



Appendix 5

Topic Paper – Delivery Cambridge South – Matter 11.2 Transport

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Client name LIH / Pigeon	Discipline Transportation	Project name Cambridge South	Date June 2017
Project number 60307964	Prepared by A Keene	Reference Number 60307964_EIP_M11_001	

Revision	Revision date	Details	Authorised
v1	02 June 2017	For Submission	Nick Anderson

1. Introduction

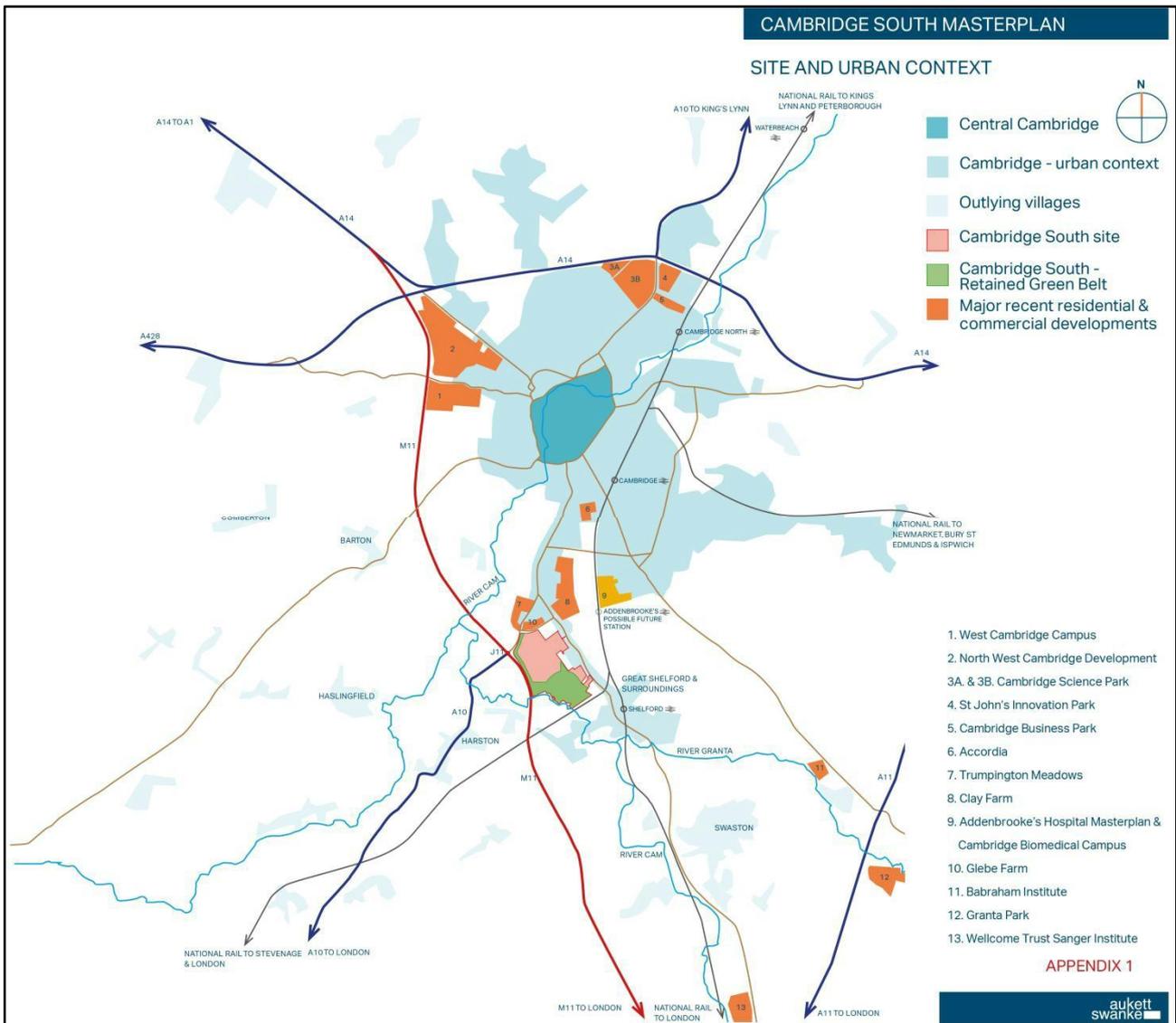
- 1.1 Cambridge South provides the opportunity to deliver an additional 85,000sqm of employment land and 1,250 homes in a sustainable location on the edge of Cambridge, within easy distance of a range of key services and facilities.
- 1.2 The site is being promoted by Lands Improvement Holdings and Pigeon Land as part of the Local Plan process to supplement the proposed development allocations identified by Cambridge City and South Cambridgeshire Councils. AECOM has been providing technical transport advice to the promoters.
- 1.3 The proposals look to make the most of the excellent connectivity of the area and locate new R&D space close to the Cambridge Biomedical Campus and Addenbrooke's Hospital, maximising potential synergy benefits through clustering and providing new private and affordable housing near to the hospital.
- 1.4 The site is well located for Trumpington Park and Ride, the Cambridge Guided Busway and Shelford Rail Station and is at a key gateway for vehicle trips accessing Cambridge.
- 1.5 The proposals reflect a desire to maximise the opportunity for sustainable travel and mitigate the development's potential impacts. The strategy also considers how the development can contribute to an improved transport network in the Southern Fringe, with the potential to provide relief to key junctions.
- 1.6 This paper considers the deliverability of the proposed Cambridge South site. The strategies identified are underpinned by a substantial amount of technical work, however it is recognised that further work will be required as the proposals are taken through towards planning. The site promoters will continue to work with the local authorities and transport operators to ensure that the access strategy is the optimum for meeting the needs of the development in a way that minimises any adverse impacts on the local transport networks, while considering the additional benefits that it could deliver.

2. Site Location & Local Transport Context

Site Location

- 2.1 The Cambridge South site is located to the south of Glebe Farm and Trumpington and to the north of Great Shelford. The River Cam and the railway line between Foxton and Cambridge provide a southern boundary to the site, whilst the eastern boundary is mostly formed by the back of residential properties along Shelford Road / Cambridge Road, allotments and a rugby club, although the south east corner of the site is immediately adjacent to the public highway (Cambridge Road).
- 2.2 The northern boundary of the Cambridge South site abuts the Addenbrooke's Road. The Addenbrooke's Road connects the A1309 Hauxton Road in the west to Shelford Road, Great Kneighton (formerly known as Clay Farm) and Addenbrooke's Hospital to the east.
- 2.3 The western boundary of the site is formed by the A1309 Hauxton Road and the M11. The A1309 Hauxton Road provides a link between the M11 Junction 11 and the A10 to Trumpington and Cambridge City Centre.
- 2.4 The site's location in the context of the local area is shown in **Figure 1**.

