PART 1 BACKGROUND

Part 1 of the Transport Assessment contains the following sections:

Section 2 - Background and Development Proposals

Section 3 - Existing Conditions

Section 4 - Summary of Policy Review

2 Background and Development Proposals

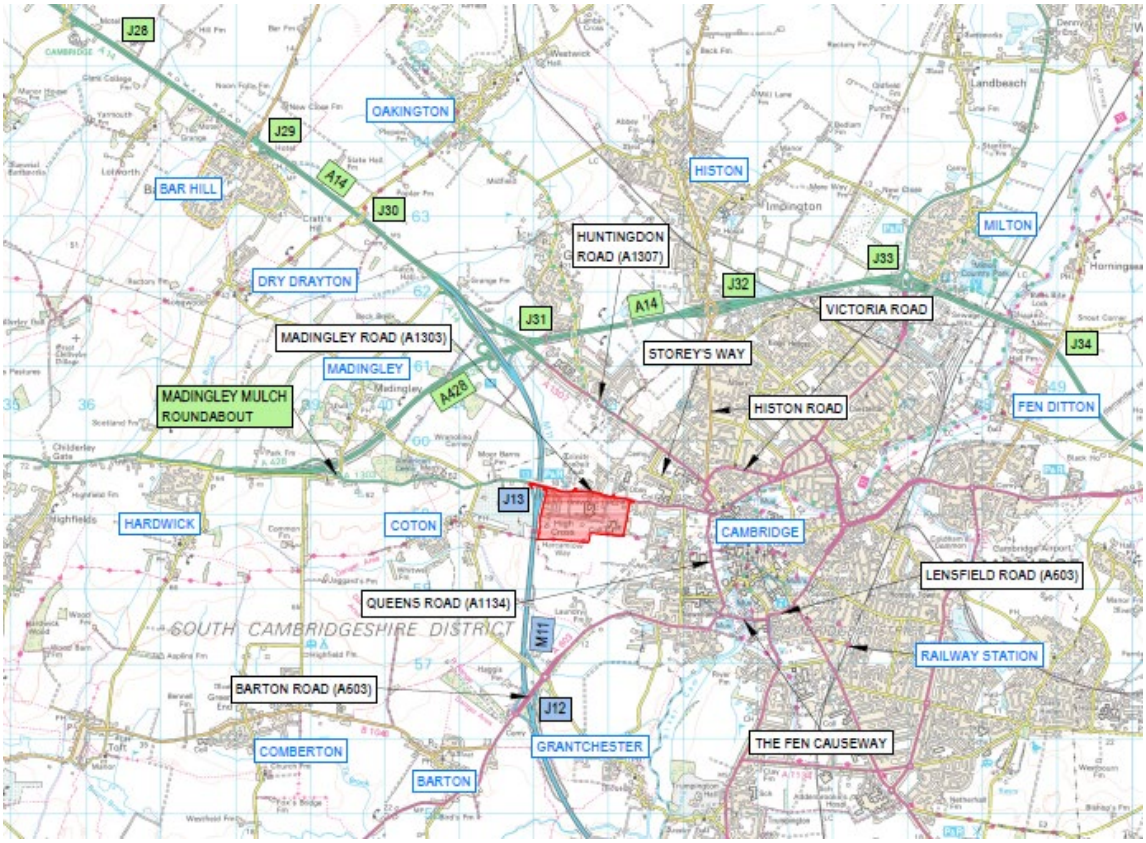
2.1 Introduction

2.1.1 This section summarises the site location and existing land uses on-site. Details of the Development proposals are also outlined.

2.2 Site Location

2.2.1 The Development is located to the west of the existing conurbation of Cambridge, as shown in Figure 2.1, reproduced in Plate 2.1, and remains within the site boundary of the extant 1999 West Cambridge Development masterplan approval.

Plate 2.1: Strategic location of West Cambridge Development



2.2.2 The centre of the Site is approximately 2km west of the City Centre of Cambridge – measured from JJ Thomson Avenue to the junction of Sidney Street and St Andrew's Street.

2.2.3 The Site is located immediately to the east of the section of the M11 motorway between Junctions 12 and 13. The site is bordered to the north by Madingley Road (the A1307 - which routes between M11 Junction 13 and the centre of Cambridge) and to the east by Clerk Maxwell Road. Immediately to the south, the Coton Path is aligned along the southern boundary – beyond that is agricultural land.

2.2.4 The 292 space University Park-and-Cycle car park is located in the north-eastern corner of the Site, to enable University staff to drive in from outside of the City, park, then to cycle to their in-City destinations. It is subject to permit control and managed with the other Estate car parks. A multi-storey car park may replace this at-grade facility as part of the proposals, and the Park and Cycle spaces would be provided elsewhere within the Development.

2.2.5 The Site lies within the administrative area of Cambridge City Council.

2.3 Extant Development Background

Development Quanta

2.3.1 West Cambridge is currently a mixed-use development with academic and commercial research uses, with associated facilities.

2.3.2 Figure 2.2 highlights the site plan in the context of the surrounding area. It is bordered to the north by Madingley Road, the west by the M11 motorway, the east by the existing residential dwellings along Clerk Maxwell Road and a recreational ground, and to the south by farmland.

2.3.3 Approval to the masterplan was originally granted in 1999 (planning application reference C/97/0961/OP), and subsequently reviewed in 2004. The Development has subsequently progressed with the elements of the original consent being delivered at different rates. The consented and delivered development mix (as of 2016, when the original application was submitted) is shown in Table 2.1.

Table 2.1: Development Area Summary (2016)

Land-Use (GFA)	Development pre-1997 (m^2)	Outline Consent 1999 (m^2)	Development Completion (m^2)	Delivery completion (%)	Remaining Development (m^2)
Academic Research	44,000	73,000	88,257	75.4	**28,743**
Research Institute	13,500	24,000	15,402	41.0	**22,098**
Commercial Research	13,972	41,000	24,984	45.4	**29,988**
Shared Facilities	0	18,000	1,671	9.3	**16,329**
Sports	0	10,120	6,060	59.9	**4,060**
Residential	680	10,000	10,680	100.0	**0**
Total (m^2)	**72,152**	**176,120**	**147,054**	**59.2**	**101,218**
Car Parking	**3,150 spaces**		**1,571 spaces**		

2.3.4 In addition to the formal spaces, further uncontrolled car parking is available locally on-road – including along the Western Access Road (currently being subjected to car parking prohibition), and off-site along Clerk Maxwell Road, where approximately 85 - 90 car parking spaces exist.

2.3.5 As the 3,150 car parking space provision consented in 1999 reflected the prevailing earlier car-dominated access and movement philosophy - and is considerably in excess of what would be considered appropriate now – a lower provision rate of car parking provision is being proposed now.

2.3.6 The West Cambridge Masterplan Outline Planning Application was first submitted in June 2016. During the associated planning deliberations, with the agreement of Cambridge City Council four further detailed applications were submitted as summarised in Table 2.2. Whilst these four applications were subsequently granted standalone planning approvals within the context of the Extant 2004 Consent, these consents would form part of the Phase 1 allocation upon the consent of the West Cambridge Masterplan Application.

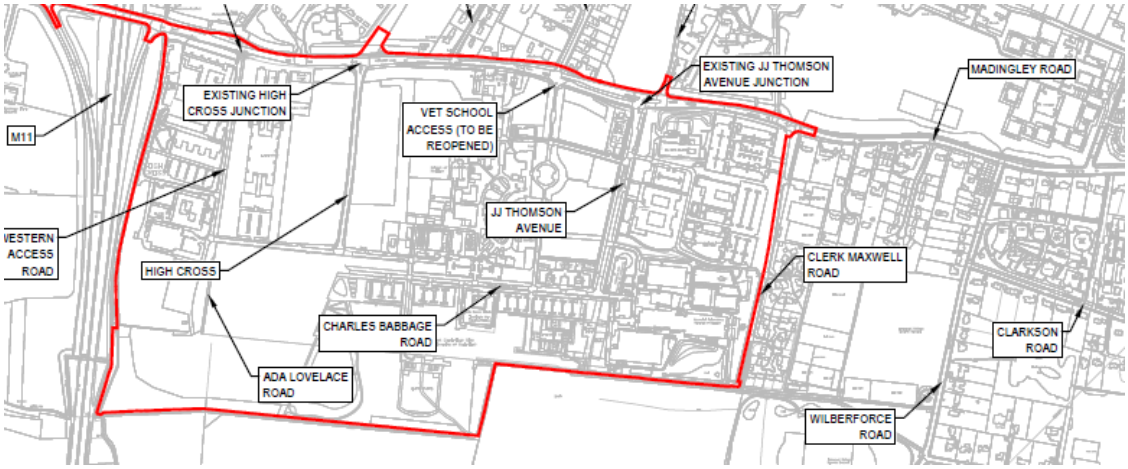
Table 2.2: Recent standalone planning approvals

Building	Application Reference	Land Use	Date	Area (m^2)
Department of Engineering	16/1811/FUL	D1 (Academic) floorspace	Approved on 1 March 2017	4,376
Cavendish III Laboratories	17/1799/FUL	D1 (Academic) floorspace	Approved on 17 August 2018	37,160
Shared Facilities Hub	17/1896/FUL	D1 (Academic), A3 (Café / restaurant, and A1 (retail) floorspace	Approved on 4 January 2019	4,907 (D1) 1,421 (A3) 75 (A1)
Whittle Laboratory	19/1763/FUL	D1 (Academic) floorspace	17 June 2020	3,102 (net increase)

Vehicular Access

2.3.7 The vehicular access to the West Cambridge site is from Madingley Road as shown on Figure 2.3, reproduced on Plate 2.2:

Plate 2.2: West Cambridge Development Vehicular Access:



2.3.8 There are currently two main vehicular access points to the site:

- at JJ Thomson Avenue, by a ghost island priority junction; and
- at High Cross – the previous priority junction has been upgraded to a traffic light controlled junction as part of the North West Cambridge site infrastructure.

2.3.9 To the east of the site, a further priority junction is formed at Clerk Maxwell Road. Clerk Maxwell Road provides vehicle access to the existing 292 space Park and Cycle facility located to the north-east of the Site, and several pedestrian and cycle accesses to the site.

2.3.10 There is a requirement within the Section 106 Agreement of the Extant West Cambridge Section outline permission of 1999 to upgrade the existing JJ Thomson Avenue access to a traffic signal controlled junction with a controlled pedestrian and cyclist toucan crossing. Whilst this requirement was triggered in 2016 with the occupation of the Chemical Engineering and Biotechnology Building, as discussed and agreed with the Joint Authorities the full signalisation of this junction has been deferred awaiting the conclusions of both this West Cambridge Masterplan Review, and until CCC has determined their strategic scheme proposals which may affect Madingley Road. Notwithstanding, the toucan crossing associated with this signalisation scheme has been delivered.

2.3.11 As shown on Figure 2.3, there are four main roads on site:

- JJ Thomson Avenue;
- Charles Babbage Road;
- High Cross Road; and
- the Western Access Road.

2.3.12 These would all be retained and used as the principal means for movement to and across the Site. Additional secondary roads would be constructed to increase connectivity across the Site. All existing and new vehicle routes and accesses would also allow for pedestrian and cycle movements.

Transport Assessment Work submitted to support the Extant Consent

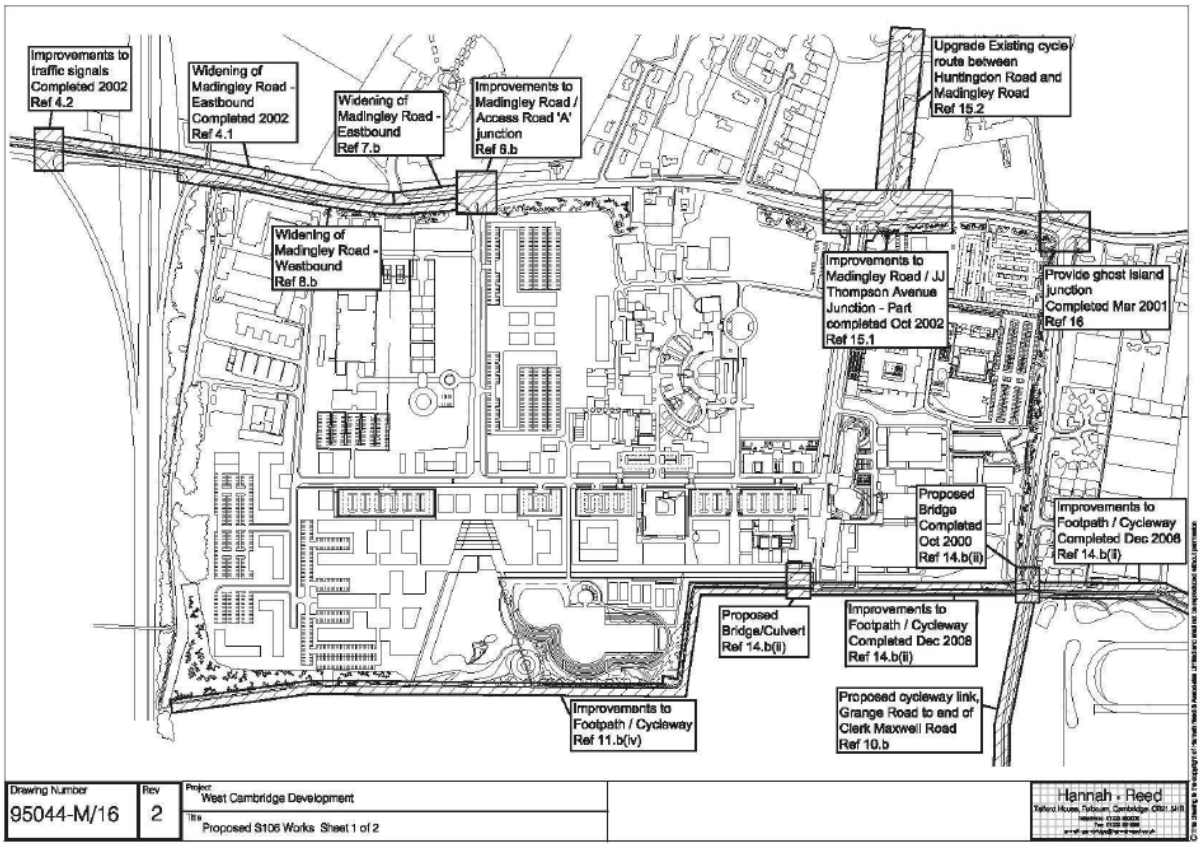
2.3.13 Hannah, Reed and Associates (referred to as “Hannah Reed” from here) prepared the Transportation Study to support the University of Cambridge’s original 1997 West Cambridge Development planning application. This was subsequently approved by the Joint Authorities – Cambridge City Council, the local planning authority, Cambridgeshire County Council, the local highway authority, and the strategic highway authority, the Highways Agency (now referred to as Highways England).

2.3.14 The vehicle flows assessed in 1999 as accruing to the consented West Cambridge Development are significantly higher than would be considered appropriate now, reflecting the historic high car parking provision, the previous car-dominated transport strategy, the then-peripheral development location, and the associated higher vehicle trip generations.

