APPENDIX 13.1A
TRANSPORT ASSESSMENT

The Beehive Redevelopment

Transport Assessment

August 2024

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This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

Final Draft

Disclaimer

This report has been prepared by Waterman Infrastructure & Environment Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

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1. Introduction

Overview

1.1. Waterman Infrastructure & Environment Ltd ('Waterman') has been appointed by Railpen ('the Applicant') to prepare a Transport Assessment (TA) in support of an outline planning application for the redevelopment of the Beehive Centre, Cambridge, CB1 3ET.

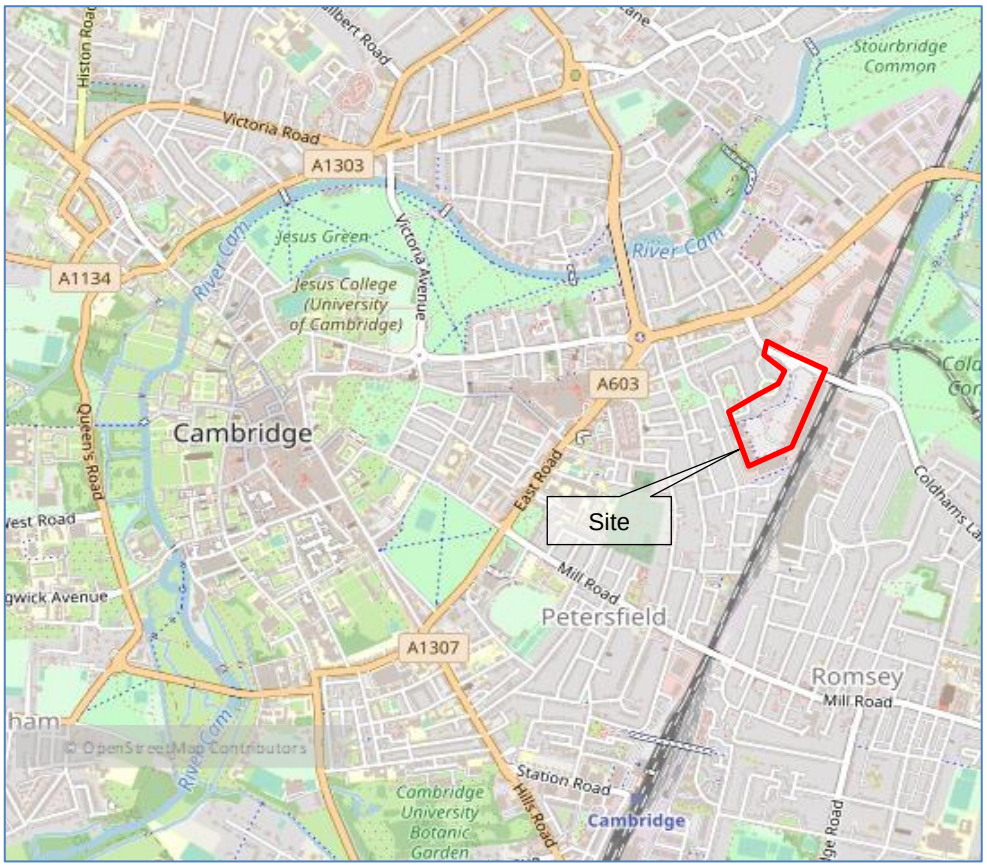
1.2. The Site is located in an area under the jurisdiction of Cambridge City Council, with planning under the jurisdiction of the Greater Cambridge Planning Service (GCP) and the Highway Authority is Cambridge County Council (CCC).

Site Context

1.3. The Site is located in Cambridge, circa 1.9km to the west of Cambridge City Centre. The Site is currently occupied by the Beehive Centre which is a mid-sized shopping area comprising circa 24,000sqm retail space currently set out as seventeen retail spaces. The existing retail park provides 885 car parking spaces.

1.4. The Site is bordered to the north by Coldhams Lane and Cambridge Retail Park, the east by the rail line, the south by York Street and Sleaford Street which are residential roads and the west by St Matthew's Garden and Silverwood Close which are residential roads. The Site's location is shown in Figure 1 below.

Figure 1: Site Location Plan



Proposed Development

1.1. The proposals include the redevelopment of the Site to provide a Technology/Life Science Park comprising a maximum of 93,765sqm GIA commercial floor space (88,597sqm office/lab GIA and 5,168sqm mixed use GIA). The Site will have a total building floor area of 136,541sqm GIA and generate circa 6,450 employees. A total of 395 car parking spaces will be provided, of which 374 will be provided within a multi-storey car park (disabled and general parking) and 21 disabled spaces provided at-grade close to the respective buildings. The Proposed Development will represent a reduction of car parking spaces on the Site by 490 compared to the existing retail park, and also a reduced intensity in use across the day.

1.2. It is proposed to retain vehicular access from Coldham Lane, however the existing Coldhams Lane/Beehive Access/ Cambridge Retail Park Access priority junction will be reprovided as a Cycle Optimised Protected Signals (CYCLOPS) junction. A CYCLOPS junction provides a protected cycle lane which encircles the junction, keeping cyclists separate from both motor traffic and pedestrians. There will also pedestrian and cycle accesses from the York Street, Sleaford Street, St Matthew's Gardens and Coldhams Lane. The bus stop within the Site will be relocated and improved as part of a mobility hub more centrally within the Site.

1.3. The Proposed Development plan is shown in Figure 2 below.

Figure 2: Indicative Site Layout

Report Context and Structure

1.4. The purpose of this Transport Assessment (TA) is to assess the transport implications of the Proposed Development. Waterman will assess the Proposed Development in terms of accessibility, parking, servicing and deliveries, traffic impact and movement by sustainable transport.

1.5. This Transport Assessment has been prepared in the context of CCC Transport Assessment Guidelines (September 2019) in support of an outline planning application for the Proposed Development at the Beehive Centre.

1.6. Following this introduction, the structure of this TA comprises:

- Section 2 – Transport Policy Context;
- Section 3 – Existing Condition and Accessibility;
- Section 4 – Development Proposals;
- Section 5 – Active Travel Zone Assessment;
- Section 6 – Traffic Flows;
- Section 7 – Trip Generation;
- Section 8 – Junction Impact Assessment;
- Section 9 – Proposed Development Car Parking Assessment;
- Section 10 – Target Mode Shift Further Justification; and
- Section 11 – Summary and Conclusions

2. Transport Policy Context

Overview

2.1. This Transport Assessment will review the proposals against the following national, regional and local planning policy:

- National Planning Policy Framework (2023)
- Cambridgeshire's Local Transport Plan (July 2015)
- Cambridgeshire's Active Travel Strategy (March 2023)
- Cambridge City Council Local Plan (2018)
- Greater Cambridge Sustainable Design and Construction (January 2020)

National Planning Policy Framework (2023)

2.2. The current NPPF (updated 19 December 2023) sets out several transport objectives in Section 9 'Promoting Sustainable Transport' designed to facilitate sustainable development and contribute to a wider sustainability by giving people a wider choice about how they travel.

2.3. Paragraph 114 states: "In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

"a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

2.4. Paragraph 115 states:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

2.5. Paragraph 116(a) states that proposals should:

"give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services; and appropriate facilities that encourage public transport use"

2.6. Paragraph 117 covers the need for Travel Plans and Transport Statements / Assessments for all developments which generate significant amounts of movement.

Cambridgeshire Local Transport Plan 2011-2031 (July 2015)

2.7. The Local Transport Plan (LTP) sets out transport policies and plans to achieve the County Council's vision.

2.8. A summary of the LTP vision is set out below:

'Creating communities where people want to live and work: now and in the future'

2.9. LTP3 has taken forward LTP2's focusses strategic objectives, which are:

- *Enabling people to thrive, achieve their potential and improve quality of life*
- *Supporting and protecting vulnerable people*
- *Managing and delivering the growth and development of sustainable communities*
- *Promoting improved skills levels and economic prosperity across the county, helping people into jobs and encouraging enterprise*
- *Meeting the challenges of climate change and enhancing the natural environment*

2.10. LTP3 has set out eight challenges for transport on the County. These challenges are:

1) *Improving the reliability of journey times by managing demand for road space, where appropriate and maximising the capacity and efficiency of the existing network.*
2) *Reducing the length of the commute and the need to travel by private car.*
3) *Making sustainable modes of transport a viable and attractive alternative to the private car.*
4) *Future-proofing our maintenance strategy and new transport infrastructure to cope with the effects of climate change.*
5) *Ensuring people – especially those at risk of social exclusion – can access the services they need within reasonable time, cost and effort wherever they live in the county.*
6) *Addressing the main causes of road accidents in Cambridgeshire.*
7) *Protecting and enhancing the natural environment by minimising the environmental impact of transport.*
8) *Influencing national and local decisions on land-use and transport planning that impact on routes through Cambridgeshire.*

2.11. LTP3 sets out a transport user hierarchy, with pedestrians at the top, followed by cyclists, public transport, specialist services vehicles and other motor vehicles at the bottom.

2.12. The Chisholm Trail cycle route that was proposed in LTP3 as a north-south pedestrian/cycle route through Cambridge, broadly following the railway line. The Chisholm Trail Bridge across the River Cam and an off-road section of the Chisholm Trail through Coldham's Common has already been provided. LTP3 notes a series of benefits that the Chisholm trial will deliver, notably inducing river crossings over the Cam by an average of 3,000 pedestrian and cycle trips per day.

Cambridgeshire's Active Travel Strategy (March 2023)

2.13. The Active Travel Strategy aims to make active travel safe, pleasant and convenient in order to become the preferred travel choice for local journeys. The strategy provides a comprehensive set of policies which will enable the provision of active travel infrastructure and initiatives in Cambridgeshire to achieve mode shift and net zero carbon targets.

2.14. To achieve the active travel vision, the strategy sets out the 4 E's below:

- ***Embrace*** *active travel as a transport priority within Cambridgeshire. It will look at internal processes and better collaboration and communication with partners and stakeholders that puts active travel at the front of all decision making and investment.*

- ***Enhance*** *the existing network of pavements, footpaths, cycleways, bridleways, and other public rights of way so they are connected and fit for purpose. For example, through improved surfacing, widening, signage, crossings and decluttering pavements.*
- ***Expand*** *existing routes to create a well-connected, safe, joined-up active travel network. Providing quality new access to key amenities such as schools, village/town centre facilities, transport hubs and places of healthcare and employment from surrounding areas.*
- ***Encourage*** *modal shift to active travel modes through a variety of initiatives focused on encouraging and supporting behavioural change. Make people aware that travel by active modes is a viable, attractive, healthier and safe option for many of their local journeys.*

2.15. Policy AT04: 'ensuring that active travel is prioritised in new developments' state that:

Early consideration of active travel provision is fundamental to achieving high-quality infrastructure and sustainable growth. Measures that embrace, enhance, expand and encourage active travel for new developments must be embedded from the start. The Council encourages developers to work with transport officers at the outset of their projects to ensure all opportunities are considered.

2.16. Policy AT06 '*applying the road user hierarchy'* states that putting those that walk and cycle at the top of the transport user hierarchy is important to embracing active travel. The 2022 updates to the Highway Code puts more emphasis on protect the most vulnerable users on the road network including horse riders. In addition, the GCP Cambridge Road classification review could redefine how different roads will look and feel for different road users, placing more emphasis on the application of the road user hierarchy.

Policy AT07 'All highway improvement schemes must consider active travel' states that: As set out in Local Transport Note (LTN) 1/20 appropriate cycle facilities should be provided within all new highways schemes and development proposals, regardless of whether the scheme is on a designated cycle route, unless there are clearly defined and suitable alternatives. Improvements for walking should also be provided to meet the Healthy Streets indicators where appropriate. Highway improvement schemes must consider active travel improvements and it will not be acceptable to continue an existing poor level of service for those walking or cycling.

2.17. Policy AT09 '*safety for all'* states that the County Council is working towards Vision Zero, which states 'no human being should be killed or seriously injured as the result of a road collision'. Policy AT11 'Improve supporting infrastructure of the existing network' states that to increase active travel journeys, accompanying infrastructure must also be delivered. Supporting infrastructure includes secure and accessible cycle parking for standard and adapted cycles, appropriate lighting where possible and installing benches, signage and wayfinding to make routes as user friendly, attractive and safe as possible.

2.18. Policy AT12 *'adopt the Healthy Streets approach'* states that the Healthy Streets approach, which includes the 10 Healthy Streets indicators should be a framework to provide the active travel network. Policy AT16 'our vision for a connected active travel network across Cambridge' states that future infrastructure needs to be well connected to the existing and proposed network and to key services and facilities. This will help achieve 20-minute neighbourhoods.

2.19. Policy AT21 *'new developments and design standards'* states that all new developments should priorities active travel and any new cycle infrastructure should accord with LTN 1/20, all new streets should be scored according to the Healthy Streets Design Check, engage with local stakeholders and work with the district councils.

2.20. Policy AT25 '*active journeys to work'* states that driving alone to work which is less than 5 miles from

home should be avoided, and residents living in a 2-mile radius should be encouraged to walk and cycle, with electric bikes offering another option for employees living within a 2-5 mile radius. Policy AT26 'promoting active travel' states that up-to-date information should be provided on-line and where funding allows to physically promote sustainable modes of transport.

2.21. Policy AT27 '*travel planning'* states that planning applications will be required to submit a Travel Plan and developers are responsible for funding and promoting the active travel measures within the Travel Plan. Policy AT30 'sustainable freight' states that use of cargo bikes and consolidation of freight at hubs on outskirts of urban areas will be supported by the Council.

Cambridge City Council Local Plan (2018)

2.22. Cambridge City Council adopted the local plan in October 2018. The document sets out the way the council will meet the development needs of Cambridge to 2031, with the aim to provide an accessible, compact city from where people can have sustainable choices about how they access work, study, leisure and other services.

2.23. Section Nine of the Local Plan sets out the transport policies for new development within Cambridge. The section focuses on how the local plan contributes to the achievement of sustainable development in terms of how it addresses the challenge of making new development functional and accessible in terms of transport and infrastructure. The policies will help to build on the culture of cycling and walking within the city and help protect and provide good, efficient, and sustainable links to key employment centres and transport interchanges.

2.24. Policy 80 – Supporting sustainable access to development states:

Development will be supported where it demonstrates that prioritisation of access is by walking, cycling and public transport, and is accessible for all. This will be achieved by:

- *supporting public transport, walking and cycling to, from and within a development by:*
  - *giving priority to these modes where there is conflict with cars;*
  - *conveniently linking the development with the surrounding walking, cycling and public transport networks;*
  - *prioritising networks of public transport, pedestrian and cycle movement so these are the best and safest means of moving around Cambridge. Areas where public transport, pedestrian and cycle movement is difficult or dangerous will be improved and, where possible, have further capacity for these sustainable modes provided;*
  - *ensuring accessibility for those with impaired mobility; and*
  - *safeguarding existing and proposed routes for walking, cycling, and public transport, including the Chisholm Trail, from development that would prejudice their continued use and/or development. In addition, funding for high quality physical provision of these routes will be required, both within and adjacent to the Proposed Developments.*
- *ensuring that any development requiring a new road or road access accords with the following:*
  - *it is designed to give high priority to the needs of pedestrians and cyclists, including their safety;*
  - *it restricts through access for general motor traffic where appropriate;*
  - *it discourages speeding;*
  - *it discourages inappropriate car-based links within the network, but encourages noncar based*

links;

- *it minimises additional car traffic in the surrounding area; and*
- *there is safe and appropriate access to the adjoining road, pedestrian and cycle networks.*

2.25. Policy 81 – Mitigating the transport impact of the development states:

Developments will only be permitted where they do not have an unacceptable transport impact. Therefore, new development will require:

- *sufficient information to be supplied with all development proposals that the transport impact can be suitably assessed. This should take the form of transport assessments;*
- *a travel plan to accompany all major development proposals; and*
- *reasonable and proportionate financial contributions/mitigation measures where necessary to make the transport impact of the development acceptable. This could include investment in infrastructure, services or behavioural change measures to encourage the use of sustainable modes of transport. Such measures should be provided to meet the first or early occupation of a Site in order to influence travel behaviour from the outset.*

2.26. In support of Policy 81, it is also stated that:

In areas of the city where traffic congestion and/or pollution from traffic are particularly high, a zero increase or reduction in car traffic through any proposed redevelopment will be sought. This includes the city centre and Newmarket Road.

Any development that will require regular loading or servicing must avoid causing illegal or dangerous parking, by providing appropriate off-street facilities.

2.27. Local Plan Policy 82 – Parking Management states:

Planning permission will not be granted for developments that would be contrary to the parking standards set out in Appendix L. This includes:

- *providing no more than the car parking standards for new residential and non-residential development set out in Appendix L, taking into account the accessibility of the Site to public transport and the nature of the use. In the city centre, and on streets with overnight parking stress, on and off street (non-disabled bay) car parking levels should be maintained at current levels for shoppers, residents and workers;*
- *providing at least the cycle parking levels in Appendix L; and*
- *providing at least the disabled and inclusive parking requirements in Appendix L.*

2.28. Car-free and car-capped development would be acceptable in the following circumstances:

- *where there is good, easily walkable and cyclable access to a district centre or the city centre;*
- *where there is high public transport accessibility; and*
- *where the car-free status of the development can realistically be enforced by planning obligations and/or on-street parking controls.*

The Council strongly supports contributions to and provision for car clubs at new developments to help reduce the need for private car parking.

Electric vehicle charging points or the infrastructure to ensure their future provision should be provided within a development where reasonable and proportionate. Developments should also provide adequate provision for servicing and public service vehicles.

2.29. The parking standards set out within Appendix L of the local plan are shown in Table 1 below. The car parking standards are maximums and can be reduced where lower car use can reasonably be expected. The cycle parking standard are minimums. Sheffield stands are the preferred choice of stand, and a minimum of 20% of spaces should be provided as Sheffield stands for less able users or those with non-standard bikes. A minimum of 20% of staff cycle parking should be provided within a secure location and as close as practical to staff entrances.

Table 1: Cambridge City Council Local Plan parking standards

	Car Parking			Cycling Parking
Type of development	Inside controlled parking zone	Outside controlled parking zone	Bays for blue badge holders	Cycle parking
Offices and general industry	1 space per 100sqm Gross Floor Area plus disabled parking	1 space per 40 sqm Gross Floor Area	1 space for each employee who is a disabled motorist. For visitors 5% of the total visitor parking capacity. Future provision for a further 5 percent of the total capacity	2 spaces for every 5 members of staff or 1 space per 30sqm GFA, whatever is greater. Visitor parking on merit.
Food retail	Disabled parking only	1 space per 50sqm GFA up to 1,400sqm and 1 per 18sqm thereafter (including disabled parking)		2 spaces for 5 members of staff. For short stay: 1 short stay per 25sqm in the City Centre. 1 short stay space per 50sqm up to 1,500sqm, thereafter 1 space per 100sqm for the rest of the city.
Non-food retail	Disabled parking only	1 space per 50sqm GFA (including disabled parking)		
Financial and professional; services	1 space per 100sqm GFA (plus disabled parking)	1 space per 40sqm GFA (including disabled parking		2 spaces per 5 members of staff and some visitor parking (on merit)
Restaurants, pubs/bars and food and drink takeaways	1 space for proprietor resident	1 space per 10sqm drinking/dining area plus 1 space for proprietor resident		2 spaces per 5 members of staff. 1 short stay space per 15sqm for the rest of the city.

Greater Cambridge Sustainable Design and Construction (January 2020)

2.30. The Supplementary Planning Document (SPD) sets out the standards required to meeting the visions, objectives and policies of the Cambridge and South Cambridgeshire Local Plans as sustainably as possible. Both Cambridge City Council and South Cambridgeshire District Council have set their aspiration for the Greater Cambridge area to be net zero carbon by 2050.

2.31. Section 2.2 *'Achieving more sustainable development forms'* sets out the model of 'walkable neighbourhoods' which is an attractive place where to live and work lies at the heart of sustainable development practice.

'A successful and sustainable local neighbourhood is a product of the distances people have to walk to access daily facilities, the presence of a sufficient range of such facilities to support their needs, and places and spaces where a variety of activities can take place.

2.32. The walkable neighbourhood is an area where it is desirable to walk to access services and facilities. Typically, this is based on maximum distances of 400m (5 minutes) and 800m (10 minutes) with the maximum walking distance being around 2,000 meters. The catchment area helps structure new development to be successfully tied into existing areas.

2.33. Section 2.3 *'Transport, Movement and Accessibility'* states that new developments should structure places around the principles of walkable neighbourhoods to reduce dependency on private cars, and to ensure impacts of trips generated by the development are minimised and to support the patronage of public transport and more sustainable modes of transport.

2.34. Planning applications should provide evidence that the design and layout of development will reduce the number of trips generated and outline the developments relationship to existing services and facilities including public transport connections and cycle infrastructure within the Transport Assessment. Where car free or reduced parking allocations are proposed, connectivity to public transport and local amenities based on the walkable neighbourhood principles are key.

2.35. Table 3.13 within the guidance sets out the standards for electric car charging facilities for a non-residential development. There is a requirement for one slow EV charge point for every two parking spaces and at least one rapid or fast EV charge point for every 1,000sqm non-residential floor space. Passive charge points should be provided in all remaining spaces to provide a future 100% coverage. Car clubs should be considered and a minimum of one car club vehicle per 10,000sqm should be provided for non-residential developments.

3. Existing Site Conditions and Accessibility

Overview

3.1. The Site is located in Cambridge, circa 1.9km to the west of Cambridge City Centre. It is currently occupied by the Beehive Centre which is a mid-sized shopping area comprising circa 24,000sqm retail space currently set out as seventeen retail spaces. The existing retail park provides 885 car parking spaces.

3.2. The Site is bordered to the north by Coldhams Lane and Cambridge Retail Park, the east by the rail line, the south by York Street and Sleaford Street which are residential roads and the west by St Matthew's Garden and Silverwood Close which are residential roads.

Walking Accessibility

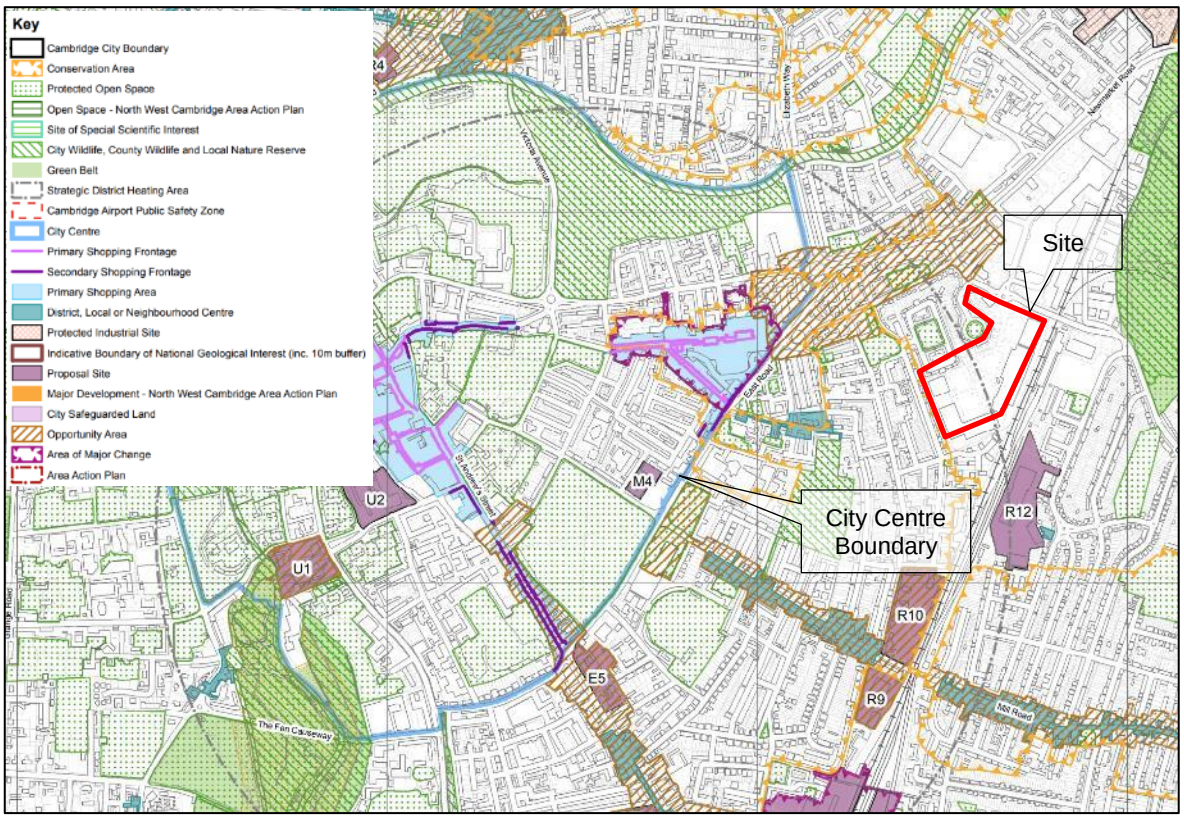
3.3. The Site currently provides ad-hoc footpaths through the Site, however there are sections within the Site where there are no dedicated pedestrian facilities (no footway along the eastern Site of the Site access road). There are existing pedestrian accesses from Coldhams Lane, St Mathews Gardens, York Street and Sleaford Street, however many of the accesses are narrow and unattractive for pedestrians. The Proposed Development will retain and significantly improve the pedestrian environment on these access points.

3.4. Coldhams Lane has existing pedestrian footways wider than 2m on either side, with tactile paving, dropped kerbs and street lighting provided at crossing points and along its length. A Zebra crossing is located circa 50m to the west of the Coldhams Lane access and a Toucan crossing is located adjacent to a pedestrian cut-through from Coldhams Lane. The Coldhams Lane Bridge (over the rail line to the east of the Site) provides a dedicated pedestrian/cycle path as well as a footway on the north wide of the bridge.

3.5. St Matthew's Gardens, York Street and Sleaford Street are residential roads with footways on either side of the carriageway. The footways on these roads are circa 1.5m wide and have regular street lighting. The speed limit on these roads and the connecting residential roads is 20mph which allows for safe informal pedestrian crossing.

3.6. The Cambridge City Centre Boundary is defined in the Cambridge City Council Local Plan 2018 Policies Map, which is shown in Figure 3. The eastern extent of Cambridge City Centre can be accessed via a 650m walk (or a 6–8-minute walk) from the Site.

Figure 3: Cambridge City Centre Extent



3.7. Cambridge has an existing high-quality pedestrian environment. Sustrans document '*Walking and Cycling Index 2024*' for Greater Cambridge prepared in March 2024 highlights that 56% of residents walk to work a least five days a week, up from 50% in 2019 and 54% in 2021, which indicates a large percent of the population are active and could be willing to introduce walking as their main mode of commute. Appendix A shows a 2km walking distance isochrone from the Site which demonstrates that a large part of Cambridge is accessible from the Site by walking.