Figure 1 – Site Location and Context

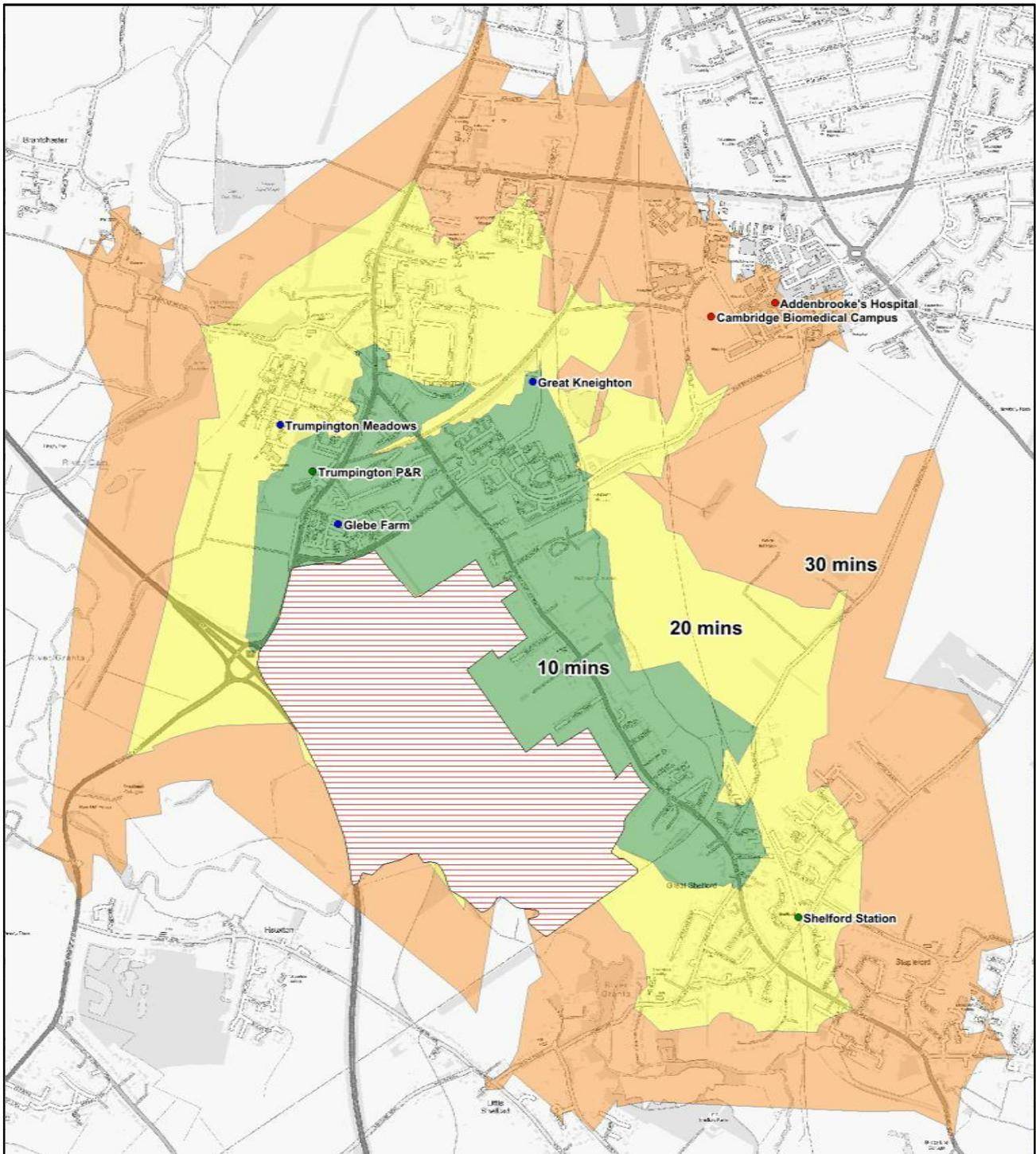


Walking & Cycling

- 2.5 A development at this site would be well served by both cycling and walking links, with dual use off-road facilities provided on the Addenbrooke's Road and Hauxton Road, as well as on-road cycle lanes on the Addenbrooke's Road, Shelford Road and Cambridge Road. These links provide direct connections to the Addenbrooke's Hospital, Cambridge City Centre and surrounding settlements, as well as to routes along the guided busway towards Cambridge Rail Station.
- 2.6 To aid cyclists on road, advance stop lines are provided at the Addenbrooke's Road junctions with Shelford Road, Hauxton Road and the Glebe Farm access.
- 2.7 Toucan crossings are provided at the Glebe Farm access junction, which would help to connect the Cambridge South development by both foot and bike to the Glebe Farm and Great Kneighton developments and then on to Addenbrooke's Hospital and Cambridge Biomedical Campus (CBC) as well as other destinations to the north and east.
- 2.8 To the south, the site is connected by footpaths and a mixture of on-road and off-road cycleways to a number of local settlements including Great Shelford, which is served by Shelford Rail Station. A short distance to the east is National Cycle Route 11, which it is proposed will ultimately connect Harlow in the south to Kings Lynn in the north and can provide longer distance commuter and leisure routes, in conjunction with the off-road route along the A10.

2.9 **Figure 2** identifies walking isochrones for the proposed development.

Figure 2 – Walking Isochrones



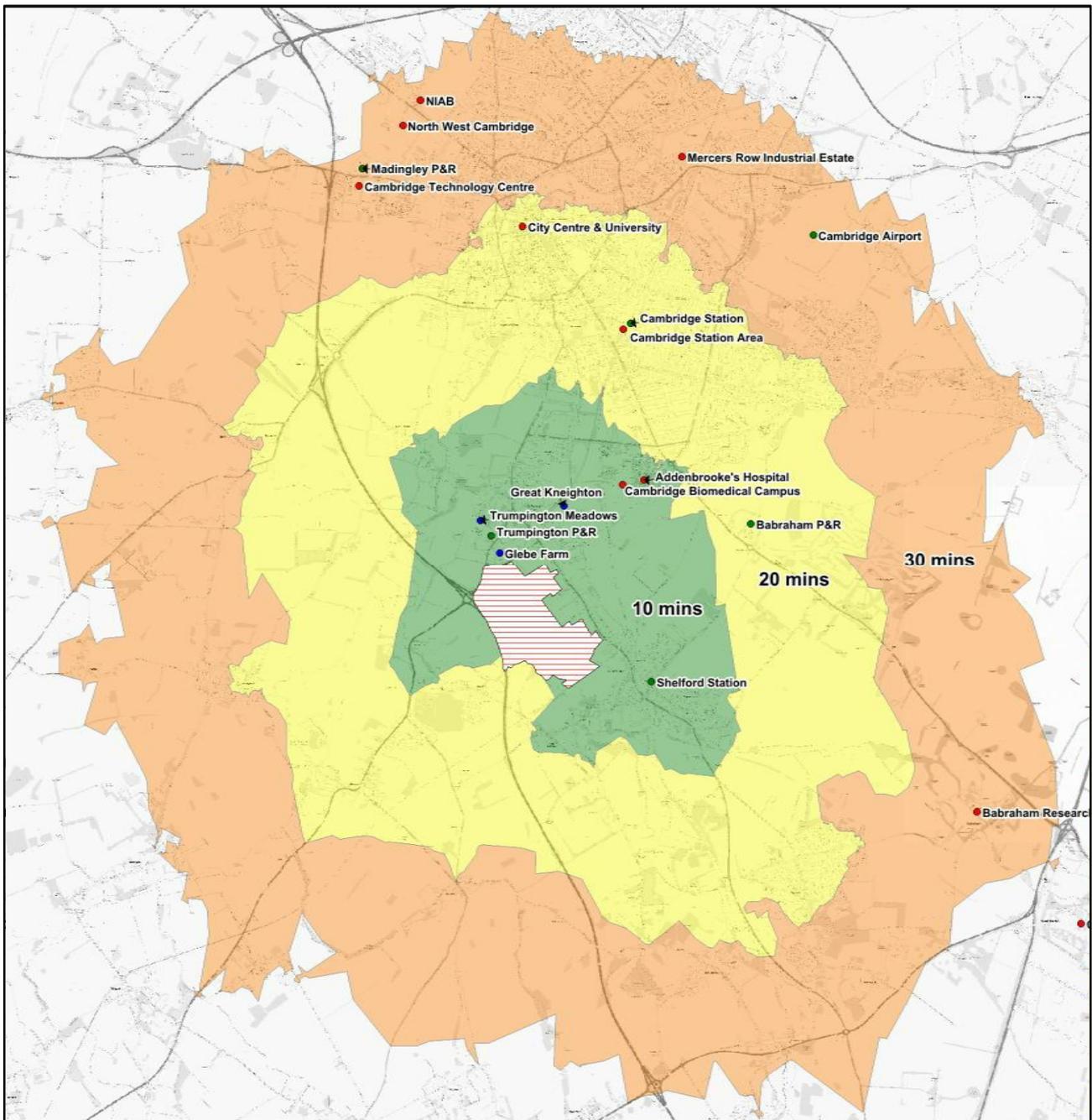
2.10 **Figure 2** shows that as well as the existing residential areas in Trumpington and Shelford, the new residential developments at Trumpington Meadows, Glebe Farm and Great Kneighton, are all within a 20 minute walk of the site. This indicates a significant potential residential catchment within easy walking distance of the proposed employment space.