Extant Section 106 Commitments

2.3.15 To mitigate the transport impacts of the West Cambridge Development as predicted in 1999, the University of Cambridge completed a Section 106 Agreement. The series of measures and triggers identified within this Agreement are reported in detail in Appendix 2.1, reproduced below in Plate 2.3:

Plate 2.3: Local Section 106 Mitigation Measures



2.3.16 The majority of the necessary highway mitigation measures to mitigate vehicular impact have been implemented. The relatively minor measures outstanding include:

i. a traffic signal enhancement of the Madingley Road / Northampton Street / Queen's Road Roundabout – was deferred at the specific request of Cambridgeshire County Council; and

ii. a second mitigation of the Madingley Road / JJ Thomson Avenue priority junction – installing a traffic signal enhancement – had not been provided as the stated development trigger quantum has just been reached with the recent occupation of the Chemical Engineering and Biotechnology Building. However, and as discussed and agreed with the Joint Authorities the full signalisation of this junction has been deferred awaiting the conclusions of this West Cambridge Masterplan Review (and indeed, until CCC has determined their strategic scheme proposals). Notwithstanding, the associated toucan crossing has already been delivered.

2.3.17 Other physical mitigation measures remain outstanding for various reasons - including development triggers not having been reached, or other undelivered measures being linked to the requirement. Some of the undelivered measures were not implementable as they are outside of the University's land ownership and the relevant freeholders were not party to the original Section 106 agreement. Discussions have taken place with neighbouring landowners but commitment to delivery cannot be secured by the University at this time. Notwithstanding, the measures identified in Section 6 would deliver an equivalent facility responding to this requirement.

2.4 Development Vision

2.4.1 The University aspires to develop the Site into a high quality academic and research campus, and - reflecting the Local Plan Allocation for this Development - to review the existing masterplan to deliver a greater density of development to the same high levels of quality.

2.4.2 The University has a vision for the Site that aspires to provide a high quality urban environment that is well-integrated to the existing city centre and surrounding suburbs, as well as to future emerging developments - such as the local North West Cambridge Development, and to the West Cambourne and Bourn Airfield Developments to the west.

2.4.3 The West Cambridge Vision comprises five themes which collectively provide the purpose of the Proposed Development, to:

i. optimise the amount of development on Site, supporting the City and Region as a world leader in research and development;

ii. support the commercialisation of knowledge through entrepreneurship and collaboration with industry;

iii. create and sustain a high quality place by transforming the physical and social environment for Site users and neighbours across the City;

iv. deliver adaptable and efficient space to support viability and long term value creation; and

v. deliver sustainable development, proactively investing in the quality of place and integration within the City.

2.5 Aims and Aspirations

2.5.1 Whilst any development of this scale could have a significant traffic impact if not managed effectively, the University already has a proud reputation throughout the City for its travel demand management. Indeed, the University has always been proactive in delivering constant improvements to it – and the University was founding member of the Travel for Work Partnership (now Travel for Cambridgeshire) established in co-operation with the County Council. This philosophy will be continued at West Cambridge, which has different travel characteristics to similar research development in the United Kingdom - and to similar developments throughout Cambridge, as a result of the following:

- the strong travel demand management strategy being promoted;
- the extensive non-car mode infrastructure proposed as mitigation;
- all on-site car parking being subjected to the University's motor proctorial control and management;
- University key workers being able to live in the University's North West Cambridge Key Worker housing - in close proximity, not only to their place of work, but also requisite community and leisure facilities. Indeed, the market housing on North West Cambridge could accommodate commercial research workers;
- the University delivering a Framework Travel Plan across West Cambridge, with an appointed Transport Coordinator – a University-appointed person responsible for delivering Travel Planning. This will be supported by Individual Travel Plan Coordinators being appointed by all occupiers of the Development;

- the University-related commercial research facilities, with nearby residential accommodation, demonstrably having far lower car trip generation rates than equivalent commercial science park facilities;

- academic research land uses within the Development having limited car parking and a lower car-based trip generation than commercial research land uses.

2.5.2 The effective travel demand management strategy would form a fundamental part of minimising car impact on the surrounding highway network, and maximising sustainable modes of travel. At the heart of delivering this travel demand management strategy is this Framework Travel Plan and the subsequent Individual Travel Plans.

2.6 Development Proposals

2.6.1 An outline planning application, the subject of this Transport Assessment, was originally submitted in 2018 to support the further intensification of development at the West Cambridge site, above that already approved under the 1999 outline consent. This is in accordance with the subsequently adopted Local Plan 2018.

2.6.2 The new application will seek permission for additional floorspace, comprising commercial research floorspace, along with Academic research providing a mix of teaching and research space.

2.6.3 The new proposals seek to densify the existing site beyond the previous outline consent, as highlighted within Policy 19 : West Cambridge Area of Major Change, in the Cambridge Local Plan 2018.

2.6.4 The Proposed Development will achieve the Development Vision through a series of parameter plans and a broadly defined description. This will allow flexibility in the description of the Development. This reflects a key aim of the Proposed Development, to build in flexibility into the planning consent, so that the University can respond to changes in academic and commercial demand over the next twenty years or so, without needing to revisit the outline planning permission.

2.6.5 The Proposed Development comprises five parameter plans as follows:

- Land use;

- Building zones;

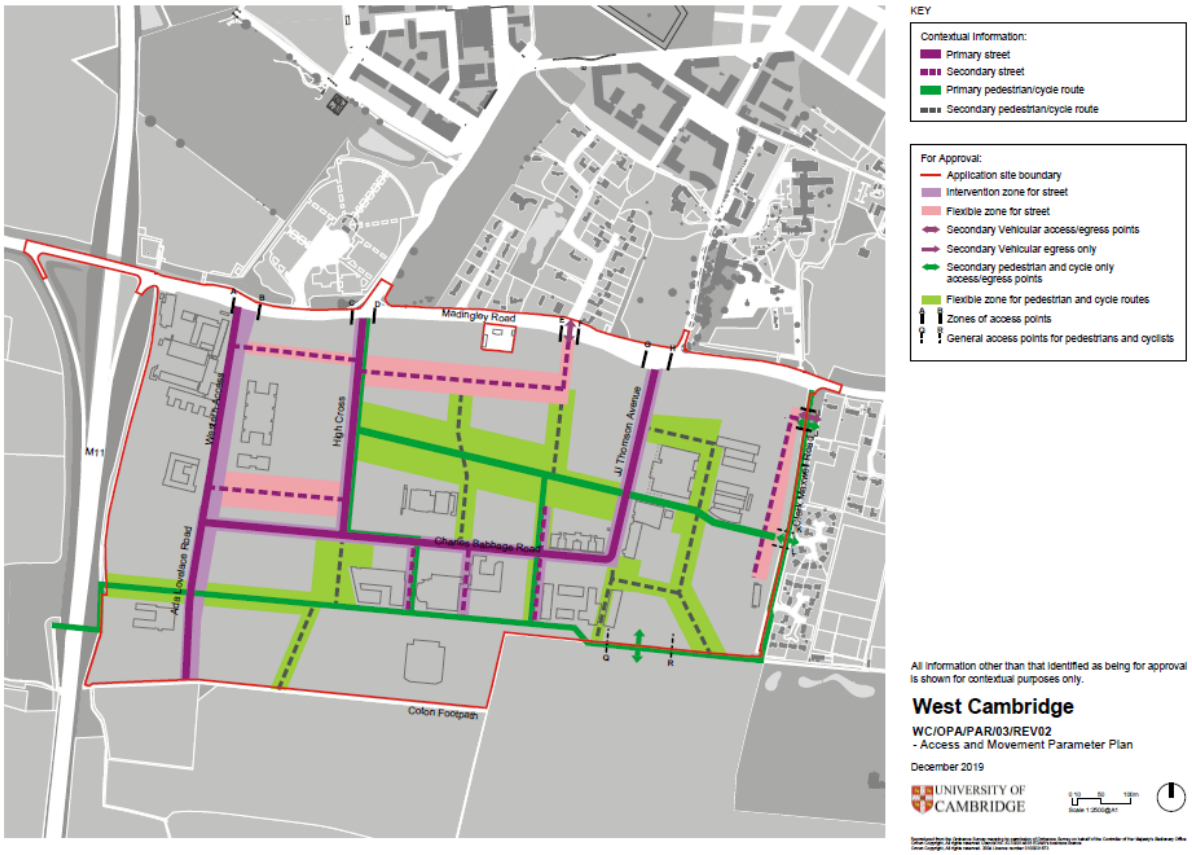
- Building heights;

- Access and movement; and

- Open space and landscape.

2.6.6 The Access Parameter Plan prepared by Aecom is appended in Appendix 2.2, reproduced in Plate 2.4:

Plate 2.4: West Cambridge Access and Movement Parameter Plan



(Source Aecom Design and Access Statement – September 2020)

Key Phase 1 (2021)

2.6.7 As an initial phase, referred to as Key Phase 1, the University is seeking agreement to following additional quanta of each land-use at West Cambridge specified in Table 2.6.

2.6.8 When considered in the context of existing areas to be demolished, this approximately equates to a further 40,000m² of academic and commercial development to that already consented.

2.6.9 As part of this Key Phase 1, the University is seeking consent to a maximum total of 2,571 car parking spaces. This provision is still 579 spaces lower than the 1999 Consented level of car parking spaces.

Table 2.4: Total Existing and Proposed Key Phase 1 - Land Use Mix

Land-Use (GFA)	(m^2)
Academic Research (m^2)	168,259 (+ 66,000)
Commercial Research and Research Institute (m^2)	92,386 (+52,000)
Nursery (m^2)	1,900
Shop, Café Restaurant, Pub - A1-A5 (m^2)	350
Assembly and Leisure	6,060
Residential (m^2)	10,680
Ancillary Infrastructure (data centre, energy centre)	7,675 (+ 3,160)
Total (m^2)	287,310
Car Parking (spaces)	**2,571**

(Numbers in parenthesis reflect the proposed changes to the existing land uses on West Cambridge)

Full Development (2031)

2.6.10 The Proposed Development incorporates both additional D1 academic research, and B1 commercial research, among other land uses, selected to respond to the needs of the University, and to densify the use of the Development. The University is seeking the assessment as a worst case of the following quanta of each land-use for the Development at West Cambridge specified in Table 2.3. This additional development increases the total floor area from 248,272m^2 to 500,280m^2.

Table 2.3: Total Existing and Proposed Full Development - Land Use Mix

Land-Use (GFA)	Existing Implemented Development (m^2) [1] [2]	1999 Consent Not Implemented [3] (m^2)	Existing Devt to be Demolished (m^2)	Proposed Additional Development to 2031 (m^2)	TOTAL FULL DEVT (2031) (m^2)
Academic Research (m^2)	102,259	-27,576	-44,350	200,000	**257,909**
Commercial Research and Research Institute (m^2)	40,386	52,086		170,000	**210,386**
Nursery (m^2)	650			2,500	**3,150**
Shop, Café Restaurant, Pub - A1-A5 (m^2)				1,000	**1,000**
Assembly and Leisure	6,060	-4,060		4,100	**10,160**
Residential (m^2)	10,680		-680		**10,000 (206 units)**
Ancillary Infrastructure (data centre, energy centre)	4,515		-2,540	5,700	**7,675**
Total (m^2)	**164,550**	**83,722**	**-47,570**	**383,300**	**500,280**
Car Parking (spaces)	**3,150**			**4,390 (maximum)**	

1. This includes pre-1999 development plus 1999 consent implemented floorspace (as of September 2015)

2. Do Something Floorspace totals are the sum of Existing (column 1), Demolished (column 3) and Proposed (column 5)

3. Existing Development column plus the 1999 Consent Not Implemented column equates to the 'Do Minimum' scenario (i.e. total floorspace on site 248,272m^2).

4. The "Academic Research" total of 102,259m^2 includes some Shared Facilities areas

2.6.11 The Retail proposal is ancillary use, perceived to be formed by small University-shop type outlets vending immediate necessities – stationery, snacks, drinks etc – to reduce the need for off-site travel to respond to these needs. As no retail car parking would be provided, within the context of the immediately adjacent retail offer at North West Cambridge, there would be minimal, if any, off-site vehicle trip attraction.

2.6.12 Similarly, the Nursery use is also considered to be ancillary, predominantly catering for the identified daytime child-care needs of on-site occupiers, and to reduce the need to travel off-site during the working day.

2.6.13 The Proposed Development would be constructed in phases depending on market demand and would likely occur over a 15-year period. The assumed opening date for all construction to be complete and the Proposed Development to be fully built-out is 2031.

Site Access

2.6.14 As detailed further in Section 8, vehicle access will be provided to the Development by a series of existing, enhanced and new vehicular access points off Madingley Road as shown on Figure 2.3. These will be delivered through the duration of the Development, to a programme to be determined. These access points are:

i. the existing traffic signal controlled High Cross junction - which could be subjected during development to an enhancement to include bans on the right turns associated with the High Cross arm to and from Madingley Road, with these trips reassigned to JJ Thomson Avenue;

ii. the existing JJ Thomson Avenue priority junction – which could be subjected during later Post - Phase 1 phases – or, indeed, as part of a strategic Madingley Road Cycle Scheme - to a traffic signal-controlled upgrade;

iii. the existing Clerk Maxwell Road priority junction could be used to access a potential enhanced car park facility at the location of the park and cycle car park (forming one possible access solution for this future car park). This junction could be subject to a potential traffic signal control enhancement; and

iv. a new traffic signal controlled, restricted movement (right in / left out), access junction onto Madingley Road at the western end of the site, which would connect to the Western Access Road. This would be delivered during later - Post-Phase 1 - phases. This junction would intercept strategic traffic movements between the site and the west, including from the M11. This early vehicle interception would help to maintain conditions at other local junctions further east – such as High Cross.

2.6.15 In addition, it has been agreed that a further existing priority junction between JJ Thomson Avenue and High Cross, previously closed, is reopened to provide limited movement service access-only to the future occupiers immediately adjacent to Madingley Road.