3.8. Census 2021 'Number of Usual Residents in Households and Communal Establishments' (TS001) data has been used to derive the population within 2km walking distance of the Site. The LOSA areas selected are Cambridge 003F, 003G, 004C, 004E, 006A, 006C, 006D, 007C, 008A, 008B, 008C, 008D, 008E, 009A, 009B, 009C, 009D and 009E. The population in 2021 within these LOSA areas is 32,455.

Amenities

3.9. The Chartered Institution of Highways and Transportation (CHIT) published the guidance document '*Planning for Walking'* (2015), which sets out the desirable thresholds for a pedestrian walking environment. The document defines a 'walkable neighbourhood' as an area with most amenities within an 800m walking distance.

3.10. Table 2 shows the amenities within walking distance of the Site. A number of retail units will be provided on-site as part of the Proposed Development (as part of the proposed 5,168sqm mixed use GIA) which will provide Site users will access to day-to-day goods and amenities. In addition, Cambridge Retail Park is located directly to the north of the Site and provides access to a wide range

of retail units/amenities which can be used by users of the Proposed Development. These amenities include a Lidl foodstore, Boots, a café, The Gym, Homebase, Currys plus other retail units.

Table 2: Local Amenities

Amenity	Distance	Walk time (100m / min)	Walk time (80m / min)
Food stores/convenience stores/retail centres			
Mixed use retail units	Provided on-site	n/a	n/a
Cambridge Retail Park	100m	1 minute	1 minute
Grafton Centre	800m	8 minutes	10 minutes
Lidl	180m	2 minutes	2 minutes
Casa Maramureseana	400m	4 minutes	5 minutes
Tesco Superstore	600m	6 minutes	7 minutes
Aldi	650m	6 minutes	8 minutes
Hot food outlets/cafes			
Mixed use retail units	Provided on-site	n/a	n/a
Nando's	130m	1 minute	2 minutes
Pausa Kitchen Cafe	220m	2 minutes	3 minutes
Pizza Hut	300m	3 minutes	4 minutes
Norfolk Street Bakery	450m	4 minutes	6 minutes
The Box Cafe	600m	6 minutes	7 minutes
Green space and fitness facilities			
Gym facilities	Provided on-site	n/a	n/a
The Gym Group, Cambridge	110m	1 minute	2 minutes
St Matthew's Piece	300m	3 minutes	4 minutes
Coldhams Common	400m	4 minutes	5 minutes
Nuffield Health Cambridge Fitness and Wellness Centre	450m	4 minutes	6 minutes
Abbey Leisure Complex	1km	10 minutes	12 minutes
Nurseries and education facilities			
Brunswick Nursery School	350m	3 minutes	5 minutes
ACE Day Nursery	650m	6 minutes	8 minutes
N Family Club Nursery	800m	8 minutes	10 minutes
Anglia Ruskin University	850m	8 minutes	10 minutes
Pharmacy/medical centre			

Amenity	Distance	Walk time (100m / min)	Walk time (80m / min)
Well Pharmacy	200m	2 minutes	3 minutes
York Street Medical Practice	200m	2 minutes	3 minutes
Boots	450m	4 minutes	6 minutes
Norfolk Street Dental Practice	500m	5 minutes	6 minutes
Superdrug	1km	10 minutes	12 minutes
Numark Pharmacy	1km	10 minutes	12 minutes
Public transport			
Bus stop on Site	Provided on-site	n/a	n/a
Bus stop along Newmarket Road	300m	3 minutes	4 minutes
Cambridge Train Station	1.3km	13 minutes	16 minutes
Cambridge North Train Station	2.7km	27 minutes	34 minutes
Cambridge Town Centre			
Cambridge Town Centre Boundary	650m	6 minutes	8 minutes

Cycling

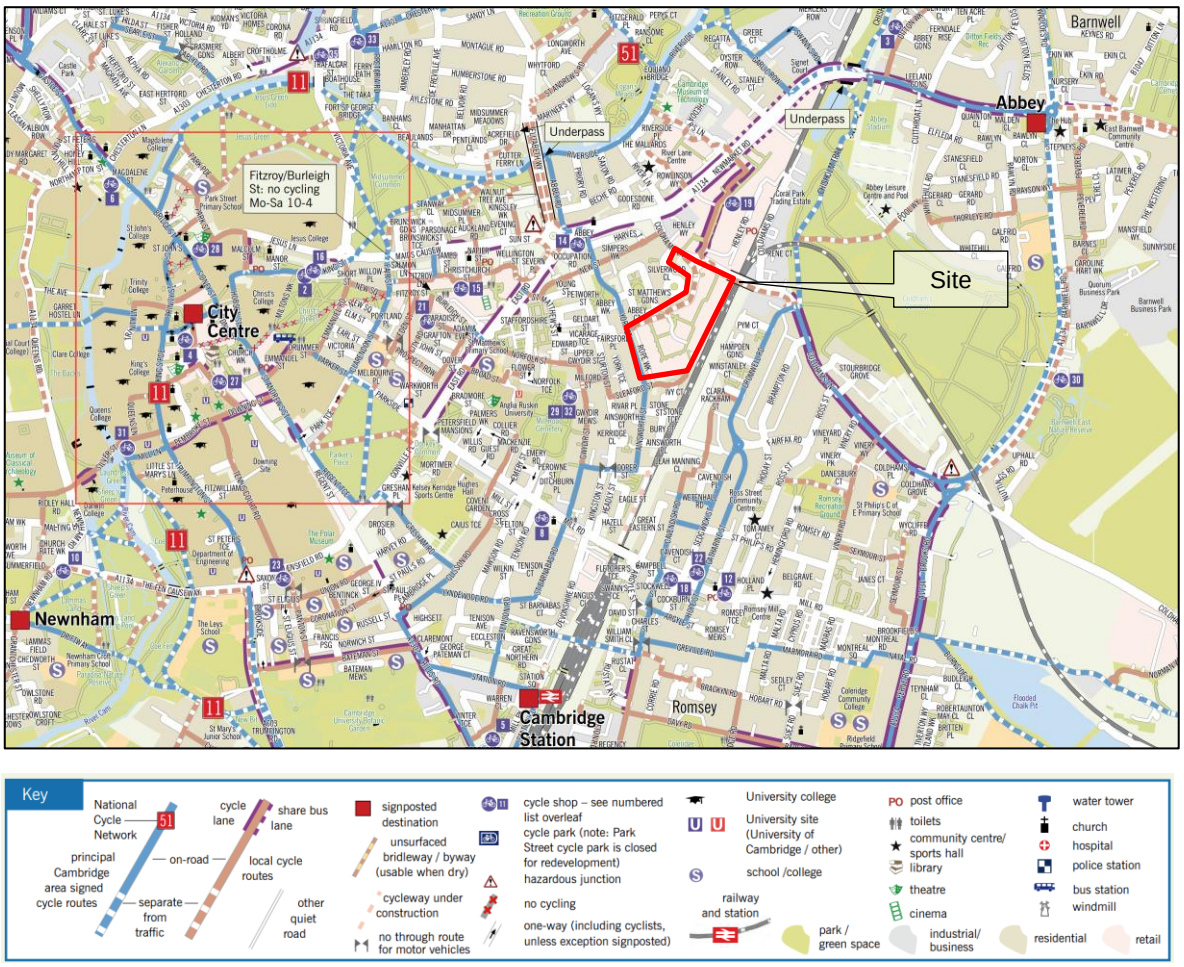
3.11. The Site is well located within the existing Cambridge cycle network. An extract from the Cambridge cycle map is show in Figure 4.

3.12. As shown in Figure 4, Coldhams Lane to the east of the Site is a marked primary on-road route, as well as York Street, Ainsworth Street, Hooper Street and Gwydir Street which provides a direct cycle route from the Site to Cambridge Station.

3.13. The Site provides an existing off-road cycle link between Coldhams Lane and York Street and Sleaford Street. There is also an existing off-road cycle link over the rail line on the Coldhams Lane Bridge. Sleaford Street and New Street are designated as local links which provide links to routes towards the town centre. A cycle link is also provided through the Cambridge Retail Park.

3.14. National cycle routes (NCR) 11 and 51 run through Cambridge and connect Cambridge and nearby population centres by cycle. NCR 11 runs between Ely and Saffron Walden and connects Cambridge to Duxford, Sawston, Great Shelford as well as Ely and Saffron Walden and can be picked up from Riverside. NCR 51 runs from St Ives and Felixstowe and connects Cambridge to Ipswich, Needham Market, Stowmarket, Thurston, Bury St Edmunds, Newmarket as well as St Ives and Felixstowe. NCR can also be picked up from Riverside.

Figure 4: Cambridge Cycle Network



3.15. The Chisholm Trail is a new 3.5km walking and cycling route which is a mostly off-road and traffic free route between Cambridge Train Station and Cambridge North Rail Station. Phase 1 of the Chisholm Trail was completed in 2022 and starts at Cambridge North Train Station and ends at Coldhams Lane. A new shared cycle/foot bridge was provided over the River Cam as part of Phase 1. The planned route for Phase 2 will run to the east of the rail line along Cromwell Road, towards Cambridge Station. Network Rail are currently undertaking preparatory works for phase 2, which is expected to be complete by 2025.

3.16. A new cycle store has been provided at Cambridge Train Station which provide 2,850 cycle parking spaces on a mixture of stands and racks. The cycle store is both sheltered and has CCTV coverage for security. Cycle hire is available 7 days a week from Rutland Cycling located next to the cycle store. Cambridge North also has a secure and covered store adjacent to the station building with 1,000 cycle parking spaces which are provided on a mixture of racks and compounds.

3.17. Voi is a mobile app which allows for short term hire of e-scooters and e-bikes within Cambridge. Bikes and scoters can be left in parking zones and there are low-speed zones and no-riding zones to restrict use in heavily pedestrianised areas. There are circa 50 Voi bikes and 300 Voi scooters within Cambridge.

3.18. GCP are currently proposing to transform Newmarket Road to prioritise walking, cycling and bus use to form part of the Cambridge Eastern Access. The proposals will run from the Newmarket

Road/Elizabeth Way/East Road/ roundabout to Junction 35 with the A14. A dedicated cycle route will be provided in each direction of Newmarket Road as well as cycle improvements at junctions (such as Cyclops roundabouts). The GCP Newmarket Road improvements are located in Appendix B.

3.19. A 5km cycling isochrone around the Site is shown in Appendix A. Census 2021 'Number of Usual Residents in Households and Communal Establishments' (TS001) data has been used to derive the population within 5km of the Site. The MOSA areas selected are Cambridge 001 – Cambridge 015. The population in 2021 within these MOSA areas is 145,672.

Buses

3.20. A bus stop is provided within the Site which is served by bus route 19 and 114 which offer services to Addenbrookes, Chesterton, Landbeach and central Cambridge. This bus stop will be re-provided within the Proposed Development and will provide larger bus shelters with seating and live departure information.

3.21. Additional bus services can be accessed from bus stops along Newmarket Road. The bus stop on Newmarket Road is located 300m to the north-west of the Site and provides access to bus routes 3, 11, 12, 19, 114 and Park & Ride route 2.

3.22. Table 3 summarises the frequent bus services accessible from the stops above. Bus route 19 operates circa two services a day towards Cambridge Bus Station and two services a day to Landbeach and route 114 operates circa four services a day towards Cambridge Bus Station / Chesterton and four services a day towards Addenbrooke's Hospital Bus Station.

Table 3: Frequent bus services accessible from the Site

Service	Route	Day	Frequency
3	Thorpe Way – Newmarket Road – Emmanuel Street – Cambridge Train Station – Cherry Hinton	Mon-Fri Sat Sun	15 mins 20 mins 30 mins
	Cherry Hinton – Cambridge Train Station – St Andrews Street – Newmarket Road – Thorpe Way – Fison Road	Mon-Fri Sat Sun	15 mins 15 mins 30 mins
11	Newmarket – Burwell – Swaffham – Stow cum Quy – Marshalls Airport – Newmarket Road – Drummer Street Bus Station	Mon-Fri Sat	60 mins 60 mins
	Drummer Street Bus Station – Newmarket Road – Marshalls Airport – Stow cum Quy – Swaffham – Burwell - Newmarket	Mon-Fri Sat	60 mins 60 mins
12	Drummer Street Bus Station – Newmarket Road – Marshalls Airport – Bottisham - Newmarket	Mon-Fri Sat	60 mins 60 mins
	Newmarket – Bottisham – Marshalls Airport – Newmarket Road – Drummer Street Bus Station	Mon-Fri Sat	60 mins 60 mins
PR2 (Park & Ride)	Drummer Street Bus Station – Newmarket Road Park & Ride	Mon-Fri Sat Sun	10 mins 10 mins 15 mins
	Newmarket Road Park & Ride – Drummer Street Bus Station	Mon-Fri Sat Sun	10 mins 10 mins 15 mins

3.23. Cambridge has five Park and Rides (P&R) which allow commuters and visitors to park on the outskirts of Cambridge and get a frequent bus into central Cambridge. The two closest P&Rs to the side are the Milton and Newmarket Road P&R. A brief summary of the full P&R provision for

Cambridge is provided in Table 4.

Table 4: Cambridge Park and Ride provision

P&R Location	Parking Spaces	Mon-Sat bus frequency	Sun bus frequency
Babraham Road	1,458 car, 250 cycle	Every 10 mins	Every 15 mins
Madingley Road	930 car, 40 cycle	Every 10 mins	Every 15 mins
Trumpington	1,600 car, 250 cycle	Every 10 mins	Every 15 mins
Milton	792 car, 50 cycle	Every 10 mins	Every 15 mins
Newmarket Road	873 car, 60 cycle	Every 10 mins	Every 15 mins
Total	**5,653 car, 650 cycle**		

3.24. As part of the GCP Eastern Access proposals, the Newmarket Road P&R is proposed to be relocated to an area south-east of the Airport Way roundabout and will provide an increased provision of 1,750 car parking spaces. Consultation of the proposals have taken place in 2023.

Rail

3.25. Cambridge Train Station is located 1.3km to the south of the Site and can be access via footways and existing signed cycle routes along the residential roads between the Site and Cambridge Rail Station. Cambridge Train Station provides access to CrossCountry, Great Northern, Thameslink and Greater Anglia Rail services to destinations such as London Liverpool Street, London Kings Cross Brighton, Norwich, Stanstead Airport, Ipswich, Ely, Birmingham New Street and others. As outlined earlier, Cambridge Train Station provides extensive cycle parking facilities. In addition, Cambridge Train Station has step-free access to all platforms, ramps for train access and accessible toilets.

3.26. Cambridge Train Station provides circa 18 services an hour mid-week which would be higher during peak hours.

3.27. Cambridge North Train Station is located 2.7km to the north of the Site and can be accessed via phase 1 of the Chisholm Trail from the Site. Cambridge North is served by Great Northern and Greater Anglia services to destinations such as London Kings Cross, Ely, London Liverpool Street, Norwich, Stanstead Airport and Ely. As outlined earlier, Cambridge North Train Station provides extensive cycle parking facilities. In addition, Cambridge North Train Station has step-free access to all platforms and ramps for train access.

3.28. Cambridge North Train Station provides circa 8 services an hour mid-week which would be higher during peak hours.

Local Highway Network

3.29. The existing retail park provides 885 car parking spaces. The Site currently takes access from the southern arm of a four-arm roundabout with Coldhams Lane, the northern arm providing access to Cambridge Retail Park to the north. The Site access road forms a two-lane approach to the junction, with a single lane exit from the roundabout into the Site, sufficiently wide for larger vehicles to manoeuvre. The roundabout approaches provide good sightlines with no obstructions to driver visibility.

3.30. There are parking restrictions and controls on the existing Site. Parking is free, however there is a

limit of four hours on free parking. Vehicles entering the Site are scanned by an Automatic Number Plate Recognition (ANPR) system and is controlled by a parking management company called Parking Eye. The restriction on car park dwell time generates a high turnover of parking on-site.

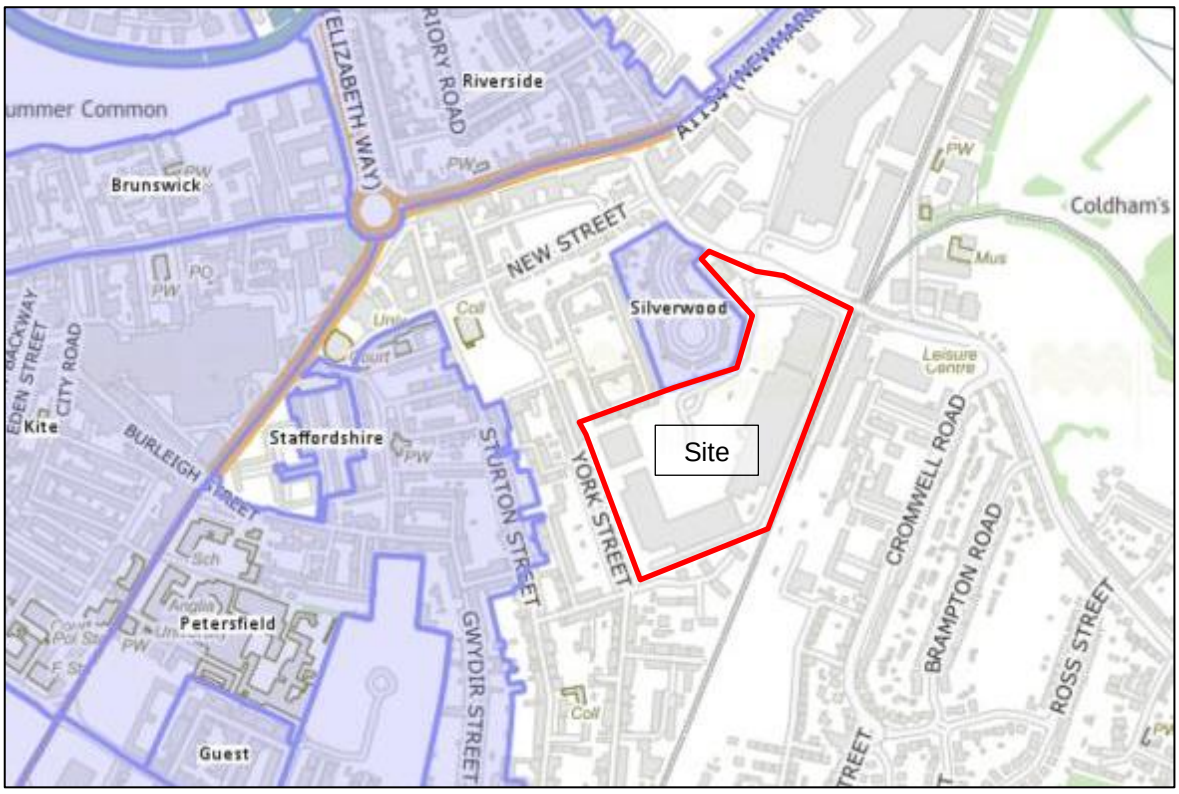
3.31. Coldhams Lane is a single carriage road with a speed limit of 30mph and connects to Newmarket Road to the north via a signalised junction and the Coldhams Lane/Brooks Road/Barnwell Road roundabout and Coldhams Lane/High Street signalised junction to the south.

3.32. Coldhams Lane is classified as a C-Road, however, there have been high level discussions with GCP to downgrade Coldhams Lane. The development proposals include a package of measures to improve walking and cycling along Coldhams Lane which are outlined within this TA.

3.33. Newmarket Road runs east to west and connects to the Newmarket Road/Elizabeth Way/East Road roundabout to the east and towards the Newmarket Road Park and Ride (P&R), Cambridge Airport and Junction 35 on the A14 to the west. The GCP Eastern Access proposals includes changes to Newmarket Road to provide high-quality footways, crossings, segregated cycle tracks, bus lanes and junction improvements.

3.34. Newmarket Road to the west and East Road to the south of the Newmarket Road/Elizabeth Way roundabout provide access towards Central Cambridge. The A14 runs east-west to the north of Cambridge and can be accessed from Junction 35 via Newmarket Road, Junction 34 via Horningsea Road and Junction 33 via Elizabeth Way and Milton Road. The A14 runs from Felixstowe to the A14/M1/M6 junction by Rugby and connects to Bury St Edmunds, Huntington, the A1 and A421. The A14 connects with the M11 to the west of Cambridge which provides access to Bishop's Stortford and London to the south. The A14 also connects to the A10 to the north of Cambridge which provides access to Ely, Littleport, Royston, King's Lynn and London and the A11 which provides access to Thetford and Norwich.

Figure 5: Existing Controlled Parking Zone near Site



3.35. The residential roads surrounding the Site (Sleaford Street and York Street) are unrestricted. Parking on Silverwood Close to the east of the Site which is accessed from Coldhams Lane is restricted Monday to Sunday between 09:00-17:00. There is also a controlled parking zone (CPZ) 'Petersfield' to the south of the Site which covers Sturton Street which restricts parking Monday to Sunday 09:00-17:00. Figure 5 shows the Sites location in relation to the existing CPZs.

3.36. The GCP have first proposed a Sustainable Travel Zone (Congestion Charge Zone) in Cambridge in 2022. The scheme would charge private vehicles £5, rising to £10 for vans and £50 for HGVs to drive into the zone between 07:00-19:00 on weekdays. In July 2023, the plans were scrapped, and in October 2023, some councillors discussed how a congestion charging scheme should remain an option for future consideration.

Car Ownership

3.37. Staff who live in the surrounding area are anticipated to travel to the Site using active travel modes, however the car ownership for the surrounding areas have been assessed to indicate prevailing car ownership trends in neighbourhoods surrounding the Site and within Cambridge. The average car ownership has been assessed using 2011 and 2021 Census data for lower output areas Cambridge 006A, 008C, 008D and 009A and is shown for each output area in Table 5.

Table 5: Car ownership in 2011 and 2021 for the surrounding area

Output area	2011		2021	
	% of households	Car ownership	% of households	Car ownership
006A	No cars – 34.7% 1 car – 50.4% 2 cars – 13.1% 3 or more cars – 2.0%	0.82	No cars – 40.2% 1 car – 47.1% 2 cars – 11.1% 3 or more cars – 1.6%	0.74
008C	No cars – 44.2% 1 car - 42.6% 2 cars -10.8% 3 or more cars - 2.4%	0.71	No cars – 45.6% 1 car – 45.8% 2 cars – 7.6% 3 or more cars – 1.1%	0.64
008D	No cars – 42.8% 1 car – 45.2% 2 cars – 10.4% 3 or more cars – 1.7%	0.71	No cars – 47.1% 1 car – 42.8% 2 cars – 8.5% 3 or more cars – 1.5%	0.64
009A	No cars – 31.8% 1 car – 48% 2 cars – 16.3% 3 or more cars – 4.0%	0.92	No cars – 33.2% 1 car – 48.6% 2 cars – 13.3% 3 or more cars – 4.9%	0.90
Total	**No cars – 38.1% 1 car – 46.4% 2 cars – 12.9% 3 cars – 2.7%**	**0.80**	**No cars – 40.6% 1 car – 46.5% 2 cars – 10.4% 3 cars – 2.5%**	**0.74**

3.38. Table 6 shows the change in car ownership between 2011 and 2021 in the output areas surrounding the Site. A reduction in car ownership is shown in green and an increase in car ownership is shown in red.

Table 6: Change in Car Ownership from 2011 to 2021

Output area	Change in Car Ownership		
	% of households	Car ownership	% change in car ownership
006A	No cars: +5.5% 1 car: -3.3% 2 cars: -2.0% 3 or more cars: -0.4%	-0.08	9.7% reduction
008C	No cars: +1.4% 1 car: +3.2% 2 cars: -3.2% 3 or more cars: -1.4%	-0.07	9.8% reduction
008D	No cars: 4.3% 1 car: -2.4% 2 cars: -1.9% 3 or more cars: -0.2%	-0.07	9.8% reduction
009A	No cars: +1.4% 1 car: +0.6% 2 cars: -3.0% 3 or more cars: +0.9%	-0.02	2.17% reduction
Total	**No cars: +2.5% 1 car: +0.1% 2 cars: -2.5% 3 cars: -0.2%**	**-0.06**	**7.50% reduction**

Existing Mode Share

3.39. The existing 'travel to work (workday population)' mode share has been based on 2011 Census data for medium output area 006 where the Site is located. Table 7 shows the existing travel to work mode share (workday population) for the Site. It is noted that the 2021 Census 'travel to work (workday population)' has been published, however the 2021 Census was undertaken during Covid-19 travel restrictions, which heavily impacted on mode shares, with a large proportion of the population working from home. Therefore the 2021 Census 'travel to work (workday population)' mode share is not considered representative of the baseline mode shares within the Site and surrounding area.

Table 7: Existing travel to work (workday population) mode share

Travel Mode	Existing 2011 mode share %
Underground, metro, light rail, tram	0.0%
Train	1.9%
Bus, minibus or coach (excludes park and ride)	4.4%
Taxi	0.5%
Motorcycle, scooter or moped	1.1%
Driver in a car or van	64.8%
Passenger in a car or van	4.6%
Bicycle	15.5%
On foot	6.9%
Other method of travel to work	0.4%
Total	100.00%

3.40. The existing travel to work (workday population) modal split has been used in Section 7 (trip generation) of this report.

Existing Site Parking Utilisation

3.41. The existing Site car parking provision of 885 spaces was surveyed as part of the traffic data collection undertaken in November 2022 to establish the maximum parking accumulation during a typical weekday, Saturday and Sunday. This survey was undertaken for each of the identified 5 zones of the car park and the totals of these calculated to derive a parking accumulation profile for the whole car park. This profile is shown below in Table 8.

Table 8: Existing Beehive Site Car Parking Accumulation Profile at Hour End

Hour Period	Wednesday 16th Nov	Saturday 19th Nov	Sunday 20th Nov
00:00 – 01:00	84	47	40
01:00 – 02:00	84	47	40
02:00 – 03:00	86	50	39
03:00 – 04:00	85	52	39
04:00 – 05:00	86	55	40
05:00 – 06:00	99	60	43
06:00 – 07:00	123	81	45
07:00 – 08:00	154	147	57
08:00 – 09:00	240	310	110
09:00 – 10:00	461	507	294
10:00 – 11:00	593	664	581
11:00 – 12:00	624	755	**765**
12:00 – 13:00	595	735	754
13:00 – 14:00	576	709	744
14:00 – 15:00	520	767	709
15:00 – 16:00	448	**781**	449
16:00 – 17:00	433	636	198
17:00 – 18:00	440	442	82
18:00 – 19:00	405	286	32
19:00 – 20:00	305	163	28
20:00 – 21:00	156	86	28
21:00 – 22:00	111	60	25
22:00 – 23:00	95	43	21
23:00 – 00:00	77	42	22
Max Accumulation	**624**	**781**	**765**

3.42. The analysis of the data shows that the maximum parking accumulation within the car park on the weekday surveyed is 624 spaces occupied out of the 885 total parking space provision (in the 11:00 to 12:00 hour), which is a 71% maximum utilisation rate.