2.11 Addenbrooke's Hospital and CBC are within a 20 to 30 minute walk of the site. As well as providing good access to key health facilities, this also has the dual benefit of nearby employment opportunities and other research and development companies located within a short journey of the development. This is an important consideration to businesses looking to benefit from being located within the Cambridge Cluster.

2.12 In addition, Trumpington Park & Ride, which provides access to the Cambridge Guided Busway, Park & Ride and conventional bus services, is within a 10 minute walk of the site. To the south, Great Shelford Rail Station is within a 20 minute walk. The proposals for the delivery of Addenbrooke’s Rail Station would be anticipated to further increase the accessibility of the site.

2.13 **Figure 3** identifies walking isochrones for the proposed development.

Figure 3 – Cycling Isochrones



2.14 **Figure 3** further emphasises the benefits of the proposed Cambridge South site location and the excellent connectivity to key locations, with the majority of Cambridge accessible within 30 minutes. Addenbrooke’s Hospital and CBC are within a 10 minute cycle ride along the Addenbrooke’s Road. Cambridge Rail Station and its surrounding development area along with the City Centre and University District are all within a 20 minute cycle ride. Babraham Research Park, NIAB and the North-West Cambridge Development area are all within 30 minutes cycle, while Cambridge Science Park is just beyond this.

2.15 Given the proximity of key destinations within a short distance of the site, it is anticipated that a significant proportion of trips could be made to and from Cambridge South by foot or bike. Data from the 2011 census indicates that for residents in the Trumpington Ward, which includes the northern section of the site, 30% who travel to work do so by bike and 16% by foot. This is very similar to the statistics for the wider Cambridge City Local Authority Area and is a significantly more sustainable travel pattern than South Cambridgeshire, as shown in **Table 1**.

Table 1: Journey to Work Statistics (Resident Population – 2011 Census)

Area	Car Driver	Car Passenger	Public Transport	Bicycle	On Foot	Other	Total
Trumpington Ward	36%	2%	15%	30%	16%	2%	100%
Cambridge	34%	3%	12%	32%	17%	2%	100%
South Cambridgeshire	69%	4%	9%	9%	7%	2%	100%

2.16 Similar data has also been extracted for those working within the Trumpington area and is presented in **Table 2**. This identifies that some 20% of people working in this area cycle to work and 9% walk. Again this is comparable to the wider Cambridge area and significantly greater than for South Cambridgeshire.

Table 2: Journey to Work Statistics (Workplace Population – 2011 Census)

Area	Car Driver	Car Passenger	Public Transport	Bicycle	On Foot	Other	Total
Trumpington Ward	49%	4%	17%	20%	9%	1%	100%
Cambridge	50%	4%	13%	22%	10%	2%	100%
South Cambridgeshire	75%	5%	4%	7%	7%	2%	100%

Public Transport

2.17 Cambridge South is well located in terms of the existing public transport network. A short distance to the north-west is the Trumpington Park & Ride, accessible within a 10 minute walk of the site. This provides a frequent service (6 buses an hour) to and from the City Centre.

2.18 In addition, the Park & Ride site is the current southern terminus for the Cambridge Guided Busway Routes A and R. Busway A connects the Park & Ride site to St Ives and Wyton Airfield via Addenbrooke’s Hospital, Cambridge Station, Central Cambridge and Cambridge Science Park. A further stop is located within the Great Kneighton development area, a short distance to the north of the site. Services operate every 15 minutes in either direction and the busway is off-road (guided) between the Park & Ride and Cambridge Station and between the Science Park and St Ives. Busway R operates between Trumpington P&R and Cambridge Station, with some services operating via Addenbrookes Hospital.

2.19 Further bus routes operate along both the Hauxton Road and Shelford Road / Cambridge Road corridors adjacent to the site. These not only provide further connections into the City Centre and facilities within Cambridge, but also to nearby settlements, including Great Shelford and Royston. More strategic long distance connections are also provided through coach services towards Stansted, Luton, Heathrow and Gatwick airports and London from the Park & Ride.

2.20 **Table 3** below provides a summary of high frequency local bus services which currently operate in the vicinity of the site. Additional, less frequent, services are also run by a number of operators.

Table 3: Bus Routes, Frequencies (Single Direction) and Nearest Stop

Service	Route	Nearest Stop	AM Peak ¹	Inter Peak ²	PM Peak ³	Sat ⁴	Sun ⁴
Citi 7	Cambridge – Sawston – Duxford – Saffron Walden	Cambridge Road	3	3	3	3	2
Blue Bus (88)	City Centre – Trumpington P&R	Park and Ride	6	6	6	6	4
Busway A	Chatteris / Ramsey / Somersham – St Ives P&R – Longstanton – Cambridge – Addenbrooke’s – Trumpington P&R	Park and Ride	4	4	4	4	0
Busway R	Trumpington P&R	Park and Ride	4	4	0	0	0

¹AM Peak 0800-0900 ² Inter Peak Average between 0900-1700 ³ PM Peak 1700-1800 ⁴ Hourly Average

- 2.21 As part of committed development proposals, it is intended that bus services will also operate through the future Great Kneighton residential area. Bus stops have already been introduced on the Addenbrooke’s Road by the Glebe Farm access and would therefore be conveniently located for Cambridge South, although at this stage the routing of services to use these stops has yet to be confirmed.
- 2.22 As noted above, both Cambridge and Shelford Rail Stations are easily accessible from the proposed site by a variety of modes. Cambridge is a key station on the local and national rail networks and provides access to services to London (Liverpool Street & Kings Cross St Pancras), Birmingham, Ely, Ipswich, Kings Lynn, Norwich, Peterborough and Stansted Airport.
- 2.23 Shelford Rail Station is located on the Cambridge to London Liverpool Street Line operated by Greater Anglia and provides access to settlements in Cambridgeshire, Essex, Hertfordshire and London.
- 2.24 The future delivery of the proposed Addenbrooke’s Station would provide an alternative connection within a 10 minute cycle ride of the site.

