

**Cambridge Local Plan and South Cambridgeshire Local Plan**

**Matter 7: Transport**

**Update on Transport Modelling**

**Introduction**

1. At the Matter 7 Transport Hearing on 18 February 2015, the Councils were asked to provide additional information on the Transport Modelling that was undertaken during the preparation of the Local Plans, using the Cambridge Sub Regional Model (CSRM), in particular:
  - The Validation Report for the CCRM Model.
  - Assumptions used in the model runs referred to in the CSRM Modelling Report (RD/Strat/160)
  - How the Cambridge Western Orbital was applied in the CSRM Model run referenced in the Modelling Report.
2. This supplementary statement provides the information above. It is being shared among other participants at the Hearing.

**The Validation Report for the CCRM Model**

3. The Cambridge Sub Regional Model (CSRM) is a WebTAG compliant model. This means that it is compliant with government guidance for transport models of this type and has used government guidance and published forecasts to predict patterns into the future. This includes forecast increases in parameters such as fuel price change and public transport fare changes as well as parameters that control traffic forecasts over time such as car ownership trends and corresponding vehicle occupancy trends, allowing for a greater degree of certainty in the modelling outputs. It is monitored and updated periodically to ensure its validity.
4. Two Cambridge Sub-Regional Model Validation Reports are publicly available documents available on the Highways Agency Website. Further information is provided in section 2 of the Technical Note at Appendix 1.

**Assumptions used in the model runs referred to in the CSRM Modelling Report**

5. The CSRM Modelling Summary Report for Cambridge and South Cambridgeshire Local Plans July 2013<sup>1</sup> details three phases of modelling:

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<sup>1</sup> RD/Strat/160

- Phase 1 (Autumn 2012): Seven different scenarios were tested. All included the then committed level of development (planning permissions and sites allocated in adopted local plans - scenario B). The seven scenarios were based on the sites in the Issues and Options 2012 consultation and potential emerging site options that were being tested ahead of Issues and Options 2<sup>2</sup>. The scenarios increased the amount of development at each stage of the development sequence, allowing the impact of different development strategies to be tested.<sup>3</sup>
- Phase 2 (Spring 2013): Detailed tests were carried out on three short-listed strategic options. In view of the clarity by that time on the strategy for Cambridge, the phase 2 tests focused on strategic options for South Cambridgeshire drawing on site options from the two rounds of issues and options consultations:
  1. village focused development in South Cambridgeshire,
  2. new settlement at Bourn Airfield and
  3. new settlement at Waterbeach.

These tests allowed the different development focuses to be compared, including the potential for mitigation of transport impacts<sup>4</sup>. By this point the decision had been taken that major new development on the edge of Cambridge should be a rejected option, so further modelling of this option was not carried out.

- Phase 3 (Spring 2013): the Phase 3 modelling was to test the emerging Proposed Submission Local Plan scenarios for South Cambridgeshire and Cambridge, together with an enhanced package of transport mitigations, in advance of finalisation of the draft plans (RD/Strat/160, CSRМ Modelling Summary Report, Section 2.4). Transport mitigation measures used in the transport modelling reflect those developed for the emerging Transport Strategy for Cambridge and South Cambridgeshire (TSCSC), designed by CCC to address significant known transport issues, and anticipate measures which would be needed to support future growth<sup>5</sup>.
6. The Technical Note provides further information on the scenarios and the assumptions as requested by the Inspector (see section 3 of Appendix 1). At each stage of modelling, assumptions were made regarding the housing and jobs that would take place at different locations across the districts informed by the information available at the time. The Technical Note includes Table 3.1 that provides a synopsis of the inputs to the model runs.

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<sup>2</sup> Note that scenario F included land west of Trumpington Road which following completion of the technical assessment was not included as a site option for consultation.