Pedestrian and Cyclist Access

2.6.16 As detailed further in Section 6, pedestrian / cyclist access to the Development and the surrounding area will be by a series of connections to the local area via:

i. the existing traffic signal controlled Madingley Road / High Cross junction, assisted by the existing toucan crossing provision;

ii. the existing Madingley Road / JJ Thomson Avenue priority junction, assisted by the toucan crossing;

iii. Clerk Maxwell Road, assisted by the proposed informal crossing adjacent to the Madingley Road;

iv. the existing access to the Vet School site from Madingley Road (to be enhanced to provide service-only access);

v. by regular connections to the existing Coton path to the south – connecting to the west - across the M11 by the existing footbridge, providing a connection towards Coton and Madingley – and the east – to Clerk Maxwell Road, Wilberforce Road and towards Adams Road and the City; and

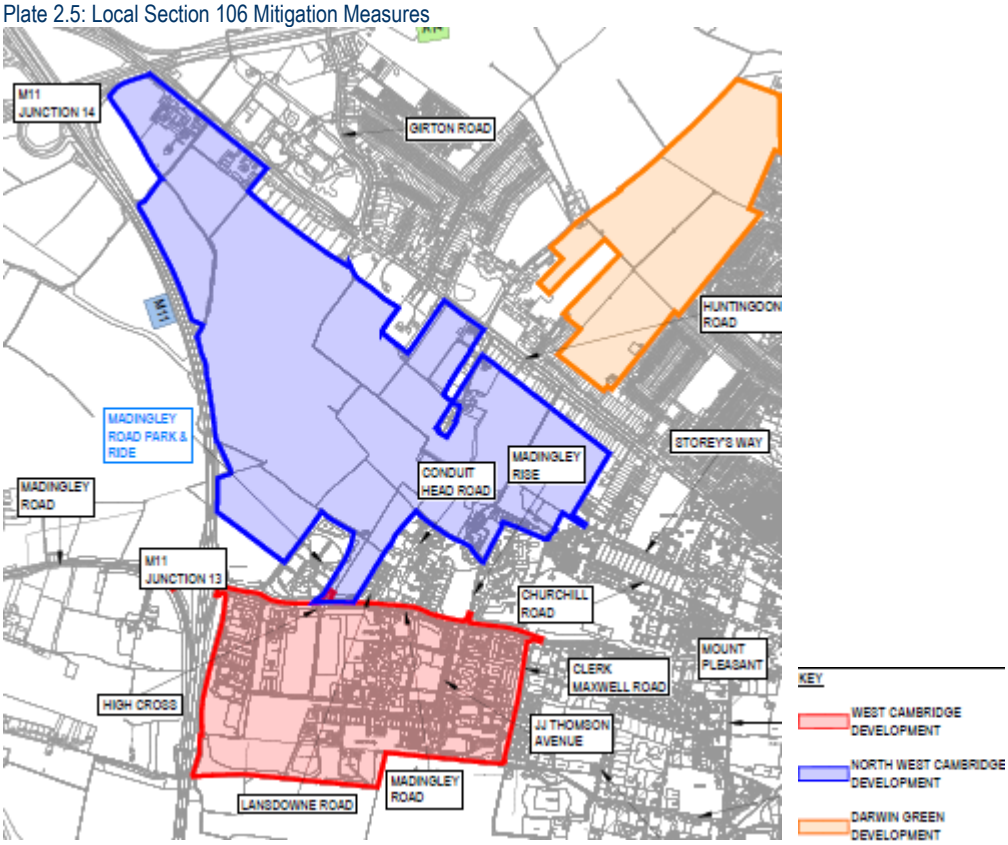
vi. a second east-west pedestrian and cycle route would be formed, accessing from the existing entrance approximately halfway along Clerk Maxwell Road, continuing westwards across JJ Thomson Avenue and through a new open space corridor linking up with High Cross Road.

2.6.17 The Access is summarised on the Access Parameter Plan, contained in Appendix 2.2.

2.7 Surrounding Development

2.7.1 There are other major consented developments in the vicinity of the Development which are planned to be implemented simultaneously. These are shown on Figure 2.2, reproduced in Plate 2.5.

Plate 2.5: Local Section 106 Mitigation Measures



Darwin Green

2.7.2 Darwin Green (formerly known as the NIAB Site) is an area located to the north-east of Huntingdon Road between Girton Road and Oxford Road, and is generally referred to by the name of the current occupant (the National Institute of Agricultural Botany - NIAB).

2.7.3 Cambridge City Council granted outline planning permission for the initial phase of development including an access road and 187 homes on the Darwin Green 'frontage land' adjoining Huntingdon Road in 2004, and construction commenced in 2010.

2.7.4 A further application was submitted for the area between Histon Road and Huntingdon Road for a further 1,593 homes, a new school, community facilities, local shops, roads, footpaths and cycleways. This application was considered by the Joint Development Control Committee and approved in July 2010, and the local centre is under construction.

2.7.5 Reserved Matters Applications were submitted in September 2015 for 114 dwellings and local centre, and in February 2016 for first housing phase (known as BDW1) including 173 dwellings with associated internal roads, car parking, landscaping, amenity and public open space. Both these applications were approved in May 2016, and construction commenced in April 2018.

2.7.6 Access to Darwin Green would be gained from Huntingdon Road to the south-west, and from Histon Road to the east. The vehicular accesses to Darwin Green are via new signal-controlled junctions to accommodate the forecast increase in demand onto the local highway network, whilst enabling priority for the proposed Guided Bus route and other bus services. The Histon Road site access was opened in January 2019.

North West Cambridge Development

2.7.7 North West Cambridge Development is a mixed-use extension to Cambridge, covering an area of 150 hectares, also promoted by the University of Cambridge. It is bounded by the M11, Madingley Road and Huntingdon Road, and is located immediately opposite West Cambridge.

2.7.8 North West Cambridge forms The University of Cambridge's response to the increasing need to provide affordable housing for both staff and graduates, and also the growing demand for more research facilities within Cambridge. The Development will consist of 1,500 University Key Worker homes, accommodation for 2,000 post-graduates, and the construction of 1,500 private dwellings. In addition to the planned residential development, North West Cambridge will also provide up to 100,000m^2 of academic / commercial research space, as well as general community and leisure facilities - including a hotel, primary school, and care home.

2.7.9 A resolution to grant Planning Permission was passed in August 2012, and formalised in February 2013 with the signing of a Section 106 agreement. Construction of Phase 1 commenced in August 2014, and is programmed to continue through to 2020. The primary school on North West Cambridge opened in September 2015, occupation of the Phase 1 residential development commenced in 2017.

2.7.10 Vehicular access is provided at three locations: two are situated to the north of the site, to Huntingdon Road; the other access is to the south of the site via Madingley Road – forming the northern arm of the proposed Madingley Road / West Cambridge / High Cross Access. The Development will further provide new, quality, strategic cyclepath links aligned east-west and north-south through the Development, as well as new bus services to link to West Cambridge, Darwin Green, and the proposed Cambridgeshire Science Park Rail station.

Former Cocks and Hens Tennis Club

2.7.11 A planning application (19/1734/FUL) was submitted to Cambridge City Council for the construction of 35 dwellings at the Former Cock and Hens Tennis Club, accessed via Clerk Maxwell Road to the north of The Lawns. The application was considered at the Planning Committee in July 2020 where the Committee resolved to grant planning permission, subject to the signing of a S106 agreement.

West Cambourne Development and Bourn Airfield

2.7.12 West Cambourne and Bourn Airfield Developments have been allocated within the Cambridge City and South Cambridgeshire Local Plans to deliver housing development to the west of Cambridge. All three developments would offer contributions towards the delivery of the strategic Cambourne to Cambridge public transport and cycling route.

2.7.13 The West Cambourne Development was consented by South Cambridgeshire District Council in January 2017 for 2,350 dwellings, and other limited uses including retail, employment, community and leisure facilities and education. Agreed contributions were offered towards the Cambourne to Cambridge scheme. Construction on the site is expected to start in 2020.

2.7.14 Bourn Airfield was allocated in South Cambridgeshire District Council's Local Plan for 3,500 dwellings and ancillary retail, education, community and leisure facility land uses. An outline planning application was submitted in September 2018, albeit has yet to be determined.

Other Strategic Developments

2.7.15 Discussions with Highways England and Cambridgeshire County Council have identified the strategic residential developments that need to be considered as part of this assessment. The Developments below have been consented, or are likely to be in the future. Prospective sites have not been included. These sites are summarised in Table 2.5, with further details contained in Appendix 2.3.

Table 2.5: Strategic Development - Residential

Development	Growth 2011 – 2031 - Number of Units
Clifton Road Industrial Estate	550
Clay Farm and Showground	2,165
North West Cambridge (within SCDC area)	1,155
North West Cambridge (within City Council area)	1,850
NIAB/Darwin Green Main	1,593
NIAB Frontage	187
Eastern Gateway, Soham	600
Land between Huntingdon Road and A14 (NIAB1 or Darwin Green 2 and NIAB)	1,000
North Ely, Ely	2,960
Cambridge East (North of Newmarket Road)	1,300
Cambridge East (North of Cherry Hinton within SCDC area)	420
Cambridge East (North of Cherry Hinton within City Council area)	780
Trumpington Meadows (Cambridge Southern Fringe – within SCDC area)	615
Trumpington Meadows (Cambridge Southern Fringe - within City Council area)	558
Cambourne	499
Northstowe Phase 1	1,500
Northstowe Phase 2	1,945
Waterbeach New Town	2,050
Bourn Airfield New Village	1,360
Cambourne West	1,200

Development	Growth 2011 – 2031 - Number of Units
Alconbury Weald	3,485
Eastern Expansion, St Neots	2,570
Eastern Expansion, St Neots (Loves Farm East)	1,092
Wyton Airfield and Wyton on the Hill	2,540
Bearscroft Farm	753
Small Scale Development - various (within City Council area)	4,760
Small Scale Development - various (within SCDC area)	3,916
Windfall Development – not determined (within SCDC area)	4,152
Windfall Development – not determined (within City Council area)	2,258
Total	**49,813**

2.7.16 These discussions have further identified other strategic employment developments. These sites are summarised in Table 2.6:

Table 2.6: Strategic Development – Employment (Jobs)

Development	Growth 2011 – 2031 – Number of Jobs
Wider City Centre Area	5,786
Station Area	1,558
Sainsbury Laboratory	150
Addenbrooke's	5,210
New Museums	232
City House	299
The Edinburgh Building, Shaftsbury Road	2,411
Northstowe	5,817
Cambourne	2,304
Granta Park	2,592

Development	Growth 2011 – 2031 – Number of Jobs
Hinxton Hall	831
Babraham	831
Landbeach	1,473
West Cambridge and North West Cambridge (City Council area)	3,873
West Cambridge and North West Cambridge (SCDC area)	2,234
Northern Fringe (City Council area)	2,411
Northern Fringe (SCDC area)	1,136
ARM / Capita Park (City)	396
Others (SCDC)	1,767
Waterbeach New Town	1,367
Bourn Airfield	2,153
Small Scale Employment (<150 jobs)	349
Total	**45,180**

2.7.17 Further details of each of the Development quanta assessed within this Report are contained in Sections 12 onwards.

2.8 Area-Wide Travel Demand Management Strategy context

2.8.1 The Proposed Development is also considered within the context of a series of transport infrastructure schemes and travel demand management measures being promoted through this region. These are considered in greater detail below.

Long Term Transport Strategy

2.8.2 Cambridgeshire's Long Term Transport Strategy (LTTS – July 2015) forms part of the Cambridgeshire Local Transport Plan, and identifies major infrastructure requirements needed to address the existing capacity constraints of Cambridgeshire's transport network, and the further infrastructure that is required to accommodate the transport demands associated with the planned growth.

2.8.3 The eight objectives of the Long Term Transport Strategy are:

- to ensure that the transport network supports sustainable growth and continued economic prosperity;
- to improve accessibility to employment and key services;

- to encourage sustainable alternatives to the private car, including rail, bus, guided bus, walking and cycling, car sharing and low emission vehicles;
- to encourage healthy and active travel, supporting improved well-being;
- to make the most efficient use of the transport network;
- to reduce the need to travel;
- to minimise the impact of transport on the environment; and
- to prioritise investment where it can have the greatest impact;

The LTTS proposals identified the following local measures, of interest to West Cambridge are summarised in Appendix 2.4, and are shown in Plate 2.6:

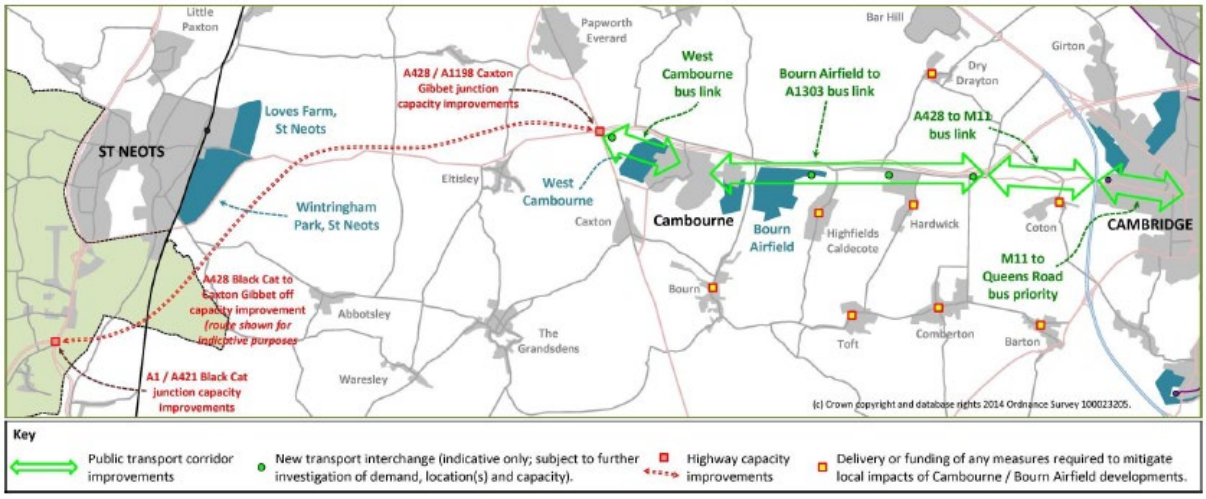


Plate 2.6 – Source – LTTS July 2015

- bus links – segregated bus links from the A428 (Caxton Gibbet) through West Cambourne, Bourn Airfield, to the A428 / A1303 junction, then through West Cambridge to Queen's Road;
- A1303 / A428 Corridor Outer Park and Ride – to take advantage of the proposed bus links to provide additional park and ride capacity;
- direct, segregated, high-quality pedestrian / cycle links to the west of Cambridge potentially aligned alongside an area-wide bus route strategic scheme;
- a more comprehensive network of cycling and walking links to and from key destinations around the county from Cambridge.

Greater Cambridge Partnership

2.8.4 The Greater Cambridge Partnership (GCP - formerly the Cambridge City Deal) is the local delivery body for a City Deal with Central Government, bringing powers and investment, worth up to £1 billion over 15 years, to vital improvements in infrastructure, supporting and accelerating the creation of 44,000 new jobs, 33,500 new homes and 420 additional apprenticeships. The four GCP partners are Cambridge City Council, Cambridgeshire County Council, South Cambridgeshire District Council, and the University of Cambridge.

2.8.5 Of relevance to West Cambridge are:

- a Cambourne to Cambridge mass transit scheme along the A428 / A1303 Corridor; and
- a Cycle Scheme along Madingley Road.

2.8.6 Both schemes are shown in Appendix 2.5.

2.8.7 Whilst details of these schemes, the delivery mechanism and the programme have been subject to discussion, area-wide strategic solutions will be required to support development in the sub-region, especially to West Cambourne and Bourn Airfield. As such, a strategic scheme needs to be allowed for.

2.8.8 The University supports the aspirations of these strategic solutions as these also deliver improved connectivity to West Cambridge. It has offered contributions agreed with the County Council towards their delivery within the context of the adopted West Cambridge Monitor and Manage Approach to transport mitigation. Whilst the benefit of a Cambourne to Cambridge Mass Transit Link has been included for within this Assessment, the West Cambridge Development Transport Strategy is flexible, and would still provide mitigation should this scheme not be delivered.

2.8.9 However, it is agreed that the A428 / A1303 Corridor mass transit scheme is the preferred response, and it would be made more certain by being aided by the financial support offered by the University.

Cambridgeshire Guided Busway

2.8.10 The Cambridgeshire Guided Busway scheme running from Huntingdon to Cambridge, linking the strategic development areas at Longstanton / Oakington (Northstowe) is an important element in the sustainable growth strategy. Since the opening of this scheme in 2011, it has achieved its predicted passenger levels. This scheme has the ability to continue to assist further in reducing congestion by extracting City-destined car-borne trips from the network, and re-moding these trips to the Cambridgeshire Guided Busway - some of the future proposals concerning the busway involve extending the existing service to the new Cambridgeshire Science Park Rail station and further afield to Peterborough.