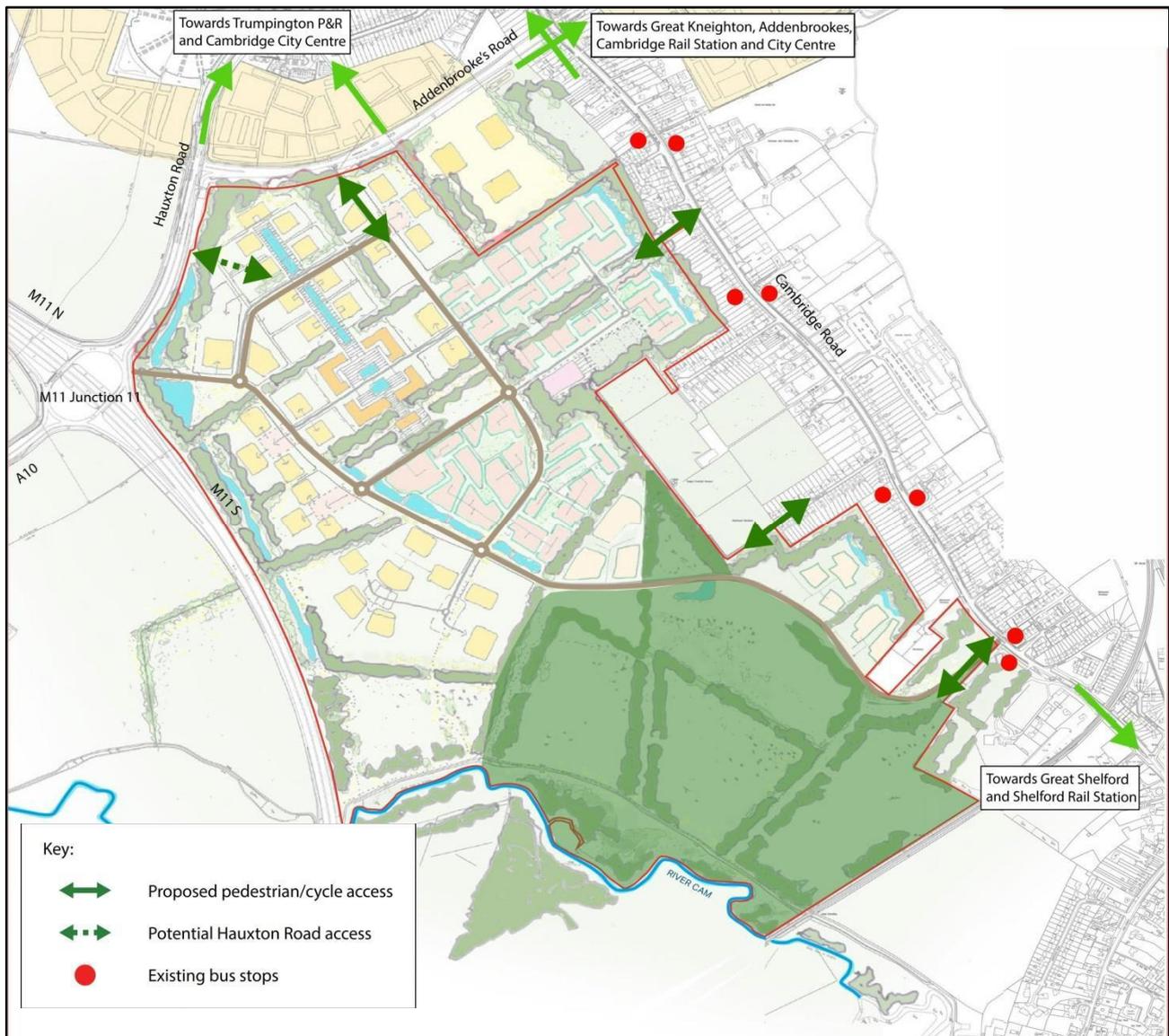
Local Highway Network

- 2.25 Cambridge benefits from access to a number of key strategic highway corridors. These include the M11 which links the city to the M25 and London, the A10 between London and Kings Lynn and the A14, between Felixstowe in the east to the M6 at Rugby.
- 2.26 Cambridge South is located in close proximity to J11 of the M11. The A1309 Hauxton Road connects this junction to the centre of Cambridge and also provides access to the Addenbrooke’s Road, a new carriageway which runs from Hauxton Road, via a junction with Shelford Road / Cambridge Road to the Addenbrooke’s Hospital. As well as prospective access to the Cambridge South Site, Addenbrooke’s Road also provides vehicular access to the Great Kneighton, Glebe Farm and CBC developments.

3. Sustainable Transport Strategy

- 3.1 The site will be highly permeable by sustainable modes between the different land uses, with high quality footway and cycleway routes. At this stage, it is anticipated that the proposed access junctions onto Addenbrooke’s Road and Cambridge Road (considered in more detail later in this paper) will provide the main access points for pedestrian and cyclist movements onto the wider networks.
- 3.2 In addition to these, there is scope to provide additional connections on to Cambridge Road, most likely to be via the end of Stonehill Road, adjacent to the access to the allotments as well as via an existing access gate a short distance to the south of Red Hill Close. These will provide connections to the current footpaths, on-road cycleways and bus stops along Cambridge Road, aiding connections towards Addenbrooke’s Hospital and Great Shelford. **Figure 4** identifies the potential location of these access points. While the detail of these routes would be established as the masterplan is further developed, it is anticipated that these would provide shared footway / cycleways towards the main routes within the site.

