GREATER CAMBRIDGE PARTNERSHIP

Growing and sharing prosperity

Delivering our City Deal

Report to:	Greater Cambridge Partnership Joint Assembly	2 November 2017
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Western Orbital – Junction and Park & Ride Interventions

1. Purpose

1.1. Orbital public transport improvements to the west of Cambridge link with wider corridors to significantly improve access to and connections between a range of employment and housing sites. This includes Bourn Airfield, Cambourne West, Cambridge Biomedical Campus, Cambridge Northern Fringe, Cambridge North West, Cambridge Southern Fringe and West Cambridge (collectively around 15,500 new homes and 20,000 new jobs between 2011 and 2031).

1.2. This report, as part of the ongoing Western Orbital scheme development, summarises technical work carried out on assessing future demand for Park & Ride (P&R) spaces at J11 of the M11 and a Park & Cycle facility at J12. It also considers the issues associated with access to expanded P&R facilities and the interaction with the local and strategic road network.

1.3. It is intended to seek authority from the GCP Executive Board to develop a full business case for a new P&R site immediately to the north west of J11 of the M11 including new access arrangements for general traffic and priority for buses using the facility. This business case will compare the costs and benefits of a new P&R site against significant expansion of the existing site at Trumpington.

2. Key issues and considerations

2.1. The information in this report is provided in more detail in the Background Paper "Western Orbital End of Stage Summary - October 2017." https://citydeal-live.storage.googleapis.com/upload/www.greatercambridge.org.uk/transport/transport-projects/Western%20Orbital%20End%20of%20Stage%20Summary%2020.10.17.pdf

2.2. In September 2017 the GCP Executive Board agreed, as part of the ongoing development of Western Orbital measures to improve sustainable transport along the western corridor of Cambridge, to increase the capacity of the Trumpington P&R site by 299 spaces to address short term capacity constraints at this site in the context of the expansion of the Cambridge Biomedical Campus (CBC).

2.3. There is a clear policy background supporting improved sustainable transport infrastructure in the area, particularly in the context of local growth. As such the report in September 2017 set out that additional medium and longer term considerations around a new P&R site at J11 and Park & Cycle at J12 as well as associated junction improvements be considered as part of the on-going Western Orbital assessment work to be presented at the November and future Boards for decision.

2.4. Potential interventions at J13 will be linked to emerging options for the Cambourne to Cambridge Better Bus Journey Scheme.

2.5. The requirement for a busway link from J11 to J13 is now being dealt with as part of a 'smart motorway' (hard shoulder running) bid to Highways England (HE) in respect of their Roads Investment Strategy 2020-25 (RIS2).

Junction 11 (Trumpington)

2.6. As stated in the September 2017 report, the existing Trumpington site is 85% full at its busiest period (13:00) and as such potential demand for P&R spaces at J11 has been assessed using 'scenarios' for future conditions in Cambridge as follows

- **Scenario 1** = continued economic growth on the basis of local plan but no demand control measures within Cambridge (the 'do nothing')
- **Scenario 2** = as per Scenario 1 but with parking restrictions at the expanded CBC site which in effect would only provide for 1 new parking space for every 3 new jobs created on the site
- **Scenario 3** = as per Scenario 2 but with additional demand management measures within Cambridge city centre

2.7. The modelling assessment of the number of spaces needed for each scenario is set out in **Table 1** below

	Scenario 1	Scenario 2	**Scenario 3**
2017 (base)	1150	1150	1150
2022	1400	1600	2350
2027	1500	1850	2690
2031	1550	2000	3100

Table 1: Future Demand for P&R at J11

2.8. Currently there are up to 1639 (1340 + 299) spaces planned to be provided at Trumpington subject to detailed design and approvals. As set out, from an operational perspective, a car park can be considered full at 85% capacity due to the disbenefits to users having to seek out spaces. As such the rounded figures in Table 1 have been uplifted by 15% and then subtracted by 1639 to provide the total additional requirement for P&R spaces (see **Table 2** below).