A14 Cambridge - Huntingdon Improvement Scheme

2.8.11 As an essential part of a strategy to accommodate the large numbers of vehicle movements associated with strategic development across the region, Highways England published their proposals for the A14 between Huntingdon and Cambridge in 2014. This upgrade will relieve congestion and help to connect communities along the A14 corridor. As shown on the summary plan in Appendix 2.6, this scheme consisted of:

- widening a section of the A1 trunk road between Brampton and Alconbury;
- removing the road viaduct over the railway at Huntingdon;
- Huntingdon Town Centre Improvements;
- a new A14 bypass to the south of Huntingdon;
- de-trunking the existing A14 carriageway between Ellington and Swavesey;
- widening the carriageway on the A14 between Swavesey and Girton;
- a new local access road;

- improvements to the Cambridge Northern Bypass; and
- various junction improvements.

2.8.12 These proposals were the subject of examination through the Development Consent Order process in 2015, and the Secretary of State published a positive decision in May 2016.

2.8.13 Construction commenced in 2017 and will be completed in by the end of 2020.

Cambridgeshire Autonomous Metro (CAM)

2.8.14 CAM forms a component part the of Cambridgeshire and Peterborough Combined Authority's overarching Local Transport Plan Vision and the Transport Strategy which aims to create an expansive metro-style network that connects regional settlements, major city fringe employment sites (such as West Cambridge) and key satellite growth areas across the region with key railway stations and Cambridge city centre.

2.8.15 The indicative plans for the CAM network included in Appendix 2.5 - shown below in Plate 2.6 - identify that West Cambridge could have its own station on a line connecting St Neots, Cambourne and the City Centre:

Plate 2.6: Cambridgeshire and Peterborough Combined Authority (CPCA) and Greater Cambridge Partnership's (GCP) shared Vision for Cambridge's Future Network 2030-50 (Annex A).

2.8.16 This CAM scheme could be a way of delivering a strategic solution for this area.

Cambridgeshire and Peterborough Combined Authority Strategic Bus Review

2.8.17 A cross-organisational Bus Reform Group has been formed as part of the Combined Authority's Strategic Bus Review. This provides an opportunity to provide strategic leadership and a more integrated approach to the bus network across the region.

2.8.18 A detailed business case which looks at franchising, enhanced partnerships and other options to reform the bus network is due to be published in early 2021. The initial review considers a significant reform of the bus network would be required if the Combined Authority wants to meet their wider ambitions, strategies and policies alongside providing a first-class public transport system.

Other measures

2.8.19 Other schemes and measures being developed include:

i. extension of demand management measures in Cambridge, promoted by Greater Cambridge Partnerships to complement the promoted strategic schemes; and

ii. the upgrade of the Felixstowe to Nuneaton via Ely rail line for freight connections to extract heavy goods vehicle movements from the highway network.

2.8.20 Further details are provided within the Policy Section (Section 4) of this Transport Assessment.

2.9 Pre-application Consultation and Scoping

2.9.1 Stantec has worked in close co-operation with Cambridge City Council, Cambridgeshire County Council and Highways England through the Local Plan Inquiry process, and through the development of these West Cambridge Development proposals. The 2020 Transport Assessment contains additional information subsequently requested following the Joint Authorities' review of the Outline Planning Application in 2016 to 2020.

2.9.2 In addition to meeting the planning and highway authorities, the University, supported by Stantec, has attended a series of meetings and presentations to various groups and organisations including:

i. the West and North West Cambridge Cycling Group – West Cambridge Active Travel;

ii. the West Cambridge Community Group; and

iii. various residents' associations and groups.

2.9.3 Initial discussions have also been held with the Traffic Managers of both of the main local bus operators – Stagecoach Cambridge and Go Whippet - to discuss the potential public transport strategy for the Site, as set out in Section 7. These discussions further involved the County Council's Public Transport Officers.

Scoping

2.9.4 As agreed with Highways England and Cambridgeshire County Council, this Transport Assessment considers the following aspects:

- Introduction
- Background and Development Proposals;
- Existing Conditions and Future Baseline Conditions;
- Summary of Policy Review;
- Development Access and Movement Strategy broken down into the following elements:
  - Access and Movement Strategy;
  - Pedestrian and Cycle Access Strategy;
  - Public Transport Strategy;

- Site Layout, Vehicular Access and Parking Provision;
- Travel Demand Management Strategy;

- Future Person Trip Rate, Distribution, Assignment and Mode Share
- Construction Access Strategy;
- Traffic and Junction Impact Analysis;
- Mitigation Strategy; and
- Conclusions.

2.9.5 In addition to Scoping, Transport Review Meetings have been and continue to be held with representatives from the County and City Councils and Highways England on a regular basis. These discussions have helped to inform the derivation of this document.

2.10 Assessment Methodology and the Monitor and Manage Approach to Mitigation

2.10.1 Whilst West Cambridge has been allocated within the Local Plan, this development is being brought forward within the context of wide-reaching transport planning uncertainty, including:

i. the scale of local residential development identified in the Cambridge Local Plan 2018;

ii. the impact of the A14 Huntingdon – Cambridge Improvement Scheme - construction due to complete shortly in a phased manner;

iii. proposals for the A428 Black Cat to Caxton Gibbet Enhancement Scheme, details recently issued for consultation;

iv. Highways England's need to consider measures along the M11 – including the M11 Junction 13 being included in the 2020 RIS2 announcement as a pipeline project for RIS3 (2025 – 2030); and

v. the impact of a series of other transport schemes – including - inter alia - the Oxford – Cambridge Expressway, and East-West Rail.

2.10.2 These would have a significant and substantial effect upon the strategic and local movements of vehicles across the region, and influence in an unknown manner the future access and movement strategy of West Cambridge – particularly in the mid- to late-phases of the Development.

2.10.3 An outline planning consent is being sought by the University to allow development to be implemented incrementally over several years, set within the context of the allocated status for this Site.

2.10.4 As the outline planning application will be submitted prior to the detailed definition of these measures, as agreed with the Joint Authorities (Cambridge City Council – the planning authority, Cambridgeshire County Council – the local highway authority, and Highways England – the strategic highway authority), an "Adaptive, Phased Approach" has been adopted. This reflects the same approach adopted to respond to similar issues elsewhere within Cambridgeshire (such as at Alconbury Weald, and Waterbeach), and is summarised as incorporating:

i. a graduated approach – the assessment process reflecting current transport planning policy where travel demand management measures are introduced first, followed by any

necessary highway infrastructure measures to mitigate the residual traffic impact; as well as

ii. an adaptive approach – where, to maintain future flexibility, the proposed mitigation for later phases responds to the quanta of development within the individual phase proposals, the timescales for the delivery, changes in future travel behaviour patterns, emerging transport policy, and the current uncertainty relating to the area-wide transport enhancement proposals delivered by others.

2.10.5 The transport strategy for West Cambridge is therefore being brought forward against a background of uncertainty in relation to the area-wide transport enhancement proposals. As the outline planning application will be submitted prior to the definition of these wider improvements schemes – e.g., for the A14, for the M11, and area-wide strategic transport schemes - as discussed and agreed with the Joint Authorities (Cambridge City Council - the local planning authority, Cambridgeshire County Council - the local highway authority, and Highways England, the strategic highway authority):

- this Transport Assessment provides a detailed assessment of the impact of an indicative Key Phase 1, relating to the 2021 scenario;
- a detailed mitigation strategy is developed to respond to this indicative Key Phase 1 in the context of the previously consented development;
- reflecting current transport policy, Monitor and Manage Approach will be adopted relating to the provision of mitigation measures to allow the mitigation strategy to respond to the quanta of development within the individual phase proposals, the timescales for delivery, changes in future travel behaviour patterns, emerging transport policy, and the current uncertainty relating to the transport enhancement proposals;
- to support this, a further high-level assessment based on agreed assumptions relating to the traffic impact, highway capacity assessment and likely mitigation strategy relating to later phases of West Cambridge (i.e., for 2021 onwards) - provided to inform the total Transport Cap contribution to finance the necessary development mitigation. It is acknowledged that the detail included within this assessment will be reviewed subsequently in the context of the applications for later phases once further clarity is reached.

2.11 Summary of the Methodology

Initial assessment work

2.11.1 Within the context of an assessment of Key Phase 1 in 2021 with relatively small development impact, it was agreed that a more local approach to the assessment of impact was appropriate – and would provide a reasonable assessment due to the absence of assessment of the reassignment effects.

2.11.2 This modelling work has been extended to enable conditions to be considered relating to later phases of West Cambridge (i.e., for 20231 onwards). Whilst this assessment has been undertaken without reference to the available network capacity – and would provide a conservative assessment of likely future impact – it has been used to inform the assessment of assess the Transport Cap to finance the necessary development mitigation. The detail included within this initial assessment would be reviewed subsequently in the context of the applications for later phases, in the context of further clarity being reached.

2.11.3 The following methodology was therefore agreed with the Joint Authorities, based upon Stantec's Transport Modelling.

2019 Base Year Methodology

2.11.4 As the 2020 flows have been significantly disrupted by the COVID19 Emergency and are unrepresentative, the 2019 flows are considered as the Base Year.

2.11.5 The 2019 Base Year Scenario is being prepared for the purposes of the Environmental Impact Assessment, and to advise the existing conditions across the network.

2.11.6 The 2019 vehicle flows will be derived across the network from traffic count surveys, from a series of sources including inter alia:

- traffic count surveys undertaken by Advanced Transport Research in May 2019 along the Madingley Road corridor commissioned, commissioned by the University; and
- traffic count surveys obtained from Mayer Brown for the M11 Junction 13 On / Off slips and the Park & Ride Access.

2.11.7 Growth factors from the Department for Transport's TEMPRO model have been used to convert traffic survey data older than 2019 to the necessary common year.

2021 Key Phase 1 Assessment Methodology

2.11.8 The 2021 Key Phase 1 Assessment considers both the Do Minimum and Do Something scenarios.

2.11.9 Two Do Minimum assessments are considered for each scenario:

i. for the Transport Assessment - considering the Future Year flow scenario, assuming the delivery of consented development across Cambridge Sub-Region – including that consented at West Cambridge; and

ii. for the Environmental Impact Assessment - considering the Future Year flow scenario, assuming the existing development at West Cambridge (i.e., with no further development within the terms of the Extant Consent).

2.11.10 The Do Something assessment in each scenario is identical for both the Transport Assessment and Environmental Impact Assessment.

2.11.11 Both the Consented (Do Minimum) and Key Phase 1 (Do Something) of West Cambridge Development - identified in Tables 2.1 and 2.3 - are assumed to be completed by 2021.

2.11.12 The 2019 network traffic flows will be inflated by the vehicle trips identified by Stantec's Spreadsheet Model arising from the consented strategic development delivered by 2021 assigning along each link.

2.11.13 The methodology used to evaluate the transport impact of the forecast movements generated by Key Phase 1 for the Transport Assessment is influenced by the Consented Development detailed in Table 2.1. The University has already provided full mitigation for the vehicle trip generation from the Consented Development.

2.11.14 These 2021 flows, being based in part on observation from the surveys in 2018 and 2019, would already include movements associated with West Cambridge. For the purposes of assessing the 2021 Do Minimum scenario for the Transport Assessment, to avoid double counting the existing West Cambridge development-generated vehicle trips:

i. the Observed 2018 or 2019 West Cambridge vehicle movements are deducted by link;

ii. these Observed 2018 or 2019 West Cambridge vehicle movements are replaced with the predicted Consented West Cambridge flows identified by the Spreadsheet Model.

2.11.15 When the link flows obtained from this first-principles approach are compared to the equivalent link flows from the CSRM, it shows that the CSRM flows are lower. As this first-principles approach does not account for reassignment or redistribution effects, the adopted methodology is shown to provide a conservative assessment of future conditions.

2031 Full Development Assessment Methodology

2.11.16 The 2031 Assessment considers the Do Minimum and Do Something scenarios.

2.11.17 As per the 2021 assessment, two Do Minimum assessments are considered.

2.11.18 The Full Development scenario for West Cambridge Development identified in Table 2.3 is assumed to be completed by 2031.

2.11.19 The 2019 network traffic flows will be inflated by the vehicle trips identified by Stantec's Spreadsheet Model arising from the consented strategic development delivered by 2031 assigning along each link.

2.11.20 The methodology used to evaluate the transport impact of the forecast movements generated by the Full West Cambridge Development is influenced by the Consented Development detailed in Table 2.1 for which the University has already provided full mitigation for.

2.11.21 These 2031 flows, being based in part on observation from the surveys in 2019, would already include movements associated with West Cambridge. For the purposes of assessing the 2031 Do Minimum scenario for the Transport Assessment, to avoid double counting the existing West Cambridge development-generated vehicle trips:

i. the Observed 2019 West Cambridge vehicle movements are deducted by link;

ii. these Observed 2019 West Cambridge vehicle movements are replaced with the predicted Consented West Cambridge flows identified by the Spreadsheet Model.

2.11.22 Further details are provided in Section 12 onwards.

3 Existing Conditions

3.1 Introduction

3.1.1 This section presents detail of the current and permitted land-uses; the pedestrian and cycle infrastructure; public transport provision; highway network and emerging development proposals from the local authority and local developers.

3.1.2 This section identifies that:

i. the Development is well-located with respect to existing pedestrian and cycle infrastructure to accommodate non-motorised movement, and that the existing bus services already connect to a series of popular destinations;

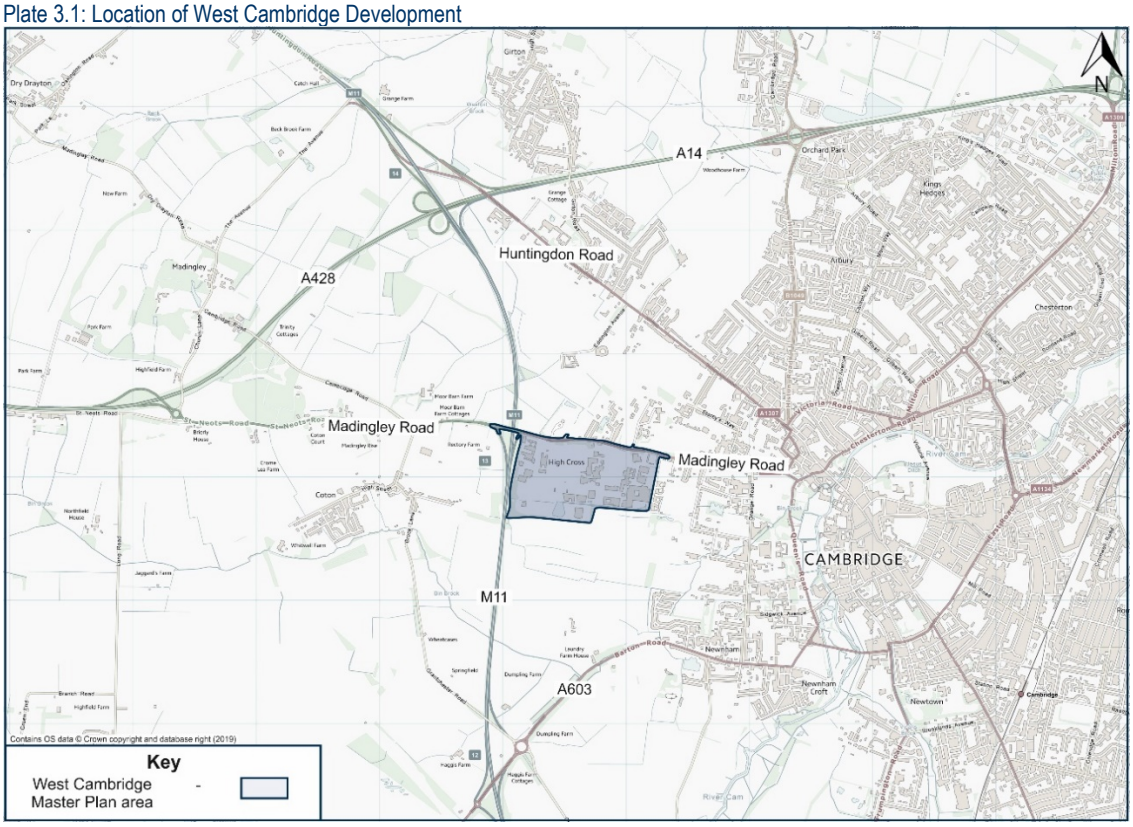
ii. existing journey to work trips by Cambridge residents and University employees involve a much lower car driver mode share than the United Kingdom average; and

iii. that there are no significant existing road safety issues in the vicinity of the Site.