3.43. For the Saturday surveyed, the analysis of the data shows that maximum parking accumulation within the car park is 781 spaces occupied out of the 885 total parking space provision (in the 15:00 to 16:00 hour), which is an 88% maximum utilisation rate.

3.44. For the Sunday surveyed, the analysis of the data shows that maximum parking accumulation within the car park is 765 spaces occupied out of the 885 total parking space provision (in the 11:00 to 12:00 hour), which is an 86% maximum utilisation rate.

3.45. This analysis supports the other data and further shows that the existing Site uses attract a considerable number of cars during the weekdays and weekend, with the car park provision utilised to a high level albeit not close to capacity.

Existing On-Street Parking Analysis

3.46. As shown earlier within Figure 5, there is an existing CPZ near to the Site in a western and northern direction. However, there is an area directly to the west and south of the Site is not covered by this and is therefore uncontrolled where double yellow lines are not in place.

3.47. Therefore, a survey was undertaken of this area, as indicated below in Figure 6, on both a weekday, Thursday 17th November 2022, and Saturday 19th November 2022 to establish the number of parking spaces present and the typical level of utilisation of these spaces.

3.48. The survey showed that based on the length of road space available where disabled permit bays, car club bays and double lines are not present, there are a total of 526 car parking spaces available in the area. A total of 4 disabled spaces and 1 car club space were also recorded.

3.49. Across the whole area, it was recorded that on the weekday there were 428 spaces utilised, which translates to an 81% parking space stress rate, whilst 406 spaces were utilised on the Saturday which translates to an 77% utilisation stress rate.

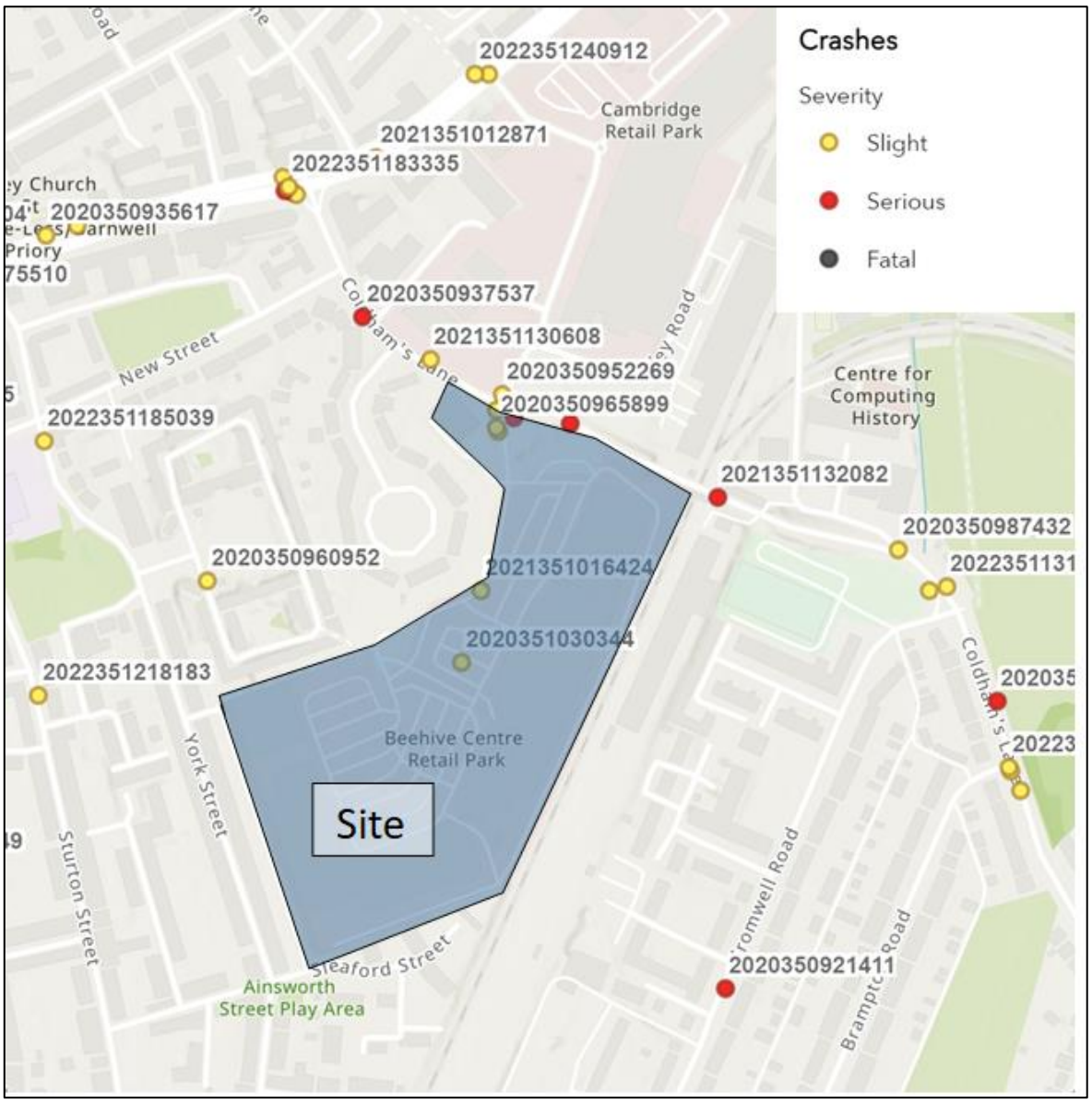
3.50. This therefore shows that there is some on-street parking space provision available within the area, however it is noted that, as also mentioned further on within this report, the GCP are proposing to provide a CPZ in this area, known as the 'York area', which would remove this uncontrolled parking availability.

Figure 6: Area of Uncontrolled Parking West of the Site

Collision Data Review

3.51. Collison data has been collected from Crashmap Pro for the immediate area surrounding the Site. Crashmap data has been collected for the latest 3 years' worth of data (2020 – 2022). An extract from Crashmap is shown in Figure 7.

Figure 7: Crashmap Pro Output



3.52. In total, there were 42 collisions recorded within the Site and surrounding area within the previous 3 years. The area assessed includes Coldhams Lane up to Brampton Road, Sturton Street, New Market Road as well as the Cambridge Retail Park. No collisions were recorded as fatal, with 10 collisions recorded as serious and 32 collisions recorded as slight.

3.53. There have been 2 reported collisions within the existing Site, both of which were recorded as slight. One accident was a collision between a car and a pedestrian on the Site access road. The pedestrian was in the carriageway at the time of collision but was not reported as crossing. The other accident was a collision between a car and bicycle in the car park, which occurred as a car pulled out in front of the cyclist. Both accidents were recorded as minor which indicates no inherent safety issues on the Site.

3.54. Table 9 below sets out a summary of the collision data.

Table 9: Collision Data Summary

Severity	Year		
	2020	2021	2022
Fatal	-	-	-
Serious	6	4	0
Slight	10	13	9
Total	**16**	**17**	**9**

3.55. A full copy of the collision data is set out within Appendix C.

4. Proposed Development

4.1. The proposals include the redevelopment of the Site to provide a Technology/Life Science Park comprising a maximum of 93,765sqm GIA commercial floor space (88,597sqm office/lab GIA and 5,168sqm mixed use GIA). The Site will have a total building floor area of 136,541sqm GIA (excluding basement but including the multi-storey car park) and generate circa 5,755 Full-Time Equivalent (FTE) employees which equated to 6,450 employees in total.

Site Access

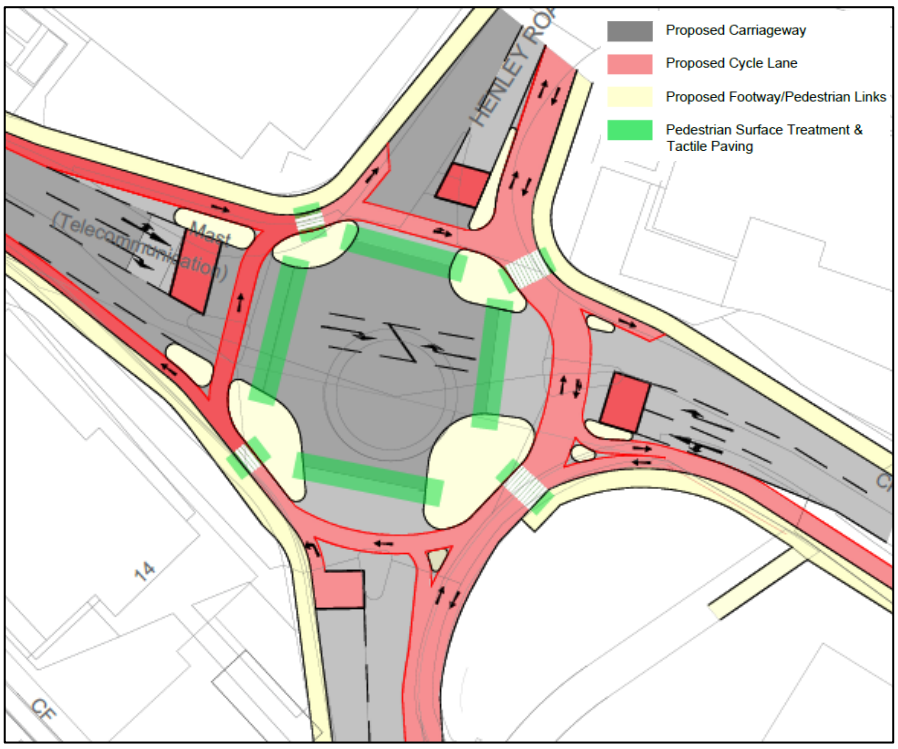
4.2. It is proposed to retain vehicular access from Coldham Lane, however the existing Coldhams Lane/Beehive Access/ Cambridge Retail Park Access priority junction will be reprovided in the form of a Cycle Optimised Protected Signals (CYCLOPS) junction. A CYCLOPS junction provides a protected cycle lane which encircles the junction, keeping cyclists separate from both motor traffic and pedestrians.

4.3. The CYCLOPS junction allows for pedestrians to cross at the same time as cyclists, but on a separate ring of paths in the middle of the junction. Zebra crossings on each side provide a safe place to cross the cycle lane. A CYCLOPS junction at the Site access provides the following benefits:

- Prioritises pedestrian and cycle movements ahead of car movements.
- Allows cyclists to turn without having to mix with motor vehicles.
- Improved pedestrian and cyclist accessibility and safety for all routes across Coldhams Lane.
- Junction design fits within existing roundabout footprint.
- Junction provides sufficient capacity to accommodate proposed Beehive redevelopment trip generation (it is noted neighbouring Cambridge Retail Park development traffic will negatively impact the capacity of a CYCLOPS junction).

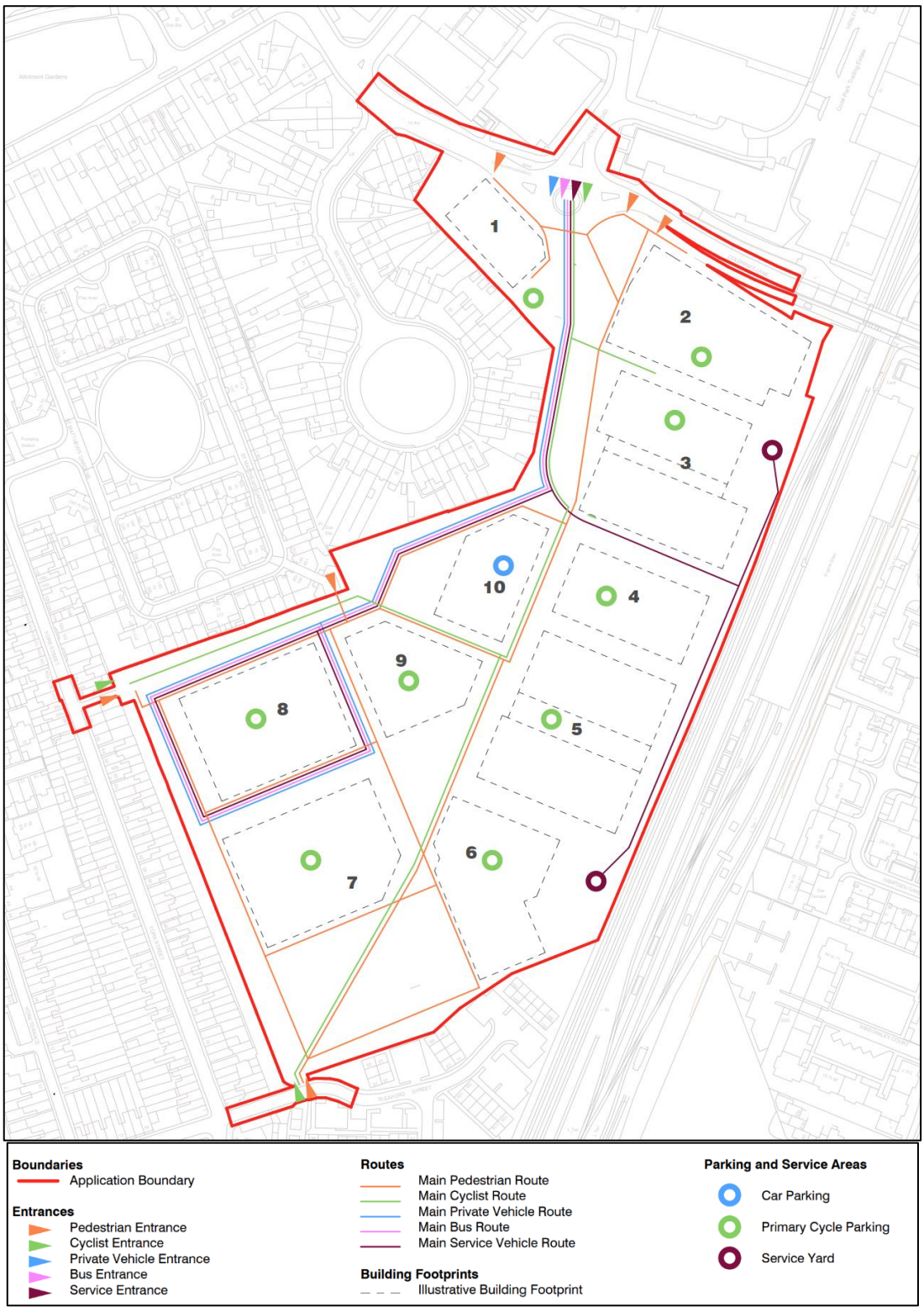
4.4. The indicative CYCLOPS Site access junction is shown below in Figure 8.

Figure 8: Indicative Proposed Site Access/Coldhams Lane Junction



4.5. There will also be pedestrian and cycle accesses from York Street, Sleaford Street, St Matthew's Gardens and Coldhams Lane. Pedestrian and cycle access will be segregated at each access and each access point will connect to the Sites internal pedestrian and cycle network. The bus stop within the Site will be relocated and improved as part of a mobility hub centrally located within the Site. Figure 9 indicates the Sites access points and respective circulation options through the Site.

Figure 9: Site Access and Circulation Plan



Vehicle Access Control

4.6. A vehicular route will be provided through the Site from Coldhams Lane. The access road will carry two-way traffic within the existing access road alignment for circa 100m, where the access road splits, going east and south, with the eastbound direction forming a priority junction with the access road.

4.7. The access road continues south and provides access to the multi-storey car park (within Block 10) circa 20m to the south of where the access road splits. The southbound access road continues past the multi-storey car park and forms a one-way loop around Block 8. The one-way loop will serve at-grade disabled parking, buses entering the Site and smaller delivery vehicles stopping directly outside the Blocks 7, 8 and 9 in the south of the Site.

4.8. The 'eastern' access road will carry two-way traffic to the service yard adjacent to the rail line along the Site's eastern boundary. The central cycle lane will cross the 'eastern' access road and will have priority over on-coming traffic.

4.9. An ANPR system will record vehicles accessing and egressing the Site. There will be no physical barrier on the Site access to prevent vehicles blocking onto the Site access. However, the ANPR will be used to monitor the overall number of vehicles accessing the Site, record the dwell time of delivery and servicing vehicles and restrict access to unauthorised vehicles.

4.10. All staff members will register their numberplate during their induction so the ANPR will recognise the vehicle as being authorised for entry. Suppliers will also be informed to pre-register the number plates of their delivery vehicle. By having all staff and delivery vehicles pre-registered, this will allow the ANPR to track repeat unauthorized vehicle access. Deliveries can be pre-registered at the point of order up to the day of delivery. A Delivery and Servicing Management Plan will set out how common Site-wide deliveries can be consolidated using known suppliers in pre-registered vehicles. Vehicles accessing the Site will be classified into two categories:

- Greenlist (pre-registered vehicles, blue badge holders and known deliveries).
- Redlist (unregistered deliveries and unscheduled deliveries).

Pedestrian & Cycle Access and Circulation

4.11. There is an existing cycle route through the Site between Coldhams Lane and York Street, however this cycle route is shared with pedestrians. In addition, the existing pedestrian and cycle access to the Site from Sleaford Street access is narrow and hard to navigate for cyclists and connects to the Sites large service area. A marked cycle route is then provided through a section of the service yard; however, cycles will currently interact with delivery and servicing vehicle movements.

4.12. The primary cycle route through the Site will be reprovided and will be LTN1/20 compliant. In-line with feedback from CamCycles and CCC, the primary cycle route will run through centrally through the Site connecting the Sleaford Street and Coldhams lane access. In addition, a cycle route will connect the York Street access to the primary cycle route between blocks 5, 9 and 10. The cycle route from Sleaford Street will no longer run through the service yard, improving safety for cyclists within the Site.

4.13. Each of the Sites access point will be signposted for pedestrians and cyclists, will be level and lit with street lighting. The pedestrian and cycle routes through the Site will be segregated where possible and will be flat with street lighting and landscaping (including places to stop and rest and features that provide shade and shelter).

Car Parking

4.14. A total of 395 car parking spaces will be provided, of which 374 will be provided within a multi-storey car park (disabled and general parking) and 21 disabled spaces will be provided at-grade close to the respective buildings. The development will represent a reduction of car parking spaces on the Site by 490 compared to the existing retail park, and also a reduced intensity of use across the day.

4.15. The following spaces will be provided within the multi-storey car park:

- Standard bays: 317 spaces
- Accessible spaces (min 10%): 38 spaces
- Rapid EV spaces (min 1 in 20 spaces): 19 spaces
- Passive allowance of EV charging: 100% of spaces
- Car sharer bays: No car sharer bays are currently proposed, however the potential to provide car sharer priority bays will be explored.

4.16. The electric car chargers provided from the onside will be 'fast' chargers with 7kW – 22kW. The remaining car parking spaces will be provided with passive provision and will be provided with 'fast' chargers (7kW – 22kW) if the demand arises. However, it is unlikely there will be additional demand for electric car charging spaces on-site as employees are likely to charge their vehicles at home where it is cheaper to charge a vehicle and can be done overnight.

4.17. A total of 21 at-grade car parking spaces will be targeted, of which four will be allocated per block. Car-club bays will also be provided at-grade throughout the Site, which will form part of the 21 at-grade parking spaces. The number of car-club bays to be provided is currently still being discussed. However, all car-club bays will have electric vehicles and electric vehicle charging points. The remaining at-grade parking spaces will be blue badge bays. It is proposed that one disabled bay per block will have a fast EV charger, with the remaining spaces having passive EV charging provision.

Car Park Management

4.18. Full details of the car park management have been provided in the Parking Management Plan (PMP) submitted alongside this TA, however a brief overview of the proposed parking management strategy is provided below.

- Parking permits will be allocated to companies on-site based on their respective floor area.
- Parking permits will be leased to companies to not tie parking permits to companies. Permits will be allocated on either a monthly, quarterly, half-yearly or yearly basis and cannot be purchased.
- All blue badge holders will be eligible to apply for a permit to park on the Site.
- Companies will have to pay to acquire a parking permit and this cost will go up per permit obtained to discourage obtaining permits up to the maximum allocation.
- Permits should only be used by those who have no alternative other than drive to the Site (i.e blue badge holders, family/carer needs, no alternative modes of travel available) and caters for more vulnerable users if travelling late at night and so allocation is 'needs-based' rather than 'wants-based'.
- The electronically controlled barrier will control access to the multi-storey car park and will be controlled using a separate ANPR. Companies with parking permits will have to pre-register using the vehicle numberplate before entering the multi-storey car park and will be charged to park for the day. Blue badge holders will not pay to park within the multi-storey car park. The daily cost of

the car parking will be in excess of the P&R or sustainable modes.

- By requiring the multi-storey car park be pre-register only, this will restrict access and ensure the car park is never oversubscribed.

Car Club

4.19. It is proposed to provide car-club bays within the at-grade parking however the number of car-club bays is yet to be determined. The car clubs will be operated by a provider with an existing presence in Cambridge (Enterprise provide the majority of local cars).

Off-site Parking

4.20. The Applicant would support the introduction of a CPZ on any of the roads surrounding the Site to prevent staff parking on-street, however it is not intended to implement a CPZ as part of the proposals. If a CPZ was to come forward for any of the unrestricted roads within 500m of the Site, the Applicant would be willing to provide a financial contribution towards the CPZ, including consultation and implementation.

4.21. Such measures would be directly informed by the regular on and off-site surveys.

Cycle Parking

4.22. A total of 4,593 cycle parking spaces will be provided throughout the Site. The Cambridge City Council cycle parking standards require:

- Office: 1 space per 30sqm; and
- Retail: 2 spaces per 5 staff

4.23. The cycle parking requirement has been based on the total office/mixed use floor area (93,765sqm) and the total building floor area (119,035sqm which is excluding basements, the multi-story car park and the block 1 bin store and cycle store) which would require a total of 3,126 cycle parking spaces and 3,968 cycle parking spaces respectively.

4.24. The cycle parking provision will therefore be in excess of the Cambridge City Council cycle parking standards for the total office/mixed use floor area and the total building floor area. Shower and changing rooms will be provided at a ratio of 1 shower/changing room per 25 cycle parking spaces and lockers will be provided at a ratio of 1 locker per cycle parking space.

4.25. Cycle parking will be provided as a mixture of two-tier racks and Sheffield stands. 20% of the total cycle parking provision will be provided on Sheffield stands. An additional 5% of cycle parking will be provided on Sheffield stands but for larger and adapted cycles. The remaining spaces will be provided as two-tier racks.

4.26. These spaces will be provided within secure stores throughout the Site. Mostly within the blocks themselves including on basement levels. Access to basement level stores will be provided via lifts and Dutch styled staircases. All cycle stores will be lit, have CCTV and access will be restricted via a key fob only issued to staff of that block. Each cycle store will also contain maintenance facilities such as a bike pump.

4.27. A cycle maintenance centre will be provided at the Mobility Hub. The Mobility Hub will be located centrally within the Site and will be the centre for all public transport information at the Site, including a help point. On weekdays, cycle technician staff will be located at the Mobility Hub and can provide essential maintenance to staff cycles. They can also offer discounted bike services.

Delivery and Servicing

4.28. Full details of the delivery and servicing strategy have been provided in the Delivery and Servicing Management Plan submitted alongside this TA, however a brief overview of the proposed parking management strategy is provided below.

Existing Arrangement

4.29. Delivery and servicing for the existing Beehive retail centre takes place on-site. Unloading of deliveries and servicing currently takes place from two service yards:

- A service yard along the eastern boundary of the Site along the rail line, which extends southwards to the south of the Site and borders Sleaford Street. This service yard is accessed via a priority junction on the access road, circa 35m south of the Site access junction with Coldhams Lane. This service yard is used for the majority of existing units on-site.
- A service yard to the west of the Site which borders York Street. This service yard is accessed through the Sites car park and is used to service a small number of retail units to the west of the Site.

4.30. A marked cycle route is provided through a section of the service yard adjacent to the rail line and cyclist will currently interact with delivery and servicing vehicle movements.

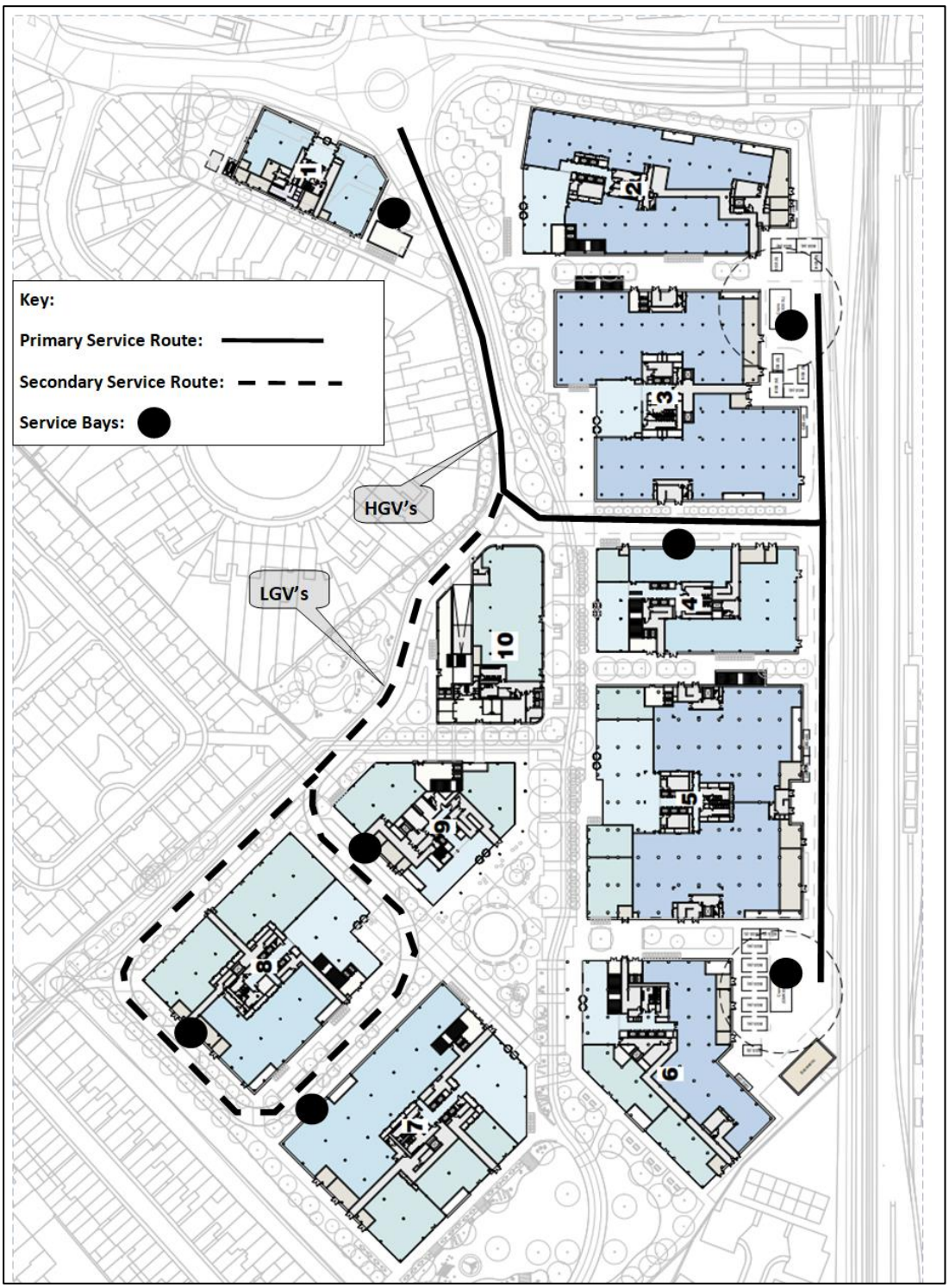
Proposed Delivery and Servicing Arrangements

4.31. All delivery and servicing for the Proposed Development will take place on-site. The existing services yard along the eastern boundary of the Site will be retained, however the service yard will no longer extend southwards to border Sleaford Street to separate the Sites enhanced cycle route and access with Sleaford Street from the developments service yard. Swept path analysis of the proposed delivery and servicing arrangement is shown in Appendix D.