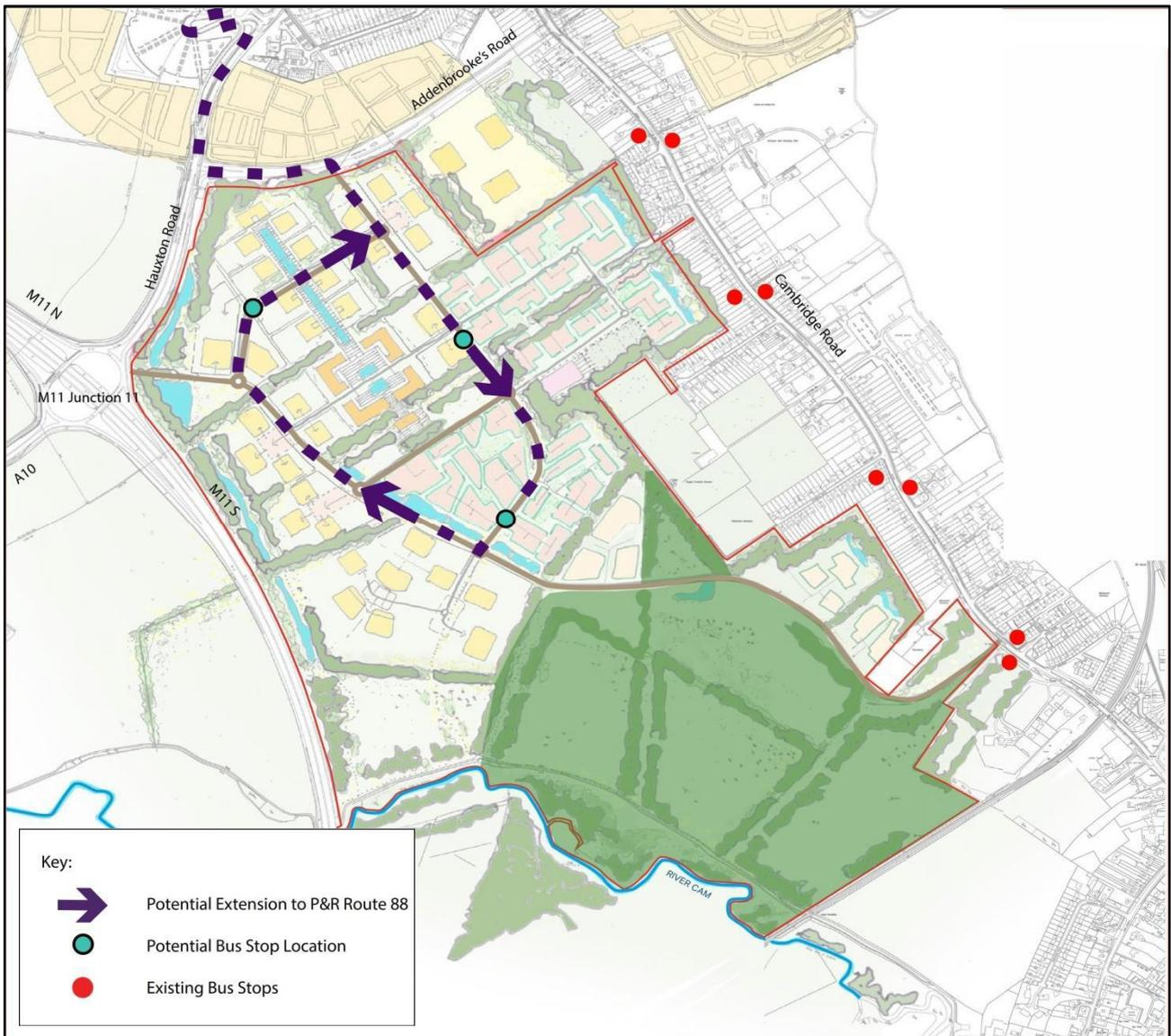
Figure 4 – Pedestrian & Cycle Access Strategy



- 3.3 For movements associated with the northern and western aspects of the site, it is anticipated that these will be predominantly directed towards the proposed Addenbrooke's Road access junction, connecting into existing toucan crossings and pedestrian and cycle routes, and which provide routes towards Trumpington Park & Ride, Glebe Farm, Great Kneighton, Addenbrooke's Hospital, Cambridge Station and City Centre.
- 3.4 The potential to provide a new footway / cycleway along the western boundary of the site (Hauxton Road) will be considered, although it is recognised that further off-road connections may be limited by severance caused by M11 Junction 11. The provision of additional crossing facilities at the Hauxton Road / Addenbrooke's Road junction will be considered, however it is anticipated that the provision of at-grade facilities may be limited by the capacity and staging of the junction, as well as the provision of the free-flow lane from Addenbrooke's Road into Hauxton Road southbound.
- 3.5 As well as ensuring permeability through the site, the masterplan can be developed with a degree of flexibility to ensure that suitable connections can be made as other adjacent sites, including those at Trumpington Meadows and the plot of land to the north-east of the site, are developed.
- 3.6 As noted in section 2, the site is within comfortable cycling distance of the centre of Cambridge and may be expected to have more scope for encouraging cycling trips than other more remote development locations. Similarly the proximity to Cambridge and the development of the Southern Fringe mean that additional facilities beyond the site would potentially be within walking distance.

- 3.7 The site also benefits from access to excellent existing public transport routes and will therefore not be reliant on the future delivery of prospective schemes to ensure that it is suitably accessible and sustainable.
- 3.8 Notwithstanding this, it is considered that there is scope to further increase this accessibility through improvements in the public transport connections within the site. Following initial discussions with Stagecoach, the extension of P&R Route 88 has been identified at this stage as the most logical solution. This currently operates between the City Centre and the Trumpington Park & Ride, with 6 services an hour. It is considered that half of these could then continue on to undertake a loop of the internal site road network via the access on Addenbrooke’s Road. An indication of the potential route and location of bus stops is provided in **Figure 5**.

Figure 5 – Potential Bus Strategy



- 3.9 This approach could provide a 20 minute frequency service, connecting the site directly to the City Centre as well as to additional bus services and the Cambridge Guided Busway at Trumpington Park & Ride. This would be in addition to existing services provided along Cambridge Road and any future services on Addenbrooke’s Road.
- 3.10 As part of the masterplan development and any future planning application, further discussions will be held with Stagecoach and Cambridgeshire County Council to ensure bus stops are located in the optimum location to maximise accessibility and to ensure consistency with the vision for public transport services in the area.

- 3.11 As part of the Transport Strategy for Cambridge and South Cambridgeshire, a number of the proposed interventions would be expected to improve the accessibility and connectivity of Cambridge South. In the immediate vicinity of the site, the introduction of a new park & ride site at Hauxton, with associated bus priority / busway links would further improve public transport connectivity / reliability, while also potentially reducing traffic pressure on M11 Junction 11 and Hauxton Road / Addenbrooke's Road by intercepting traffic prior to these points.
- 3.12 Improvements to the rail network, including increased frequency of services, station improvements / new stations would also be expected to benefit the site given its close proximity to Shelford Rail Station. The potential for a new station at Addenbrooke's to serve the hospital and Cambridge Biomedical Campus would, in particular, be expected to improve the accessibility of the site.
- 3.13 A range of other schemes have also been identified which would either directly benefit the connectivity of the site by sustainable modes, or be expected to help to reduce the pressure of background traffic growth in the area. These include:
- Off-road cycle links along A10
 - Busway / bus priority parallel to M11 corridor
 - Bus links between Chesterton, Cambridge Science Park and west Cambridge and onwards to Addenbrooke's, potentially via the M11 (Western Orbital).
 - Demand management schemes, including the expansion of Controlled Parking Zones in Cambridge and South Cambridgeshire and extension of the Core Traffic Scheme principles to limit through traffic in Central Cambridge
 - Use of Smarter Choices Measures to encourage a general mode shift, including promotion of travel planning, car sharing, electric charging infrastructure and journey planning information.
- 3.14 It should be stressed that while the proposed development would be anticipated to benefit from these improvements, the delivery of the Cambridge South site is not dependent on these schemes.
- 3.15 As well as the relevant infrastructural improvements which would be delivered as part of the development, a travel plan would be developed in support of a planning application which would identify ways to minimise the number and duration of journeys and to encourage sustainable travel habits.