	Scenario 1	Scenario 2	**Scenario 3**
2017 (base)	-320	-320	-320
2022	-30	200	1060
2027	140	490	1450
2031	140	660	1930

Table 2: Total Requirement for P&R spaces

2.9 Table 2 sets out that, depending on the chosen Scenario, there could be a significant shortfall for P&R at J11 by 2031 based on existing growth projections. However if no measures are taken to control vehicle demand within local destinations such as CBC and Cambridge City centre, the existing Park & Ride will retain capacity until 2027 and only require a relatively small increases in spaces to cater for demand after that.

2.10 The future traffic condition at J11 have been assessed. The modelling finds that in the case of all scenarios, the junction will be impacted by congestion back from Trumpington Road by 2022 making access to the Trumpington P&R site delayed at peak times and possibly also impacting P&R bus operations into the City Centre. Any further increase in capacity on the M11 for general traffic (e.g. as part of a Smart Motorway initiative) could, without mitigation, further exacerbate this congestion at junctions.

Junctions 12 (Barton) and 13 (Madingley)

2.11 Other junctions which fall within the scope of the Western Orbital have also been considered as part the strategic evaluation. At J12 a potential Park & Cycle has been considered to intercept some traffic using Barton Road. J13 northbound off slip has also been considered as a component of a bus priority scheme complemented by bus priority measures at J11 southbound off slip, to support a potential 'Western Orbital' bus service that could link key growth sites to the west of Cambridge (such as Cambourne) with CBC.

3. Options and emerging recommendations

Junction 11

3.1. The analysis concludes that additional P&R capacity may be needed at J11 but that congestion will reduce the effectiveness of this P&R capacity because vehicles will have to queue for long periods to access new P&R capacity as well as the operational of buses running to and from a P&R site. Officers will be recommending that further work be undertaken that supports an approach to J11 that is 'holistic' including both P&R expansion, access arrangements and bus priority.

3.2. In this context a number of options have been evaluated for feasibility to determine which, if any, should be taken forward for a full business case assessment.

3.3. In terms of Park & Ride, two options are identified as suitable for potential larger expansion. Option A is for further expansion of the existing P&R site at Trumpington and Option B is for a new site on land to the north west of J11.

3.4. Table 3 summarises the key issues around each site

	Option A	**Option B**
Engineering potential for expansion	Expansion of the site would need to be via decking and/or underground provision even for the lowest predicted space requirement as no additional ground level space is available.	Any new site would be at ground level
Constructability	A small decking or underground parking area could be achieved while keeping the existing site open but larger expansion may require closure of the existing site during construction	This site could be delivered without impact on existing P&R operation
Access	Options exist for segregated vehicle access south bound off M11 to the existing site. Access from the M11 northbound and from the A10 would need to be via the existing J11 potentially putting more pressure on the junction (without high cost engineering interventions)	Access north bound off the M11 and east bound off the A10 can be achieved without impacting J11. Access south bound off the M11 would need to be via J11.
Operational issues	This site is closer to the City and CBC via the guideway. Buses could access the guideway directly to CBC. The	This site is further from the city and CBC and bus infrastructure would need to be provided across the M11 either across the

	Option A	Option B
	site would be more attractive for southbound users off the M11 if a segregated access road were provided. Bus priority would need to be enhanced along Trumpington Road for additional city bound bus services.	existing roundabout at J11 or via a new or enhanced overbridge to the north. Bus priority would need to be enhanced along Trumpington Road for additional city bound bus services. The use of the existing guideway could be accessed via the existing P&R site.
Planning considerations	This site is partly in Green Belt although is already surrounded by urban development. Decking would have an impact on the adjacent properties.	This is a new P&R site in Green Belt
Environmental Issues	Considerations will include air quality, noise and visual impact in relation to significant site expansion close to residential properties and a primary school	Considerations will include visual impact and loss of openness and impact on green belt purposes and impacts on biodiversity
Cost	High cost per space for expansion and decking has limited life cycle unless bespoke structures are considered. Indicative costings for this were provided in the September Report (link below) *http://scambs.moderngov.co.uk/ieListDocuments.aspx?CId=1073&MId=6851&Ver=4*	Low cost per space for new construction