4.32. The re-provided service area will be accessed from the ‘eastern’ access road which runs between Blocks 3 and 4. The service yard will directly service the blocks adjacent to the service yard. Blocks in the south-west of the Site will be serviced from loading bays along the Sites internal road network along the one-way loop. HGV’s will be restricted from accessing ‘southern access road’ and the one-way loop and therefore only deliveries by LGV or smaller will take place from the loading bays along the one-way loop (with the exception of refuse collection).

4.33. Signage will be provided to direct HGV’s to the service yard along the Sites eastern boundary. Deliveries undertaken by HGV’s to block that do not border the service area will stop within the service area to unload, with goods being transferred into smaller electric vehicles which will then distribute goods across the Site. This ensures that HGV’s stay away from the public areas of the Site, reducing interactions of HGVs with pedestrian and cyclists. The delivery and servicing vehicle size restriction is shown in Figure 10.

Figure 10: Proposed separation of LGV's and HGV's on-site



4.34. The Site access ANPR will be used to monitor the overall number of vehicles accessing the Site including delivery and servicing vehicles, record the dwell time of delivery and servicing vehicles and

restrict access to unauthorised vehicles.

4.35. There will be a maximum 20-minute dwell time on-site for all deliveries. The dwell time for deliveries will be recorded by the Site access ANPR. If a delivery requires a longer dwell time than 20 minutes then the company receiving the delivery or Site management will inform the parking management company who will exempt the numberplate from the maximum dwell time for 20 minutes.

Refuse Collection

4.36. It is proposed that refuse collection for the development will be undertaken using a private waste contractor. Companies will be required to appoint the same private waste contractor where possible and waste collection will be spread out to significantly reduce the number of trips to the Site associated with refuse collection.

4.37. The refuse collection strategy for the Proposed Development is outlined in the Operational Waste Management Plan (OWMP). All waste collection will take place on-site from either the service yards or loading bays along the Site.

Delivery and Servicing Frequency

4.38. A servicing survey was undertaken of the existing 24,000sqm retail space on Wednesday 16th November 2022, Thursday 17th November 2022, Saturday 19th November 2022 and Sunday the 20th November 2022. The servicing survey recorded all vehicle movements in and out of the two existing service areas. There is staff parking within the existing service yard along the Sites eastern boundary which has been counted as part of the servicing survey. While some deliveries will have been undertaken by cars, to ensure a robust assessment, all car movements to the large service yard have been discounted.

4.39. The results of the existing servicing survey are summarised in Table 10 which shows the number of trips for a weekday (average of Wednesday and Thursday), Saturday and Sunday.

Table 10: Existing Beehive servicing trips

Item	Weekday Average	Saturday	Sunday
Total servicing trips	155 (310 two-way trips)	162 (324 two-way trips)	128 (256 two-way trips)
OGV servicing trips	28 (56 two-way trips)	19 (38 two-way trips)	13 (26 two-way trips)
Average dwell time	45 minutes 8 seconds	30 minutes and 26 seconds	47 minutes and 3 seconds

4.40. The delivery and servicing trip generation for the Proposed Development has been based on servicing trip rates that were presented and agreed in principle with CCC in October 2022 and GCP in February 2023.

4.41. The agreed light good and heavy good servicing trip rates are shown in Table 11, as well as the number of trips the 93,765sqm development would generate.

Table 11: Proposed delivery and servicing trips

Vehicle Type	Trip Rate	Trips
Light goods	0.253 trips per 100sqm	237 two-way trips
Heavy goods	0.033 trips per 100sqm	31 two-way trips
Total	0.286 trips per 100sqm	268 two-way trips

4.42. Based on the trip generation above, the Proposed Development will result in a reduction of delivery and servicing trips throughout the day. The net difference between existing and proposed delivery and servicing trips is shown in Table 12.

Table 12: Net change in delivery and servicing two-way trips

Type of Vehicle	Net Change
All delivery and servicing vehicles	-42 daily two-way trips
OGV vehicles	-25 daily two-way trips

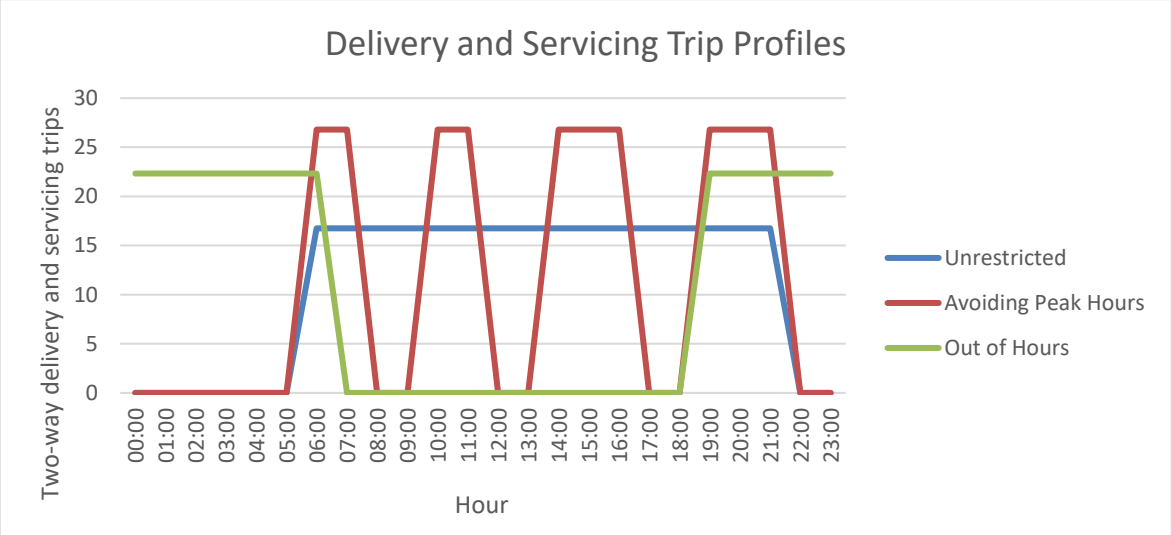
Delivery and Servicing Trip Profile

4.43. The Proposed Development will generate circa 268 two-way trips throughout the day. Across a day, this would result in 16-17 two-way trips an hour (based on servicing between 06:00 – 22:00) which can be accommodated within the service yard and loading bays throughout the Site.

4.44. To further reduce the impact of delivery and servicing on pedestrians, cyclists and other Site users, the option to restrict delivery and servicing within the peak hours (avoiding 08:00-10:00, 12:00-14:00 and 17:00-19:00) which would result in circa 26-27 two-way delivery and servicing trips an hour, presuming that the earliest delivery remains at 06:00 and the latest delivery remains at 22:00. This level of trips per hour can still be accommodated within proposed facilities on-site. Another option could be to allow for out of hours deliveries only, between 19:00-07:00 to avoid most interaction with Site users. This would result in circa 22-23 two-way deliveries an hour throughout the night which can be accommodated on-site.

4.45. The delivery profile options are shown in Figure 11. The timed delivery and servicing strategy will be agreed with CCC and GCP prior to occupation.

Figure 11: Delivery and servicing time profile



4.46. A Site wide approach requiring all companies to use the same provider for common deliveries (i.e comestibles and stationery) can be included within companies lease clause. This was introduced at an office scheme outside of Cambridge. Anglo Office Group was appointed with Gnewt Cargo to run the scheme which led to a reduction from an average of 21 delivery vehicles per day, to just one drop per day from the consolidation centre. The introduction of Site wide consolidation will reduce the number of vehicles entering the Site and using the service yard/loading bays within the Site. Consolidated deliveries will also be undertaken by a known supplier and will reduce the likelihood for unauthorised vehicles to enter the Site.

Sustainable Transport Strategy

4.47. As part of the Proposed Development, The Applicant will contribute towards a number of sustainable transport improvements in the surrounding area and within the Site to achieve the target modal shift change. These measures are outlined in more detail within Section 5.

4.48. The proposed mode share targets are shown in Table 13. The Sustainable Transport Strategy (STS) will support and facilitate the proposed target modal shift.

Table 13: Proposed Modal Shift Targets

Travel mode	2011 mode share %	Target mode share%	Change in share %
Underground, metro, light rail, tram	0.0%	0.0%	0.0%
Train	1.9%	16.0%	+14.1%
Bus, minibus or coach (includes Park and Ride)	4.4%	16.0%	+11.6%
Taxi	0.5%	0.5%	0.0%
Motorcycle, scooter or moped	1.1%	1.1%	0.0%
Driver a car or van	64.8%	4.8%	-59.9%
Passenger in a car or van	4.6%	4.6%	0.0%
Bicycle	15.5%	40.0%	+24.5%
On foot	6.9%	15.5%	+8.6%
Other method of travel to work	0.4%	1.5%	+1.1%
Total	100.00%	100.00%	0.0%

4.49. The modal shift targets have been informed through multiple sources (detailed in section 4.53) and are supported by GCP and CCC.

4.50. The existing car driver mode share of 64.8% from 2011 for the workplace population in the census area used is recognised as being high, however the aspiration within Cambridge is to significantly reduce car travel and is likely to generally be much lower across the city in the future, particularly with a number of initiatives proposed to reduce car use and promote sustainable travel within the area and city-wide.

4.51. The vision of the Proposed Development is to also significantly reduce car travel at the Site through improving existing and providing new infrastructure and services for sustainable travel modes, while also restricting the amount of car parking available to further encourage a shift from car use to public transport and walking and cycling travel.

4.52. The key driver for mode share at the Site is the proposed constrained nature of car parking provision on-site, which includes a total of 395 spaces. Based on the figure of 5,755 FET employees and 6,450 total employee numbers, derived from the economic consultants for the project, Volterra, this results in a required maximum mode share of 6.1% for car driver trips.

4.53. The target travel mode shares for the Proposed Development have therefore been formulated to consider this maximum 6.1% car mode share along with previously set targets within Cambridge for specific modes, and are as follows:

- **Train** – A target figure of 16% has been used based on the 12% figure for 2035 included within the North East Cambridge Area Action Plan Working Draft Strategy (2019) plus an increase due to closer proximity of the Site than the majority of the NE Cambridge area to the City Centre and Cambridge railway station. It is noted that the North East Cambridge Area Action Plan Working Draft Strategy (2019) has since been superseded with a revised draft, however following

discussions with CCC in response to the 2023 Beehive application (planning ref: 23/03204/OUT), the target figure of 16% has been retained;

- **Bus -** A target figure of 16% has been used based on the 12% figure for 2035 included within the North East Cambridge Area Action Plan Working Draft Strategy (2019) plus an increase due to the volume and high frequency of bus services proposed to serve the Site. It is noted that the North East Cambridge Area Action Plan Working Draft Strategy (2019) has since been superseded with a revised draft, however following discussions with CCC in response to the 2023 Beehive application (planning ref: 23/03204/OUT), the target figure of 16% has been retained;
- **Cycle –** A target figure of 40% has been used based on the target cycle share for Cambridge by 2023 included within the 'Greater Cambridge City Deal', which was signed by representatives from central government, council leaders, businesses and the University of Cambridge in June 2014. It is understood from CCC that no other targets for cycle mode share have been set since, and given that the cycle mode share across Cambridge in 2011 was circa 30%, this target figure is considered reasonable.
- **Walking –** A target figure of 15.5% has been used based on the 16% figure for 2035 included within the North East Cambridge Area Action Plan Working Draft Strategy (2019), while this is considered a reasonable future target for a city with an existing overall 10% walking mode share and with aspirations to increase walking and cycling through several initiatives. It is noted that the North East Cambridge Area Action Plan Working Draft Strategy (2019) has since been superseded with a revised draft, however following discussions with CCC in response to the 2023 Beehive application (planning ref: 23/03204/OUT), the target figure of 15.5% has been retained
- **Other Method of travel to work –** A target figure of 1.5% has been adopted as it is anticipated that growth in use of electric scooters and e-bikes will continue and provide a means of commuting for many people using the Site.

4.54. The train mode share has been broken down to consider the eventuality that people at the Proposed Development using the train will also be likely use the bus or cycle given the approximate 1.1 mile distance between Cambridge Train station and the Site. Therefore, for the purpose of this assessment, the 16% target train mode share has been split into 14% train and bus and 2% train and cycle.

4.55. In addition, the bus mode share has been broken down to consider the eventuality that people at the Proposed Development using the bus would either use existing regular bus services or be car drivers who use the Park & Ride services, which will be enhanced as part of the proposals. For the purpose of this assessment, a split of 8% using existing services and 8% using P&R services has been adopted.

4.56. A target car / van driver mode share of 4.8% has therefore been used, which is below the maximum 6.1% mode share as based on the estimated number of employees and parking space provision.

4.57. Further justification of the targeted mode shift is provided within Section 10.

5. Healthy Streets Assessment & Proposed Improvement Measures

5.1. An Active Travel Zone (ATZ) assessment has been undertaken to consider how future staff and occupiers will be able to make key journeys to and from the Site to support the Site's sustainable travel strategy on a daily basis. Policy AT12 'Adopt the Healthy Streets Approach' within the Cambridgeshire Active Travel Strategy suggests the Healthy Streets approach should be considered. In the absence of Cambridge specific Healthy Streets/ATZ assessment guidance, this ATZ assessment has been undertaken in accordance with TfL Healthy Streets ATZ methodology.

5.2. A review of the main travel corridor routes to the Site from the main attractors have been assessed and reviewed using the TfL Healthy Streets ATZ methodology. The routes have been assessed using the 8 Healthy Streets indicators below:

- Easy to cross.
- Shade and shelter.
- Places to stop and rest.
- Not too noisy.
- People choose to walk, cycle and use public transport.
- People feel safe.
- Things to see and do.
- People feel relaxed.

Corridors of Travel

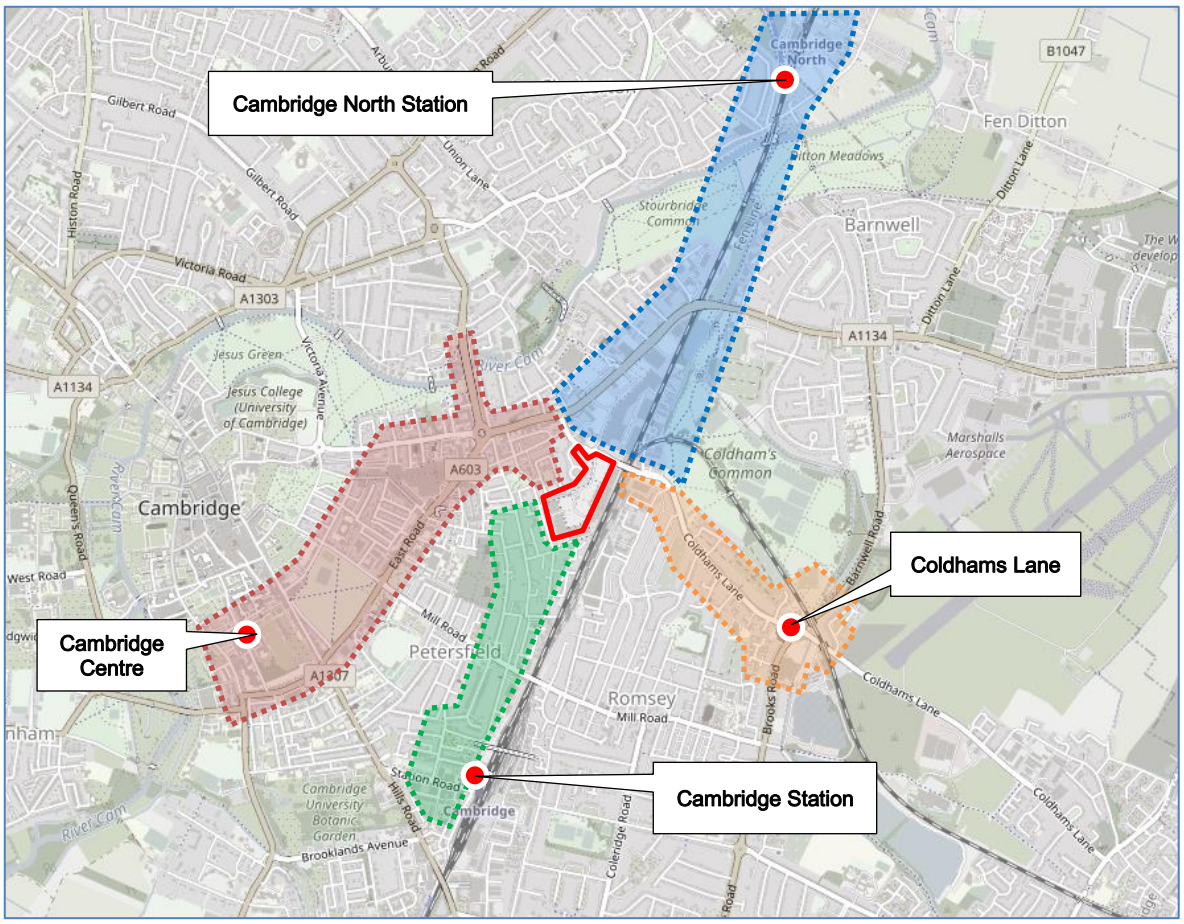
5.3. Census origin-destination data for Cambridge has been utilised to derive the key corridors of travel for those accessing the Site on foot and by bicycle, based on commuting data for those in employment in output area E02003726: Cambridge 008, within which the Site is located.

5.4. The key corridors, have been established via access to nodes within the broad census catchments, with the following locations forming the main nodes through which sustainable travel is undertaken:

- Cambridge North Station;
- Cambridge Station;
- Coldhams Lane / Brooks Road / Sainsburys Roundabout; and
- Cambridge Centre / East Road.

5.5. Walking and cycling routes have been established, utilising the most direct and logical routes to and from the Site via the above main nodes, resulting in the identification of the main corridors of travel, as identified in Figure 12.

Figure 12: Corridors of Travel



5.6. A number of routes within the corridors of travel have been reviewed as part of the ATZ assessment, with many of the routes making up the main corridors of travel between the Site and the identified nodes.

5.7. A summary of the routes assessed and the potential measures for improvement to be considered as part of the ATZ assessment are identified in the tables within Appendix E.

Summary of Potential Walking and Cycling Measures

5.8. The ATZ assessment summary tables indicate that there is a lack of tactile paving at crossing points throughout the surrounding area, despite the provision of dropped kerbs, as such the potential measures for improvement include the installation of tactile paving at the crossing points, where only dropped kerbs are present, for the benefit of pedestrians with visual impairments.

5.9. Additionally, the characteristics of a number of the assessed routes lends itself to the provision of improvements to and provision of formal cycle route facilities. The carriageway widths, vehicle speeds and expected level of vehicle movements ensure that sections of the assessed routes are considered suitable to accommodate advisory on-street cycle lanes or, as a minimum, cycle markings and improved signage and wayfinding measures.

5.10. The ATZ assessment has also informed the creation of a suite of potential measures which are under consideration to facilitate the proposed modal shift for walking and cycling. Taking on board input from stakeholders, following engagement sessions with Cambridgeshire County Council Highways, Greater Cambridge Partnership, Living Streets and CamCycle, among others, the following measures have been proposed for improvements to the main corridors of travel.

5.11. Potential walking and cycling measures that have been considered are set out in Table 14 below.

Table 14: Sustainable Travel Measures – Walking & Cycling

	Measure/Improvement	On-site/ Off-site	Short, Medium or Long Term	Deliverable?
1	Improved site access with Coldhams Lane	On/Off	S	Y
2	Improved site access with Sleaford Street	On/Off	S	Y
3	Improved site access with York Street	On/Off	S	Y
4	Improved site access with St Matthews Gardens	On/Off	S	Y
5	Routes through the Site with off-site wayfinding signage	On	S	Y
6	Improvements to footways along Coldhams Lane - entry treatments/Copenhagen crossings	Off	M	[Option or 7]
7	Improvements to footways along Coldhams Lane - dropped/tactile crossings	Off	M	Y
8	Support GCP improvements along Newmarket Road	Off	L	Y (Contribution)
9	Mobility Hub on-site	On	S	Y
10	LTN1/20 cycle route through the Site	On	S	Y
11	Cycle parking facilities (3,593 spaces) in-excess of Cambridge cycle parking standards	On	S	Y
12	Cycle maintenance facility at Mobility Hub and within stores	On	M	Y
	Cycle corridor improvements along Coldhams Lane			
13	**Coldhams Lane/Brooks Road/Barnwell Road roundabout:** Widening of off-street/shared provision where possible / Crossing points on each arm for peds/cycles / Continue on-street cycle markings into the roundabout.	Off	L	Y (Contribution)

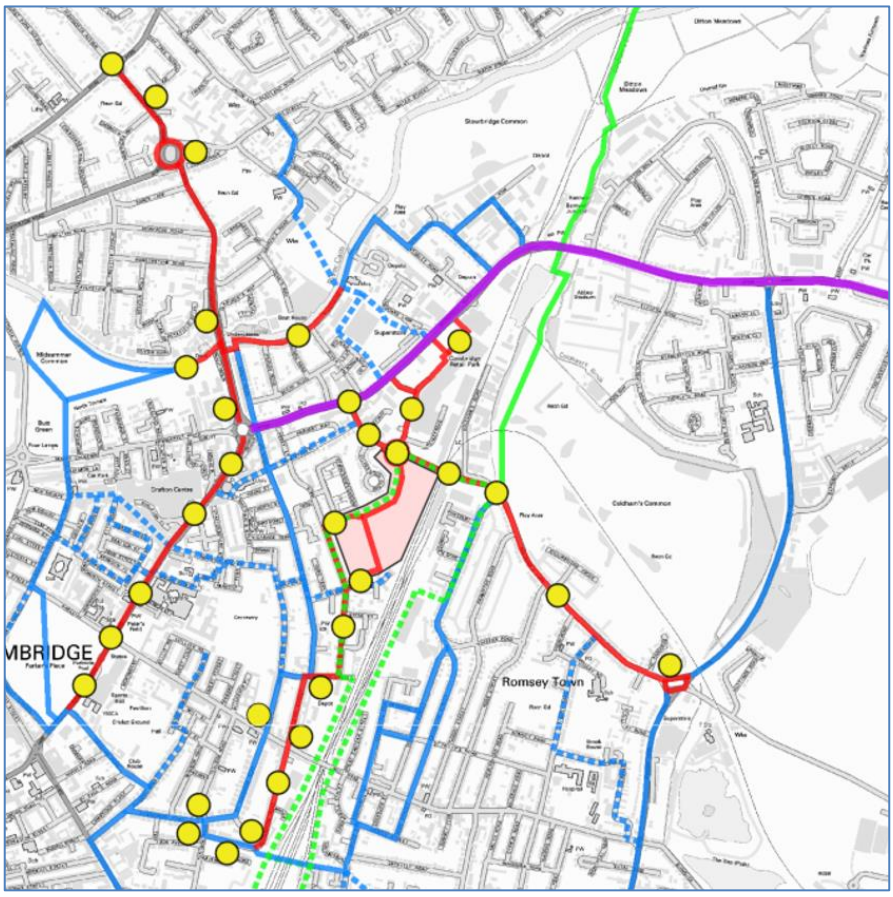
	Measure/Improvement	On-site/ Off-site	Short, Medium or Long Term	Deliverable?
14	**Coldhams Lane: Existing on-street provision between Cornwell Road and Brooks Road** - Where suitable, provide bollards on cycle lane for extra protection and widen the cycle lane.	Off	L	Y (Contribution)
15	**Coldhams Lane by the Chisholm Trail:** Support GCP proposals for the junction as part of the Chisholm Trail Phase 2.	Off	M	Y (Contribution)
16	**Coldhams Lane Bridge: Existing bridge with narrow cycle lane** - Remove guard railings on bridge approach to allow for widening. Remove cover on bridge to make more attractive. Add cycle markings on carriageway.	Off	S	Y (Contribution)
17	**Coldhams Lane Bridge**: Replace road and cycle bridge, new combined structure.	Off	L	N
18	**Site access**: Cyclops junction	Off	S	[Item 1]
19	**Coldhams Lane between site and Newmarket Road:** Remove right hand turn lanes to provide width for on-street cycle lanes either side.	Off	S	Y
20	**Coldhams Lane/Newmarket Road junction**: Support GCP Newmarket Road proposals.	Off	L	[Item 8]
21	**Cambridge Retail Park:** Cycle provision/improvement to be provided as part of Cambridge Retail Park application.	Off	S / M	[Applicant]
22	**Cambridge Retail Park:** Connection to Newmarket Road to be explored.	Off	M	[Applicant]
	Cycle lane improvements towards Cambridge Station			
23	**York Street:** Shared pedestrian and cycle site access - Raised table, full segregation of peds/cycles.	Off	L	[Item 3]
24	**Sleaford Street:** Shared pedestrian and cycle site access - Raised table, full segregation of peds/cycles.	Off	L	[Item 2]
25	**Ainsworth Street:** Improve signage/wayfinding or additional markings on existing route on Sturton Street / Parking restrictions on one side of Ainsworth Street to create cycle lane.	Off	L	Y (Contribution)
26	**Hooper Street:** Cycle route/carriageway and link to Kingston Street (approx. 1m width) - Improve signage/wayfinding, widen modal filter (emergency access)	Off	L	Y (Contribution)
27	**Kingston Street:** Junction with Mill Road - Possible raised table crossing/nearby speed calming on Mill Road / Provide crossing cyclists with priority.	Off	L	Y (Contribution)
28	**Gwydir Street:** Junction with Mill Road/St Barnabas Road - On-street provision, LTN1/20 capacity satisfactory, may model traffic.	Off	L	Y (Contribution)
29	**St Barnabas Road:** Junction with Tenison Road - On-street provision, LTN1/20 capacity satisfactory, may model traffic.	Off	L	Y (Contribution)
30	**Tenison Road:** Junction with Devonshire Road - On-street provision, LTN1/20 capacity satisfactory, may model traffic.	Off	L	Y (Contribution)

	Measure/Improvement	On-site/ Off-site	Short, Medium or Long Term	Deliverable?
31	**Devonshire Road:** Off-street cycle lane 2-way - On-street provision, LTN1/20 capacity satisfactory, may model traffic.	Off	L	[Option or 32 / 33]
32	**Devonshire Road:** Cycle access to Cambridge Station - On-street provision, LTN1/20 capacity satisfactory, may model traffic.	Off	L	Y (Contribution)
33	**Devonshire Road:** Carriageway link to Mill Road - One-one northbound traffic and improve cycle signage/wayfinding / One-way northbound traffic, peds to west footway, segregated 2m southbound cycles.	Off	L	Y (Contribution)
Cycle improvements along A603 East Road, along the River Cam and along A1134 Elizabeth Way				
34	**Elizabeth Way/East Road/Newmarket Road roundabout:** Remove guard railings by the subway entrances to allow easier transition for cyclists between the subway and Elizabeth Way	Off	L	[Item 8]
35	**Elizabeth Way:** Narrow central reservation to provide space for dedicated on or off-street cycle lanes.	Off	L	N
36	**Elizabeth Way/High Street/Chesterton Road roundabout:** Provide peds/cycle crossing points on each arm using existing islands / Incorporate Dutch/Cyclopes styled roundabout design	Off	L	N
37	**Elizabeth Way:** Provide wayfinding and cycle signage / Advisory cycle lanes in both directions.	Off	L	N
38	**Elizabeth Way/Milton Road/Highworth Avenue roundabout:** Add cycle and pedestrian priority on the Milton Road and Elizabeth Way arms of roundabout / Incorporate Dutch/cyclopes styled roundabout design	Off	L	N
39	**East Road/A603: Existing subway under roundabout for peds and cycles** - Remove guard railings by the subway entrances to allow easier transition for cyclists between the subway and East Road	Off	L	N [Grafton Ctr]
40	**A603 East Road**: Provide bollards where feasible for protection of existing cycle lane / Narrow central reservation and remove guard railing to widen on-street cycle lane.	Off	L	N [Grafton Ctr]
41	**A603 East Road by Ruskin Gallery:** On-street cycle lane stops due to zig-zag markings - Provide advisory cycle markings. Additional public cycle parking.	Off	L	N [Grafton Ctr]
42	**A603 East Road /Mill Road/Parkside signalised junction:** Provide Mill Place and Parkside with advanced cycle boxes. Signalised pedestrian crossing on East Road (south) arm.	Off	L	N [Grafton Ctr]
43	**Gonville Place:** Advisory cycle lane on Gonville Place / Remove turning lanes, narrowing the carriageway to allow for a cycle lane on both sides of the carriageway. Or cycle lane adjacent to Gonville Place through Parker's Piece.	Off	L	N [Grafton Ctr]
44	**Riverside:** advisory on-road cycle lane markings.	Off	S	Y

	Measure/Improvement	On-site/ Off-site	Short, Medium or Long Term	Deliverable?
45	**Riverside:** improved signage and wayfinding to bridges/crossing points over River Cam.	Off	S	Y

5.12. A plan showing the location of the proposed walking and cycling solutions is below in Figure 13.

Figure 13: Proposed Walking and Cycling Improvement Locations



6. Traffic Flows

6.1. This section discusses the survey data collection that has been used to inform the network traffic flow and junction capacity assessments.

