentioned, W S Atkins commented that: “on the A603 eastbound [there are] delays of approximately 13 minutes”. A 13-minute delay is a significant thing, and needs addressing.

- W S Atkins also commented that “The Barton Road queue ... could be due to the pedestrian crossing or interaction with Grange Road” and, having commissioned research from W S Atkins, it seems silly to ignore it. We therefore propose the following changes (Note: 2 & 3 would operate at peak hours only):

1. Make continuous double-yellow lines all the way along the north side of Barton Road, between the junction with Grantchester Road and the traffic lights by Lammas Land. This will aid traffic flow. Ban all coaches from parking along both sides of Barton Road, to further de-clog the road and help traffic flow.

2. Make the pedestrian crossing traffic lights by Grantchester Road inactive at peak hours, i.e. the traffic lights would be set to Green (for cars) during weekday peak hours. For pedestrians/cyclists wishing to cross Barton Road, there is alternative provision 100 yards away, by Grange Road.

3. Make the Barton Road/Grange Road junction ‘no right turn’ during weekday peak hours, i.e. no right turn out of Grange Road onto Barton Road, and no right turn from Barton Road onto Grange Road. This would mean that, during weekday peak hours, lines of traffic would not be trying to cross each other, and hence W S Atkins’ concern would be addressed. In both cases, cars wanting to turn right could use Sidgwick Avenue instead; yes it’s a longer journey, but we think the benefits to many outweigh the disadvantages to few. (The traffic lights would be inoperative during peak hours, so cars turning left out of Grange Road would have to filter in as per a normal T junction).

At weekday peak hours, “no right turn” out of Grange Road or from Barton Road, to avoid the slow-down caused by lines of traffic crossing each other.

Traffic lights to be Green for cars during weekday peak hours; those wishing to cross the road would go 100 yards along to the Grange Road crossing.

Alternative route
4a. New Park & Cycle at Junction 12

- W S Atkins’ Report Appendix has a broad pink colouring to suggest a possible location for a Park & Cycle at Junction 12.
- There is one (but only one) field that we can support: the field nearest the M11 sliproad.

Not supported:
- Too close to the Rife Range for Health & Safety reasons
- Would damage important green separation between Barton and the rifle range/motorway junctions

Not supported:
- Too small
- Environmentally-important orchard

Supported:
- Good access
- The least environmentally and visually sensitive location

Not supported:
- No access
4b. New Park & Cycle at Junction 12

- This is the field, looking north-west
- The M11 sliproad is behind the belt of trees on the right; the A603 is behind the trees in the far centre of the picture
- The field is a bit smaller than Madingley Road Park & Ride, but not much smaller, so it seems adequate for the purpose.
4c. New Park & Cycle at Junction 12

- Access would be onto the Barton Road
- We would resist traffic lights, as they would slow flow, so we recommend an enlarged / oval-shaped roundabout

[Diagram showing access points and land uses]

- Access is not possible here, because the land is at different heights (the motorway is sunk below-ground at this point)
- New belt of trees planted as visual screen
- St Mark’s graveyard
- Orchard
4d. New Park & Cycle at Junction 12

- The map below shows a possible off-road cycle connection from the new Park & Cycle to the existing (and very good) segregated cycle path alongside Barton Road.
5. New bus-only exit at Junction 11

- The City Deal commissioned a “M11 Bus-only Slip roads” feasibility report from W S Atkins (21 August 2015)
- see http://www.gccitydeal.co.uk/citydeal/downloads/download/5/bus-only_slip_roads
- At Page 55, this included three Options (A, B and C) for a new bus-only slip-road exit at M11 Junction 11. See the diagrams on the right. The report estimated the costs as £1.2m for Option A, £0.8m for Option B, and £4.7–5.7m for Option C
- A bus could then run uninterrupted from the M11, off the new slip-road, by-pass the traffic lights by the Addenbrooke’s access road, join the Guided Busway, and go straight to the Biomedical Campus and/or the train Station
- For the return bus journey and the link with the new Park & Ride, please see overleaf

River Cam and Byron’s Pool Local Nature Reserve (owned by City Council)

Bus travels along the M11 until after it has crossed the river

New bus-only slip-road already envisaged by W S Atkins

Guided Busway
6a. New Park & Ride at Junction 11

- Extensive tree-planting to screen the Trumpington Meadows Country Park and protect its public amenity-value.
- New bus-only slip-road already envisaged by W S Atkins (see also previous page).
- Existing farm bridge.
- Car access to A10.
- Buses (but not cars) join existing M11 slip-road.
- Buses would not have to go through either of these traffic lights.
6b. New Park & Ride at Junction 11

- In the part of the Trumpington Meadows Country Park that is south of the M11, the view from the concrete track looking north and east is currently not particularly attractive (see below).
- It is possible that, with appropriate tree-planting and screening around a new Park & Ride, the rural feel of the park might well be enhanced.