<sup>3</sup> RD/Strat/160, CSRМ Modelling Summary Report, Section 2.1

<sup>4</sup> RD/Strat/160, CSRМ Modelling Summary Report, Section 2.3

<sup>5</sup> RD/Strat/160, CSRМ Modelling Summary Report, Appendix B

7. In preparing this note the Councils have noted some inconsistencies with the trajectories used in the Phase 3 modelling:
- Cambridge – the total dwellings modelled at 14,288 dwellings is broadly consistent with, and slightly higher than, the Proposed Submission Local Plan trajectory figure of 14,191 dwellings<sup>6</sup>. However the phase 3 modelling retained two locations for development on the edge of Cambridge from the earlier phases of modelling, namely a site to the west of Trumpington Road and a site south of Fulbourn Road, neither of which were allocated for housing in the Proposed Submission Local Plan or subsequently. Also the Worts Causeway sites (GB1 and GB2) were at the time of the phase 3 modelling identified as appropriate for a lower capacity of 430 dwellings compared with 495 which was the level of development input into the phase 3 modelling. The Proposed Submission Local Plan provided for the balance of dwellings, which had erroneously been retained in the model in the above locations, as being dispersed across the urban area through updated capacity assumptions of sites identified in the Phase 1 model runs and an updated windfall assessment.
  - South Cambridgeshire – the phase 3 modelling includes additional sites that had gained planning permission since the earlier model runs and the allocated sites in the Proposed Submission Local Plan, which along with commitments is broadly consistent with the 19,000 dwelling housing target in the draft plan at 18,663 dwellings. However, the additional year of completions since the earlier model runs (2011-2012 at 696 dwellings) was not included within the Phase 3 model, nor was the future allowance for windfalls as included in the Proposed Submission Local Plan trajectory (2,900 dwellings). As such, the overall number of dwellings included in the phase 3 modelling was not consistent with the trajectory included in the Proposed Submission Local Plan of 22,189 dwellings<sup>7</sup>.
8. These inputs into the phase 3 modelling have been discussed with the County Council and for completeness it is intended that they will be addressed through a rerun of the Phase 3 modelling with the inputs corrected for consistency with the Proposed Submission Local Plans and put before the examination as soon as possible.

### **How the Cambridge Western Orbital was applied in the CSRM Model run referenced in the Modelling Report**

9. Section 4 of the Technical Note at Appendix 1 provides an overview of the assumptions made in the transport modelling supporting the Local Plan regarding the Cambridge Western Orbital public transport route. For the purposes of modelling it assumed improvements to existing routes for bus movements.

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<sup>6</sup> At time of submission the trajectory figure in the most recently published Cambridge AMR was 14,091 dwellings.

<sup>7</sup> At time of submission the trajectory figure in the most recently published South Cambridgeshire AMR was 22,206 dwellings.

10. It should be noted that the Western Orbital proposals have evolved since the modelling work. The final Transport Strategy for Cambridge and South Cambridgeshire (TSCSC)<sup>8</sup> describes the scheme as a dedicated bus facility to run parallel to the M11 between junction 11 (Trumpington) and junction 13 (Madingley Road). This would offer greater segregation and more integrated interchange options than assumed in the modelling with likely enhanced public transport modes shares. This is particularly the case when considered together with the A428 Public Transport corridor enhancements, all of which will tend to improve modal transfer.

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<sup>8</sup> Transport Strategy for Cambridge and South Cambridgeshire Action Plan (RD/T/120)  
Scheme DC13 – Page B10

# Technical note

<b>Project:</b>	South Cambridgeshire Local Plan and Cambridge Local Plan examinations	<b>To:</b>	Cambridgeshire County Council
<b>Subject:</b>	CSRM Modelling Information Update	<b>From:</b>	Atkins
<b>Date:</b>	09 March 2015	<b>cc:</b>	Cambridge City Council and South Cambs District Council

## 1. Introduction

1.1. To support the CSRM Modelling Summary Report for Cambridge and South Cambridgeshire Local Plans, Atkins has been asked to identify the planning inputs and network parameters used for each test conducted to support each stage of the analysis. In particular the following information was requested:

- The Model Validation reports for the base year modelling;
- The planning assumptions for each test covering housing and employment allocations alongside specific transport measures; and
- The representation of the orbital bus route from Science Park Station to Addenbrooke's via Cambridge North-West.

