Responses to GCP's opposition to optimal hybrid C2C route

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1. A segregated, double bus-lane (inbound and outbound) would comfortably fit within the highway boundary along 90% of Madingley Road up to the M11 bridge. However, for a short stretch in front of the American Cemetery and SSSI there has been considerable encroachment over the north-side highway boundary so a single bus-lane plan may be needed there (could be in-bound only or bi-directional).	*The assessment undertaken by the LLF is based on a sub-standard urban cross-section which is not suitable for an inter-urban scheme. Even this cross-section cannot be accommodated on around 10% of the scheme length, and there are multiple locations where it is unlikely to be comfortably accommodated once the need for side-slopes, drainage, visibility splays is considered. A wider cross-section would be required.*	We agree that a maximal 18.3m cross-section roadway would be difficult on no more than 10% of the route, which is therefore completely consistent with our assessment that it can be accommodated on at least 90% of the route. It is untrue that there are "multiple locations where it is unlikely to be comfortably accommodated". No evidence is provided to substantiate that claim and it is strongly disputed. Furthermore, an 18.3m section is the maximum needed and is not essential throughout, as demonstrated by the fact that the existing stretch of the A1303 does not use those lane widths in many places, especially a 4 m bus lane and 3 m cycleway. Our review of actual lane widths currently on the A1303 is provided as an appendix. A 16.8 m cross-section would be more than adequate for a configuration with a two-lane busway and would be consistent with the A1303 as currently configured (see also point 5 below).	The objective of the scheme is to create a High Quality Public Transport scheme and not to provide ad-hoc public transport improvements solely where they can be accommodated. See previous response. As an absolute minimum we require 14.6m for the carriageway and 3m for the NMU lane. That would be 17.6m excluding any verge or allowing for the need for a footpath on both sides of the road where there is frontage activity. The figure of 16.8m would not be "more than adequate" – it would be a sub-standard contingency layout. As such, were we to develop such a layout it would score poorly as it would not achieve the aims of the C2C scheme.
2. The lawns in front of the American Cemetery extend up to about 6 metres over the highway boundary. Some trees in front of (though not part of) the SSSI extend as much as	*Agreed.*		

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20 metres over the highway boundary. Given the sensitive nature of these sites, there is a good argument to protect these as much as possible. Therefore a scheme which left these more or less untouched would seem preferable - though that would have to be balanced against any environmental destruction caused by an alternative scheme.			
3. The M11 overbridge at junction 13 can accommodate 4 lanes of traffic (e.g. 2 inbound and 1 outbound general traffic lanes + 1 bus lane) plus a cycle/pedestrian (non-motorised user or NMU) lane, which could be squeezed onto the bridge but may be preferable as a "bolt-on" addition to the bridge or a new NMU bridge. Atkins have previously costed (at 2010 prices) widening of the carriageway to take an extra lane at £632,000 and a new or bolt-on or NMU bridge at £2-4 million.	*The overbridge cannot accommodate a cycle/pedestrian lane over and above 4 traffic lanes.* *Without an additional structure or widening, the traffic lanes would have to be substandard, and this would be unlikely to meet Highways England requirements.*	This is incorrect. GCP has already published a report by Atkins indicating that it is possible to accommodate 4 traffic lanes and an NMU lane, each of at least the minimum recommended width. Please refer to A428 Cambourne to Cambridge Option Study: Rectory Farm Bridge Options Report, 10 June 2016; section 10.2. However, addition of a new or bolt-on NMU crossing would be relatively inexpensive and may be preferable anyway.	Our previous response remains correct and is consistent with the Atkins work which simply indicates that 4no 3m lanes could be accommodated but notes the potential safety and congestion risks and that no engagement with Highways England or assessment of standard compliance has been undertaken. An additional NMU crossing could be provided as previously discussed.
4. A scheme delivered entirely inside the highway boundary may not require a planning application and may be deliverable within a couple of years (about 1 year before construction could start and then possibly 1-2 years of construction	*In theory, a scheme is within the highway boundary doesn't need planning consent, however it was noted that if it was felt that there could be an impact to heritage or other assets such as the cemetery or SSSI, or the scope of work exceeded*	This does not reflect the discussion that took place at the meeting. However, it would help stakeholders and decision-makers to understand the likely timescales if comparator information could be provided on planning, preparation and construction times could be provided for other recent	The LLF response is confusing two issues. The A14 will take four years from Secretary of State decision. We have suggested that widening of Madingley Road would take 2/3 years to implement including any time to obtain consents, and to