3.2 Site Location and Existing Use

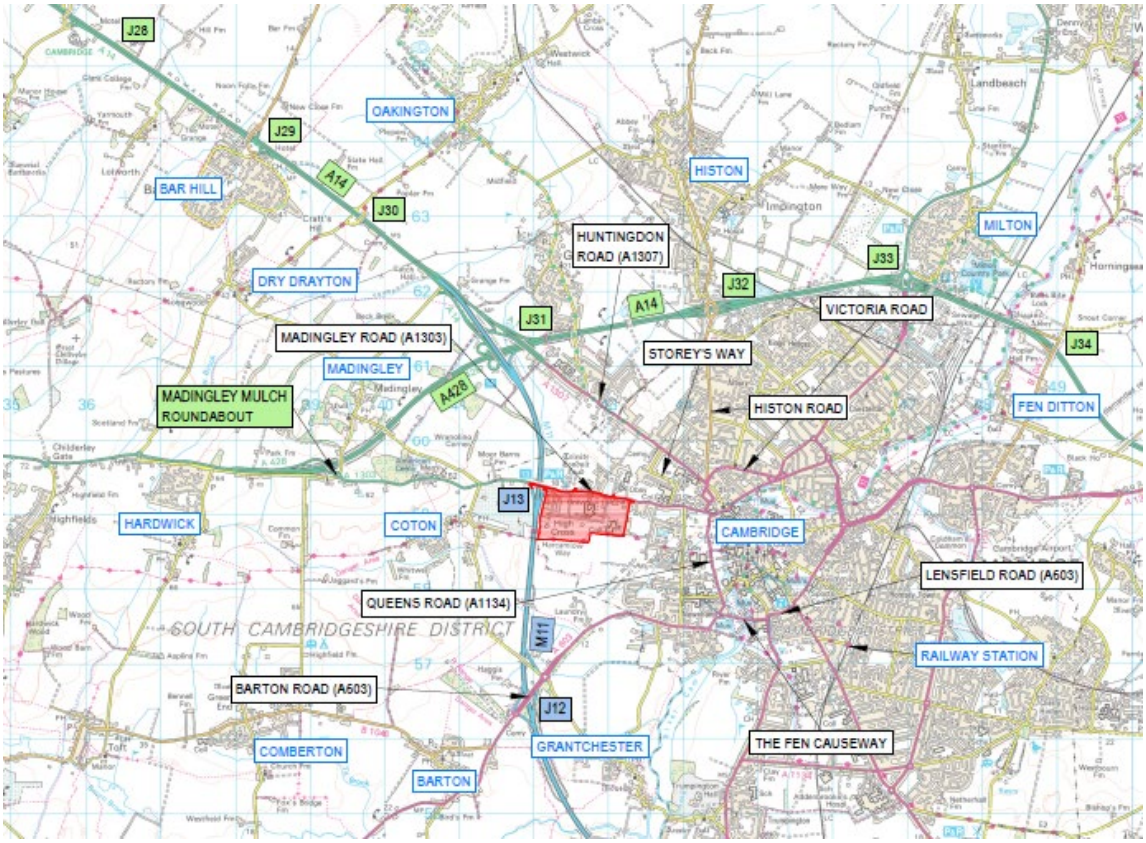
3.2.1 The proposed Development is shown in Figures 2.1 and 2.2, being located to the north-west of the existing urban conurbation of Cambridge, approximately 3km north-west of the centre of the city. The location of this Site is shown on Plate 3.1:

Plate 3.1: Location of West Cambridge Development



3.2.2 The Site is located immediately to the east of the section of the M11 motorway between Junctions 13 and 14, is bordered to the north by the Class A Madingley Road (A1303) which routes between the Madingley Mulch junction on the A428, through M11 Junction 13 and on to the centre of Cambridge. Clerk Maxwell Road, a residential distributor road, is located to the east. Agricultural land occupies the land between the Site and Barton Road to the south.

Plate 3.2: Strategic location of West Cambridge Development



3.2.3 West Cambridge is a mixed-use development, with the predominantly academic and commercial research elements and ancillary land-uses. Outline planning consent was originally granted in 1999, and subsequently the Development has progressed with the elements of the original consent being delivered at different rates. The consented and delivered development mix is shown in Table 2.1.

3.3 Existing Pedestrian and Cycle Facilities

Pedestrian and Cycle Access Points to West Cambridge

3.3.1 The existing walking and cycling access points to West Cambridge from the north are:

- at the Madingley Road junctions with JJ Thomson Avenue;
- at High Cross;
- adjacent to the British Antarctic Survey building at the Western Access – a pedestrian-only access;
- at the Veterinary School access road; and
- from the Park and Cycle facility.

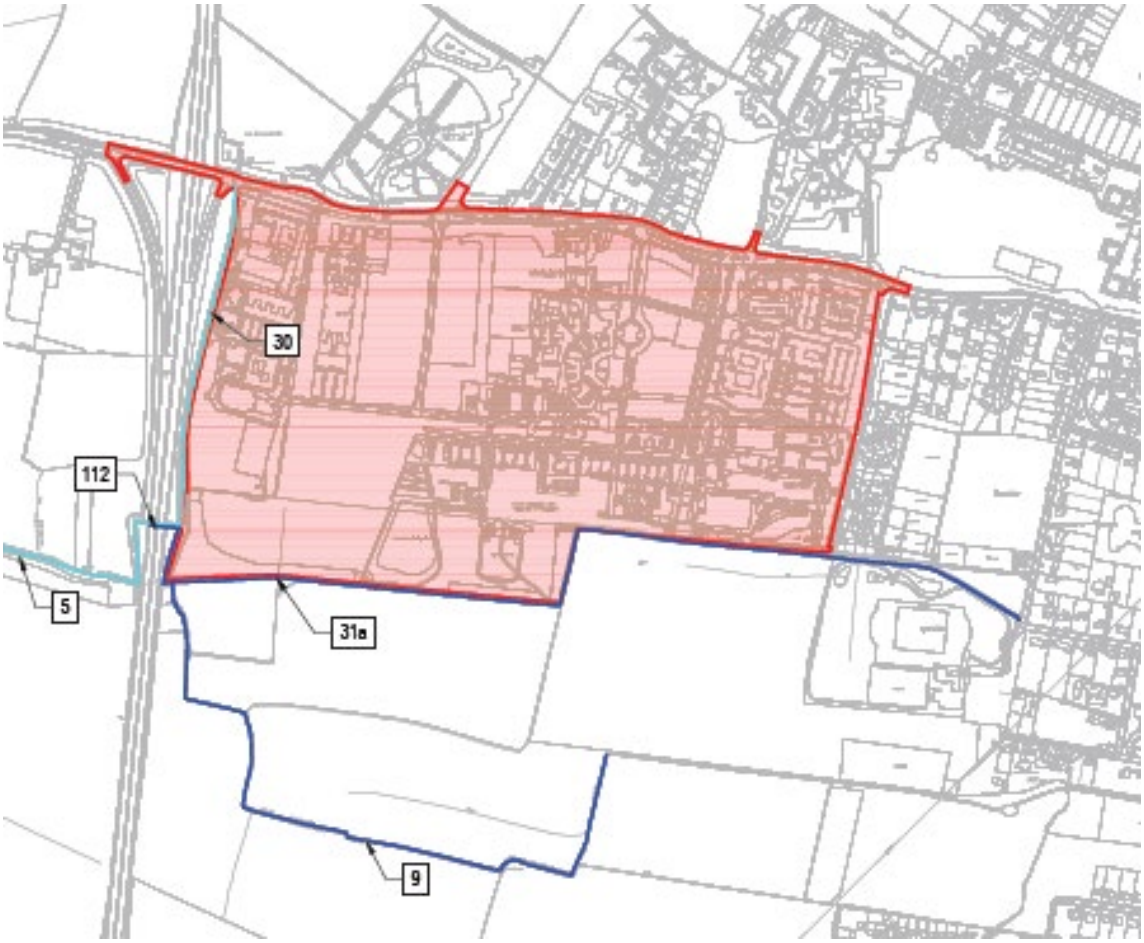
3.3.2 From the south, the Coton Path, a pedestrian and cycle route, connects West Cambridge to the city centre via Adams Road and Burrell's Walk.

3.3.3 From the east, there is a pedestrian and cycle shared use path from Clerk Maxwell Road to JJ Thomson Avenue.

Public Rights of Way

3.3.4 Public Rights of Way form part of an integral part of the highway network, could contribute towards enhancing the connectivity of the network and of the scheme as a whole, and provide additional opportunities for sustainable transport modes between communities in the vicinity. The Public Rights of Way in the vicinity of the Development are shown on Figure 3.1, reproduced in Plate 3.4.

Plate 3.4: Public Rights of Way around West Cambridge



3.3.5 In summary:

i. Footpath 31a routes on a west to east alignment along the southern periphery of the Site, commencing from the western corner of the site (adjacent to the M11). Extending to the east, this footpath connects with Wilberforce Road where it terminates;

ii. Footpath 9 commences at the same point as Footpath 31a, but routes to a south-east direction where it terminates at an area of agricultural land;

iii. Bridleway 30 also commences at the same point as Footpath 31a, and routes north-south alongside the M11 until reaching Madingley Road; and

iv. Bridleway 5 is located to the south of Madingley Road between the M11 southbound on-slip and the West Cambridge Development, and runs on a north-south axis.

3.3.6 In addition, Footpath 6 routes on a south-west to south east access linking from Barton Road to nearby Coton (extending over the M11) where it terminates. There are currently no dedicated equestrian facilities within the Development, albeit Bridleway 30 links between the M11 Coton Path foot/cycle bridge to Madingley Road along the western boundary. There is no clear continuation of this bridleway beyond its termination at Madingley Road.

Pedestrian Facilities

Walking Route Network

3.3.7 The existing pedestrian facilities are shown on Figure 3.2.

3.3.8 There are two good pedestrian connections between West Cambridge and the city centre:

- using the existing pedestrian facilities along Madingley Road; and
- via the Coton Path Corridor - a much quieter route that connects to Adams Road (a residential street) and Burrell's Walk (a dedicated pedestrian and cycle path).

3.3.9 In the vicinity of West Cambridge, Madingley Road has footways along both sides of the carriageway. The footway along the south terminates at the West Cambridge High Cross junction, opposite the North West Cambridge Development High Cross access. The footway along the south varies from between 1.5m and 2m wide, and generally has no median strip. The footway on the north varies between 1.5m and 2m wide and has a median strip along the majority of Madingley Road. The footways are illuminated by the carriageway lighting system.

3.3.10 There are five controlled crossings along Madingley Road:

i. a pelican crossing to the west of the Madingley Road / Northampton Street Roundabout;

ii. a pelican crossing to the east of the Madingley Road / Grange Road traffic signal controlled junction;

iii. a toucan crossing to the east of the Storey's Lane / Madingley Road junction – a footpath leads from here to the south eventually to join Clarkson Road;

iv. a toucan crossing between the Madingley Rise and JJ Thomson Avenue junctions; and

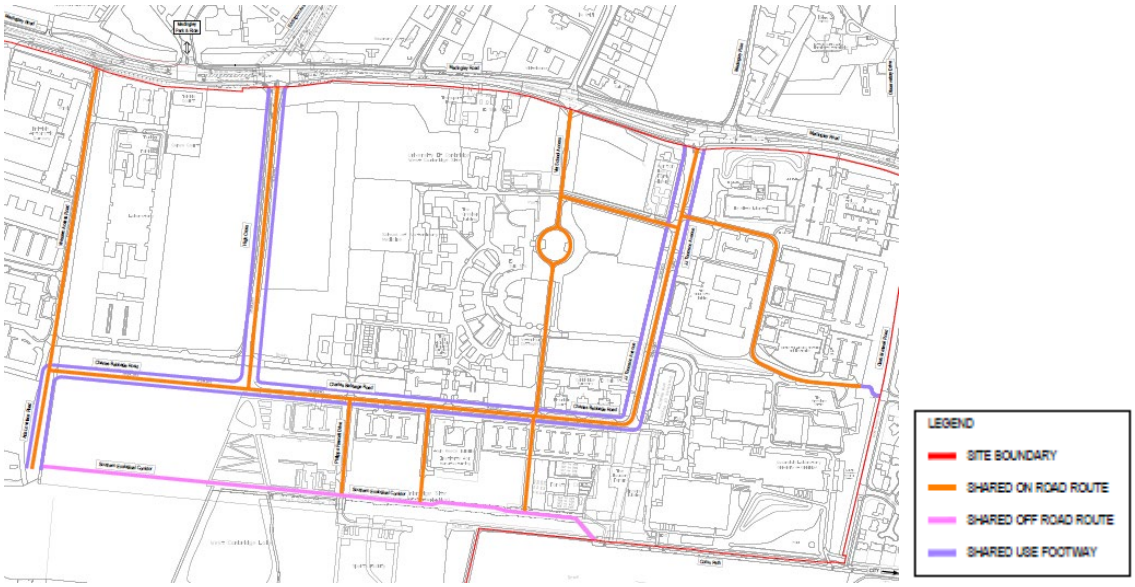
v. a toucan crossing at the Madingley Road Park and Ride site entrance.

3.3.11 There is some severance between West Cambridge and the north due to Madingley Road, but this has been reduced with the traffic signal controlled junction enhancement of the Madingley Road / North West Cambridge / High Cross Site Access, and the delivery of the toucan signal controlled crossing between the Madingley Road / JJ Thomson Avenue / Madingley Rise junctions.

On-site facilities

3.3.12 The on-site facilities within the Development are shown on Figure 3.2, reproduced in Plate 3.5.

Plate 3.5: On-site facilities in West Cambridge



3.3.13 Within the West Cambridge Development, JJ Thomson Avenue, Charles Babbage Road and High Cross have footways with generous widths on both sides of the carriageway – a typical arrangement is shown on Plate 3.6.