Survey Data Collection

6.2. Traffic surveys were undertaken in November 2022 to capture the required data collection at the Beehive Centre and all of its points of access, along with separate surveys at the nearby Cambridge Retail Park for supporting data, in addition to several off-site surveys to capture traffic flows and queue lengths at junctions. The traffic survey specification contained in Appendix F provide full details of the surveys specified however the following list provides a summary of these for the Beehive Site:

- Manual Classified Turning Counts (MCTCs) at 13 junctions with Queue Length Surveys at 9 of these junctions.
- Automatic Traffic Count (ATC) Surveys at 4 locations.
- Beehive Centre - Multi-Modal surveys at 6 Site access points to the existing Beehive Centre Site which includes ANPR cameras on the motorised vehicular access to Site. As well as vehicle in and out numbers, the ANPR should provide car parking duration figures.
- Beehive Centre - In addition, parking occupancy surveys to be undertaken within 5 parking zones in car park.
- Servicing Trip Surveys at Beehive Centre (at 2 locations).
- 5 Non-Motorised User (NMU) surveys north of the Beehive Site and 6 south of the Site.
- On-Street Parking Beat surveys to the north, south and west of the Beehive Centre Site.
- Questionnaire surveys for shoppers at both Beehive Centre (outside Asda and Pets at Home stores).

6.3. The data collected at the Beehive Site itself has been used to inform the existing Site trip generation and parking analysis calculations, whereas the MCTC and queue length survey data has been used to inform the off-site network traffic flows and junction capacity assessments.

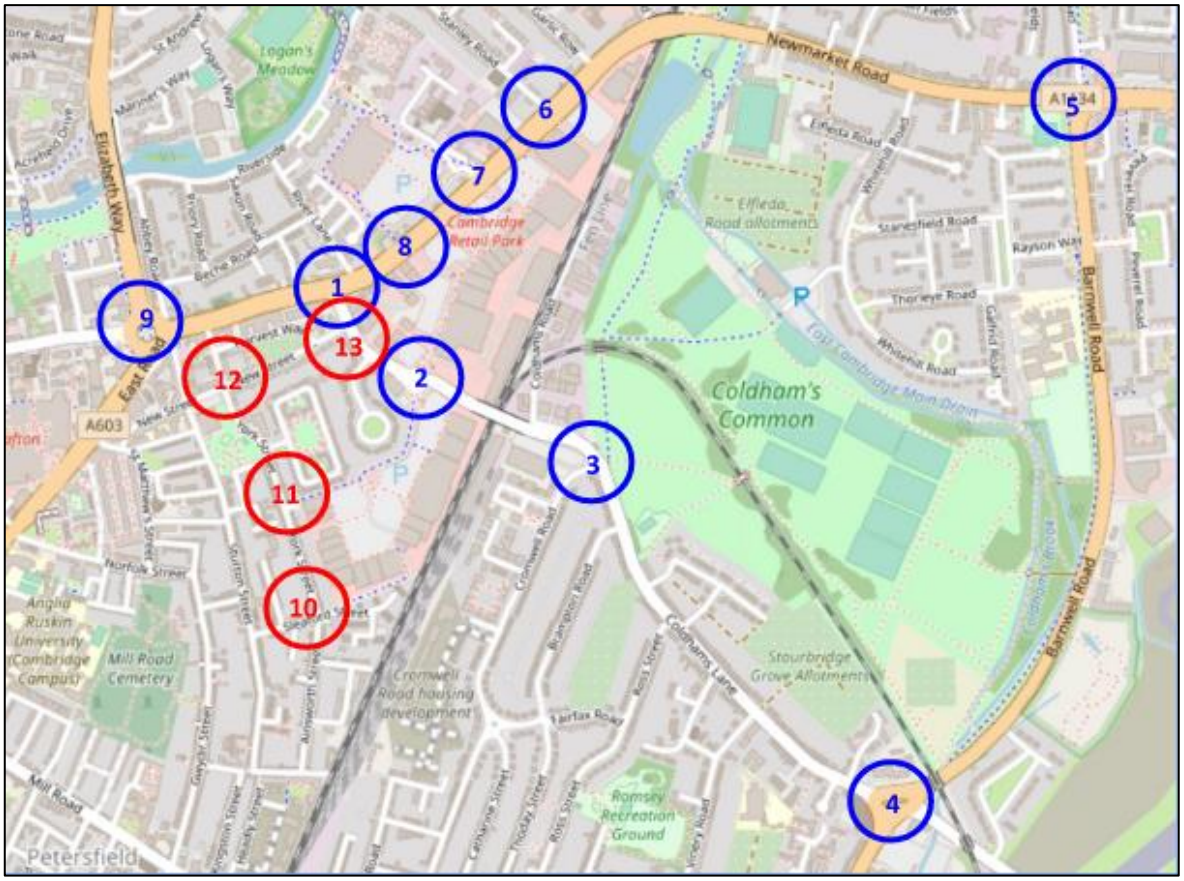
6.4. It is noted that CCC have only requested a junction capacity assessment at the Site access / Coldhams Lane junction, nevertheless the MCTC data for all junctions surveyed has been processed to provide network traffic flow diagrams in the AM, PM and Saturday peak hours. The 13 junctions this network covers include:

1) A1134 Newmarket Road / Coldhams Lane / River Lane staggered 4-arm signal-controlled junction.
2) Site Access / Coldhams Lane roundabout junction.
3) Coldhams Lane / Cromwell Road signal-controlled junction.
4) Coldhams Lane / Brooks Road / Barnwell Road roundabout junction.
5) A1134 Newmarket Road / Barnwell Road / Wadloes Road roundabout junction.
6) A1134 Newmarket Road / Stanley Road signal-controlled junction.

7) A1134 Newmarket Road / Cheddars Lane signal-controlled junction.
8) A1134 Newmarket Road / Cambridge Retail Park Access signal-controlled junction.
9) A1134 Newmarket Road / East Road / Elizabeth Way signal-controlled roundabout.
10) Ainsworth Street / Sleaford Street / York Street junction.
11) York Street / Rope Walk junction.
12) New Street / York Street / Abbey Street mini-roundabout junction.
13) Coldhams Lane / New Street priority junction.

6.5. These junctions are shown below in Figure 14.

Figure 14: Location of MCTC and Queue Length Surveys (Junctions 1 to 9) and MCTC Surveys (Junctions 10 to 13)



6.6. The MCTC and queue length data was recorded on two separate weekdays, Wednesday 16th and Thursday 17th November 2022, and the data for each day analysed to establish the day with the higher AM and PM peak hour vehicular traffic flows at the key local junctions within the study area, the Site Access / Coldhams Lane junction and A1134 Newmarket Road / Coldhams Lane junction. It was identified that Wednesday 16th November 2022 had higher traffic flows and therefore this day has been used as the basis for the traffic flows for the Transport Assessment.

6.7. An analysis of the vehicular traffic flows during the AM peak period (07:00 to 10:00) and PM peak period (16:00 to 19:00) was undertaken to establish the network AM and PM peak hours. The AM peak hour has been identified as 08:15 to 09:15 and the PM peak hour between 17:00 to 18:00.

6.8. The turning traffic flows for these peak hours at the 13 junctions have been processed into Passenger Car Units (PCUs), which is an industry standard of recognising the road space utilised by different types of vehicles, with one PCU representing a standard car length and 2 to 3 PCUs often representing the length of Heavy Goods Vehicles (HGVs). These 2022 observed AM and PM peak hour turning movements at each junction have been shown on traffic flow diagrams and these are included at Appendix G.

6.9. 24-hour and 18-hour daily vehicular traffic flows on the network area covered have also been derived for the using the four Automatic Traffic Counts (ATC) undertaken on the local highway network at the locations shown below in Figure 15. These were undertaken between Tuesday 15th November 2022 and Thursday 24th November 2022 and average daily traffic flows calculated.

Figure 15: Locations of ATC surveys

6.10. For links where ATCs were not undertaken, factors have been derived from the 4 ATC surveys for the peak hour to 18-hour and 24-hour flows and the AM and PM peak hour turning count traffic flows factored to 18-hour and 24-hour flows using these factors. A table of these traffic flows is included within Appendix G.

Future Year Traffic Flows

6.11. A future assessment year of 2030 has been agreed with CCC and the 2022 observed data has been factored to 2030 using the TEMPro version 7.2c industry-standard software, which combines NTEM local traffic growth factors (for the Cambridge MSOA 006 zone) with regional traffic growth factors using the National Transport Model (NTM), which are based on road type.

6.12. The following traffic growth factors were calculated for 2022 to 2030:

- 2022 to 2030 AM peak = 1.06130
- 2022 to 2030 PM peak = 1.06120
- 2022 to 2030 Saturday peak = 1.0710

6.13. The factoring of the observed 2022 traffic flows using these factors has produced 2030 future year baseline vehicular traffic flows for the AM peak hour, PM Peak hour, Saturday peak hour and 18-hour and 24-hour daily flows. These traffic flows have been shown on traffic flow diagrams and these are included at Appendix G.

6.14. The 2030 baseline traffic flows have provided the basis for the subsequent addition of the estimated net vehicular traffic flows due to the Proposed Development.

6.15. The process followed to obtain the existing Site trip generation from the November 2022 surveys undertaken along with the estimated trips associated at the Proposed Development to derive the estimated net trip generation from the Site is discussed in the following section.

7. Trip Generation

7.1. The masterplan (Masterplan 16), which is shown in Appendix H, will provide a maximum of 93,765sqm GIA commercial floor space (88,597sqm office/lab GIA and 5,168sqm mixed use GIA). It is noted that these floor areas exclude all ancillary spaces, and there is a total building floor area of 122,579sqm GIA (excluding basements and the multi-story car park).

7.2. The trip generation analysis for the Proposed Development is based on the maximum provision of 88,597sqm GIA of office / lab space and 5,168sqm GIA of mixed retail and community uses, with the TRICS database and agreed trip rates from the approved Cambridge Biomedical Campus application in 2020 used to calculate the trip generation. In the case of the existing development, traffic surveys were undertaken in November 2022 to capture the current use of the Site by each main travel mode. The net trip calculation has been derived by subtracting the existing trip generation from the estimated proposed trip generation.

7.3. Trip generation scenarios have been developed to consider discussions held with CCC to date. A spreadsheet containing three multi-modal trip generation scenarios was submitted to CCC in January 2023 based on the previous version of the masterplan, Masterplan 12, and comments were received in response from CCC on the methodology used. CCC recommended the use of one main trip generation scenario and a test scenario.

7.4. The estimated trip generation values for cars/LGVs and cycles have been distributed onto the highway network within traffic flow diagrams, which have included a number of junctions and links located within a reasonable distance from the Site, to estimate the net change in traffic due to the Proposed Development.

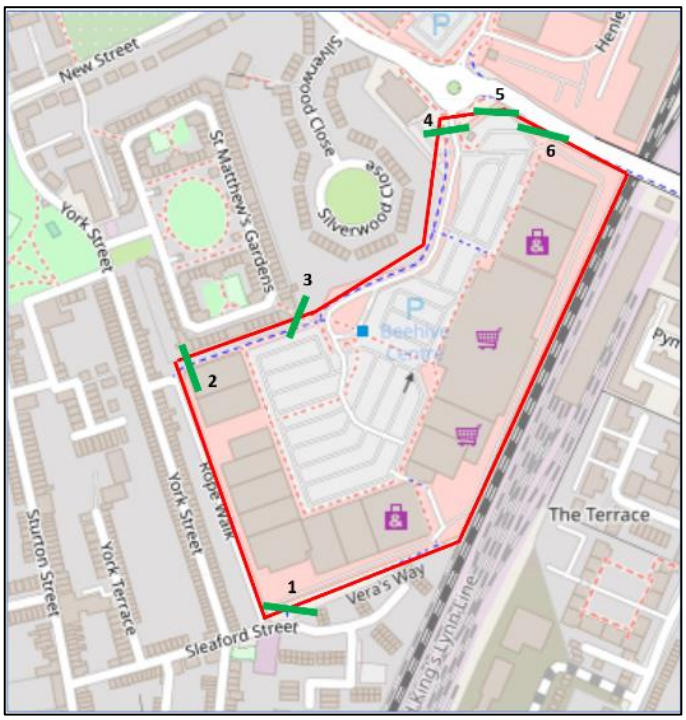
Existing Site Trip Generation

Methodology

7.5. The existing Beehive Centre retail park Site is 7.05 hectares in size and consists of several large format retail units with the Asda food store being the key offering on-site. There is a total of 885 parking spaces across the Site.

7.6. The Site also contains six separate access points, with the only vehicular access being provided via a roundabout junction on Coldhams Lane. These indicative access locations are shown below in Figure 16.

Figure 16: Locations of Existing Site Accesses



7.7. A shared footway / cycleway currently runs through the Site, as indicated on the plan between access points 2 and 4. Points 1, 3, 5 and 6 are separate formal access points for pedestrian use only.

7.8. The surveys undertaken of the existing Site in November 2022 captured all vehicular and non-vehicular movements entering and departing the Site at these six access points for a 24-hour period on two weekdays and on both a Saturday and Sunday to provide a comprehensive picture of existing people trip generation. However, due to the occurrence of trips passing through the Site using the shared footway / cycleway, observations were required at certain locations on this route to capture the number of pedestrians and cyclists diverting off the footway / cycleway to therefore use the retail units at the Site. This allowed calculations to be made to derive the existing trip generation during the AM peak, PM peak and Saturday peak hours.

7.9. The number of people boarding and alighting the bus services (19 and 144) routeing through the Site were captured in the November 2022 surveys to provide existing bus trip generation values.

7.10. Questionnaire surveys were also undertaken outside the Asda and Pets at Home stores as part of the November 2022 surveys to obtain sample data on travel patterns associated with journeys to and from the Site and also within the Site itself. This provided information on whether travel modes such as car, walking, cycling, bus or train were used.

7.11. The amount of people travelling to the Site as a car / van passenger was not able to be recorded within the surveys so an assumption was made using the share for this travel mode contained within the 2011 Census 'Method of Travel to Work' data for the Middle-layer Super Output Area (MSOA) E02003724 (Cambridge MSOA 006), which covers the area adjacent to the Site and is the MSOA

that CCC recommended for use within the calculations. It is also noted that a 'Other Method of Travel' category has been used to account for travel by motorised scooter.

7.12. It is noted that an analysis of the November 2022 surveyed traffic data at the nearby junctions on the local highway network showed the surveyed Wednesday to have marginally higher traffic flows than the surveyed Thursday, and the Wednesdays has therefore been used going forward for the purposes of the traffic flow assessments. Within the Wednesday survey, the AM peak hour was identified to be 08:15 to 09:15 and the PM peak hour to be 17:00 to 18:00. For the Saturday survey, a peak hour of 11.30 to 12.30 was identified.

Existing Trip Generation Values

7.13. Based on the survey data captured and the processing of this, the number of trips within the three peak hours have been calculated for each identified travel mode as follows in Table 15. This includes arrivals ('Arr') and departures ('Dep') and two-way trips during the weekday AM peak, weekday PM peak and Saturday peak.

Table 15: Existing Site Trip Generation for AM, PM and Saturday Peak Hours by Mode

Travel Mode	AM Peak Trips			PM Peak Trips			Saturday Peak Trips		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Train	0	0	**0**	0	0	**0**	0	0	**0**
Bus / Coach	0	0	**0**	0	0	**0**	2	2	**4**
Taxi	0	0	**0**	0	0	**0**	0	0	**0**
Motorcycle	1	0	**1**	5	5	**10**	6	6	**12**
Car / Van	279	138	**417**	459	448	**907**	775	683	**1,458**
Car / Van passenger	20	10	**29**	32	32	**64**	55	48	**103**
Bicycle	117	104	**221**	130	106	**236**	104	96	**200**
Pedestrian	115	99	**214**	175	168	**343**	297	320	**617**
Other	1	3	**4**	4	7	**11**	2	2	**4**
Total	**533**	**354**	**886**	**805**	**766**	**1,571**	**1.241**	**1,157**	**2,398**

7.14. The table shows a total of 886 existing two-way people trips in the AM peak, 1,571 trips in the PM peak and 2,398 in the Saturday peak.

7.15. The car / van driver vehicle mode is the most dominant mode by a significant margin with an AM peak two-way trip total of 417 trips, a PM peak two-way total of 907 trips and Saturday peak two-way total of 1,458 trips.

7.16. Weekday, Saturday and Sunday existing daily volumes have also been calculated, with 5-day and 7-day week totals derived from the daily volumes and these are shown below in Table 16.

Table 16: Existing Site Trip Generation for Daily and Week by Mode

Travel Mode	Two-Way Multimodal Trips				
	Weekday Daily	Saturday Daily	Sunday Daily	5-day Total	7-day Total
Train	0	0	0	0	0
Bus / Coach	0	34	24	0	58
Taxi	0	0	0	0	0
Motorcycle	91	103	71	456	630
Car / Van	10,974	12,510	8,622	54,870	76,002
Car / Van passenger	773	881	607	3,864	5,352
Bicycle	3,778	1,716	1,183	18,939	21,838
Pedestrian	4,617	5,294	3,649	23,084	32,026
Other	124	34	24	622	680
Total	**20,367**	**20,573**	**14,179**	**101,834**	**136,585**

7.17. The table shows an existing Site weekday daily total of 20,367 people trips, Saturday daily total of 20,573 people trips, Sunday daily total of 14,179 people trips, 5-day weekday total of 101,834 trips and 7-day total of 135,585 trips.

7.18. With regard to car / van driver use specifically, it shows a total of 10,974 daily trips, 12,510 trips on the Saturday, 8,622 trips on the Sunday, 54,870 trips for the 5-day total and 76,002 trips for the 7-day week total.

7.19. It should be noted that Table 16 shows there are no bus trips to and from the Site in the week, however the questionnaire survey recorded three bus trips to the Site on the Thursday (17th November) which would relate to circa 15 bus trips for the 5-day week total.

Existing Site Mode Share

7.20. The existing travel mode share at the Site has been calculated based on the trips recorded within the November 2022 surveys and as shown in Tables 15 and 16, with the weekday mode shares based on an average of the AM peak and PM peak two-way trip totals for each mode and the weekend mode shares based on the Saturday two-way trip totals for each mode.

7.21. These mode share values are shown below in Table 17.

Table 17: Existing Site Trip Generation for Daily and Week by Mode

Mode	Weekday Mode Share	Saturday Mode Share
Train	0%	0%
Bus / Coach	0%	0%
Taxi	0%	0%
Motorcycle	0%	1%
Car / Van driver	54%	61%
Car / Van passenger	4%	4%
Bicycle	19%	8%
Pedestrian	23%	26%
Other Method of Travel	1%	0%
Total	**100%**	**100%**

7.22. This analysis shows that the Site currently attracts a high proportion of car / van driver vehicle trips (54% in the weekday and 61% during the weekend) compared to other modes, although a relatively high proportion of trips are made by walking (23% and 26%) and by bicycle (19% and 8%), which shows a good level of connectivity to local areas.

Proposed Development Trip Generation & Travel Mode Share

7.23. The methodology followed to calculate the estimated trip generation for the Proposed Development is discussed within the following sub-sections.

Proposed Development Use Splits

7.24. As noted previously, the trip generation analysis for the Proposed Development is based on the maximum provision of 88,597sqm GIA of office / lab space and 5,168sqm GIA of mixed retail and community uses. The maximum provision of 88,597sqm GIA of office / lab space is based on the 'office only' scheme, however for the purpose of this trip generation, a mixture of office / lab will be assessed. The 'office / lab' scheme will provide a maximum of 85,449sqm GIA of office / lab space. The difference between the 'office only' scheme and 'office / lab' scheme (3,148sqm) will also be assessed as office use.

7.25. Within the 'office / lab' masterplan, 40,072sqm GIA would be office / dry lab use (36,924sqm plus 3,148sqm) and 48,525sqm GIA wet lab use. Further information on the splits indicates that the 48,525sqm of wet lab use would comprise 50% of actual wet lab space (24,262.50sqm) and 50% write up-space (24,262.50sqm). The write-up space has been considered as office / dry lab space for the trip generation analysis to provide a robust trip generation assessment.

7.26. With regard to the non-office mixed use space of 5,168sqm GIA, information on the potential breakdown of this indicates that this would be a mix of non-food retail use, Food & Beverage Restaurant / Café use, Leisure use – possibly a gym and community use. For the purposes of a robust assessment, the following split has been used:

- Non-Food Retail: 25% of mixed-use so 1,292sqm GIA;
- F&B Restaurant / Café: 25% of mixed-use so 1,292sqm GIA;
- Leisure – Gym: 25% of mixed-use so 1,292sqm GIA; and
- Community use - Doctor's surgery: 25% of mixed-use so 1,292sqm GIA

7.27. Trip rates have therefore been calculated for each of these four uses to provide trip generation values across the required periods. It should however be noted that these potential mixed uses are likely to be subject to minor changes as the Masterplan is updated in future and should therefore be considered indicative.

TRICS Calculated Trip Rates

7.28. The TRICS database (v7.9.3) has been used to calculate people trip rates for the proposed uses prior to travel mode shares being applied. These trip rates have been agreed with CCC. TRICS outputs are attached at Appendix I.

7.29. Table 18 shows the AM peak, PM peak, Saturday and Daily people trip rates derived for the office and dry lab uses calculated using the TRICS '02 – Employment / A – Office' category, based on GFA.

Table 18: TRICS Calculated AM, PM, Saturday Peak Hours & Daily Trip Rates for Office / Dry Lab Uses

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	1.770	0.084	**1.854**
PM peak	0.100	1.777	**1.877**
Saturday peak	N/A	N/A	**N/A**
Weekday Daily	6.700	6.694	**13.394**
Weekend Daily	N/A	N/A	**N/A**

7.30. Table 19 below shows the AM peak, PM peak, Saturday and Daily people trip rates derived for the non-food retail unit use calculated using the TRICS '01 – Retail / G – Other Individual Non-Food Superstore' category, based on GFA.

Table 19: TRICS Calculated AM, PM, Saturday Peak Hours & Daily Trip Rates for Non-Food Retail Use

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	0.313	0	**0.312**
PM peak	2.250	2.813	**5.062**
Saturday peak	3.826	3.694	**7.520**
Weekday Daily	27.75	28.125	**55.875**
Weekend Daily	25.462	25.198	**50.660**

7.31. Table 20 below shows the AM peak, PM peak, Saturday and Daily people trip rates derived for the F&B Restaurant / Café use calculated using the TRICS '06 – Hotel, Food & Drink / B – Restaurants' category, based on GFA.

Table 20: TRICS Calculated AM, PM, Saturday Peak Hours & Daily Trip Rates for F&B Restaurant / Café Use

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	N/A	N/A	**N/A**
PM peak	3.309	1.295	**4.604**
Saturday peak	14.652	6.044	**20.696**
Weekday Daily	13.672	34.377	**71.347**
Weekend Daily	120.147	120.173	**240.32**

7.32. Table 21 below shows the AM peak, PM peak, Saturday and Daily people trip rates derived for the Leisure - Gym use calculated using the TRICS '07 – Leisure / K – Fitness Club (Private)' category, based on GFA.

Table 21: TRICS Calculated AM, PM, Saturday Peak Hours & Daily Trip Rates for Leisure - Gym Use

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	1.478	1.123	**2.601**
PM peak	3.927	2.692	**6.619**
Saturday peak	2.952	4.413	**7.365**
Weekday Daily	32.501	32.433	**64.934**
Weekend Daily	38.404	38.714	**77.118**

7.33. Table 22 below shows the AM peak, PM peak, Saturday and Daily people trip rates derived for the Community – Doctor's surgery' use calculated using the TRICS '05 – Health / G – GP Surgeries' category, based on GFA.