1.2. Each of these areas is described in the following sections.

# Technical note

## 2. Model Validation Reports

2.1. The CSRМ has been used extensively for other plan making exercises within Cambridgeshire, for developer related tests of larger sites through Cambridgeshire County Council and by the Highways Agency (HA) as a source of demand forecasts for all current work on the A14 Cambridge to Huntingdon Upgrade which underpins the business case submission and DCO process for this important regional and national highway scheme.

2.2. The CSRМ is supported by two validations reports:

- Transport Demand and Public Transport Model Development and Validation Report (October 2009) – a combined MEPLAN based land use, transport demand and Public Transport assignment model
- Highway Model Component: Model Development and Validation Report (July 2009) – a SATURN based highway assignment model

2.3. These large and detailed documents have been in the public domain since autumn 2013 through the HA website as appendices to the A14 Cambridge to Huntingdon Improvement Scheme Local Model Validation Report:

<http://assets.highways.gov.uk/freedom-of-information/disclosure-log/a14-cambridge-to-huntingdon-improvement-scheme-698600/Local-Model-Validation-Report.pdf>

2.4. Both documents relate to the original base year model formulated to replicate conditions in 2006.

# Technical note

## 3. Input Assumption Ledger for Land Uses

- 3.1. A number of tests were conducted through the three phases of the Local Plan work. These are described in the CSRM Modelling Summary Report for Cambridge and South Cambridgeshire Local Plans July 2013. The Input Ledger shown in Table 3.1 gives a breakdown of the key planning assumptions made for each test together with any transport mitigation assumed for Phases 2 and 3.

**Table 3.1: Assumptions for CSRM runs for the City and South Cambs Local Plan Analysis**

Phase	Scenario	Name	Dwellings				Jobs				Transport Tests			
				Cambridge	S. Cambs	Hunts	E. Cambs	Cambridge	S. Cambs	Hunts	E. Cambs	Without Mitigation	With Mitigation	
Phase 1	B *	Committed		10512	14219	9952	1594	14900	22400	15100	7900	Chesterton Station 2016, WOTC link 2013, A14 Complementary PT services	n/a	
	C *	Within Cambridge Urban area	As B plus	2098	0	5641	7105	14900	22400	15100	7900	As B	n/a	
	D1 *	Waterbeach New Settlement	As C plus		4500			14900	22400	15100	7900	As B	n/a	
	D2 *	Bourn Airfield New Settlement	As C plus		3500			14900	22400	15100	7900	As B	n/a	
	E *	Village extensions	As C plus		6130			14900	22400	15100	7900	As B	n/a	
	F *	Cambridge Fringe	As C plus		1678			14900	22400	15100	7900	As B	n/a	
	F+ *	Cambridge Fringe higher level	As C plus		3654	348			14900	22400	15100	7900	As B	n/a
	G	Combination Test (D2, E and F)	As C plus		1678	9630			14900	22400	15100	7900	As B	n/a
Phase 2	1 *	Village Based	As F, plus		5363			15000	22810	15100	7900	A14 scheme from 2019	All schemes in Appendix B except A10 dualling	
	2 *	Waterbeach New Town	As F, plus		14273			15000	22810	15100	7900	As Above	All schemes in Appendix B	
	3 *	Bourn Airfield New Settlement	As F, plus		6713			15000	22810	15100	7900	As Above	All schemes in Appendix B	
Phase 3		Preferred Option		14288	18663	15593	8699	22100	22506	15100	7900	As Above	All schemes in Appendix B except A10 dualling	