Plate 3 6: Existing Footway arrangement along High Cross

3.3.14 Within the Development, Charles Babbage Road has been subject to an urban realm scheme and traffic calming, resulting in it forming an attractive link for pedestrians – this is shown on Plate 3.7.

Plate 3 7: Charles Babbage Road

3.3.15 There is a footway on the western side of the Western Access connecting from Charles Babbage Road to Madingley Road.

Cycling Facilities

Cycling Route Network

3.3.16 The local cycling network in the vicinity of the Development is shown on Figure 3.3, compiled using information from Cambridgeshire County Council website and to other attractors to the south and west of the City. As shown on this figure, Cambridge is exceptionally well provided with cycling facilities.

3.3.17 Across the wider Cambridge area, there are National Cycle Network routes 1, 11, 12, 51, 53, and 63. National Cycle Route 51 passes close to the Development, as shown on Figure 3.3. This connects Huntingdon to the west and Newmarket to the east. A section of this route runs south-east to north-west adjacent to the Site along Huntingdon Road (A1307) from Cambridge Road towards Cambridge City Centre. The cycle route is formed with on-road cycle lanes along both sides of Huntingdon Road. It is signed throughout as National Cycle Route 51, and forms a high quality route. The path stretches across East Side Common and provides improved cycle links for the local villages into Huntingdon.

3.3.18 Cambridgeshire County Council delivered the Madingley Road Phase 1 Combined Cycleway / Footway proposals in 2012, a quality cycleway along the northern verge, significantly enhancing the cycling and walking infrastructure along this route. These works are shown in Appendix 3.1, and consisted of:

i. upgrading the existing combined footway / cycleway within the northern verge to 3m wide between the east of Madingley Rise and Lady Margaret Road;

ii. enhancing the cycleway crossings of minor roads such as Storey's Way and Madingley Rise;

iii. the advisory on-road cycle lane from Queen's Road to the Park and Ride site on the southern side of Madingley Road shown on these plans will be provided as part of later phases.

3.3.19 At the junctions on Madingley Road with Lady Margaret Road and Grange Road there are cycle advance stop lines with pens.

3.3.20 The Coton Path runs along the southern boundary of the Development and connects Coton, one kilometre to the west, with the city centre via Adams Road and Burrell's Walk with limited motorised traffic. Plate 3.8 shows the path between Adams Road and the Development (left) and along the south of the Development boundary (right).

Plate 3.8: Coton Path linking the south of West Cambridge with Adams Road

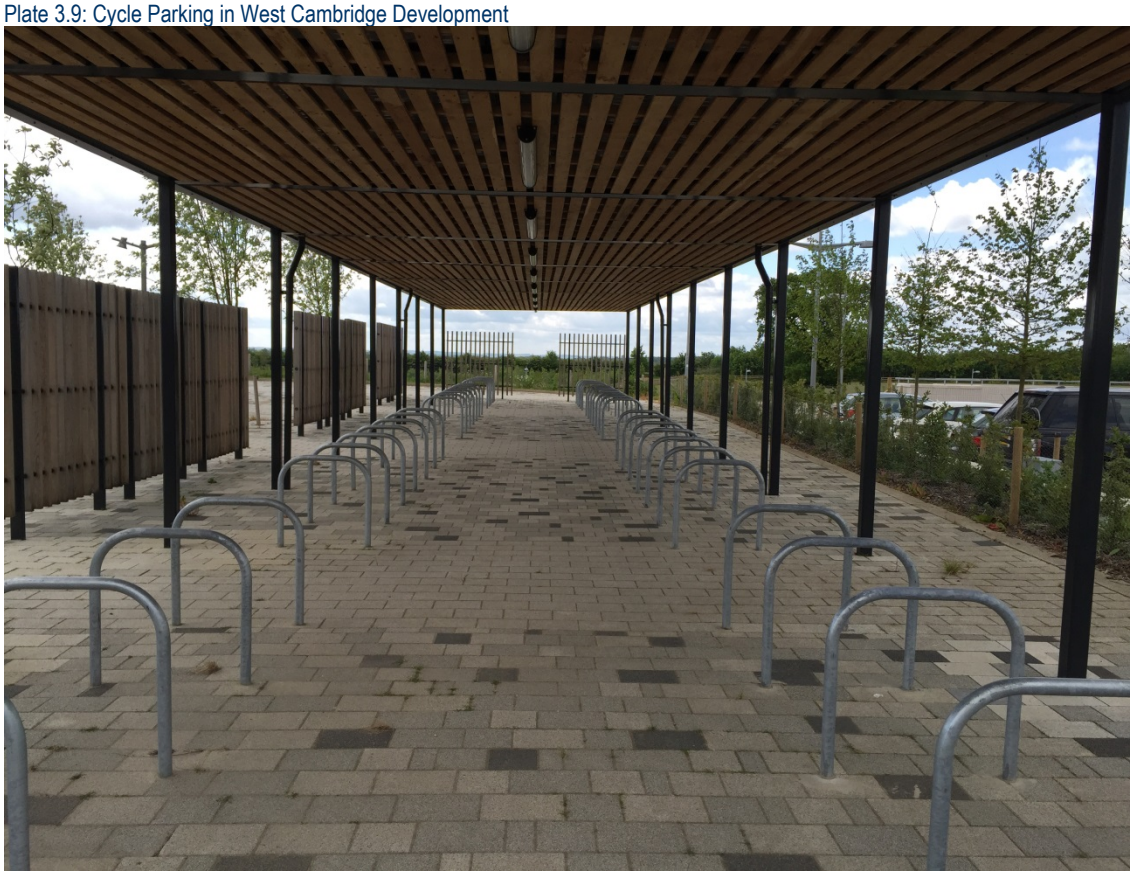
3.3.21 The existing Coton Path is being considered by the GCP for inclusion as part of a new Comberton Greenway, a cycleway route linking Comberton, Coton and the City.

On-site facilities

3.3.22 Along JJ Thomson Avenue, High Cross and Charles Babbage Road, there are substantial shared cycle and footways on either side of the carriageway, with those of the former two roads separated by tree-lined grass verges.

3.3.23 Across the Development, there are a number of covered, secure cycle parking areas with Sheffield stands and lighting such as that shown in Plate 3.9. There is also parking provided within development plots, generally in the form of Sheffield stands.

Plate 3.9: Cycle Parking in West Cambridge Development



3.3.24 There is also the existing University Park and Cycle facility located in the north-eastern corner of the Site, off Clerk Maxwell Road. This car park too is subject to permit control and managed with the other Estate car parks, and intended to intercept the University's city-based car trips from the west and from the M11 bound for the City Centre. Its close location to Clerk Maxwell Road provides a safe cycle access onto the Coton Path / Adams Road / Burrell's Walk route for these city-based trips to re-mode to cycle. The site provides 292 parking spaces. Whilst this at-grade facility will be removed as part of the proposals, the spaces will be provided elsewhere within the Development.

Associated Off-site Cycle Parking

3.3.25 A large percentage of movement of students around Cambridge has historically been made by bicycle. To accommodate these student cycles, all University facilities throughout the City – all colleges and departments – have private cycle parking and storage provision.

3.3.26 Within the City Centre, there are various public cycle parking locations that would encourage and promote the use of cycling into Cambridge for trips by occupiers during the day:

i. the Grand Arcade Cycle Park is located off Corn Exchange Street and provides space for approximately 500 cycles that includes free parking for 200 spaces (the other 300 spaces are charged parking);

ii. Park Street Cycle Park is located on the ground floor of Park Street Car Park and provides covered space for 285 cycles; and

iii. At Cambridge Rail Station, accommodating 2,850 cycles.

3.3.27 Other cycle parks exist around Cambridge, such as bicycle stands located on East Road, Downing Site at the University, and at the Addenbrooke's Hospital. Further cycle parking located close to the Site is along Madingley Rise, but this cycle parking is for the use of the university alone.

3.3.28 Whilst any proposed amendments to the University's cycle parking provision at West Cambridge are related to specific development proposals, it is part of the University's approach to sustainable transport to keep under review cycle parking provision in all of their facilities as part of the University's regular City Wide Travel Plan obligations.

Other Development-related cycle and pedestrian infrastructure enhancement proposals

3.3.29 A series of pedestrian and cycle infrastructure proposals have been promoted by others within the area.

3.3.30 The Long Term Transport Strategy (LTTS - referred to in Section 2.9) forms part of the Cambridgeshire Local Transport Plan, and identifies major infrastructure requirements needed to address the existing capacity constraints of Cambridgeshire's transport network, as part of this Strategy, a third city centre cycle park will be provided, although no timescale has been given at this stage.

3.3.31 As further referred to in Section 2.9, the Authorities are considering strategic improvements to cycling within the Greater Cambridge area. An area-wide strategic transport scheme aimed at improving the existing cycle infrastructure along Madingley Road is being investigated.

3.3.32 As part of the North West Cambridge Development proposals, the following cycle infrastructure improvements were delivered along Madingley Road;

i. a traffic signal-controlled pedestrian and cyclist crossing incorporated into the Madingley Road – High Cross - North West Cambridge Development access junction; and

ii. a new toucan crossing on Madingley Road adjacent to JJ Thomson Avenue / Madingley Rise.

Existing Cycle Movements

3.3.33 A travel pattern survey was undertaken in May 2015, seeking information about staff and students' travel habits over the course of two weeks.

3.3.34 The post code data for the existing cycle user occupants of West Cambridge has been analysed along broad travel corridors, the output is reported in Appendix 3.2 and summarised in Table 3.1 along the broad movement corridors:

Table 3.1: Observed Cycle to Work Movements to West Cambridge (2015)

	Cyclists				Total			
Corridor	Staff	Students	Total	%	Staff	Students	Total	%
North, beyond Girton	11	2	13	3%	37	2	39	6%
North of City	64	61	125	26%	82	61	143	21%
North-east, beyond Milton	2	0	2	0%	11	0	11	2%
North-east area of City	8	33	41	9%	9	34	43	6%
South-east area of City	44	30	74	16%	54	33	87	13%
South-east, towards Balsham	2	2	4	1%	7	2	9	1%
South area of City	11	55	66	14%	21	60	81	12%
Towards Great Shelford	4	0	4	1%	19	0	19	3%
South-west, beyond Barton	2	0	2	0%	6	0	6	1%
West Cambridge, North-west of City and Girton	36	92	128	27%	49	116	165	25%
West along the A1303 Corridor, beyond Coton	13	2	15	3%	51	5	56	8%
North-west, towards St Ives	1	0	1	0%	7	0	7	1%
Other	0	0	0	0%	0	0	0	0%
Total	198	277	475	100%	353	313	666	100%

Source: SDG – University of Cambridge – Travel Survey and Segmentation Study – October 2015
Response rates of 34% Staff and 10% Students were reported.

3.3.35 This information will inform the derivation of the Development Cycle Strategy, with:

i. around 30% of movement to the north, across Madingley Road;

ii. around 25% of movement to the east, along the existing facilities along Madingley Road;

iii. around 40% of movement passing to the east, along the Coton Path, continuing along towards the City; but

iv. with a limited number, only around 3% of existing cycle movements, assigning to the west across the motorway. This is considered to reflect the limited numbers resident in communities to the west.

3.4 Existing Bus Services

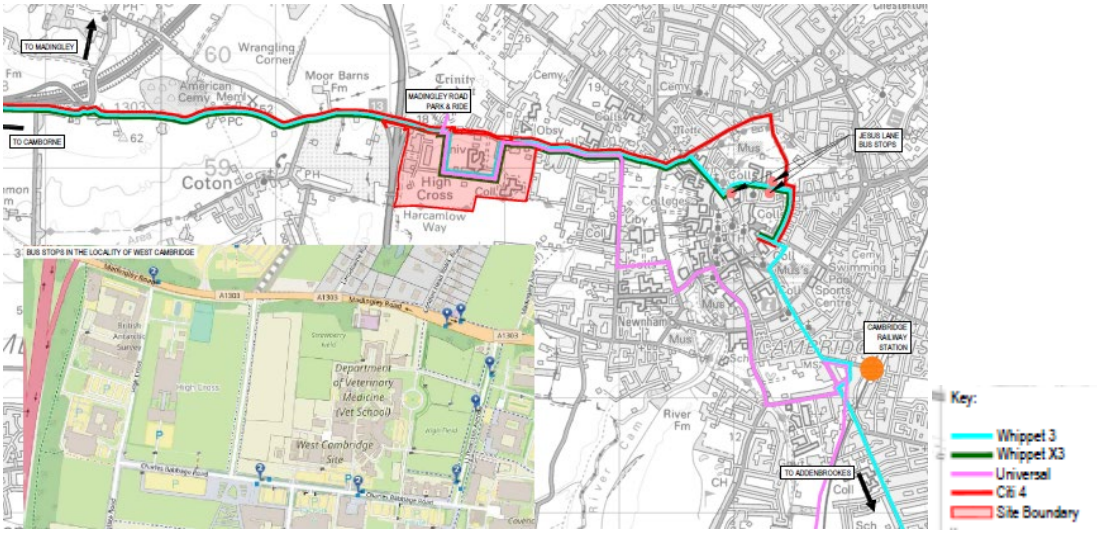
3.4.1 Whilst walking and cycling offer an attractive alternative to the private car for many short- and medium- distance trips, bus travel can also be an effective option. In particular, quality bus services offer the potential to replace car travel locally (such as to adjacent developments), to other destinations across Cambridge, and further afield. In conjunction with rail, it is a realistic option to the car for longer distance trips.

3.4.2 In this section, details of existing bus services are set out. These comprise existing local and long distance services on Madingley Road, the park & ride service from a site north of Madingley Road, and the guided busway that serves northern areas of Cambridge. Each of these is described in turn below.

Existing Bus Services on Madingley Road

3.4.3 The development is well located on an existing public transport corridor served by well-established services that connect to the city centre, railway station and a range of destinations in Cambridge itself and, more widely, in West Cambridgeshire and beyond. As shown in Figure 3.4, repeated in Plate 3.10, the services operate on Madingley Road and are provided by two operators: Stagecoach and Whippet.

Plate 3.10: Existing Bus Services



3.4.4 Stagecoach operates services Citi 4 and X5, Whippet provides the 8, X3, and Universal ('U') Services. Places served by these routes are Cambridge city centre, Cambourne, Huntingdon, Papworth, St Ives, St Neots and further afield to Bedford, Milton Keynes and Oxford. Table 3.2 shows details of the services provided, as at September 2019.