4. Highway Access Strategy

Future Highway Network Operation

- 4.1 It is generally recognised that parts of the highway network, in particular on the key radial and orbital routes into and around Cambridge, suffer from congestion, especially at peak times. This may act as a constraint to future growth in the region and while a development at Cambridge South would benefit from excellent sustainable transport connections, its proximity to key locations and the potential to minimise trips through mixed-use development and travel demand measures, it remains important that the potential highway impacts are considered and measures considered to minimise and mitigate impacts.
- 4.2 In order to consider the potential deliverability of the development, the future operation of key junctions in the vicinity of Cambridge South has been investigated. This has utilised predicted traffic flows for 2026 based on publically available information from the approved CBC Phase 2 planning application, which take into account existing traffic flows and committed development traffic on the local highway network.
- 4.3 For the purposes of summarising the operation of the junctions, junctions with approaches which are operating above 100% degree of saturation (DoS) have been considered as over capacity, those with approaches operating between 85% and 100% DoS (based on the worst operating approach) have been considered approaching capacity and those with all arms operating at or below 85% have been considered as operating within capacity.
- 4.4 Modelling of the future operation of individual junctions in the vicinity of Cambridge South, without the inclusion of Cambridge South development traffic, indicates that:

- Hauxton Road / Addenbrooke's Road would be approaching capacity in the AM Peak and operating within capacity in the PM Peak, with the longest queues forecast to be on the Hauxton Road approaches, northbound in the AM Peak and southbound in the PM Peak;
- Glebe Farm Site Access / Addenbrooke's Road would be approaching capacity in both peaks, with the greatest queues in the eastbound direction;
- Shelford Road / Cambridge Road / Addenbrooke's Road is identified as a key constraint. Reflecting this, two mitigation packages have been identified for this junction as part of the consented CBC Phase 2 planning application. This involves an interim scheme to be delivered once the ABCAM portion of the CBC Phase 2 development has been delivered and then a more significant intervention to support the wider CBC Phase 2 proposals. Based on the interim scheme and forecast 2026 flows, the junction would be over capacity in both peaks, with the longest queues forecast on the Addenbrooke's Road eastbound in the AM Peak and Addenbrooke's Road westbound in the PM Peak. With the full mitigation junction arrangement, the junction is still forecast to be operating over capacity in the AM peak but within capacity in the PM peak.
- M11 Junction 11 would be approaching capacity in the AM peak and over capacity in the PM peak, with the A10 approach being under particular pressure.

4.5 Site observations have noted that in the AM peak, there is currently extensive queuing northbound on Hauxton Road / High Street towards Cambridge. This queuing typically extends from around the junction between Hauxton Road / Shelford Road and can continue as far as the M11 J11 southbound diverge where the off-slip leaves the main carriageway. This queuing is not seen as reflective of individual capacity constraints on the junctions on the Hauxton Road corridor around Cambridge South, and therefore not shown in the individual junction models, but as a result of a particular capacity constraint further to the north and the poor co-ordination of the 6 sets of signals which are located in the 1km between the pedestrian crossing at Maris Lane and the Addenbrooke's Road / Hauxton Road junction.

Proposed Access Strategy

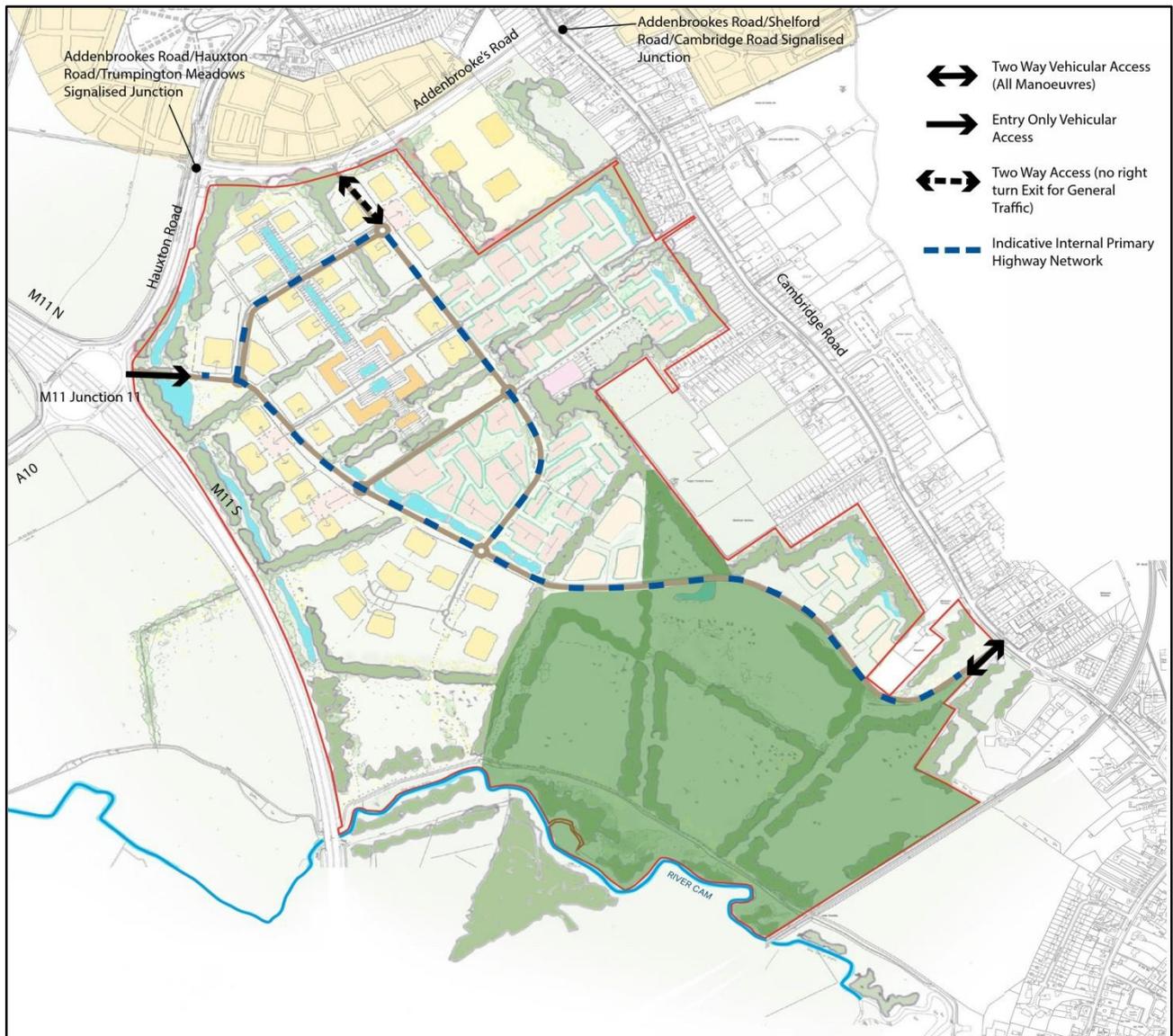
4.6 A systematic review has been undertaken of alternative vehicular access options for the proposed site to consider which approach would provide best access while also minimising the impacts on the key local junctions. This includes considering measures which may help to not only ensure that development traffic associated with Cambridge South can be suitably accommodated, but also identify the potential for improving the operation of junctions through the reassignment of traffic where feasible.

4.7 A preferred access strategy was subsequently identified which proposed three vehicular access points:

- An access from the Addenbrooke's Road. This would form part of a signalised staggered crossroads with the access to the Glebe Farm residential development and although vehicles would both enter and exit the development, the right turn movement out of Cambridge South would be banned. This would reduce the impact of development traffic on the Addenbrooke's Road / Shelford Road / Cambridge Road junction and minimise internal queues between the site access and Glebe Farm access.
- An access onto Cambridge Road from the south east corner of the site. This would take the form of a signalised all-movements t-junction.
- An inbound only arm from M11 J11 located between the A1039 Hauxton Road and M11 southbound on-slip. A recent precedent for this option would be the access to the new Glaxo development at junction 7 of the A1(M). Initial discussions have been held with Highways England (formerly the Highways Agency), during which they indicated that they have no objections in principle to this approach, subject to demonstration that there would be acceptable impact on the operation of the trunk road network.