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time, depending on the exact details of the scheme).	*permitted development, it is likely some kind of approval process would be required.* *The quick wins we previously proposed might be deliverable within 2/3 years. Officers made it clear that a scheme on the scale the LLF Technical Group has suggested would almost certainly take longer given the complexity of widening a heavily congested live highway.* *The issue of planning consent would depend on the nature of the eventual scheme. A widened or new M11 pedestrian bridge would require consent.*	highway widening/alteration schemes, such as Huntingdon Road, Hills Road, etc. It would be extremely surprising and remarkable if adding a couple of bus lanes to 1.7 miles of the A1303 could take more than 2-3 years, when the 21-mile upgrade of the A14 (which apparently includes 34 new bridges and structures) is on track to take about 4 years from the date of the Secretary of State's decision!	agree details with stakeholders such as Highways England, Heritage England and Natural England. As we have already indicated, widening of the M11 bridge, as a minimum, would require additional consents.
5. A roadway of about 17-18 metres would be optimal for inclusion of two bus lanes, made up of: 2 x 3.65m for general traffic + 2 x 3-4m for buses + 2-3m for cycles/pedestrians. In front of the American Cemetery/SSSI this may have to come down to a road width of 12-15 metres.	*A compliant roadway would comprise:* *2 x 4 m bus lanes, 2 x 3.65m general traffic lanes, 3 m for cycles/pedestrians, 18.3m as a minimum, excluding provision of planting strips, verges, earthworks, drainage etc. As such 17-18m cannot be considered to be optimal.* *A reduced width of 12m would preclude provision of any public transport priority.*	It is incorrect that 4 m is the minimum requirement for a bus lane. That is a recommended width to allow buses to overtake cycles safely but would not apply for central bus lanes and is also not applicable given that there is a separate cycleway beside the road. Furthermore, the existing bus lane on the A1303 is mostly 3.5 m wide, establishing a clear precedent. While 3.65m is the standard requirement for general traffic lanes, this is not required for a multi-lane arrangement with a turning lane, as	This question has been answered. Whilst there may be locations where a narrow lane has been accommodated, this is very different to assuming sub-standard design as the starting point for a major growth corridor for the city. The fact that a sub-standard traffic lane of 3.4m can be identified in the vicinity does not change the need to plan a scheme that complies with design standards. Whilst there is always some flexibility, the suggested

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		demonstrated at the Coton turn, where the lane widths are currently 3.4 m. It is also incorrect that 3 m is a minimum for a cycleway. The current cycleway rarely exceeds 2 m at any point along the A1303 and the combined width of the cycleway and verge is almost always less than 3 m. At its narrowest (by Crome Lea) it is 1.6 m, with no verge. An acceptable and consistent cross-section could therefore be 2 x 3.65 m (general traffic) + 2 x 3.5 m (double bus-lane) + 2.5 m (cycle/pedestrian) = 16.8 m. While for a single bus-lane configuration where highway space is most constrained, the following would be a viable and consistent minimum: 2 x 3.4 m (general traffic) + 3.4 m (bus lane) + 1.6 m (cycleway) = 11.8 m. The narrowest part of the highway, assuming nothing at all is reclaimed in front of the American Cemetery, is 12.3m width (for a length of about 20 metres), which could therefore accommodate a viable scheme.	cross-section of 11.8m has no basis.
6. Technically, bus lanes can be accommodated equally easily in the centre of the road (the median) or at the sides. However, bus lanes at the sides are more likely to be blocked by	*Bus lanes can be accommodated on the nearside or offside. Nearside is conventional because of the convenience for location of stops. We agree that this will*		It is unclear whether or not the LLF is lobbying for a central bus lane.