Table 3: Key Issues for P&R expansion

3.6 A number of access arrangements to a new or expanded P&R site have been considered and modelled for traffic impacts. The objective of any new access arrangement will be to facilitate both bus and general traffic movement into and out of the P&R site with minimal or no impact on the strategic and local highway network. Further discussions with Highways England are ongoing in terms of ensuring the best strategic and operational fit with the M11.

3.7 An outline plan of areas discussed in this report is provided in **Appendix 1** with detailed plans and layouts provided in the Background Paper.

Junction 12

3.8 A Park & Cycle (where drivers park and then cycle onwards) has been considered at J12. Five sites were assessed for a potential location and two were identified as the most feasible, Appendix 1. Overall assessment of potential demand is low – around 200 – 300 users per day. On this basis, the cost of developing, constructing and maintaining a Park & Cycle site as well as the environmental impacts of loss of green belt for the site are unlikely to lead to a positive business case when considered in isolation, even taking into account the benefits to cycling. Furthermore a Park & Cycle site at J12 would be larger than the envisaged Rural Travel Hubs, being considered as a separate GCP project. However plans for a Barton Greenway also being developed by the GCP will serve to improve cycling opportunities along this corridor. As such Officers will not be recommending further assessment of a Park & Cycle at J12.

Junction 13

3.9 J13 has been, to date, within the scope of the Western Orbital project. As such given the existing peak congestion at J13 and impact on a future orbital bus service using the M11, a number of potential bus priority proposals have been considered. Similarly to J11, these proposals require further consideration with Highways England in the context of the future M11 strategy. In addition, given the ongoing development of the Cambourne to Cambridge Better Bus Journey scheme, there is a clear case to ensure that any future proposal for J13 is integral to the option development for this project. As such Officers will be recommending that the bus priority at J13 be removed from the Western Orbital project and that it be included as part of the business case development for the Cambourne to Cambridge scheme.

3.10 The Cambourne to Cambridge LLF currently also includes for the Western Orbital Scheme primarily as a result of the interconnectivity of the 2 schemes at J13 and the initial intention for a possible Busway parallel to the M11. With the proposal that J13 be now considered as part of the Cambourne to Cambridge Scheme and the recommendation to no longer pursue a Park and Cycle at J12 Officers will also be recommending that a site specific consultation group be set up for the J11 proposals up to the Planning approval stage and at that point further consideration be given as to the applicability for an LLF.

4. Next steps and milestones

4.1. This report has identified a number of feasible proposals for interventions at J11. It is now proposed to recommend the development of a 'full business case' for a preferred option to include increased P&R capacity and access/bus priority measures both into/out of the P&R and along Trumpington Road for City bound P&R bus services.

4.2. The proposed timetable for this business case development work is as set out in Table 4:

Activity	**Target completion date***
Develop series of distinct options (including P&R and bus priority/access arrangements)	January 2018
Present options for consultation to GCP Executive Board EB	March 2018
Public Consultation on Options	June/July 2018
Final Option recommendation to GCP EB	December 2018
Detailed design and other preparatory tasks for planning process	2019
Obtain relevant planning powers to construct	January 2020
Start construction	Summer 2020
Scheme completion	December 2021

Table 4 – Key Milestones
Subject to statutory permissions

5 Recommendations to Joint Assembly

5.1 Joint Assembly is asked to comment on the overall approach being recommended to the Executive Board.

APPENDIX 1: AREAS OF INTEREST IN REPORT