- \* Phase 1 - B Includes: Cambridge Fringe sites committed in existing plans, and Cambourne (950) and Northstowe (7500)
- \* Phase 1 - C Identified SHLAA sites within Cambridge (1258), and windfall allowance (840)
- \* Phase 1 - D1 Waterbeach new settlement (4500)
- \* Phase 1 - D2 Bourn Airfield (3500)
- \* Phase 1 - E All villages Sites identified in South Cambridgeshire Issues and Options 2012 (including Cambourne West)
- \* Phase 1 - F Additional sites on Cambridge Fringe - Land West of Trumpington Road (1106), Worts Causeway (495) , Fulbourn Road South (77)
- \* Phase 1 – F+ Additional sites on Cambridge Fringe (higher level) – As F plus additional locations on the Cambridge fringe (see below)
  
- \* Phase 2 - 1 NIAB3 (130) Cambourne West (1000), Waterbeach (Barracks Built Area Only) (1090) Northstowe Reserve (900), Village sites focusing on Rural Centres and Minor Rural Centres (2243)
- \* Phase 2 - 2 NIAB3 (130) Waterbeach New Town (10,000), Cambourne West (1000), Northstowe Reserve (900), Village sites at Rural Centres and Minor Rural Centres (2243)
- \* Phase 2 - 3 Bourn Airfield New Village (3500) Waterbeach (Barracks Built Area Only) (1090), Northstowe Reserve (900), Villages sites at Rural Centres and Minor Rural Centres (1223)
  
- \* Phase 3 Sites reflecting Cambridge and South Cambridgeshire Proposed Submission Local Plans, with completions anticipated at 2031.



Note: Phase 1 F+ was used to test a Cambridge Fringe focused strategy as a comparator. Dwellings were distributed around a range of Green Belt broad locations to deliver around 4000 dwellings, rather than reflecting specific site proposals. These are described by reference to the Broad Locations identified in each Councils' Issues and Options report 2012 (South Cambridge Issue 12 and Figure 4, pages 41 and 42 and Cambridge Issues and Options 2012 Issues 10 to 19, pages 48 to 74):

Broad Location 1 – Land to the north and south of Barton Road (39)

Broad Location 3 – Land West of Trumpington Road (424)

Broad Location 5 – Land South of Addenbrooke's Road (1,502)

Broad Location 7 – Land between Babraham Road and Fulbourn Road (1,212)

Broad Location 8 – Land East of Gazelle Way (754)

# Technical note

## 4. Orbital Bus Route Alignment

- 4.1. Appendix B.2 of the Modelling Summary Report describes “An Orbital bus service from Cambridge Science Park to Addenbrooke’s, via North West Cambridge”.
- 4.2. Figure 4.1 provides a plan of the route as coded in the Public Transport Assignment model. It had been anticipated this would augment the Uni/Citi 4 services.