Table 3.2: Bus Routes and Daytime Frequencies

Service (Operator)	Route	Frequency (minutes)	
		Mon – Sat	Sunday
X3 (Whippet)	Cambridge, West Cambridge, Cambourne, Lower Cambourne, Papworth, Godmanchester, Huntingdon	90	120
8 (Whippet)	Cambridge, Coton, Madingley, Dry Drayton, Bar Hill, Boxworth, Conington, Knapwell, Elsworth, Papworth	Off peak only 3 journeys	No service
Citi 4 (Stagecoach)	Cambridge, Hardwick, Cambourne	20	60
Universal ('U') (Whippet)	Eddington, Cambridge City Centre, Cambridge Rail Station, Addenbrooke's Hospital	15	Every 30 mins
X5 (Stagecoach)	Cambridge, St Neots, Bedford, Milton Keynes, Buckingham, Bicester, Oxford	30	30

November 2019 - this information may change as bus operators review their services

3.4.5 The two more frequent services are the Citi 4, operated by Stagecoach, and the Universal, operated by Whippet:

i. the Citi 4 is one of a network of seven "Citi" branded routes serving the Cambridge urban area and surrounding area, and provides a 20 minute frequency service from Cambourne via Madingley Road to the city centre. In the evenings and on Sundays there is an hourly service on the route; and

ii. the Universal service provides a link between the Madingley Road Park and Ride site, the University's West Cambridge campus, and the city centre (Silver Street and Trumpington Street), the Cambridge Biomedical Campus, and Addenbrooke's Hospital and operates every 15 minutes during Monday to Friday daytimes only. This route is supported financially by the University of Cambridge and the service is being reviewed for the start of a new contract from July 2021.

3.4.6 Longer distance links are provided by:

i. Stagecoach service X5 - every 30 minutes to St Neots, continuing to Bedford, Milton Keynes and Oxford; and

ii. Whippet with service X3 - operating hourly to Papworth and Huntingdon.

3.4.7 Figure 3.4 includes an extract from the County Council website showing the location of bus stops within and adjacent to West Cambridge:

Madingley Road

i. two outside the Western Access Road – both stops are formed by bus stop flags and timetables. The westbound stop is located in a bus layby;

ii. two located 210m to the west of the JJ Thomson Avenue junction – both stops are formed by a bus stop flags and timetables. The westbound stop is located in a bus layby;

JJ Thomson Avenue

i. two sets of bus stops are located at two locations along JJ Thomson Avenue. All four stops are formed by bus stop flags and poles, the two bus stops for services exiting the site are further supported by bus shelters and timetable information;

Charles Babbage Road

i. the bus stops located outside the Institute for Manufacturing building are formed by stop bus flags and poles for both directions;

ii. the bus stops located outside the Department for Materials Science and Metallurgy building are formed by bus flags and poles for both directions.

Park & Ride

3.4.8 Cambridge has a well-established park & ride system. The nearest park & ride site to the Development is located to the north of Madingley Road, the car parking facility is open 24 hours a day including bank holidays. There are other park & ride sites around Cambridge relevant to this Development.

3.4.9 The 'Red' park & ride service operates from Madingley Road to the city centre, terminating at St Andrew's Street. Services operate every 10 minutes from 0700 to 1820 and then every 20 minutes until 2020 on Monday to Friday; every 10 minutes from 0800 to 1820 and then every 20 minutes until 2020 on Saturday; and every 15 minutes from 0900 to 1815 on Sunday.

3.4.10 The main role of this Madingley Road Park & Ride facility is to intercept car trips from the west and from the M11 inbound to the City Centre. Whilst this facility may not be directly relevant to improving accessibility to West Cambridge, it does decrease the traffic volumes along Madingley Road.

Guided Busway

3.4.11 The northern area of Cambridge is also served by the Cambridge Guided Busway, a strategic bus-based rapid transit scheme connecting the communities of Cambridge, St Ives and Huntingdon, along with, in future, the new Northstowe Community.

3.4.12 Whilst the Guided Busway does not directly serve the Development, the high-quality characteristics of the service, which are more akin to a tram than a conventional bus, make it an attractive mode of transport in its own right and an integral part of the Cambridge public transport network. Through interchange to other bus services, it provides an alternative to the car for trips to and from the Development.

3.5 Existing Rail Services

3.5.1 Rail travel, in conjunction with bus, offers an attractive alternative to the private car for many longer distance trips to West Cambridge.

3.5.2 The nearer rail station is Cambridge Rail Station, which is approximately 4 kilometres to the south-east of the West Cambridge development. The other is Cambridge North Rail Station, and is approximately 5km to the north-west. These are both shown on Figure 2.1.

3.5.3 Table 3.3 provides detail of rail services which can be accessed from these stations.

Table 3.3: Rail Services to Cambridge

Operator	Destination	Journey Time (minutes)	Frequency (per hour)	
			Mon – Sat	Sunday
Cambridge Rail Station				
CrossCounty	Birmingham New Street	165	1	1
	Ely	14	1	1
	Peterborough	49	1	1
	Stansted Airport	34	1	1
Greater Anglia	Ely	17	1	1
	Ipswich	77	1	1
	London Liverpool Street	80	3	2
	Norwich	81	1	1
	Tottenham Hale	69	3	2
Great Northern	King's Lynn	46	1	1
	Ely	18	1	1
	London King's Cross	47	2	2
	Stevenage	37	2	2
Thameslink	London St Pancras	65	2	2
	Brighton	147	2	2
	London's King's Cross	83	2	2
Cambridge North Rail Station				
Greater Anglia	Ely	13	1	1
	London Liverpool Street	90	1	1
	Norwich	76	1	1
Great Northern	King's Lynn	49	1	1
	Ely	14	2-3	2
	London King's Cross	60	2-3	2
Thameslink	Cambridge	4	1	1
	London's King's Cross	90	1	1

3.5.4 The completion of the Thameslink programme has resulted in the semi-fast and stopping Great Northern services to Kings Cross being transferred to Thameslink and each increased to half-hourly. These services will operate through the Thameslink "core" between London St Pancras and London Bridge, then continue to either Gatwick Airport and Brighton (semi-fast services) or Maidstone East (stopping services). There are two fast trains per hour that run non-stop between Cambridge Rail Station and London, branded the 'Cambridge Express' and operated by Great Northern. Journey time to Kings Cross is around 50 minutes.

3.5.5 In addition, there are hourly semi-fast and stopping services to each of Kings Cross and Liverpool Street, operating via Stevenage and Bishops Stortford respectively. Other services operate to key destinations in East Anglia and the Midlands.

3.5.6 The Cambridge North Station is connected to the Cambridge Guided Busway, hence offers quality link public transport trips across the north of the City.

3.5.7 Following the introduction of the Universal bus service, there is now a regular 15-minute frequency direct bus service between the Development and Cambridge Rail Station on Monday to Friday.

3.5.8 Cambridge Rail Station and the city centre are also linked by around eighteen buses per hour on the main Citi 1, 3, 7 and 8 services, which also provide regular direct links to Addenbrooke's Hospital, Cherry Hinton, Fulbourn, Fen Ditton, Arbury, Saffron Walden and a number of villages south of Cambridge. Journey time from the city centre to Cambridge Rail Station is under 10 minutes, Plusbus tickets are available for integrated rail and bus travel.

3.6 Existing Road Network

3.6.1 As shown on Figure 2.1, the Site is located to the south of a radial route leading between the M11 and the centre of Cambridge – the A1303 Madingley Road.

Vehicle access to the Site

3.6.2 Highway access to the site is exclusively from Madingley Road. Madingley Road borders the north of the Development, and is a single lane carriageway which fluctuates in width from approximately 7.5m to approximately 15m at the junction with JJ Thomson Avenue. In the vicinity of the Development there is a speed limit of 40mph, this reduces to 30mph towards the centre of Cambridge near JJ Thomson Avenue. Madingley Road leads from the A428 Madingley Mulch Roundabout to the inner Cambridge Ring Road, and is the main arterial route into the city from the west.

3.6.3 As shown on Figure 2.3, there are two junctions from Madingley Road which provide vehicular access to the site:

i. Madingley Road / High Cross / North West Cambridge Access - a four-armed traffic signal controlled crossroads located some 100 metres to the east of the Madingley Road / Park and Ride access junction, implemented to provide access to the new North West Cambridge Development to the north. The West Cambridge High Cross access road is a single carriageway road with a width of approximately 7.3 metres, which flares on the approach to the junction to provide two exit lanes. The inbound Madingley Road movements have dedicated both left- and right-turn lanes;

ii. Madingley Road / JJ Thomson Avenue / Madingley Rise – a staggered priority junction with single lane dualling providing right-turning lane facilities. Madingley Rise, to the north, forms the access road to the Earth Science Facility, and is used by University employees, students and visitors. JJ Thomson Avenue, to the south forms the main vehicular access to the West Cambridge Development. JJ Thomson Avenue is a single carriageway road with a width of approximately 7.5 metres, but which widens to two lanes on the approach to the junction providing a left-turn flare of 29 metres.

3.6.4 A further left in – left out priority junction between JJ Thomson Avenue and High Cross will be re-opened to provide limited servicing and cyclist / pedestrian access to an area of the Site to be occupied by the Cavendish III Laboratories application.

3.6.5 In addition to these junctions, Clerk Maxwell Road is a local access road and forms the eastern boundary to the site. Currently, this road provides access to a small number of residential homes and the 292 space Park and Cycle site, located at the north-east corner of the Development. On-street parking is not controlled, and approximately 85 - 90 car parking spaces are available reducing the environmental quality of this road. There is no direct vehicular access from Clerk Maxwell Road to the Development, albeit three pedestrian and cyclist accesses into the Development are served from this road. The junction of Clerk Maxwell Road with Madingley Road is formed by a ghost island priority junction.

Strategic Highway Network

3.6.6 As shown on Figure 2.1, the local highway network provides direct access between the Development and the M11 strategic highway network, when Madingley Road intersects with the M11 at Junction 13. An indirect link is also provided to the A14 by Huntingdon Road to M11 Junction 14 (A14 Junction 31).

3.6.7 The M11 is located to the west of the Site, and routes in a north / south axis. It links between the North Circular Road in London, passes Bishop's Stortford, Harlow, and Stansted Airport before passing to the immediate west of the Site at the merger with the A14 at Junction 14.

3.6.8 The A14 East also connects to the A428, a strategic road that links Coventry to Cambridge via Bedford and Northampton.

3.6.9 To the north of the Site lies the A14 on an east / west axis from Cambridge. To the east, the A14 connects to Newmarket, Bury St Edmunds, and Ipswich, terminating at the seaport of Felixstowe. To the west the A14 passes Huntingdon, crossing the A1 before continuing around Kettering and terminating at Junction 19 of the M1, the start of the M6.

3.6.10 Only limited movement access is possible at the two closest junctions to the M11, the A428 and the A14:

i. the A14 is accessed via Huntingdon Road at A14 Junction 31, however westbound movements only are provided for – eastbound access to the A14 and southbound access to the M11 are not possible. The nearest A14 eastbound access from the Development is via Histon Road, the A14 Junction 32;

ii. the M11 is accessed via Madingley Road, but only southbound movements are accommodated towards London; and

iii. the A428 cannot be directly accessed from the M11. A route to this link is formed along Madingley Road to the west.

Movement Overview

3.6.11 Madingley Road provides a convenient local access to West Cambridge for movement from the south (via the M11), from the west (from Madingley Road and the A428), and from the east (towards the City centre).

3.6.12 Whilst these movements are well-catered for, access to / from the north is poor as M11 Junction 13 has no north-facing diverge and or merge lanes. Approaching the site by car from the north or north-west - including areas to the north of the City centre, and from the A14 / A11 corridor - must use one of:

i. the M11, and U-turn at M11 Junction 12;

ii. drive through the City and enter via Madingley Road; or

iii. drive along Huntingdon Road and through either North West Cambridge or Storey's Way / Madingley Road.

3.6.13 Both the Huntingdon Road and Madingley Road Corridors are subject to levels congestion during the AM and PM peak hours, the congestion being more pronounced during the AM peak in the eastbound direction towards the city centre.

3.7 Observed Existing Journey mode share

3.7.1 To understand current travel patterns and existing mode share in the vicinity of the Development, existing travel patterns have been reviewed with reference to the readily available sources of data for the proposed land-uses including:

i. the existing Census 2011 Journey to Work data for the urban area of Cambridge;

ii. the existing Census 2011 Journey to Work data for England;

iii. the Travel Survey and Segmentation Study undertaken in October 2015 by SDG for the University of Cambridge; (Whilst later 2019 travel survey data are available, the 2015 data formed a substantive part of the modelling work undertaken by Stantec in support of this application. As the 2019 results are generally reflective of the 2015 information, the 2015 results are referred to);

iv. Cambridgeshire County Council's Travel for Work Partnership from the 2016 surveys for the University of Cambridge – reflecting more closely the mode share of the academic research area staff; and

v. Cambridgeshire County Council's Travel for Work Partnership from the 2014 surveys for the Cambridge Science Park – reflecting more closely the mode share of the commercial research area staff.

3.7.2 These data sources are considered individually below.

2011 Census

3.7.3 Information relating to the journey to work mode, and home and work locations is available in the latest available Census results, from 2011. Two data sets have been reviewed:

i. the Site is located in the Super Output Area referenced E02003725 covering the Cambridge urban area - as shown in Appendix 3.3. The mode shares from the 2011 Census for journeys to work in this area for workers employed within this area are shown in Table 3.4:

Table 3.4: Census 2011 Mode Share for journey to work within Cambridge

PT passenger		Car Driver	Car Passenger	Motorcycle	Bicycle	Pedestrian	Other - (Taxi, Metro, U'ground)	Single Occupancy Car Driver
Bus	Rail							
8.3%	4.5%	50.0%	4.0%	1.1%	21.6%	10.0%	0.3%	46.0%

Source – Census 2011 – Nomis Super Output Areas referenced E002319, E02003720, E02003721, E02003722, E02003723, E02003724, E02003725, E02003726, E02003727, E02003728, E02003729, E02003730, E02003731– excluding Work from Home trips

ii. the mode shares from the 2011 Census for journeys to work for workers employed within England is shown in Table 3.5:

Table 3.5: Census 2011 Mode Share for England - journey to work

PT passenger		Car Driver	Car Passenger	Motorcycle	Bicycle	Pedestrian	Other - (Taxi, Metro, U'ground)	Single Occupancy Car Driver
Bus	Rail							
7.9%	5.6%	60.2%	5.3%	0.9%	3.1%	11.3%	5.6%	54.9%

Source – Census 2011 - Nomis

Travel to Work Partnership – University of Cambridge

3.7.4 Reference is made to the Travel for Cambridgeshire survey of the travel patterns of the University employees at the West Cambridge Development – this is considered to represent reasonably the mode share of the Academic Research staff. The responses from the 350 respondents are shown in Appendix 3.4; the results are summarised in Table 3.6:

Table 3.6: Base Total External Trip Generation – West Cambridge

PT passenger		Car Driver	Car Passenger	Motorcycle	Bicycle	Pedestrian	Single Occupancy Car Driver
Bus	Rail						
3.7%	3.7%	42.0%	2.0%	0.9%	42.9%	4.9%	40.0%

Source – Travel to Work Survey 2016 produced for University of Cambridge (Travel for Cambridgeshire for West Cambridge) Whilst later Journey To Work observations reflects these 2016 mode shares, the 2016 data is reported to maintain consistency with the Transport Assessment modelling work which referred to the 2016 survey results.