Table 22: TRICS Calculated AM, PM, Saturday Peak Hours & Daily Trip Rates for Community – GP Surgery Use

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	3.859	1.895	**5.754**
PM peak	1.914	3.273	**5.187**
Saturday peak	N/A	N/A	**N/A**
Weekday Daily	40.694	41.178	**81.872**
Weekend Daily	N/A	N/A	**N/A**

Cambridge Biomedical Campus Trip Rates

7.34. For the proposed wet lab use, due to the lack of suitable surveyed Sites within TRICS it was decided that the trip rates included within the agreed 2020 Transport Assessment Addendum for the Cambridge Biomedical Campus (CBC) planning application (for 129,000sqm GIA) be used for this assessment, given that the R&D uses included within this are considered generally representative of the wet lab uses proposed as part of the Beehive redevelopment. These trip rates assumed a density of 1 employee per 36sqm density while preliminary information for the wet labs at the Proposed Development suggests the employee density would be 1 per 50sqm, so the use of CBC rates can be considered robust. This approach has been agreed by CCC.

7.35. The CBC trip rates are shown below in Table 23.

Table 23: Trip Rates for CBC R&D Use

Period	Total People Trip Rates		
	Arr	Dep	Total
AM peak	1.0605	0.0806	**1.1434**
PM peak	0.0543	0.8690	**0.9225**
Saturday peak	N/A	N/A	**N/A**
Weekday Daily	3.4349	3.4698	**6.9039**
Weekend Daily	N/A	N/A	**N/A**

Travel Mode Shares

Existing Area Mode Shares

7.36. 2011 Census 'WP703EW Method of Travel to Work' data for the workplace population was extracted for the Middle-layer Super Output Area (MSOA) E02003724: Cambridge 006.

7.37. The MSOA E02003726: Cambridge 008 covers the area including the Site, however it was advised by CCC during pre-application discussions that another zone nearby would be more representative of workplace travel patterns given the low existing amount of workplace development in the zone which includes the Site.

7.38. Cambridge 006, which is located immediately to the north and northeast of 008, was therefore used as it covers a larger area and a higher proportion of workplace development, including the Mercer's Row Industrial Estate, Cambridge Retail Park and an industrial area west of Cambridge City Airport.

7.39. It is also noted that 2021 census data has not been used given that it took place during Covid-19 pandemic restrictions and is unlikely to be representative of current patterns. The mode shares for each method of travel to work for the workplace population have been extracted and are shown within Table 7 earlier within this report.

7.40. For reference and comparison, the mode shares for each method of travel to work for the residential population within Cambridge 006 have been extracted and are show below in Table 24.

Table 24: 2011 Census Method of Travel to Work (Residential Population) Mode Shares (MSOA E02003724: Cambridge 006)

Journey to Work Mode	Percentage from MSOA Cambridge 006
Underground / Metro / Light Rail / Tram	0.2%
Train	3.1%
Bus	9.2%
Taxi	0.6%
Motorcycle / Scooter / Moped	1.4%
Car / Van Driver	40.6%
Car / Van Passenger	4.6%
Bicycle	28.8%
Pedestrian	11.0%
Other method of travel to work	0.5%
Total Person Trips	**100%**

7.41. While this dataset is for the residential population in the area travelling to work rather than those working in the area, it highlights the existing relatively high bicycle mode share of 28.8% and pedestrian mode share of 11.0% for people commuting in the area.

Target Mode Shares

7.42. The target mode share calculations have been discussed previously in Chapter 4 and are outlined in Table 13. The vision of the Proposed Development is to also significantly reduce car travel at the Site through improving existing and providing new infrastructure and services for sustainable travel

modes, while also restricting the amount of car parking available to further encourage a shift from car use to public transport and walking and cycling travel.

7.43. The target mode shares for each mode are reprovided in Table 25 below.

Table 25: Target Travel Mode Shares for Proposed Development

Journey to Work Mode	Target Mode Share
Underground / Metro / Light Rail / Tram	0.0%
Train – to Bus	14.0%
Train – to Cycle	2.0%
Bus / Minibus / Coach	8.0%
Car to P&R and use P&R service	8.0%
Taxi	0.5%
Motorcycle / Scooter / Moped	1.1%
Car / Van Driver	4.8%
Car / Van Passenger	4.6%
Bicycle	40.0%
Pedestrian	15.5%
Other method of travel to work	1.5%
Total Person Trips	**100%**

7.44. A target car / van driver mode share of 4.8% has therefore been used, which is below the maximum 6.1% mode share as based on the estimated number of FTEs and parking space provision. This is considered reasonable and allows for some marginal flexibility with the estimated FTE / employee numbers.

'Break-Even' Mode Share

7.45. At the meeting with CCC in December 2022 to discuss the general approach to undertaking the trip generation and distribution assessment, it was requested that a 'break even' mode share for car driver travel be calculated which results in 0 additional / reduced car / van driver trips being generated in each direction by the Proposed Development in the AM peak.

7.46. This 'break-even' car driver mode share figure has been calculated later within this Transport Assessment as part of a test trip generation scenario and the shares for the other modes altered proportionally.

Trip Internalisation

7.47. It was agreed with CCC in the December 2022 meeting that internalisation factors could be applied to the calculated overall people trip generation for the Proposed Development during the weekdays to consider the likelihood that a large number of people working at the office / lab R&D units would

also use the retail and community uses on-site. It is possible that given the scale of the R&D operation proposed, the majority of people using the retail and community uses would be those from the R&D uses, however for the purpose of a robust assessment, an internalisation factor of 25% has been applied to all estimated trips generated by the retail and community uses.

Working from Home

7.48. The number of people working from home was increasing prior to the Covid-19 pandemic however this number increased significantly as a result of the forced lockdowns and since the end of restrictions the number remains substantially higher than the level pre-Covid. It is now generally accepted that the 'hybrid' working from home / working in the office model will continue and be entrenched in working practice.

7.49. As recommended by CCC within comments received in March 2023, a 31% working from home factor has been used based on the 'Cambridgeshire Insight – Transport Data Insights' website (as contained within Slide 6 within the January 2023 '*Transport Update: Cambridge and South Cambs'* presentation).

7.50. This 31% reduction in people trips has been applied for office-based staff but not for the dry lab or wet lab staff, even though there is a possibility some dry lab staff may occasionally complete write-up work at home, to provide a robust assessment.

Trip Generation Scenarios

7.51. The following two trip generation scenarios have been adopted for assessment based on the considerations discussed previously and have been agreed with CCC:

- Scenario 1: Uses Target Mode Shares, Trip Internalisation factors & Working from Home Trip factors;
- Test Scenario: Uses 'Break Even' Car Mode Share in AM Peak, Trip Internalisation factors & Working from Home Trip factors.

7.52. In response to the 2023 application for the redevelopment at the Beehive Centre (Planning application reference 23/03204/OUT) CCC Transport Assessment team requested a scenario (Scenario 3) be tested as part of the Site access junction modelling, which assumes the full car parking provision would reach capacity and consequently there will be a 11.5% car driver mode share during the peak hours. Scenario 3 has not been tested within this trip generation assessment, as the car mode share in Scenario 3 (11.5%) is lower than the Test Scenario (24.3%) and higher than Scenario 1 (4.8%) and therefore would sit between Scenario 1 and the Test Scenario. The Test Scenario would be considered to represent the worst case scenario.

7.53. These scenarios consider a number of potential variables and will likely provide a suitable range of trip generation values for the assessment. They also align to the 'Decide & Provide' approach, which, in the 'TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach' (February 2021), comments that: '*Decide and Provide" (D&P) is a planning paradigm that is vision-led, rather than forecast-led (Predict and Provide), and which aims to improve the resilience of planning decisions by taking account of deep uncertainty about the future. At its heart is deciding on a preferred future and providing a development path best suited to achieving it.'*

7.54. The calculated trip generation values for the two scenarios in the AM peak, PM peak, Saturday peak, weekday daily, Saturday daily, Sunday daily, 5-weekday total and 7-day weekly total are discussed in the following text.

Proposed Development Trips

7.55. The calculated estimated trip generation for the Proposed Development by arrival, departure and two-way trip totals for the peak hours and daily volumes, based on the target mode shares for each adopted travel mode, are shown below in the following sub-sections for each scenario.

Scenario 1

7.56. The estimated AM peak, PM peak, Saturday peak trips for the Proposed Development in Scenario 1 are shown below in Table 26.

Table 26: Scenario 1 - Proposed Development Trip Generation for AM, PM and Saturday Peak Hours by Mode

Travel Mode	AM Peak Trips			PM Peak Trips			Saturday Peak Trips		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Underground / Metro / Light Rail / Tram	0	0	**0**	0	0	**0**	0	0	**0**
Train – to Bus	161	12	**173**	24	155	**179**	29	19	**48**
Train – to Cycle	23	2	**25**	3	22	**26**	4	3	**7**
Bus / Minibus / Coach	92	7	**99**	14	89	**103**	17	11	**28**
Car to P&R and use P&R service	92	7	**99**	14	89	**103**	17	11	**28**
Taxi	6	0	**7**	1	6	**7**	1	1	**2**
Motorcycle / Scooter / Moped	12	1	**13**	2	12	**14**	2	1	**4**
Car / Van Driver	56	4	**60**	8	54	**62**	10	7	**17**
Car / Van Passenger	52	4	**56**	8	51	**58**	9	6	**16**
Bicycle	460	35	**495**	68	444	**513**	83	55	**138**
Pedestrian	178	14	**192**	26	172	**199**	32	21	**53**
Other method of travel to work	17	1	**19**	3	17	**19**	3	2	**5**
Total	**1,150**	**89**	**1,238**	**171**	**1,110**	**1,281**	**208**	**137**	**345**

7.57. The table shows a total of 1,238 two-way people trips in the AM peak, 1,281 trips in the PM peak and 345 in the Saturday peak.

7.58. With regard to the specific modes, for car driver use it shows 60 two-way trips for the AM peak, 62 two-way trips for the PM peak and 17 two-way trips in the Saturday peak.

7.59. The high mode share for cycles is reflected by the two-way trip totals of 495 in the AM peak, 513 two-way trips in the PM peak and 138 two-way trips in the Saturday peak.

7.60. Weekday, Saturday and Sunday daily volumes have also been calculated for Scenario 1, with 5-day and 7-day week totals derived from the daily volumes and these are shown below in Table 27.

Table 27: Scenario 1 - Proposed Development Trip Generation for Weekday, Saturday, Sunday, 5-day and 7-day periods

Travel Mode	Two-Way Multimodal Trips				
	Weekday Daily	Saturday Daily	Sunday Daily	5-day Total	7-day Total
Underground / Metro / Light Rail / Tram	0	0	0	0	0
Train – to Bus	1,462	499	499	7,309	8,308
Train – to Cycle	209	71	71	1,044	1,187
Bus / Minibus / Coach	835	285	285	4,177	4,748
Car to P&R and use P&R service	835	285	285	4,177	4,748
Taxi	55	19	19	277	315
Motorcycle / Scooter / Moped	111	38	38	554	630
Car / Van Driver	509	173	173	2,530	2,876
Car / Van Passenger	476	163	163	2,381	2,707
Bicycle	4,177	1,427	1,427	20,884	23,738
Pedestrian	1,619	553	553	8,093	9,198
Other method of travel to work	157	54	54	783	890
Totals	**10,442**	**3,567**	**3,567**	**52,210**	**59,344**

7.61. For the Proposed Development in Scenario 1, the table shows a weekday daily total of 10,442 people trips, Saturday daily total of 3,567 people trips, Sunday daily total of 3,567 people trips, 5-day weekday total of 52,210 trips and 7-day week total of 59,344 trips.

7.62. With regard to the specific modes, for car driver use it shows 509 daily trips, 173 trips on both Saturdays and Sundays, 2,530 5-day trips and 2,876 7-day trips. For cycles, it shows 4,177 daily trips, 1,427 trips on both Saturday and Sunday, 20,884 5-day week trips and 23,738 7-day week trips.

Test Scenario

7.63. The estimated AM peak, PM peak, Saturday peak trips for the Proposed Development in the Test Scenario are shown below in Table 28.

Table 28: Test Scenario - Proposed Development Trip Generation for AM, PM and Saturday Peak Hours by Mode

Travel Mode	AM Peak Trips			PM Peak Trips			Saturday Peak Trips		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Underground / Metro / Light Rail / Tram	0	0	**0**	0	0	**0**	0	0	**0**
Train – to Bus	117	0	**118**	17	4	**21**	21	0	**22**
Train – to Cycle	17	0	**17**	2	1	**3**	3	0	**3**
Bus / Minibus / Coach	67	0	**67**	10	2	**12**	12	0	**12**
Car to P&R and use P&R service	67	0	**67**	10	2	**12**	12	0	**12**
Taxi	6	0	**7**	1	6	**7**	1	1	**2**
Motorcycle / Scooter / Moped	12	1	**13**	2	12	**14**	2	1	**4**
Car / Van Driver	279	66	**346**	42	833	**874**	50	103	**153**
Car / Van Passenger	52	4	**56**	8	51	**58**	9	6	**16**
Bicycle	336	1	**336**	50	11	**61**	61	1	**62**
Pedestrian	178	14	**192**	26	172	**199**	32	21	**53**
Other method of travel to work	17	1	**19**	3	17	**19**	3	2	**5**
Totals	**1150**	**89**	**1238**	**171**	**1110**	**1281**	**208**	**137**	**345**

7.64. For the Proposed Development in the Test Scenario, the table shows a total of 1,238 two-way people trips in the AM peak, 1,281 trips in the PM peak and 345 in the Saturday peak. It is noted that these totals are the same as those for Scenario 1 given that it is only the mode share percentages that have changed.

7.65. With regard to the specific modes, the higher mode share for car drivers is reflected by the 346 two-way trips for the AM peak (compared to 60 trips in Scenario 1), 874 two-way trips for the PM peak (62 trips in Scenario 1) and 153 two-way trips in the Saturday peak (17 trips in Scenario 1).

7.66. The lower mode share for cycles is also reflected by the two-way trip totals of 336 in the AM peak (compared to 495 trips in Scenario 1), 61 two-way trips in the PM peak (513 trips in Scenario 1) and 62 two-way trips in the Saturday peak (138 trips in Scenario 1).

7.67. Weekday, Saturday and Sunday daily volumes have also been calculated for the Test Scenario, with 5-day and 7-day week totals derived from the daily volumes and these are shown below in Table 29.

Table 29: Test Scenario - Proposed Development Trip Generation for Weekday, Saturday, Sunday, 5-day and 7-day periods

Travel Mode	Two-Way Multimodal Trips				
	Weekday Daily	Saturday Daily	Sunday Daily	5-day Total	7-day Total
Underground / Metro / Light Rail / Tram	0	0	0	0	0
Train – to Bus	1,067	364	364	5,335	6,063
Train – to Cycle	152	52	52	762	866
Bus / Minibus / Coach	610	208	208	3,048	3,465
Car to P&R and use P&R service	610	208	208	3,048	3,465
Taxi	55	19	19	277	315
Motorcycle / Scooter / Moped	111	38	38	554	630
Car / Van Driver	2,537	867	867	12,687	14,421
Car / Van Passenger	476	163	163	2381	2,707
Bicycle	3,048	1,041	1,041	15,241	17,324
Pedestrian	1,619	553	553	8,093	9,198
Other method of travel to work	157	54	54	783	890
Totals	10,442	3,567	3,567	52,210	59,344

7.68. For the Proposed Development in the Test Scenario, as in Scenario 1, the table shows a weekday daily total of 10,442 people trips, both Saturday and Sunday daily total of 3,567 people trips,, 5-day weekday total of 52,210 trips and 7-day week total of 59,344 trips.

7.69. With regard to the specific modes, for car driver use it shows 2,537 daily trips (compared to 506 daily trips in Scenario 1), 867 trips on both Saturdays and Sundays (173 trips in Scenario 1), 12,687 5-day trips (2,530 trips in Scenario 1) and 14,421 7-day trips (2,876 trips in Scenario 1).

7.70. For cycles, it shows 3,048 daily trips (compared to 4,177 trips in Scenario 1), 1,041 trips on both Saturday and Sunday (1,427 trips in Scenario 1), 15,241 5-day week trips (20,884 trips in Scenario 1) and 17,324 7-day week trips (23,738 trips in Scenario 1).

7.71. With regard to the calculated estimated trips, the higher mode share for car drivers in the Test Scenario is reflected by a much higher number of car trips in all peak hours and daily. It is noted that while the mode share test scenario has been a useful assessment, the level of car trips generated by this higher car mode share would far outweigh the proposed parking provision at the Site.

7.72. While it is acknowledged that some of these vehicles would look to find alternative parking in a local non-CPZ area, the current parking stress levels (translating in limited availability), the distance these car drivers would have to walk to the Site combined with the proposed attractive bus offering from the Milton and Newmarket Road Park & Rides would mean that cars seeking off-site parking is likely to be minimal.

7.73. As shown by the analysis, the higher car mode in the Test scenario share would inevitably result in a lower mode share and resulting lower number of trips generated by the sustainable travel modes.

Net Trip Generation

7.74. The resultant net trip generations by mode for Scenario 1 and the Test Scenario have been calculated by subtracting the observed existing trip generation for the Site from the estimated trip generation for the Proposed Development in each scenario.

Scenario 1 Net Trip Generation

7.75. The estimated net AM peak, PM peak, Saturday peak hour trips by mode in Scenario 1 are shown below in Table 30.

Table 30: Scenario 1 - Net Trip Generation for AM, PM and Saturday Peak Hours by Mode

Travel Mode	AM Peak Net Trips			PM Peak Net Trips			Saturday Peak Net Trips		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Underground / Metro / Light Rail / Tram	0	0	**0**	0	0	**0**	0	0	**0**
Train – to Bus	161	12	**173**	24	155	**179**	29	19	**48**
Train – to Cycle	23	2	**25**	3	22	**26**	4	3	**7**
Bus / Minibus / Coach	92	7	**99**	14	89	**103**	15	9	**24**
Car to P&R and use P&R service	92	7	**99**	14	89	**103**	17	11	**28**
Taxi	6	0	**7**	1	6	**7**	1	1	**2**
Motorcycle / Scooter / Moped	11	1	**12**	-3	7	**4**	-4	-5	**-8**
Car / Van Driver	-223	-134	**-357**	-451	-394	**-845**	-765	-676	**-1,441**
Car / Van Passenger	33	-6	**27**	-25	19	**-5**	-45	-42	**-87**
Bicycle	343	-69	**274**	-62	338	**277**	-21	-41	**-62**
Pedestrian	63	-85	**-22**	-149	4	**-144**	-265	-299	**-564**
Other method of travel to work	16	-2	**15**	-1	10	**8**	1	0	**1**
Total	**617**	**-265**	**352**	**-634**	**345**	**-290**	**-1,033**	**-1,020**	**-2,053**

7.76. For Scenario 1, the table shows a net increase of 352 two-way people trips in the AM peak and contrasting net reductions of 290 trips in the PM peak and 2,053 trips in the Saturday peak.

7.77. With regard to the specific modes, for car / van driver vehicle use it shows substantial net reductions of 357 two-way trips in the AM peak, 845 two-way trips for the PM peak and 1,441 two-way trips in the Saturday peak.

7.78. The high mode share for cycles is reflected by the large net increase in two-way trip totals of 274 in the AM peak, 277 two-way trips in the PM peak and a minor decrease in two-way trips in the Saturday peak.

7.79. Net Weekday, Saturday and Sunday daily trip volumes have also been calculated for Scenario 1, with 5-day and 7-day week totals derived from the daily volumes and these are shown below in Table 31.

Table 31: Scenario 1 – Net Trip Generation for Weekday, Saturday, Sunday, 5-day and 7-day periods

Travel Mode	Net Two-Way Multimodal Trips				
	Weekday Daily	Saturday Daily	Sunday Daily	5-day Total	7-day Total
Underground / Metro / Light Rail / Tram	0	0	0	0	0
Train – to Bus	1,462	499	499	7,309	8,308
Train – to Cycle	209	71	71	1,044	1,187
Bus / Minibus / Coach	835	251	262	4,177	4,690
Car to P&R and use P&R service	835	285	285	4,177	4,748
Taxi	55	19	19	277	315
Motorcycle / Scooter / Moped	20	-65	-33	98	0
Car / Van Driver	-10,468	-12,337	-8,449	-52,340	-73,126
Car / Van Passenger	-297	-718	-444	-1,483	-2,645
Bicycle	389	-289	244	1,945	1,900
Pedestrian	-2,998	-4,741	-3,096	-14,991	-22,828
Other method of travel to work	32	19	30	162	211
Total	**-9,925**	**-17,006**	**-10,612**	**-49,624**	**-77,242**

7.80. For Scenario 1, the table shows an estimated net reduction of 9,925 people trips in the daily total, a reduction of 17,006 people trips in the Saturday daily total, a net reduction of 10,612 people trips in the Sunday daily total, a net reduction of 49,624 trips in the 5-day weekday total and a net reduction of 77,242 trips in the 7-day week total.

7.81. With regard to the specific modes, for car / van driver vehicle use it shows a net reduction of 10,468 trips in the daily total, a reduction of 12,337 trips in the Saturday daily total, a reduction of 8,449 trips

in the Sunday daily total, a reduction of 52,340 trips in the 5-day week total and a reduction of 73,126 trips in the 7-day week total.

7.82. For cycles, it shows a net increase of 389 trips in the daily total, a decrease of 289 trips in the Saturday daily total, an increase of 244 trips in the Sunday total, an increase of 1,945 trips in the 5-day week total and an increase of 1,900 trips in the 7-day week total.

Test Scenario Net Trip Generation

Test Scenario Mode Share

7.83. The target mode share values for the Proposed Development trips, as referenced previously in Table 13, have been modified to obtain a 'break-even' car / driver vehicle mode net trip generation in the worst-case AM peak as requested by CCC.

7.84. This has been achieved by entering an increased car / van driver mode share that obtains this break-even net car / van driver vehicle trip generation and factoring down the mode shares for the other modes proportionally.

7.85. CCC requested that the net change of 0 trips is achieved for both arrivals and departures to the Site for this scenario. However, while it was possible to obtain this for the arrivals, due to the number of departures from the Proposed Development being lower than the existing departures from the Site, it was not possible to calculate a break-even mode share for the departures. Therefore, as a robust test, a break-even mode share for arrival trips has been obtained and the highest car / van driver mode share possible used for the departure trips.

7.86. The resultant mode share values that achieved this are shown below in Table 32.

Table 32: Calculated Mode Share Values for Break-Even Net AM Peak Car / Van Trip Generation

Travel Mode	Break-Even AM Peak Arrival Mode Share	AM Peak Departure Mode Share Tested
Underground / Metro / Light Rail / Tram	0.0%	0.0%
Train – to Bus	10.2%	0.4%
Train – to Cycle	1.5%	0.1%
Bus / Minibus / Coach	5.8%	0.2%
Car to P&R and use P&R service	5.8%	0.2%
Taxi	0.5%	0.5%
Motorcycle / Scooter / Moped	1.1%	1.1%
Car / Van Driver	24.3%	75.0%
Car / Van Passenger	4.6%	4.6%
Bicycle	29.2%	1.0%
Pedestrian	15.5%	15.5%
Other method of travel to work	1.5%	1.5%
Totals	**100.00%**	**100.00%**

7.87. The analysis shows that a 24.3% car / van driver mode share would achieve this break-even net car / van driver arrival trip generation at the Site in the AM peak. This indicates that even with a notably higher car / van driver mode share of up to 24.3%, the Site would still generate fewer car / van driver vehicle arrival trips than the existing Site use in all peak hours. The resulting net trip generation values for each mode and time period are shown below.

Net Trip Values

7.88. The estimated net trip generation by mode in the AM peak, PM peak, Saturday peak hours due to the Proposed Development within the Test Scenario are shown below in Table 33.

Table 33: Test Scenario Net Trip Generation for AM, PM and Saturday Peak Hours by Mode

Travel Mode	AM Peak Net Trips			PM Peak Net Trips			Saturday Peak Net Trips		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Underground / Metro / Light Rail / Tram	0	0	**0**	0	0	**0**	0	0	**0**
Train – to Bus	117	0	**118**	17	4	**21**	21	0	**22**
Train – to Cycle	17	0	**17**	2	1	**3**	3	0	**3**
Bus / Minibus / Coach	67	0	**67**	10	2	**12**	10	-2	**8**
Car to P&R and use P&R service	67	0	**67**	10	2	**12**	12	0	**12**
Taxi	6	0	**7**	1	6	**7**	1	1	**2**
Motorcycle / Scooter / Moped	11	1	**12**	-3	7	**4**	-4	-5	**-8**
Car / Van Driver	0	-72	**-71**	-417	385	**-33**	-725	-580	**-1305**
Car / Van Passenger	33	-6	**27**	-25	19	**-5**	-45	-42	**-87**
Bicycle	219	-103	**115**	-80	-95	**-175**	-43	-95	**-138**
Pedestrian	63	-85	**-22**	-149	4	**-144**	-265	-299	**-564**
Other method of travel	16	-2	**15**	-1	10	**8**	1	0	**1**
Total	**617**	**-265**	**352**	**-634**	**345**	**-290**	**-1033**	**-1020**	**-2053**

7.89. For the Test Scenario, the table shows a net increase of 352 two-way people trips in the AM peak and contrasting net reductions of 290 trips in the PM peak and 2,053 trips in the Saturday peak. It is noted that these totals are the same as those for Scenario 1 given that it is only the mode share percentages that have changed.

7.90. With regard to the specific modes, the higher mode share for car / van driver vehicle use would result a net reduction of 71 two-way trips in the AM Peak, a reduction of 33 two-way trips in the PM Peak and a reduction of 1,305 two-way trips in the Saturday peak.

7.91. The lower mode share for cycles is also reflected by a lower net increase in two-way trip total of 115 in the AM peak, a reduction of 175 two-way trips in the PM peak and a reduction of 138 two-way trips in the Saturday peak.

7.92. Net Weekday, Saturday and Sunday daily volumes have also been calculated for the Test Scenario, with 5-day and 7-day week totals derived from the daily volumes and these are shown in Table 34.

Table 34: Test Scenario - Net Trip Generation for Weekday, Saturday, Sunday, 5-day and 7-day periods

Travel Mode	Net Two-Way Multimodal Trips				
	Weekday Daily	Saturday Daily	Sunday Daily	5-day Total	7-day Total
Underground / Metro / Light Rail / Tram	0	0	0	0	0
Train – to Bus	1,067	364	364	5,335	6,063
Train – to Cycle	152	52	52	762	866
Bus / Minibus / Coach	610	174	185	3,048	3,407
Car to P&R and use P&R service	610	208	208	3,048	3,465
Taxi	55	19	19	277	315
Motorcycle / Scooter / Moped	20	-65	-33	98	0
Car / Van Driver	-8,437	-11,643	-7,755	-42,183	-61,581
Car / Van Passenger	-297	-718	-444	-1,483	-2,645
Bicycle	-740	-675	-141	-3,698	-4,514
Pedestrian	-2,998	-4,741	-3,096	-14,991	-22,828
Other method of travel to work	32	19	30	162	211
Total	**-9,925**	**-17,006**	**-10,612**	**-49,624**	**-77,242**

7.93. In the Test Scenario, as in Scenario 1, the table shows a net reduction of 9,925 people trips in the daily total, a net reduction of 17,006 people trips in the Saturday daily total, a net reduction of 10,612

people trips in the Sunday daily total, a net reduction of 49,624 trips in the 5-day weekday total and a net reduction of 77,242 trips in the 7-day week total.