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parked cars, delivery vehicles, etc. On the other hand, median bus lanes can make it harder to provide bus stops - though that is not an issue for the C2C scheme which is not intended as a frequently stopping service. There is room at the "Coton turn" should a median bus stop be needed.	*not be a frequent stopping service.* *We agree that offside lanes are less likely to be blocked by parked cars etc. Conversely, they may be more likely to be blocked by turning vehicles.*	This is not entirely logical. Nearside bus lanes have to be crossed by every turning vehicle, whereas offside lanes only need to be crossed by vehicles executing a right turn. In any case, there are very few turnings on that stretch of the A1303 and it is highly unlikely this would represent a material obstacle to the scheme.	We have agreed that a central bus lane would be feasible. Conventionally central bus lanes are not deployed because of the land take associated with bus stops. We agree that with an express bus service we do not intend to have frequent stops but maintaining a nearside lane helps to future-proof the scheme. It remains unclear why the LLF position is that a central bus lane would be advantageous.

Hybrid Scheme

The Hybrid scheme was a proposal from the LLF Technical Group. Details of the scheme were not provided and a response to the points raised is outlined below.

Based on these considerations, a hybrid scheme which is mostly off-road but uses the A1303 from Madingley Mulch roundabout, offering segregated bus infrastructure for 100% of the route inbound and at least 90% outbound between Cambourne and the West Cambridge site, appears to be entirely feasible.

This would offer the following:

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A) Direct route from Cambourne to Cambridge Biomedical Campus via M11 and Trumpington P&R in well under 30 minutes at peak times, with segregated running for >95% of the route - significantly superior to the currently proposed off-road route via the West Fields to Grange Road.	*No scheme specific details were provided so we are unable to comment on the proposals. For example the 30 minute running time is not substantiated and may prove extremely difficult to achieve.*	It is extremely disappointing that it is left to the community to work up these proposals in specific detail. However, it is not at all difficult to substantiate the running times proposed: 1) Cambourne to Madingley Mulch: 4.2 miles, 6 minutes 2) Madingley Mulch to M11: 1.7 miles, 3 minutes 3) M11, J13 to Trumpington P&R: 4.5 miles, 6 minutes 4) Trumpington P&R to Biomedical Campus: 8 minutes (per Busway A service timetable) TOTAL: 23 minutes express. For a stopping service (e.g at Scotland Farm P&R) this may increase to around 28 minutes. This route would be 75% segregated (off-road and/or bus lanes) and the remainder on a motorway. A separate bus access from the M11 to Trumpington P&R could further reduce the journey time by 1-2 minutes. In contrast, an off-road route to Charles Babbage Road would have to navigate the West Cambridge site and return to Madingley Road to access the M11, adding at least 2 minutes to the journey time; while a service to Grange Road using the U bus route to get to CBC would take at least an hour.	The figures produced by the LLF are based on conjecture. Specific concerns would be as follows: Cambourne to Madingley Mulch. The figure of 6 minutes would need to allow for the relatively slow progress through Cambourne, 3 bus stops (2 on Bourn Airfield and 1 at Hardwick) and the diversion into a Park and Ride and associated dwell time. Madingley Mulch to M11. This assumes a bus lane would avoid any congestion whereas, as discussed elsewhere, and conceded by the LLF, continuous bus lane could not be provided.

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B) Optimal access to West Cambridge site and Eddington (and via Eddington to Cambridge Science Park) - superior to an off-road route that passes to the south of West Cambridge site.	*This is factually incorrect. The off-road route penetrates West Cambridge and the hybrid proposal does not. Some services associated with hybrid scheme may go through Eddington but this would increase journey times for those vehicles affected.*	The GCP response is entirely incorrect. The LLF's proposed hybrid scheme has easy access to penetrate the West Cambridge site at either High Cross or JJ Thomson Ave. Given the location of West Cambridge site departments, such as Whittle Laboratory, Veterinary School, Computer Lab etc, a stop at or near the junction of Madingley Road and JJ Thomson Ave would be as attractive as one on Charles Babbage Road, where GCP's off-road service is planned to go. Services going through Eddington could have rapid access to the Science Park, reducing not increasing their journey time.	When considering Optimal access to West Cambridge, the GCP solution runs through the West Cambridge site, whereas the LLF solution does not. Therefore, the GCP solution is optimal as it would provide for a bus stop within the West Cambridge site and not (for inbound traffic) on the other side of a busy A- road.