4.8 The location of these three access points are shown on **Figure 6**.

Figure 6 – Proposed Highway Access Strategy



4.9 Each of these access points would connect to the internal site highway network and allow full permeability through the site. This would not just be limited to development movements but could also accommodate other traffic. This would provide more direct connections between the M11 J11 and Cambridge Road and would be expected to alleviate some pressure on the Hauxton Road corridor as well as the Hauxton Road / Addenbrooke's Road and Addenbrooke's Road / Shelford Road / Cambridge Road junctions. The resultant rerouting of traffic is shown in **Figures 7** below.

Figure 7 – Potential Rerouting of Traffic



Existing route between M11 J11 & Cambridge Road

All traffic is current required to use the Hauxton Road / Addenbrooke's Road and Shelford Road / Addenbrooke's Road junctions



With Cambridge South Development (1)

Development would allow eastbound traffic to avoid the congested northbound Hauxton Road corridor and Shelford Road / Addenbrooke's Road junction.



With Cambridge South Development (2)

Development would allow westbound traffic to avoid the congested Shelford Road / Addenbrooke's Road junction.

Cambridge South Development Trip Generation

4.10 In order to consider the potential impacts of the development in light of the future highway operation, an initial trip generation assessment has been undertaken for the relevant proposed land uses, using information from approved planning applications and local developments.

4.11 The combined trip generation associated with the employment and residential elements is shown in **Table 4**.

Table 4: Cambridge South Total Trip Generation

Period	Mode	Trip Generation		
		In	Out	Total
AM Peak	All Modes	1,313	984	2,297
	Car Driver	726	513	1,239
PM Peak	All Modes	770	1,266	2,036
	Car Driver	454	699	1,153

4.12 This provides an initial trip generation for the consideration of the impacts of the site and is likely to represent a very robust reflection of the potential generation of the potential development. No allowance has been made for the potential for trips to be contained within the site as a result of the mix of land uses and provision of ancillary facilities associated with such a development. The vehicle trip generation is also considered robust as it does not necessarily fully reflect linkages to other nearby development and the extent of both existing and potential future sustainable transport connections.

Impact on Local Highway Constraints

4.13 Given the re-distributed base and development trip assignments, capacity assessments have been undertaken for the key junctions on the local highway network, based on assumptions made regarding the potential level of redistribution of base trips and the distribution of development trips.

Main Development Access / Addenbrooke’s Road / Glebe Farm

4.14 A preliminary staggered crossroad junction arrangement has been developed incorporating both the Glebe Farm and Cambridge South site accesses. To provide additional capacity at the junction, two westbound ahead lanes are provided on the approach to the site access.

4.15 The preliminary assessments indicate that the proposed junction would operate within capacity with development during both peak hours with reduced queuing on each of the approach arms compared to the base situation.

A1308 Hauxton Road / Addenbrooke’s Road / Trumpington Meadows

4.16 Although the provision of the site access from Junction 11 of the M11 would be expected to reduce the level of development traffic using the Hauxton Road / Addenbrooke’s Road junction (as well as reduce base traffic moving between the M11 Junction and Cambridge Road), it would still be used by vehicles leaving the site towards Junction 11 and for development traffic to / from Cambridge City Centre.

4.17 Following re-routeing of base flow and addition of the development traffic, there would be an improvement in the operation of the junction in the AM peak, from approaching capacity to operating within capacity. While the DoS will increase in the PM peak, the junctions will remain as operating within capacity.

Addenbrooke’s Road / Shelford Road / Cambridge Road

4.18 The proposed access strategy has been designed to minimise the amount of development traffic using this critical junction and would also be expected to result in a reduction in base flows at this point of the network. The reduction in traffic flows would be most notable at the Cambridge Road left turn movement and the Addenbrooke’s Road Eastbound right turn.

- 4.19 An analysis using the 2026 future base traffic flows (including CBC Phase 2) and the Cambridge South development has been undertaken on both junction designs identified as part of the CBC Phase 2 planning application. It is acknowledged that the intention is that the interim scheme would only be a temporary measure, however it is possible that this layout could be retained until 50% of the wider CBC Phase 2 development is built out. For the purposes of this analysis, both the interim and full mitigation schemes have been considered using the full 2026 traffic flows.
- 4.20 The modelling indicates that the interim scheme would be expected to be operating over capacity in both the base and with Cambridge South development scenarios in both peaks. While still over capacity, the with Cambridge South operation, which provides the opportunity for the rerouting of base traffic away from this junction, is significantly improved with lower levels of queuing forecast.
- 4.21 With the full mitigation scheme, the junction is forecast to improve from operating over capacity in the AM peak without Cambridge South to approaching capacity with Cambridge South. In the PM peak, the junction would remain operating within capacity, although again with the Cambridge South development, the overall operation of the junction is forecast to improve.

Southern Site Access / Cambridge Road

- 4.22 To reduce the impact of development traffic on the Addenbrooke's Road / Shelford Road / Cambridge Road junction, a new junction would be required on Cambridge Road with a through link to the proposed Addenbrooke's Road junction.
- 4.23 It is anticipated that this junction would be located in the south east of the site where the site boundary abuts Cambridge Road. It is acknowledged that any signalised junction design would need to avoid or accommodate any nearby cul-de-sacs and private driveways. Adjacent cul-de-sacs could be accommodate either with 'keep clear' markings on the approaches to stop line or inclusion within the junction as a demand dependant phase.
- 4.24 Although the access design would be refined at a later stage, initial modelling indicates that a suitable junction design can be provided which would operate within capacity.

M11 Junction 11

- 4.25 Given the forecast capacity constraints, the introduction of the proposed site access arm from Junction 11 and additional traffic associated with the proposed development, an incremental series of improvements were investigated to determine the best approach for increasing capacity at the interchange.
- 4.26 This resulted in the proposed widening the A1309 Hauxton Road southbound approach to three lanes between the M11 interchange and the A1309 Hauxton Road junction with Addenbrooke's Road and the provision of a nearside flare on the associated circulatory carriageway. To provide reasonable lane balancing on the circulatory carriageway, the Cambridge South exit would be widened to two lanes.
- 4.27 It will also be necessary to provide additional capacity on the M11 southern overbridge, with a third lane to be accommodated either within the existing structure, or through the extension of the bridge. AECOM have undertaken an initial assessment which has confirmed that there is sufficient space on the bridge to accommodate three lanes, with a further assessment to be undertaken to confirm the extent of any strengthening of the bridge which is required.
- 4.28 To reflect the constraints associated with the A10 approach and increase its capacity, the potential to introduce an additional lane through flaring the approach has been identified.
- 4.29 The proposed improvements to the junction are forecast to at least mitigate the impacts of the development, with improvements to both total and average delay for the junction in both peaks. The improvements would also be expected to result in the junction operating below capacity in the PM peak.

Summary

- 4.30 The initially analysis above indicates that it will be possible to accommodate the scheme on the local highway network. This process will be refined in the event that the site is allocated and in conjunction with the local highway authorities.

4.31 In advance of this however, the analysis has indicated that the development of the proposed site, as well as providing additional housing and employment opportunities with Cambridge, may help to deliver improved junction performance at a number of junctions, including the Addenbrooke's Road / Shelford Road junction which has been identified to have traffic demand in excess of capacity by 2026. A summary of the relative operation of the junctions, based on the greatest degree of saturation on approach, with and without the development is provided below. As noted above, the Addenbrooke's Road / Shelford Road junction is forecast to remain operating over capacity with the Cambridge South development, based on the interim mitigation scheme and full forecast 2026 traffic flows (which represents a very robust test of the junction's operation). However the potential for reassignment as a result of the development offers the potential for a significant improvement in the operation of this junction.