7.94. With regard to the specific modes, for car driver use it shows a net reduction of 8,437 daily trips, a reduction of 11,643 trips in the Saturday daily total, a reduction of 7,755 trips in the Sunday total, a reduction of 42,183 trips in the 5-day total and a reduction of 61,581 trips in the 7-day week total.

7.95. For cycles, it shows a net reduction of 740 trips in the daily total, a reduction of 675 trips in the Saturday daily total, a reduction of 141 trips in the Sunday daily total, a reduction of 3,698 trips in the 5-day total and a reduction of 4,514 trips in the 7-day week total.

Summary

7.96. The calculated estimated Net trip generation for Scenario 1 shows there to be an increase in overall people trips at the Site in the AM peak due to the Proposed Development but a minor decrease in the PM peak and significant reduction in the Saturday peak.

7.97. It is also evident from Scenario 1 that, due to the nature of the Proposed Development compared to the existing retail use, that there would be a significant reduction in car / van driver vehicle trips to the Site. The analysis shows that the reduction would be greatest in the Saturday peak hour, followed by the PM peak hour and then the AM peak hour.

7.98. The Test Scenario, which includes a higher car / van vehicle driver mode share that provides a break-even car / van driver vehicle net trip generation with the existing Site use in the AM peak, produces a slight increase in car / van driver vehicle trips in the PM peak but still a significant reduction in trips in the Saturday peak hour.

7.99. Given the estimated large reductions in car / van driver vehicle trips due to the implementation of the Proposed Development, CCC stated within the December 2022 meeting that junction capacity assessments would not be required for the Saturday peak hour.

7.100. CCC also stated within the April 2023 meeting that given the estimated reduction in car / van driver vehicle trips due to the Proposed Development along with the proposals by the GCP to reduce lane capacity for general traffic on Newmarket Road as part of the Eastern Corridor Improvement scheme, a junction capacity assessment of only the Site access / Coldhams Lane junction is required.

7.101. This will be undertaken for the junction in its existing form with the 2022 observed flows and future assessment year (with and without Proposed Development) flows using the industry standard TEMPro and NTM growth factoring methodology, envisaged to be in a future year of 2030 to provide a robust assessment, and for the proposed layout (with and without Proposed Development) using the calculated 2030 future year flows.

7.102. The vision to promote and achieve high usage of sustainable travel modes at the Proposed Development is reflected by the target mode shares and the subsequent net trip generation for walking, cycling, bus and rail modes, which would all increase significantly at the Site.

7.103. In particular, the number of cycle trips generated by the Site would increase substantially and the distribution of these trips along with car / van vehicle trips has been estimated to establish the likely origins and destinations of these trips and routes that would be taken to / from the Site, as discussed in the following section.

Trip Distribution & Assignment

7.104. The estimated net trip generation for traffic to / from the Site, which is the estimated traffic generated by the Proposed Development minus the observed existing traffic from Site, has been distributed and assigned onto the highway network to establish the likely changes in both car / van driver and cycle trips on key routes linking the Site.

7.105. This analysis provides a forecast of the impact of the car / van driver and cycle traffic from the Proposed Development and enables potential requirements for suitable mitigation measures to be discussed.

Net Trip Distribution

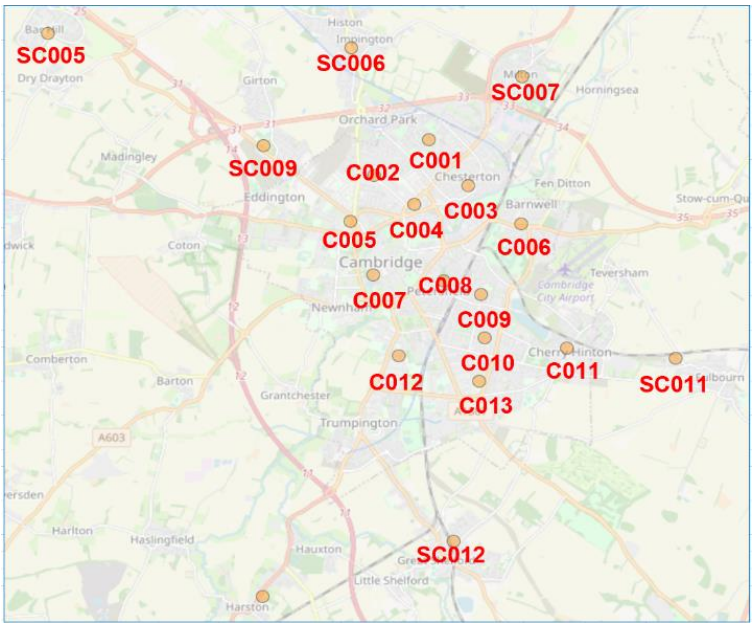
7.106. The estimated net trips for car / van drivers and cycles calculated for the Scenario 1 and the Test Scenario have been distributed using 2011 Census '*WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)*' dataset, which provides the origins destinations for each Census Middle-layer Super Output Area (MSOA). The 2021 Census dataset has not been utilised as within this period, a large proportion of people were working from home due to Covid 19 restrictions.

7.107. As used previously for the calculation of the mode share of the local area, the Cambridge 006 MSOA was adopted for providing the distribution data.

7.108. The trips to Cambridge MSOA 006 from other MSOAs within the local area and beyond were ranked based on volume. The top 10 origin MSOAs for work-based trips within the Cambridge MSOA 006 are as follows, with the locations of these shown indicatively below in Figure 17:

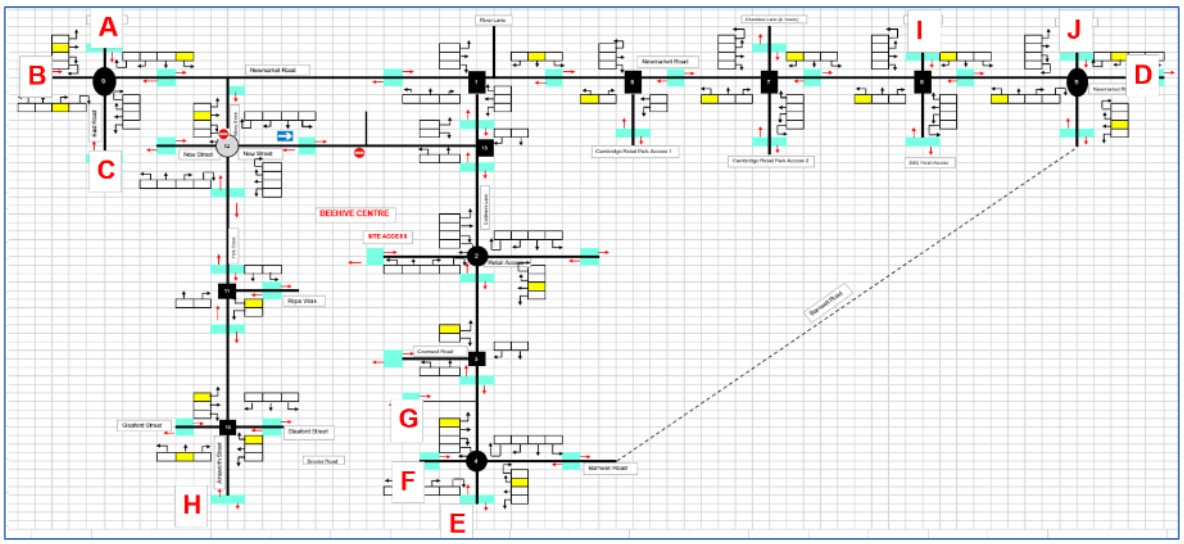
- Cambridge MSOA 006;
- Cambridge MSOA 001;
- Cambridge MSOA 009;
- Cambridge MSOA 003;
- South Cambridgeshire MSOA 006;
- Cambridge MSOA 011;
- Cambridge MSOA 002;
- South Cambridgeshire MSOA 011;
- Cambridge 010; and
- South Cambridgeshire MSOA 011.

Figure 17: Indicative Locations of Census MSOAs in Cambridge



7.109. A network diagram has been created to consider the potential local routes cars / van drivers use to go to / from the Site, as follows in Figure 18.

Figure 18: Network Diagram Template for Distribution and Assignment of Net Trips



7.110. The diagram includes 10 potential entry / exit points on the network covered for the traffic to be distributed to / from, as labelled A to J.

7.111. For the top 50 MSOAs with work trips associated with MSOA 006, the likely routes of these have been decided upon using judgement and Google Maps software, with proportions applied for the relevant 10 entry / exit points (A to J) in instances where 100% of trips would not likely use the same route.

Car / Van Trip Distribution & Assignment

7.112. The following percentages have been deduced for cars / van driver trips from the analysis for each network entry / exit point:

- A – A1134 Elizabeth Way = 32.5%;
- B - Newmarket Road = 6.3%;
- C – A603 East Road = 9.1%;
- D – A1134 Newmarket Road = 20.9%;
- E – Coldhams Lane = 10.3%;
- F – A1134 Brooks Road = 9.9%;
- G - Vinery Road / Ross Street / Cromwell Road area = 2.2%;
- H – Ainsworth Street = 2.4%;
- I – Stanley Road / Garlic Row = 1.2%; and
- J – Wadloes Road = 5.2%

7.113. The subsequent assignment of car / van driver arrival and departure traffic proportions onto the network is shown on diagrams within Appendix G.

7.114. The net car / van driver trips for Scenario 1 (as shown in Table 30) have been distributed and assigned onto the network for the AM peak, PM peak and Saturday peak and these are shown within Appendix G.

7.115. They key observation from the Scenario 1 flow diagrams is that there would be a significant reduction in car / van driver trips on Coldhams Lane and Newmarket Road in all peak hours, particularly in the PM peak and Saturday peak.

7.116. The net car / van driver trips for the Test Scenario (as shown in Table 33) have been distributed and assigned onto the network and these are shown within Appendix G.

7.117. For the Test Scenario in the AM peak, as was the requirement of the ‘break-even’ trip generation in the AM peak within this Test Scenario, this shows no change in arrival car trips across the network.

7.118. The key observation from the Test Scenario flow diagrams is that there would be a significant reduction in car / van driver trips on Coldhams Lane and Newmarket Road in the PM peak and Saturday peak.

Cycle Trip Distribution & Assignment

7.119. While most of the routes taken by cyclists would generally be the same as those taken by cars / vans, it is considered that there are some instances where cyclists would potentially use different routes within the network area covered in Figure 4.

7.120. It is considered that cyclists travelling between the Site and the area to the southwest of the Site, which includes Cambridge Train Station, would be more likely to choose to use the Site access / exit points via York Street or Sleaford Street and use quieter local roads such as Sturton Street or Ainsworth Street, Kingston Street and Devonshire Road to head to / from that direction rather than using the A603 East Road. Therefore, the distribution and assignment has been altered to suit for cyclists.

7.121. It is also considered that cyclists travelling between the Site and the area to the northeast of the Site would be more likely to use the upgraded Chisholm Trail route between Coldhams Lane and A1134 Newmarket Road than use Coldhams Lane and A1134 Newmarket Road. However, as a robust assessment, cycle traffic has been assigned onto the Coldhams Lane and Newmarket Road routes within this assessment.

7.122. If travelling west and north to/from the Site, cyclists would also likely use the York Street access and travel via York Street and New Street to reach A603 East Road or Abbey Street to reach A1134 Newmarket Road rather than using Coldhams Lane and the section of Newmarket Road west of its junction with Coldhams Lane.

7.123. The following percentages have been deduced for cycle trips from the analysis for each network entry / exit point:

- A – A1134 Elizabeth Way = 32.5%;
- B - Newmarket Road = 6.3%;
- C – A603 East Road = 9.1%;
- D – A1134 Newmarket Road = 20.9%;
- E – Coldhams Lane = 10.3%;
- F – A1134 Brooks Road = 9.9%;
- G - Vinery Road / Ross Street / Cromwell Road area = 2.2%;
- H – Ainsworth Street = 2.4%;
- I – Stanley Road / Garlic Row = 1.2%; and
- J – Wadloes Road = 5.2%

7.124. The net cycle trips for Scenario 1 (as shown in Table 30) have been distributed and assigned onto the network for the AM peak and PM peak and these are shown within Appendix G.

7.125. They key observations from the Scenario 1 flow diagrams are that there would be moderate increases in cycle trips across the network in both the AM and PM hours, with the largest increases on York Street, Newmarket Road west of the junction with Abbey Street and then A603 Elizabeth Way.

7.126. The net cycle trips for the Test Scenario (as shown in Table 33) have been distributed and assigned onto the network and these are shown within Appendix G**.**

7.127. They key observations from the Test Scenario flow diagrams are that, given the lower cycle mode share within this scenario than within Scenario 1, there would be smaller increases in cycle trips across the network in both the AM peak hour, with the largest increases once again on York Street,

Newmarket Road west of the junction with Abbey Street and then A603 Elizabeth Way. There would however be reductions in the PM peak hour due to the very high car mode share adversely affecting the net cycle trip values.

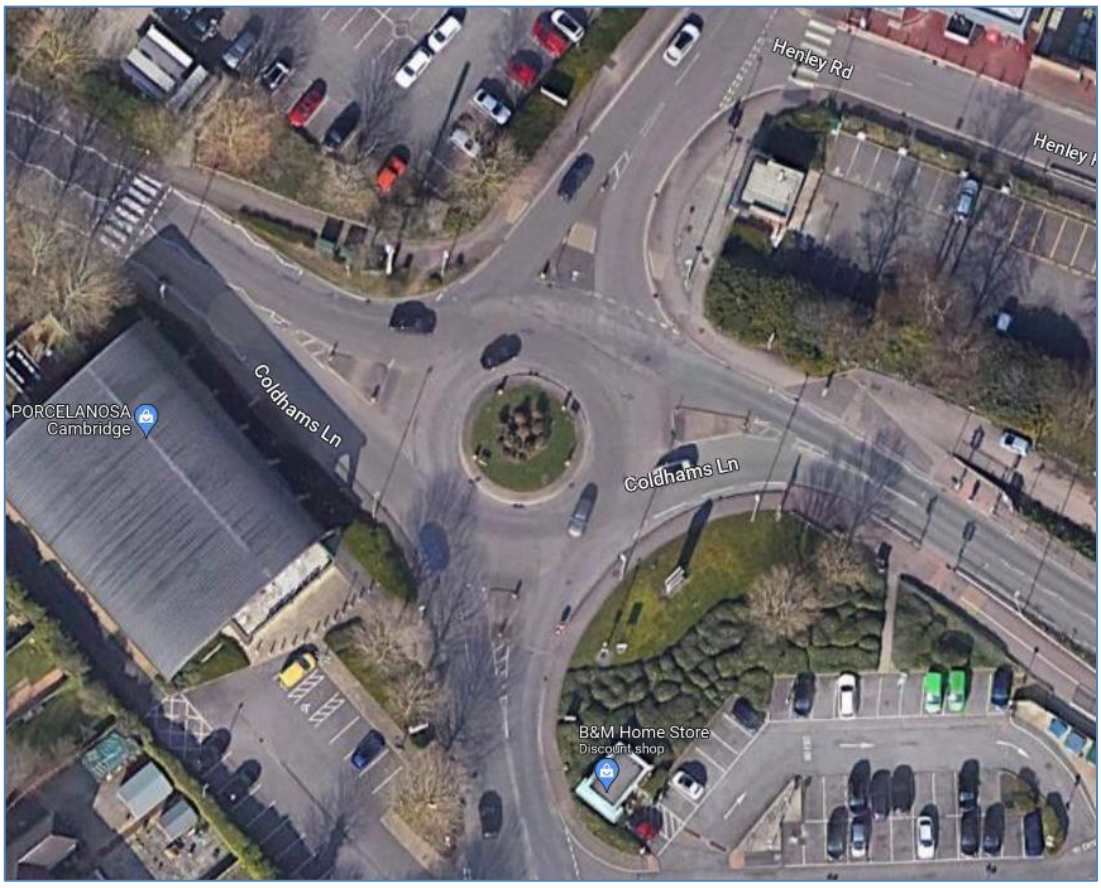
8. Junction Impact Assessment

8.1. As noted previously, it has been agreed with CCC that due to the estimated significant reductions in car / van driver trips in the Scenario 1 trip generation assessment, only junction capacity assessments of the existing and proposed layouts at the Beehive Site access / Coldhams Lane / Cambridge Retail Park junction are required for this TA. CCC also stated that assessment of the junction would only be required in the AM and PM peak hours and not the Saturday peak hour.

Existing Site Access / Coldhams Lane Roundabout Operation

8.2. The existing junction comprises 4 arms including Coldhams Lane (east), the Beehive Centre Site access, Coldhams Lane (west) and the Cambridge Retail Park site access. The roundabout has an Inscribed Circle Diameter (ICD) of approximately 33 metres and each of the approaches are sufficiently wide at the roundabout to accommodate two lanes of traffic. There is currently no formal pedestrian or cycle crossing provision at the roundabout, with the nearest formal crossing provision comprising a zebra crossing on Coldhams Lane approximately 30m west of the junction and a toucan crossing approximately 30m east of the junction. A screenshot of the existing layout is shown below in Figure 19.

Figure 19: Existing Layout at Site Access / Coldhams Lane Roundabout



Source: © Google Maps 2024

Traffic Flow Scenarios

8.3. The roundabout has been assessed using the following traffic flow scenarios:

- 2022 Observed AM and PM peak hours;
- 2030 Forecast Baseline AM and PM peak hours; and
- 2030 Forecast Baseline plus Proposed Development (Scenario 1) AM and PM peak hours.

Junction Assessment Methodology

8.4. Junction capacity analysis of the existing roundabout junction has been undertaken using the industry-standard Transport Research Laboratory (TRL) Junctions 10 traffic modelling software for priority junctions and roundabouts. Junctions 10 contains the ARCADY module which models priority-controlled roundabouts.

8.5. The performance of these junctions is typically estimated using two standard outputs from Junctions 10: Ratio of Flow to Capacity (RFC) and Maximum Queue on each junction approach. Average delay per PCU in seconds on each junction approach has also been shown for information. Roundabouts and priority junctions are considered to operate satisfactorily when the modelled maximum RFC of all junction approaches are less than or equal to the practical capacity threshold of 0.85 (85%). They are considered to be operating above capacity once the RFC exceeds the operational capacity threshold of 1.0 (100%).

8.6. The observed queue lengths recorded in the surveys have been compared against those calculated within the 2023 modelled scenarios for each junction and the level crossing and these values and the patterns of these are generally similar, therefore providing suitably calibrated base models.

8.7. The observed mean maximum queues on each junction approach recorded within the 08:00 to 09:00 AM peak and 17:00 to 18:00 PM peak of the November 2022 traffic surveys have been extracted and shown below within Table 35 alongside the mean maximum queues shown by the modelling undertaken within the ARCADY module of Junctions 10.

Table 35: Comparison of 2022 Observed Queues vs Modelled Queues

Junction Approach	2022 AM Peak (08:15 – 09:15)		2022 PM Peak (17:00 – 18:00)	
	Observed Mean Max Queue	Modelled Mean Max Queue	Observed Mean Max Queue	Modelled Max Queue
Coldhams Lane (east)	7.5	1.2	7.1	1.7
Beehive Site access	2.0	0.3	5.1	0.5
Coldhams Lane (west)	2.7	0.6	7.4	0.8
Cambridge Retail Park	2.0	0.3	5.7	0.6

8.8. It is evident that the observed queues are generally higher than the modelled queues, although the differences are not substantial. There are two main potential reasons for this. The first is due to

unequal lane usage on the approaches to the junction that contain two lanes (on the Coldhams Lane (west), Coldhams Lane (east) and Beehive Centre approaches) and the second due to exit blocking from congestion on the Coldhams Lane corridor which stems from queues extending back from upstream junctions or pedestrian crossings.

8.9. Junctions 10, version 10.1, provides improved representation of unequal lane usage within its alternative 'Lane Simulation' mode. This has therefore been used to re-model the junction to establish whether unequal lane usage does result in longer queues at the junction. The results of this assessment are summarised below within Table 36.

Table 36: Comparison of 2022 Observed Queues vs Modelled Queues (using Lane Simulation Mode in Junctions 10)

Junction Approach	2022 AM Peak (08:15 – 09:15)		2022 PM Peak (17:00 – 18:00)	
	Observed Mean Max Queue	Modelled Mean Max Queue	Observed Mean Max Queue	Modelled Max Queue
Coldhams Lane (east)	7.5	1.6	7.1	2.4
Beehive Site access	2.0	0.6	5.1	0.7
Coldhams Lane (west)	2.7	1.0	7.4	1.1
Cambridge Retail Park	2.0	0.5	5.7	0.8

8.10. The results of the revised model show slightly higher queues on each junction approach in both peak hours than the previous model results, however they are still lower than those observed in the 2022 surveys. This therefore suggests that unequal lane usage is not an issue at the junction. Rather, the differences in queues between the modelled and observed are most likely due to transient queueing on Coldhams Lane which originates from its junction with Newmarket Road in a westbound direction or Cromwell Road in an eastbound direction and also the toucan crossing located 30 metres to the east of the roundabout and the zebra crossing located 30 metres to the west of the roundabout.

8.11. The results of the modelling assessments for each traffic flow scenario are presented below, with commentary provided on the key differences between the scenarios.

Junction Assessment Results

8.12. The Junctions 10 results for the modelling of the existing Beehive Site access / Coldhams Lane / Cambridge Retail Park junction have been summarised below in Table 37. The output file is included at Appendix J.

Table 37: Junctions 10 Results for Existing Beehive Site access / Coldhams Lane / Cambridge Retail Park junction

Junction Approach	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	RFC	Max Q	Delay (s)	RFC	Max Q	Delay (s)
2022 Observed						
Coldhams Lane (east)	0.56	1.6	9.36	0.63	2.4	11.06
Beehive Site access	0.24	0.6	5.80	0.34	0.7	6.44
Coldhams Lane (west)	0.39	1.0	4.70	0.44	1.1	5.23
Cambridge Retail Park	0.22	0.5	8.88	0.37	0.8	12.20
2030 Base						
Coldhams Lane (east)	0.57	1.6	9.54	0.69	3.1	12.64
Beehive Site access	0.25	0.6	5.80	0.35	0.9	6.46
Coldhams Lane (west)	0.42	1.4	4.80	0.46	1.3	5.57
Cambridge Retail Park	0.24	0.6	9.53	0.42	0.9	11.85
2030 Base + Proposed Development						
Coldhams Lane (east)	0.48	1.2	7.44	0.46	1.4	7.29
Beehive Site access	0.00	0.0	5.55	0.01	0.1	5.65
Coldhams Lane (west)	0.35	0.9	4.33	0.31	0.8	4.20
Cambridge Retail Park	0.17	0.4	8.21	0.22	0.6	7.86

8.13. The modelled results (using lane simulation) in the 2022 AM peak show that the junction currently operates with sufficient spare capacity and negligible queueing and delay amounts, with a maximum RFC of 0.56 and associated queue of 1.6 PCUs on the Coldhams Lane (east) approach in the AM peak and maximum RFC of 0.63 and associated queue of 2.4 PCUs on Coldhams Lane (east) for right-turning traffic in the PM peak.

8.14. The results for the forecast 2030 Base scenario indicate that the junction would continue to operate with sufficient spare capacity and negligible queueing amounts, with a maximum RFC of 0.57 and associated queue of 1.6 PCUs on Coldhams Lane (east) in the AM peak and maximum RFC of 0.69 and associated queue of 3.1 PCUs on Coldhams Lane (east) in the PM peak. This indicates that there would be negligible change in operation from the 2022 observed situation.

8.15. With the net reduction in traffic flows due to the Proposed Development, it is indicated that the junction would operate with a greater amount of spare capacity and continued negligible queueing amounts, with a maximum RFC of 0.48 and associated queue of 1.2 PCUs on Coldhams Lane (east) in the AM peak and maximum RFC of 0.46 and associated queue of 1.4 PCUs on Coldhams Lane (east) in the PM peak. This indicates that there would be some improvement in operation from the 2030 baseline situation.

8.16. Based on this junction capacity assessment, it is therefore considered that the estimated reduction

in traffic due to the Proposed Development would result in an improvement on the operation of the existing junction in both the 2030 future assessment year AM and PM peak hours.

8.17. Although it has been demonstrated that junction capacity is unlikely to be an issue once the proposals are implemented, it is now proposed that the existing Coldhams Lane/Site Access/CRP Access will be reprovided in the form of a CYCLOPS junction, with a view to improve active travel crossing provision and vulnerable users safety. This is discussed further below.

Proposed Site Access CYCLOPS Operation

8.18. The existing roundabout access will be reprovided as CYCLOPS junction. A CYCLOPS junction provides a protected cycle lane which encircles the junction, keeping cyclists separate from both motor traffic and pedestrians.

8.19. The CYCLOPS junction allows for pedestrians to cross at the same time as cyclists, but on a separate ring of paths in the middle of the junction. Zebra crossings on each side provide a safe place to cross the cycle lane. The benefits of a CYCLOPS junction are set out within Section 4 and is shown in Figure 8. A full Site access plan is also shown in Appendix K.

Junction Assessment Methodology

8.20. To assess the impact of re-providing the Site access/Coldhams Lane/CRP roundabout as a CYCLOPS junction, a LinSig (version 3.2) model of the proposed signalised crossroad junction has been prepared. LinSig is an industry standard software developed by JCT consultancy. It allows traffic engineers to model traffic signals and their effect on traffic capacities and queuing.

8.21. The performance of signalised junctions is typically indicated using the following standard outputs from LinSig:

- Degree of Saturation (DoS) - The DoS is defined as the ratio of flow-to-capacity for each junction approach lane and a Degree of Saturation of 90% is considered the practical capacity of the lane.
- Average Vehicle Delay – This is the average traffic delay on each approach lane in seconds per PCU (s/PCU).
- Mean Maximum Queue (MMQ) – The MMQ is the average maximum queue (in PCUs) on each approach lane across the modelled peak hour.
- Practical Reserve Capacity (PRC) - PRC is a measure of how much additional traffic can pass through a junction whilst maintaining a maximum degree of saturation of 90% on all lanes. A positive PRC rating indicates that the junction has spare capacity while a negative PRC indicates that the junction is operating above capacity.