Travel to Work Partnership – Cambridge Science Park

3.7.5 Further reference is made to the Travel Plan Plus Area Report produced by Travel for Cambridgeshire of the travel patterns of the employees at the Cambridge Science Park – this is considered to represent reasonably the mode share of the Commercial Research staff. The results are summarised in Appendix 3.4; the results are summarised in Table 3.7:

Table 3.7: Base Total External Trip Generation – Commercial Research

PT passenger		Car Driver	Car Passenger	Motorcycle	Bicycle	Pedestrian	Worked at home, or at other location	Single Occupancy Car Driver
Bus	Rail							
5.0%	1.4%	62.8%	8.8%	0.8%	21.6%	4.7%	3.7%	54.0%

Source – Travel to Work Survey 2014 produced for The Travel Plan Plus Area (Travel for Cambridgeshire for the Cambridge Science Park area)

Commentary

3.7.6 This mode share data supports anecdotal evidence relating to general movement both in Cambridge, as well specifically by the University's employees:

i. the Single Occupancy Car Driver mode share for Cambridge is lower than across England, with all the non-car modes corresponding higher;

ii. the Single Occupancy Car Driver mode share for University employees at West Cambridge is lower than reported in the Census for Cambridge – supporting evidence of the tradition of non-car mode choice by University employees;

iii. the non-car share for University employees (car share, cycling, bus) observed at West Cambridge is significantly higher than for employees at the Science Park;

iv. that the restrictions on parking at the University's facilities may reduce the Single Occupancy Car Driver share.

3.7.7 The Car Driver and Single Occupancy Car Driver mode shares for the Cambridge Science Park commercial research areas are significantly higher than that reported for the West Cambridge Development - which itself includes the sort of commercial research and development facilities (e.g. Microsoft and Schlumberger) expected to operate from the Development. This reflects the nature of the Cambridge Science Park Development - having been car-orientated from the outset, having greater on-site parking provision, no on-site worker accommodation, no on-site community and general absence of a non-car mode travel culture.

3.7.8 The University is confident that West Cambridge Development - being set up from the outset to be sustainable, bicycle and pedestrian friendly, to include a sustainable mix of uses reducing the need to travel and with a non-car travel culture form the outset, combined with an effective Site-Wide Travel Plan - will result in sustainable development, and in transport terms out-perform the Cambridge Science Park.

3.8 Traffic Data Review

3.8.1 This Section summarises the traffic data collection strategy on the surrounding highway network.

3.8.2 Both Automatic Traffic Count Surveys and Manual Turning Count surveys were undertaken to collect observed traffic flow data at local junctions in the vicinity of the Site. In addition, data was extracted from the Webtris database. This sub-section summarises the junctions considered around West Cambridge.

3.8.3 Traffic Turning Count Surveys were commissioned by the University of Cambridge to inform the Transport Assessment for the Whittle Laboratory at West Cambridge at the following junctions and were undertaken on 21st May 2019 by Advanced Transport Research (ATR):

- Madingley Road / JJ Thomson Avenue;
- Madingley Road / Clerk Maxwell Road; and
- Madingley Road / Madingley Rise.

3.8.4 Additional Traffic Turning Count Surveys were undertaken by TSP on Thursday 18th June 2018 which were provided by Mayer-Brown at the following junctions:

- Madingley Road / M11 Off-slip;
- Madingley Road / M11 On-slip;
- Madingley Road / Park and Ride access; and
- Madingley Road / High Cross junction / Eddington Avenue.

3.8.5 Only where necessary, growth factors from the Department for Transport's TEMPRO model will be used to convert traffic survey data older than 2019 to the necessary common year.

3.8.6 The 2019 Base flows are shown figuratively in Appendix 3.5.

3.9 Madingley Road Corridor Junction Capacity Assessments

3.9.1 This section summarises the observed conditions at a number of local and strategic junctions determined following discussions with the Joint Authorities. The results are reported in more detail in Appendix 3.6, the computer output is contained in Appendix 3.6.

3.9.2 The existing Madingley Road Corridor has been assessed with reference to the 2019 Observed flows for the following existing junctions:

i. the M11 Off Slip traffic signal-controlled junction;

ii. the Park and Ride / High Cross traffic signal-controlled junctions;

iii. Madingley Road / JJ Thomson Avenue / Madingley Rise priority junctions; and

iv. Madingley Road / Clerk Maxwell Road priority junction.

3.9.3 The capacity of the junctions surrounding the Site have been assessed using appropriate modelling software including:

- JCT Consultancy's LinSig computer program - utilised to model the traffic signal-controlled junctions along the Madingley Road Corridor; and
- TRL's PICADY program, the Priority Junction Assessment Module within the Junctions 9 computer suite - was used to confirm the degrees of saturation reported in the LinSig assessment at the Madingley Road / JJ Thomson Avenue / Madingley Rise, and Madingley Road / Clerk Maxwell Road junctions.

3.9.4 The 2019 Base models have been reviewed and approved by Cambridgeshire County Council and their consultants, Green Signals Consulting Ltd for use in assessing the Proposed Development flows for the signalised junctions. This approval is contained in an email included in Appendix 3.7.

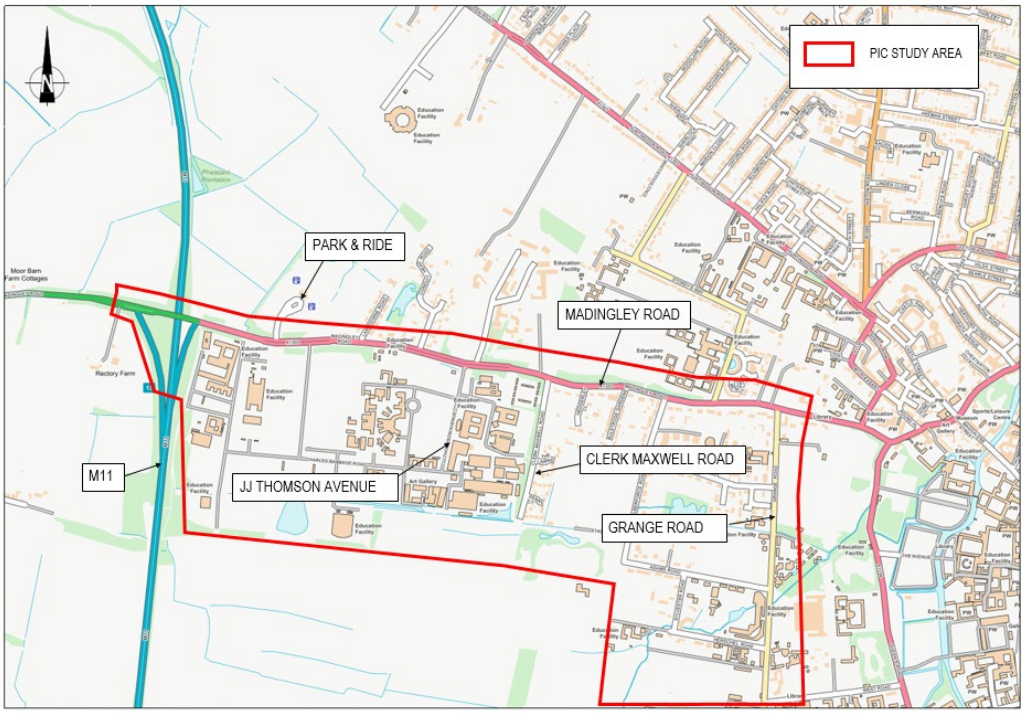
3.9.5 It is concluded that in 2019:

- the existing M11 J13 Off Slip Signalised Junction is forecast to operate at capacity in both the AM and PM peaks;
- the Madingley Road / Park and Ride / High Cross Signalised Junctions are forecast to operate at capacity;
- the Madingley Road / JJ Thomson Avenue Priority Junction is forecast to operate within capacity;
- the Madingley Road / Madingley Rise Priority Junction is forecast to operate within capacity.

3.10 Road Safety

3.10.1 To understand road safety issues in the vicinity of the Site, an assessment was undertaken at key local links and junctions within 1km of the Development site boundary, and along a 2.1km section of Madingley Road. The PIC study area is shown in Plate 3.11 below.

Plate 3.11: PIC Study Area



3.10.2 Road traffic collision personal injury summary data was obtained from Cambridgeshire County Council for the full five-year period between February 2014 and February 2019. The collision data for the assessment area are included in Appendix 3.8, along with a plot showing the location of these personal injury collisions. The source information available is coarse, with no detailed PIC descriptions/ causations provided.

3.10.3 The updated study area covers the length of Madingley Road commencing at the M11 Junction 13 off-slip to the west of the site, and terminating at Grange Road to the east of the site. This is an approximate 2.1km extent of Madingley Road. The study area included West Cambridge, and the Coton Path.

3.10.4 The observed number of combined link and minor junction personal injury collisions (PICs – formerly known as personal injury accidents), and major junction personal injury collisions are reported on each link and junction in Table 3.13.

3.10.5 The comparable number that would be anticipated during this period on these links was also calculated with reference to the Department for Transport's Design Manual for Roads and Bridges, Volume 13 - these calculations are also contained in Appendix 3.8 and the results are summarised and compared with the observed level of personal injury collisions in Table 3.13.

Table 3.13: Summary of Observed and Anticipated Personal Injury Collisions (5 Years)

Links	Number (Rate – PICs per million vehicle km)	Number (Rate – PICs per million vehicle km)
1) Madingley Road - M11 off-slip to west of JJ Thomson Avenue	1	9
2) Madingley Road Corridor - West of JJ Thomson Avenue to east of Grange Road	6	8
3) High Cross	0	1
4) JJ Thomson Avenue	1	2
5) Clerk Maxwell	0	1
Junctions	**Observed PICs**	**Anticipated PICs**
1) Madingley Road – M11 off-slip signalised junction	1	6
2) Madingley Road – M11 on-slip signalised junction	0	10
3) Madingley Road – Park & Ride signalised junction	1	8
4) Madingley Road – High Cross priority junction	0	5
5) Madingley Road - JJ Thomson Avenue priority junction	1	4
6) Madingley Road – Clerk Maxwell priority junction	3	3
7) Madingley Road – Wilberforce Road priority junction	0	3
8) Madingley Road – Storey's Way priority junction	4	3
9) Madingley Road - Grange Road signalised junction	4	7

Notes: Link only rates have also been calculated for roads where there are no adjoining junctions along its length.
Collisions within 20m of the major junctions identified in this table have been allocated to the junctions. Any other collision occurring at minor unspecified junctions are allocated to the link in question. The link rates have therefore been calculated as a combined link and minor junction personal injury collision rate apart from those identified separately in the table above.

3.10.6 A total of 22 collisions were observed within the study area. Of the observed incidents:

- none were classified as a fatal in severity;
- four were classified as a serious injury collision;
- only one slight PIC was recorded within the West Cambridge development (along JJ Thomson Avenue);
- no PICs were recorded along Clerk Maxwell Road; and
- 18 were classified as slight in severity.

3.10.7 As stated above, one PIC was recorded along JJ Thomson Avenue which was classified as slight in severity and involved a cyclist. There are proposals to improve pedestrian and cyclist facilities along JJ Thomson Avenue, as well as to provide a parallel Zebra Crossing - which would enhance highway safety conditions for cyclists in the future.

3.10.8 The Assessment has specifically commented upon vulnerable road users, of which there are a high number of collisions - albeit it is acknowledged that:

i. motorcycle usage in Cambridge is generally 25% higher than the rest of the UK; and

ii. Cambridge City is recognised as having a high number of cycle movements.

3.10.9 Of the 22 collisions reported above, 14 were vulnerable road users - all of these involving at least one cyclist.

3.10.10 The Road Safety Assessment has identified two existing road safety issues:

i. at the Madingley Road / Storey's Way priority junction – this has a marginally higher number of observed incidents than would be anticipated (four observed to three anticipated). Further, of these four collisions, all are vulnerable road users;

ii. at the Madingley Road / Grange Road traffic signal controlled junction - whilst the number of observed incidents is lower than anticipated (four observed to seven anticipated), all of these four collisions involved vulnerable road users.

3.10.11 Whilst the Proposed Development will not result in any detriment to the existing highway safety conditions within the site vicinity, as part of the West Cambridge Development Transport Mitigation Strategy remedial measures are proposed at these locations - further details of these proposed measures are discussed in Sections 6.6 and 15.

3.10.12 Personal injury collision data were also sought for the Coton Path - albeit no PICs were reported on this link for the same five-year Study Period.

4 Summary of Policy Review

4.1 Introduction

4.1.1 This section summarises existing national and local policy, guidance and emerging strategies and provides an assessment of the performance of the proposed development against these policies. A detailed summary is included in Appendix 4.1.

4.1.2 This section identifies that the Development accords well with national and regional transport policy and guidance to deliver sustainable development, as well as with the key local transport and planning policy objectives. It shows that, overall, the proposals for the Development, and the transport strategy evolving to support it, will make a substantial and significant contribution to sustainable development objectives and policies for the Cambridge area.

4.2 Policy, guidance and emerging strategy documents reviewed

4.2.1 The following documents were reviewed:

- **National Policy and Guidance**
  - National Planning Policy Framework (NPPF - 2019);
  - Planning Practice Guidance;
  - Circular 02/2013 'Strategic Road Network and the Delivery of Sustainable Transport';
- **Local Policy and Guidance**
  - Cambridge Local Plan 2018;
- **Local Transport Policy and Guidance**
  - Cambridgeshire and Peterborough Local Transport Plan, and the Greater Cambridge Partnerships proposals;
  - Transport Strategy for Cambridge / South Cambridgeshire

4.3 Analysis and application of current policy, guidance and emerging strategies

4.3.1 This Transport Assessment identifies the transport strategy and travel demand management measures to ensure that the Site will be developed in accordance with national and local policy, as well as the broad long-term strategy for the development of Cambridge as set out in the local planning documentation.

4.3.2 Overall, the proposals for the Development, and the transport strategy evolving to support it, will make a substantial and significant contribution to the achievement of sustainable development objectives and policies for the Cambridge area.

4.3.3 Following discussions with the Joint Authorities, agreed developer contributions are being offered by the University to two area-wide strategic schemes - the Cambourne to Cambridge Public Transport route, and to the Madingley Road Cycle Scheme – to assist in their deliveries. To provide resilience, an independent transport strategy has also been identified in this Transport Assessment that would also adequately mitigate the transport impact of the Development in isolation should there be delays to the deliveries of these schemes. As such, the West Cambridge outline planning application does not rely on a strategic transport scheme for mitigation. Notwithstanding, it is agreed that the A428 / A1303 Corridor mass transit scheme is the preferred response, and it would be made more certain by being aided by the financial support offered by the University.

4.3.4 The Development accords well with national transport policy and guidance to deliver sustainable development:

i. its sustainable location within Cambridge, and the incorporation of employment well located adjacent to residential land-uses reducing the need to travel - supporting the stated aspirations and objectives of paragraph 103 of the National Planning Policy Framework; and

ii. by promoting ways to reduce the traffic impact of this development and the University's other activities within Cambridge, and by "managing down" traffic generation, the Development supports the policy of the Department for Transport's Circular 02/2013.

4.3.5 The Development also accords with important local transport and planning policy requirements and strategies:

i. of Policy 19 of the Cambridge Local Plan - by including a comprehensive transport strategy for the site, incorporating a sustainable transport plan to minimise reliance on private cars – including an assessment of the level, form and type of car parking on the site, as well as enhancing links for walking, cycling and public transport links (including access for all) to the city centre, railway station(s), other principal educational and employment sites, and other key locations within the city to support sustainable development;

ii. by improving the local footpath and cycleway network as an integral part of a wider transport system – thus improving access to the surrounding countryside – according with the Cambridgeshire Rights of Way Improvement Plan; and

iii. of the measures identified within the Cambridge Long-Term Transport Strategy, the public transport strategy would deliver enhanced public transport services.