Table 7 - Summary of Junction Operation with and without Cambridge South

Junction	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
Main Development Access / Addenbrooke's Road / Glebe Farm	Yellow	Green	Yellow	Green
A1308 Hauxton Road / Addenbrooke's Road / Trumpington Meadows	Yellow	Green	Green	Green
Addenbrooke's Road / Shelford Road / Cambridge Road (Interim CBC Phase 2 Mitigation Scheme ¹)	Red	Red	Red	Red
Addenbrooke's Road / Shelford Road / Cambridge Road (Full CBC Phase 2 Mitigation Scheme ¹)	Red	Yellow	Green	Green
Southern Site Access / Cambridge Road	Grey	Green	Grey	Green
M11 Junction 11	Yellow	Yellow	Red	Yellow

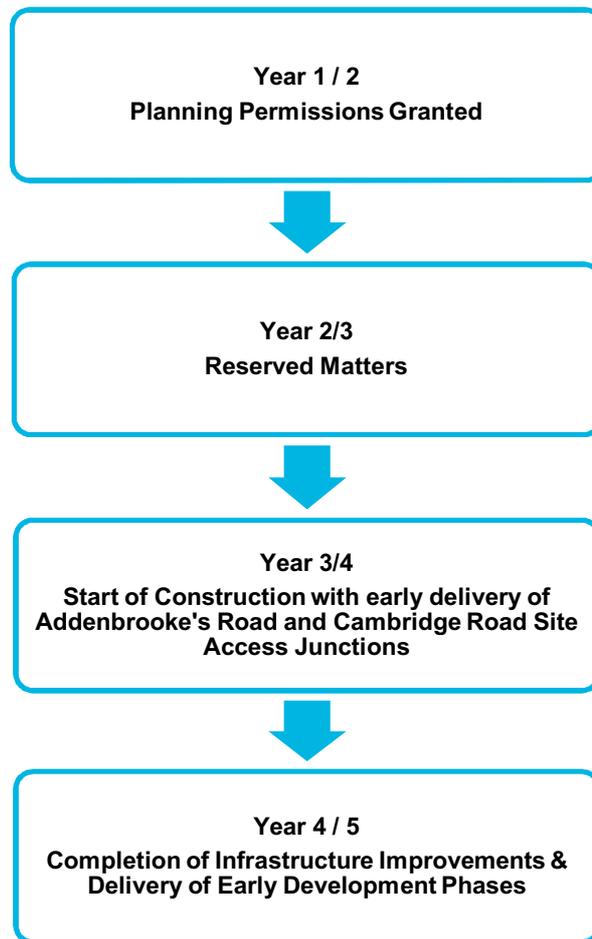
¹Assumes 2026 future flows including full CBC Phase 2 development

Key:

	Over capacity (+100% DoS)
	Approaching Capacity (85%-100% DoS)
	Within Capacity (>85% DoS)
	N/A

5. Deliverability of Cambridge South

- 5.1 The development is not considered to require costly infrastructure in order to be delivered and sustainable. It is ideally located to tap into the existing walking and cycling networks, while its proximity to Shelford Rail Station and Trumpington Park & Ride means easy access to public transport services, as well as the potential for extending the existing Park & Ride bus services through the site. Unlike the major infrastructure improvements being proposed for the growth settlements identified in the Local Plans, the improvements required for Cambridge South are anticipated to be fully deliverable within either client owned or highway land. This negates the need for costly and time consuming negotiations or Compulsory Purchase Order for land purchase / access.
- 5.2 An initial exercise estimated the potential cost of the highways improvements, including new access junctions, associated with the proposed development to be in the region of £5million to £10million. Although excluding on-site infrastructure and subject to further studies and sustainable transport funding and contributions, it is anticipated that these costs would be fully borne by the development, without affecting the provision of affordable housing, and would not require additional public funding. These low costs and the land ownership in the area will allow the developers to consider further ways to improve connectivity and the operation of the local transport networks to maximise the accessibility of the development. This could have further potential knock-on benefits for existing journeys made in this area beyond those identified already.
- 5.3 The development can be delivered quickly, allowing a potential early win in terms of additional employment and residential land in the Local Plan period.
- 5.4 An indicative programme has been produced to consider the potential timescales associated with the development, assuming the inclusion of the Cambridge South development within modified Local Plans.



5.5 Therefore, assuming an appropriate resolution to the development of the Local Plan process, the Cambridge South development has the potential to deliver additional employment and homes within the early stages of the Local Plan Period.

6. Summary & Compliance with Policy

6.1 A potential mixed-use development site has been identified to the south of the centre of Cambridge. The Cambridge South development could realise some 1,250 new homes and 85,500sqm of employment (Science Park) space.

6.2 The site is well served by non-car modes and a strategy has been identified to tie into the existing cycling, walking and public transport networks.

6.3 The development would be ideally located for access to key local destinations and transport hubs, including the City Centre, Cambridge and Shelford Rail Stations, Cambridge Science Park and Addenbrooke's Hospital, which are all within easy walking or cycling distance.

6.4 In considering how inclusions of the site may affect the 'soundness' of the Local Plan, the Cambridge City and South Cambridgeshire District Local Plans development process identifies a sequence or hierarchy of sustainable development locations, with development to be considered first where it is most sustainable. That sequence is:

- Within the built up area of Cambridge;
- On the edge of Cambridge;
- One or more new settlements;
- Within or adjoining market towns; and
- At sustainable villages.

6.5 This hierarchy is consistent with one of the twelve core planning principles detailed in NPPF:

actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable;

6.6 The Cambridge South site is located in an edge of Cambridge location and is therefore in the higher echelons of the sustainable location hierarchy. This is considered particularly notable if considered within a general growth strategy which has a strong reliance on developments located further down this sustainability hierarchy. The relative sustainability of movements associated with fringe locations is noted in the modelling undertaken on behalf of the Councils to support the Local Plans.

6.7 The allocation of the site within the Local Plan would be consistent with Paragraphs 32-35 of the NPPF. These require plans and decisions to take account of whether the opportunities for sustainable transport modes have been taken up, to reduce the need for major transport infrastructure and whether improvements can be made to the transport network that cost effectively limit the significant impacts of the development. Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Plans should also protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. This includes ensuring that developments are located and designed where practical to give priority to pedestrian and cycle movements, and have access to high quality public transport facilities.

6.8 Analysis of the potential highways impacts of the site indicates that the local highway network, with suitable junction mitigation measures, would be able to accommodate the development. By allowing traffic through the site, it is anticipated that there may actually be significant capacity and operation benefits, in particular at the Addenbrooke's Road / Cambridge Road / Shelford Road junction, which is predicted to be operating above capacity in 2026, while also helping to relieve existing pressure on the Hauxton Road corridor.

6.9 In line with the requirement for the Local Plans to be effective, the development is not dependent on significant large scale infrastructure improvements, tying into existing or committed infrastructure, with any off-site improvements considered cost effective and deliverable by the development. This would allow the potential delivery of additional employment and homes within the early stages of the Local Plan Period.

6.10 It is therefore considered that the Cambridge South development site should be identified as an allocated site within the Cambridge City and South Cambridge Local Plans.