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C) Access to City Centre via Northampton St in under 30 minutes.	*No scheme specific details were provided so we are unable to comment on the proposals. For example the 30 minute running time is not substantiated and may prove extremely difficult to achieve.*	1) Cambourne to Madingley Mulch: 4.2 miles, 6 minutes 2) Madingley Mulch to West Cambridge site: 2 miles, 4 minutes 3) West Cambridge site to Northampton St: 1.0 mile, 8 minutes* 4) Northampton St to Drummer St (bus/taxi-only route): 0.9 miles, 4 minutes* TOTAL: 22 minutes express; 27 minutes allowing for stops at Scotland farm P&R and West Cambridge site. *Highest peak hours average journey time of current Citi 4 service. 95% of services would have a journey time <30 minutes, based on real-time Citi 4 data. In contrast, an off-road service going to Grange Road (assuming it could in fact reach Grange Road) would have to navigate Grange Road itself, Silver Street and Downing Street in-bound and Regent St, Lensfield Rd and Trumpington Rd in addition out-bound, a significantly longer and slower route to/from the City Centre.	The only direct comparison available to this Hybrid scheme without doing further assessments is the Cambourne to Madingley Mulch Section. Calculations done for Phase 2, Option 1 (off-road) are 10.85 minutes for the journey, which is 4.6 miles long. This runs on street through Cambourne before running off-road through Bourn Airfield to Madingley Mulch. This includes stops at the two Bourn airfield stops and Hardwick (Not Scotland Farm as the calculation was based on Waterworks) but priority through junctions. This would suggest journey times presented are optimistic.
D) Comparable with (and for some destinations superior to) the GCP's proposed off-road scheme in terms of transport performance (journey times, passenger capacity, reliability, etc).	*No scheme specific details were provided so we are unable to comment on the proposals. It is unclear how this conclusion is reached. Journey time and reliability likely to be worse*	See above for evidence on journey times	

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E) Deliverable quickly and sustainable long-term.	*This is not the case. Extensive on-line construction could not be delivered quickly and would impact significantly existing users of the route.*	An on-road element using the A1303 would be much quicker to implement than an off-road stretch requiring a public enquiry, a new motorised user bridge over the M11, extensive attempted environmental mitigation, etc. The impact to existing users during construction would be temporary and relatively short-lived, as seen with numerous other city road schemes, whereas the disruption caused by an off-road scheme close to Cambridge would be permanent.	The hybrid solution would probably be quicker to deliver than the off-line solution, but as has already been stated we would anticipate that it would still take 2-3 years to complete. The complexity of constructing the on-road solution whilst the A1303 is in use has not been fully appreciated here.
F) Compliant with possible future CAM metro system.	*On-road solution at Junction 13 would not be considered to be CAM compliant by CPCA*	This is a purely subjective and completely unsubstantiable. CAM specifications are as yet unknown and there is nothing in the LLF's proposal which is non-compliant with the general CAM ideas and aspirations published to date. Even the GCP's proposed off-road scheme is only 75% off-road, so it is clear that an on-road component is not per se non-compliant with CAM. A hybrid route with an on-road component on Madingley hill would be approximately 60% off-road, which is not materially different from the GCP's preferred scheme.	The LLF solution is based on sub-standard lane widths which would represent a constraint on CAM development. Whilst CAM specification is not yet known it is a reasonable working assumption that it would use vehicles compatible with a standard 3.65m lane. It would not be reasonable to assume that it could operate on narrow lanes.

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G) Significant budget (possibly £100M or more) freed up to support additional sustainable transport improvements and initiatives, e.g. better ticketing, public transport use incentives, on-demand services, etc.	*No scheme specific details were provided so we are unable to comment on the proposals.*	An estimated budget can be derived from previous GCP publications. Based on figures in the economic case published in 2016 and the Phase 2 consultation, a hybrid route is likely to have a present value cost in the region of £50m, compared with £180-200m for the GCP's proposed off-road route.	The simplest way to assess the various options with the most recent data, as found in OAR2 (Table 18) is by looking at the Scheme Capital Costs (2018 prices). These costs exclude risk allowances but include all elements such as land costs and scheme design and management leading up to construction. This also showed the "Low Cost a & b" schemes (i.e. Phase 1 On-Road with differing P&Rs) to be £37m - £38m. From the Phase 2 Consultation document, Off Road Phase 2 alone was £43m (excluding land costs etc…). Therefore a conservative estimate for a Hybrid scheme consisting of Off-Road Phase 2, On-Road Phase 1 and a P&R would be £80m, compared with the "Illustrative Comparator" from OAR2 Table 18 (I.e. Off-Road, Phase 1 & 2, with Waterworks P&R Site, which was £120m.