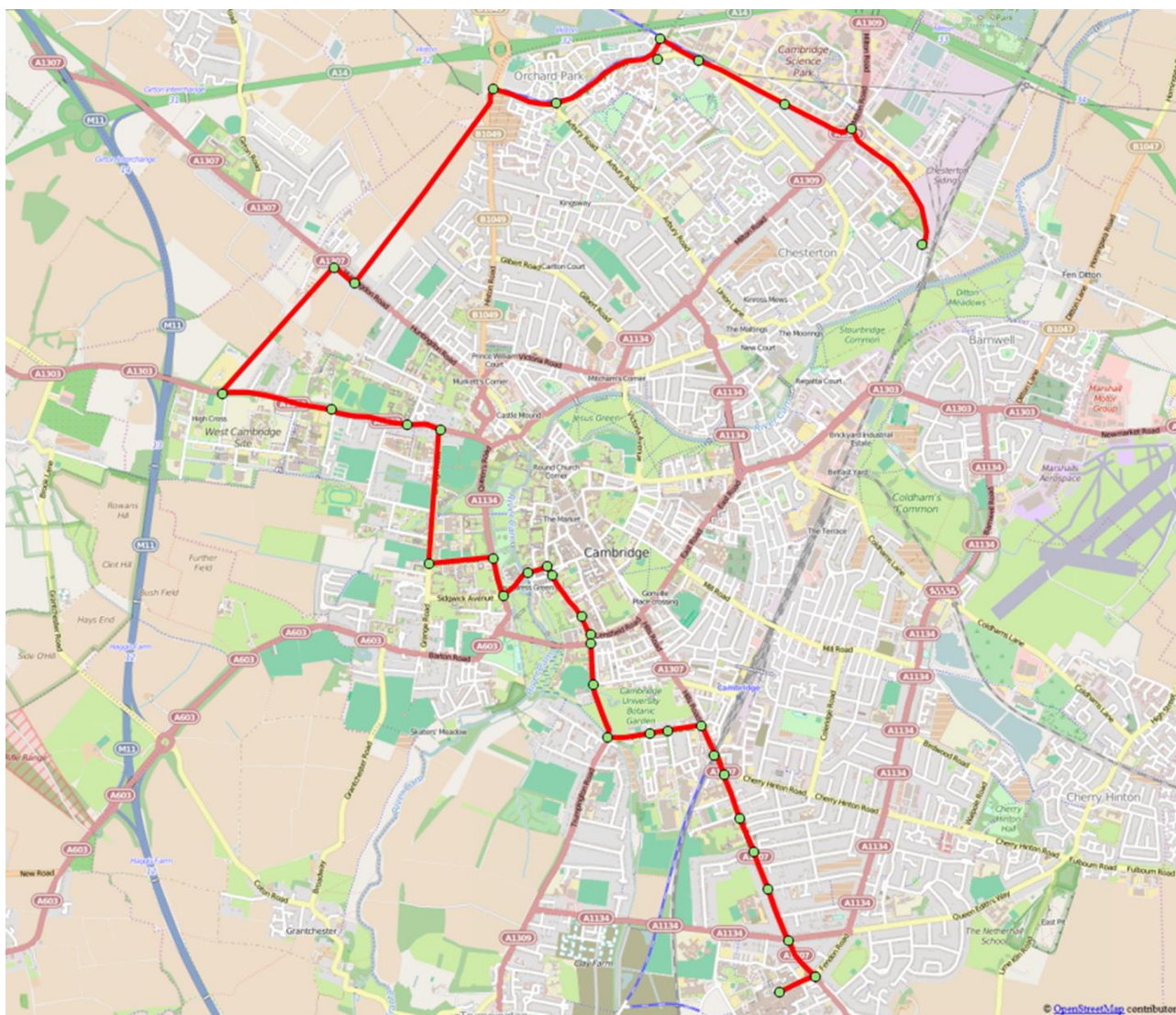


Figure 4.1: Route and Stop location of Orbital Bus Service assumed in TSCSC modelling

# Technical note

4.3. Table 4.1 lists service frequency and congested journey times assumed for the service between selected points along the route.

Modelled characteristic	Assumed Value
Service Frequency	15 mins
Journey Time: Science Park Station – Cambridge Regional College (CRC)	2.0 mins
Journey Time: CRC - Madingley Road/P&R	5.2 mins
Journey Time: Madingley Road/P&R- Peterhouse	10.1 mins
Journey Time: Peterhouse - Addenbrookes	10.6 mins

**Table 4.1: Characteristics of Orbital Bus Route Cambridge Science Park Station to Addenbrooke’s**

4.4. It should be noted that the final version of the Transport Strategy for Cambridge and South Cambridgeshire Action Plan<sup>1</sup> describes the scheme as a dedicated bus facility to run parallel to the M11 between junction 11 (Trumpington) and junction 13 (Madingley Road). City Deal Schemes are now advancing Western Orbital options that may be able to offer greater segregation and more integrated interchange options particularly with the A428 PT corridor enhancements, all of which will tend to improve modal transfer.

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<sup>1</sup> Transport Strategy for Cambridge and South Cambridgeshire Action Plan (RD/T/120) Scheme DC13 – Page B10