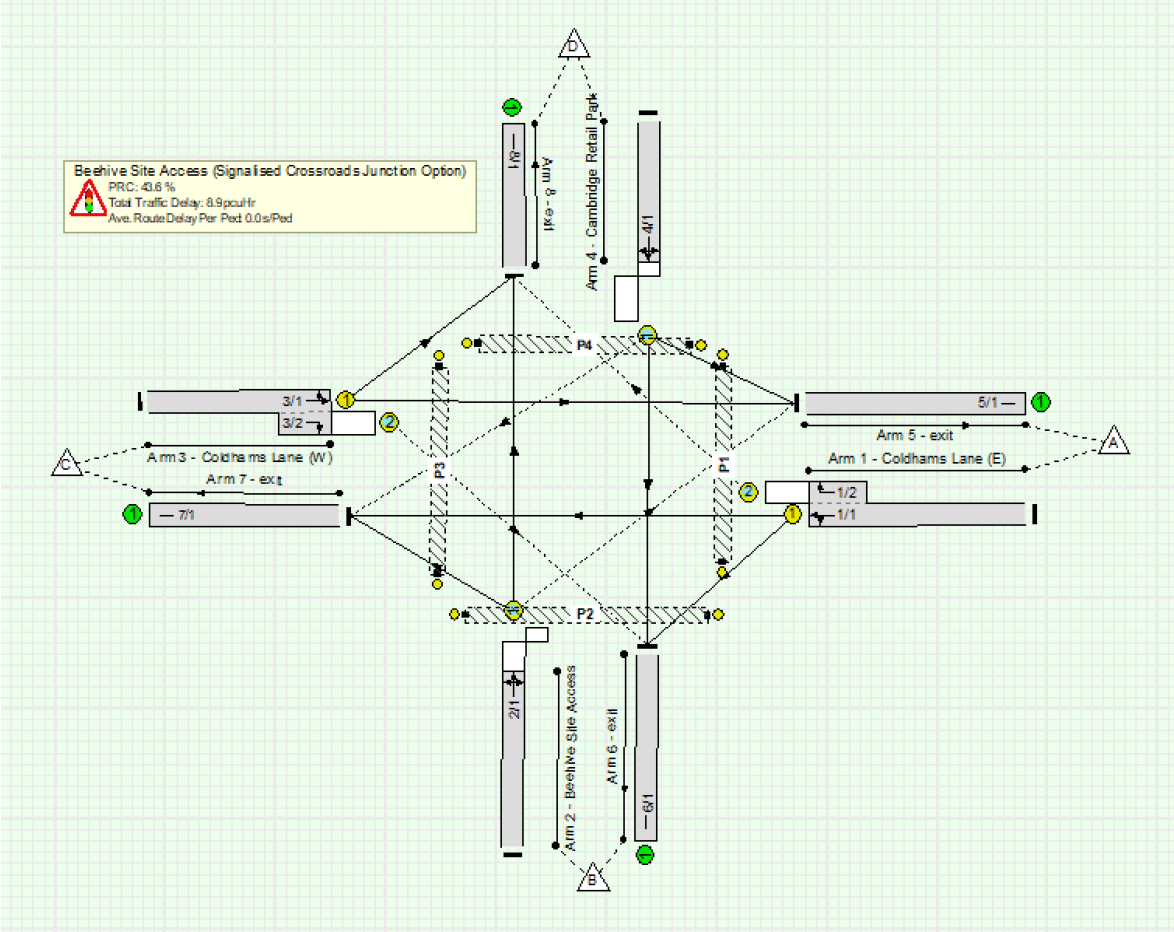
8.22. The junction has been assessed using a 90 second cycle time, which is a typical cycle time for junctions with pedestrian crossings.

8.23. The Coldhams Lane east and west approaches both have right turn short lane arms, with storage for 3 PCUs in front of the stop-line. The Beehive Site access and CRP access arms have a right-turn non-blocking capacity of 1 PCU (one car can wait inside the junction to turn right while vehicles going

straight ahead can proceed) and blocking capacity of a further 2 PCUs (two cars waiting to turn right will block the flow of traffic going straight ahead).

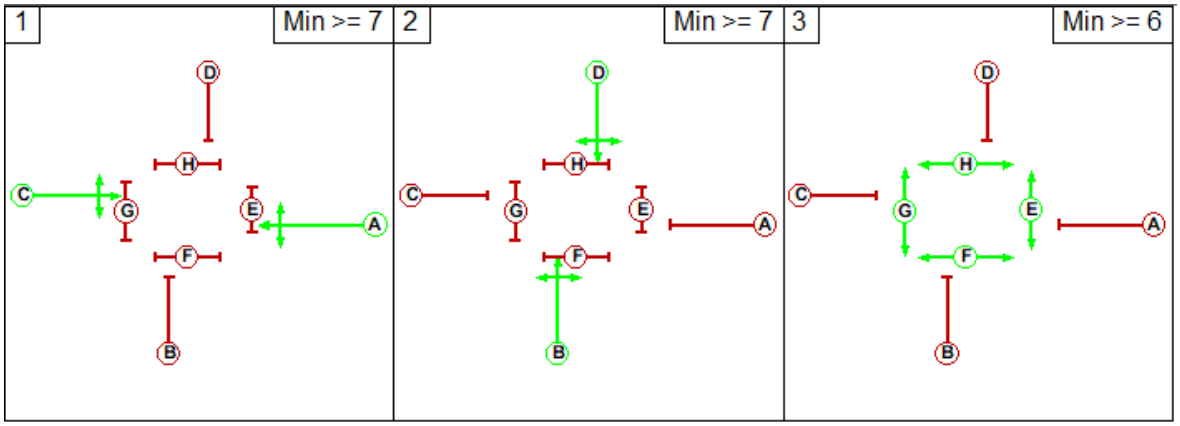
8.24. The LinSig layout is shown in Figure 20 below.

Figure 20: CYCLOPS layout in LinSig



8.25. A three-stage signal sequence has been used within the model and this is shown below in Figure 21. Stage 1 includes the Coldhams Lane (west) and Coldhams Lane (east) approaches running concurrently, Stage 2 the Beehive Site access and CRP site access roads together and Stage 3, the cycle lanes and pedestrian crossings in unison around the CYCLOPS layout.

Figure 21: Signal Stage Sequence Modelled at CYCLOPS Junction



8.26. The calculated traffic signal phase intergreen period timings at the junction have been calculated using JCT Quickgreen (version 2.0) software and these are shown within the intergreen matrix table in Figure 22 below. It should be noted that the intergreens consider 4.0m advanced cycle stop lines on each arm.

Figure 22: Traffic Signal Phase Intergreen Matrix

	A	B	C	D	E	F	G	H
A	–	6	–	6	6	8	9	8
B	6		6	–	9	6	8	9
C	–	5		6	8	8	6	7
D	5	–	5		7	8	8	6
E	12	12	12	12		–	–	–
F	13	13	13	13	–		–	–
G	14	14	14	14	–	–		–
H	11	11	11	11	–	–	–	

8.27. Each scenario within the model has been run using the 'PRC Optimised' facility within LinSig which optimises the modelled scenario to provide optimal capacity rather than delay. The subsequent modelled results are discussed in the following section.

Traffic Flow Scenarios

8.28. The proposed CYCLOPS junction layout has been assessed against the 2030 Forecast Baseline plus Proposed Development AM and PM peak hours. However, in response to the 2023 application for the redevelopment at the Beehive Centre (Planning application reference 23/03204/OUT) CCC Transport Assessment team requested a scenario (Scenario 3) be tested which assumes the full car

parking provision would reach capacity and consequently there will be a 11.5% car driver mode share during the peak hours.

8.29. Therefore, the CYCLOPS junction has been assessed using the following traffic flow scenario:

- Scenario 1 - 2030 Forecast Baseline plus Proposed Development AM and PM peak hours, based on target mode shares.
- Scenario 3 – 2030 Forecast Baseline plus Proposed Development AM and PM peak hours, in which the car park reaches capacity leading to a 11.5% car driver mode share within the peak hours.

Junction Assessment Results

8.30. The Scenario 1 results of the proposed CYCLOPS junction between the Site access/Coldhams Lane and the CRP has been summarised in Table 38 below. The output file is included within Appendix J.

Table 38: LinSig Results Summary – Scenario 1

Lane ID	Approach Lane	DoS (%)	Average Delay (s/PCU)	Mean Max Queue (PCU)	PRC (%)
AM Peak					
1/1	Coldhams Lane (east)	54.5%	20.2	8.9	43.6%
2/1	Beehive Site Access	2.1%	42.0	0.1	
3/1	Coldhams Lane (west)	62.7%	21.4	11.7	
4/1	Cambridge Retail Park	60.8%	56.4	4.1	
PM Peak					
1/1	Coldhams Lane (east)	55.2%	23.1	8.8	43.8%
2/1	Beehive Site Access	17.0%	38.3	1.2	
3/1	Coldhams Lane (west)	61.6%	23.9	11.0	
4/1	Cambridge Retail Park	62.6%	49.8	5.3	
Saturday Peak					
1/1	Coldhams Lane (east)	57.5%	27.3	7.9	56.5%
2/1	Beehive Site Access	1.7%	31.2	0.1	
3/1	Coldhams Lane (west)	48.3%	24.6	7.2	
4/1	Cambridge Retail Park	56.8%	40.8	5.7	

8.31. The results for the 2030 Base plus Proposed Development Scenario 1 assessment indicate that the CYCLOPS junction would operate with sufficient spare capacity and queues which could be accommodated without impacting on nearby key junctions, with a max DoS of 62.7% on the Coldhams Lane (west) arm in the AM Peak, a max average delay of 56.4 s/PCU on the CRP approach during the AM Peak and a MMQ of 11.7 PCUs on Coldhams Lane (west) in the AM Peak.

8.32. The lowest shown PRC of 43.6% is during the AM peak which indicates that the junction would operate with available spare capacity during all peak hours in this future year scenario.

8.33. The Scenario 3 results of the proposed CYCLOPS junction between the Site access/Coldhams Lane and the CRP has been summarised in Table 39 below. The output file is included within Appendix J.

Table 39: LinSig Results Summary - Scenario 3

Lane ID	Approach Lane	DoS (%)	Average Delay (s/PCU)	Mean Max Queue (PCU)	PRC (%)
AM Peak					
1/1	Coldhams Lane (east)	55.3%	19.8	9.1	35.7%
2/1	Beehive Site Access	4.6%	43.8	0.2	
3/1	Coldhams Lane (west)	66.3%	21.9	12.5	
4/1	Cambridge Retail Park	66.3%	62.4	4.3	
PM Peak					
1/1	Coldhams Lane (east)	55.4%	23.2	8.8	42.4%
2/1	Beehive Site Access	40.3%	42.3	3.1	
3/1	Coldhams Lane (west)	62.6%	24.1	11.2	
4/1	Cambridge Retail Park	63.2%	51.5	5.3	
Saturday Peak					
1/1	Coldhams Lane (east)	58.0%	27.4	8.0	55.3%
2/1	Beehive Site Access	3.8%	31.4	0.3	
3/1	Coldhams Lane (west)	49.4%	24.9	7.3	
4/1	Cambridge Retail Park	56.8%	40.8	5.7	

8.34. The results for the 2030 Base plus Proposed Development Scenario 3 assessment indicate that the signalised crossroad junction would operate with sufficient spare capacity and queues which could

be accommodated without impacting on nearby key junctions, with a max DoS of 66.3% on the CRP approach and Coldhams lane (west) arm in the AM peak hour, a max average delay of 62.4 s/PCU on the CRP approach during the AM peak and a MMQ of 12.5 PCUs on Coldhams Lane (west) in the AM Peak.

8.35. The lowest shown PRC of 35.7% is during the AM peak which indicates that the junction would operate with available spare capacity during all peak hours in this future year scenario.

8.36. The results for Scenario 3 are similar to those for Scenario 1 and this therefore demonstrates that the effective worst-case trip generation at the Proposed Development in Scenario 3, where the car park reaches capacity, would not have a significant impact on the operation of the proposed junction, which would remain comfortably within capacity.

8.37. It should be noted that both of the above assessment scenarios have assigned existing CRP flows which were recorded within the November 2022 traffic survey. These models (and associated traffic flow scenarios) do not account for any potential change in traffic flow associated with a redevelopment of the CRP.

9. Proposed Development Car Parking Assessment

9.1. This section provides details of the assessment undertaken to estimate the on-site car parking accumulation profile with the Proposed Development in place.

9.2. This is based on the calculated Scenario 1 trip generation values over the daily period and indicates how the estimated maximum accumulation compares to the proposed car parking provision of 395 spaces. A test has however also been undertaken using the Test Scenario trip generation values to estimate the maximum parking accumulation with the higher car / van driver mode in place.

9.3. The estimated total parking accumulation profile for the Proposed Development during a weekday has been derived by calculating the profile for each of the following land uses. The assumptions applied to the trip generation under the heading of 'Proposed Development Use Splits' have been applied to the parking accumulation assessment.

- Office / Dry Lab Use (40,072sqm);
- Wet Lab Use (48,525sqm) 50% of which is considered actual wet lab space and 50% is considered write-up space and therefore has been assessed as Office / Dry Lab Use;
- Non-Food Retail Use (1,292sqm);
- F+B Use (1,292sqm);
- Leisure Club – Gym (1,292sqm); and
- Health Centre - Doctors' Surgery (1,292sqm)

Scenario 1 Parking Accumulation

9.4. The respective estimated total people trip generation profiles for each land use component during the weekday have been factored by the car / van driver target mode share value, which is 4.8%, within Scenario 1 and the accumulations calculated for each lane use.

9.5. The estimated accumulations for each land use have been totalled and this overall car parking accumulation profile for the Proposed Development is shown below in Table 40.

Table 40: Scenario 1 Estimated Car Parking Accumulation Profile

Hour Period	Arrivals	Departures	Car Parking Accumulation
06:00 – 07:00	17	2	15
07:00 – 08:00	27	4	38
08:00 – 09:00	68	5	101
09:00 – 10:00	56	7	149
10:00 – 11:00	22	9	162
11:00 – 12:00	**13**	**11**	**164**
12:00 – 13:00	18	22	160
13:00 – 14:00	24	22	162
14:00 – 15:00	16	15	163
15:00 – 16:00	9	18	154
16:00 – 17:00	10	39	126
17:00 – 18:00	9	68	67
18:00 – 19:00	8	38	37
19:00 – 20:00	6	22	21
20:00 – 21:00	4	10	14
21:00 – 22:00	4	7	11
Max Accumulation			**164**

9.6. The analysis estimates that the maximum car parking accumulation for the Proposed Development would be 164 spaces during the 11:00 to 12:00 hour. This is however based on there being no vehicles in the car park before 06:00, given that the TRICS data does not show any arrivals or departures before this time, however it would be likely that there would be a small number of vehicles on-site overnight due to operational requirements such as security or maintenance.

9.7. It is recognised that this estimated maximum accumulation is notably lower than the proposed parking provision of 395 spaces, nevertheless it would reduce the potential risk of on-street parking near to the Site while the spare provision of spaces could be monitored and some or all of these removed in the future if this was to consistently occur.

Test Scenario Parking Accumulation

9.8. The estimated total people trip generation profiles for each land use component during the weekday within the Test Scenario have been factored by the car / van driver break even share value, which is 23.3%, within the Test Scenario and the accumulations calculated for each lane use.

9.9. The estimated accumulations for each land use have been totalled and this overall car parking accumulation profile for the Proposed Development is shown below in Table 41.

Table 41: Scenario 2 Estimated Car Parking Accumulation Profile

Hour Period	Arrivals	Departures	Car Parking Accumulation
06:00 – 07:00	86	12	75
07:00 – 08:00	135	20	190
08:00 – 09:00	339	24	504
09:00 – 10:00	281	36	749
10:00 – 11:00	108	43	815
11:00 – 12:00	**67**	**58**	**825**
12:00 – 13:00	90	111	804
13:00 – 14:00	121	112	813
14:00 – 15:00	78	74	817
15:00 – 16:00	48	91	773
16:00 – 17:00	52	195	630
17:00 – 18:00	45	339	336
18:00 – 19:00	39	191	184
19:00 – 20:00	29	109	104
20:00 – 21:00	18	50	71
21:00 – 22:00	20	34	57
Max Accumulation			**825**

9.10. The analysis estimates that the maximum car parking accumulation for the Proposed Development would be 825 spaces during the 11:00 to 12:00 hour.

9.11. This estimated maximum accumulation is however substantially above the proposed parking provision of 395 spaces and is therefore unrealistic as the capacity of the car park is the main limiting factor on car use at the Proposed Development.

9.12. Another scenario, Scenario 3, has been assessed to establish the car / van driver mode share that would result in the maximum parking accumulation reaching the 395 spaces proposed. This car / van driver mode share was calculated to be 11.5% and the parking accumulation profile for this assessment is shown below in Table 42.

Table 42: Estimated Car Parking Accumulation Profile for Further Scenario (Scenario 3)

Hour Period	Arrivals	Departures	Car Parking Accumulation
06:00 – 07:00	41	5	35
07:00 – 08:00	64	9	90
08:00 – 09:00	160	12	239
09:00 – 10:00	133	17	355
10:00 – 11:00	51	20	386
11:00 – 12:00	**32**	**27**	**390**
12:00 – 13:00	43	53	380
13:00 – 14:00	57	53	385
14:00 – 15:00	37	35	387
15:00 – 16:00	22	43	366
16:00 – 17:00	25	92	298
17:00 – 18:00	21	161	159
18:00 – 19:00	18	90	87
19:00 – 20:00	14	52	49
20:00 – 21:00	8	24	34
21:00 – 22:00	9	16	27
Max Accumulation			**390**

9.13. The 11.5% car / van driver mode share figure calculated for this test is however not part of the main assessment as the 4.8% target car / van driver mode share is fully achievable via the proposed provision of an extensive suite of improvement measures for sustainable travel modes, as discussed and justified in the following section.

10. Target Mode Shift Further Justification

10.1. This section provides further justification for the target travel mode share figures adopted for walking, cycling, bus, rail, and car / van driver modes within the trip generation and distribution assessment undertaken for the Proposed Development.

10.2. The Full Target Mode Shift Justification is set out within a Technical Note in Appendix L. Nevertheless, a summary of each section has been set out below:

Existing Mode Share

10.3. The Census 2011 Method of Travel to Work (Workday Population) dataset has been used as a 'base' modal split when establishing the modal shift required to achieve the target modal split (Table 13). However other datasets to establish the existing travel patterns have been explored:

- Census 2011 Method of Travel to Work (Resident Population) for output area 006.
- Census 2011 Method of Travel to Work (Workday Population) for output area 008.
- Census 2021 Method of Travel to Work (Workday Population) for output area 006.
- Mode share derived from the November 2022 survey.

10.4. The existing modal splits derived from the Census 2011 'Workday Population' dataset are the most onerous in terms of having the highest car/van driver mode share and the lowest bicycle and pedestrian mode shares. While it is considered the target modal splits are aspirational, the other mode shares indicate that the existing modal split may be closer to the target modal split.

Walking Mode Share Justification

10.5. A 15.5% target mode share for people walking to / from the Proposed Development has been adopted within this TA.

10.6. The proposed walking improvements in the surrounding area have been assessed using the DfT Active Mode Appraisal Toolkit which indicates the hard intervention/improvements proposed would result in:

- a 10.2% increase of the walking mode share.
- an improvement in 'health' by 86.4%.
- an improvement in journey quality by 3.3%.

10.7. As well as the expected modal shift change which is expected to arise as a benefit of the proposed walking interventions and improvements, the Proposed Development will also introduce a suite of soft measures to increase employees walking to and from the Site through the Travel Plan.

10.8. The Sustrans Greater Cambridge Walking and Cycling Index 2021 sets out that 54% of residents walk at least 5 days a week, up from 50% in 2019. In addition, it was recorded that 96% of all residents walk and 86% of residents think their local area is overall a good place to walk.

Cycling Mode Share Justification

10.9. A 40% target mode share for people cycling to / from the Proposed Development has been

adopted within this TA.

10.10. The DfT Active Mode Appraisal Toolkit indicates the hard intervention/improvements proposed would result in:

- a 9.1% increase in the cycling mode share.
- an improvement in 'health' by 39%.
- an improvement in journey quality by 51.5%.

10.11. Up to 30 potential cycle improvements measures in the surrounding area have been identified (albeit not all will be agreed or implemented). On the basis that 60% of the measures would be smaller actions (18 improvements), 30% of measures would be medium actions (9 improvements) and 10% of measures would be significant actions (3 improvements) then the proposed hard interventions/measures would result in an increase of 5,100 one-way daily cycling trips as a minimum (applying the lower scale of potential trip increases). Therefore it I considered the proposed cycle improvement measures would support an increase in daily cycling trips in excess of the target mode shift increase.

Bus Mode Share Justification

10.12. A total 16% target mode share for people using a bus to / from the Proposed Development has been adopted within the TA.

10.13. Cambridge has five Park and Rides (P&R) which allow commuters and visitors to park on the outskirts of Cambridge and get a frequent bus into central Cambridge. There are five existing P&R schemes in Cambridge which provide a total of 5,652 car parking spaces and a total bus seat capacity of circa 2,250 bus seats an hour (based on a frequency of one bus per 10 minutes and a bus capacity of 75 seats).

10.14. The Proposed Development will provide an increase in bus seat capacity 'towards' to the Site by 825 bus seats in each peak hour, potentially rising to 900 seats an hour towards the Site. An additional 825 - 900 bus seats towards the Site equates to an additional bus seat for 12.79% - 13.95% of staff. These additional seats would account for the target increase of +11.6% bus mode share.

10.15. Overall there will be a maximum of 371 bus trips in the AM Peak and 385 bus trips in the PM peak which can be accommodated in the increased number of bus seats proposed.

Rail Mode Share Justification

10.16. A 16% target mode share for people using rail services to / from the Proposed Development has been adopted within the TA.

10.17. The Proposed Development is likely to generate and reach the rail mode share target due to the specialist nature of the Proposed Development being research use which will need people to commute from areas outside of Cambridge such as Peterborough, Norwich, Bury St. Edmunds, Newmarket and Bishop's Stortford which are accessible to the Site by rail.

10.18. To support and facilitate the necessary rail use, improvements to bus, walking and cycle links to both stations have been prioritised to facilitate access to Cambridge Train Station and Cambridge North Train Station.

Car / Van Driver Mode Share Justification

10.19. A 4.8% target mode share for people using car and van to / from the Proposed Development has been adopted within the TA.

10.20. The key driver for mode share at the Site is driven by the proposed constrained nature of car parking provision on-site, which includes a total of 395 spaces. The projected employee on-site (6,450) could lead to a maximum car driver mode share of 6.1%. A target car / van driver mode share of 4.8% has therefore been used, which is below the maximum 6.1% mode share as based on the estimated number of staff and parking space provision.

10.21. A comprehensive Parking Management Plan will be implemented on-site which will restrict and discourage employees parking on-site and the surrounding area, which will work in tandem with the interventions/measures that will simultaneously encourage and increase the use of sustainable transport. Measures set out within the Parking Management Plan include ANRP access, charging for parking and exploring a CPZ for surrounding roads.

11. Summary and Conclusions

Summary

11.1. Waterman Infrastructure & Environment Ltd ('Waterman') has been appointed by Railpen ('the Applicant') to prepare a Transport Assessment in support of an outline planning application to provide a Technology and Life Sciences Park at the Beehive Retail Park, Coldhams Lane, Cambridge, CB1 3ET.

11.2. The Site is located in Cambridge, circa 1.9km to the west of Cambridge City Centre. The Site is currently occupied by the Beehive Centre which is a mid-sized shopping area comprising circa 24,000sqm retail space currently set out as seventeen retail spaces. The existing retail park provides 885 car parking spaces.

Existing Conditions and Accessibility

11.3. The Site is bordered to the north by Coldhams Lane and Cambridge Retail Park, the east by the rail line, the south by York Street and Sleaford Street which are residential roads and the west by St Matthew's Garden and Silverwood Close which are residential roads. The eastern extent of Cambridge City Centre can be accessed via a 650m walk (or a 6-8 minute walk) from the Site.

11.4. Coldhams Lane to the east of the Site is a marked primary on-road route, as well as York Street, Ainsworth Street, Hooper Street and Gwydir Street which provides a direct cycle route from the Site to Cambridge Station. GCP are currently proposing to transform Newmarket Road to prioritise walking, cycling and bus use to form part of the Cambridge Eastern Access.

11.5. A bus stop is provided within the Site which is served by bus route 19 and 114. Additional bus services (bus routes 3, 11, 12, 19, 114 and Park & Ride route 2) can be accessed from bus stops along Newmarket Road. Cambridge Train Station is located 1.3km to the south of the Site and Cambridge North Train Station is located 2.7km to the north of the Site and can be accessed via phase 1 of the Chisholm Trail from the Site.

11.6. The Site currently takes access from the southern arm of a four-arm roundabout with Coldhams Lane, the northern arm providing access to Cambridge Retail Park to the north. Parking within the existing Site is free, however there is a limit of four hours on free parking.

Proposed Development

11.7. The proposals include the redevelopment of the Site to provide a Technology/Life Science Park comprising a maximum of 93,765sqm GIA commercial floor space (88,597sqm office/lab GIA and 5,168sqm mixed use GIA). The Site will have a total building floor area of 136,541sqm GIA (excluding basement but including the multi-storey car park) and generate circa 5,755 Full-Time Equivalent (FTE) employees which equated to 6,450 employees in total.

11.8. The existing Coldhams Lane/Beehive Access/ Cambridge Retail Park Access priority junction will be improved and reprovided in the form of a CYCLOPS junction. A CYCLOPS junction provides a protected cycle lane which encircles the junction, keeping cyclists separate from both motor traffic and pedestrians. There will also be pedestrian and cycle accesses from the York Street, Sleaford Street, St Matthew's Gardens and Coldhams Lane. Pedestrian and cycle access will be segregated

at each access and each access point will connect to the Sites internal pedestrian and cycle network.

11.9. A total of 395 car parking spaces will be provided, of which 374 will be provided within a multi-storey car park (disabled and general parking) and 21 disabled spaces will be provided at-grade close to the respective buildings. A total of 4,593 cycle parking spaces will be provided throughout the Site. The cycle parking provision will be in excess of the Cambridge City Council cycle parking standards.

11.10. All delivery and servicing for the Proposed Development will take place on-site. The existing service yard along the eastern boundary of the Site will be retained.

11.11. The mode share targets at the Proposed Development have been outlined, which are based on the North East Cambridge Area Action Plan Working Draft Strategy (2019) and have been agreed in principle with CCC. A target mode share of 4.8% for car drivers, 40.0% for cyclists and 15.5% for walking has been set which are seen as aspiration but achievable targets.

Healthy Streets Assessment & Proposed Improvement Measures

11.12. An Active Travel Zone (ATZ) assessment has been undertaken to assess the quality of walking and cycling routes to the Site via four main travel corridors to the Site. The four travel corridors were identified as 1) Cambridge North Station; 2) Cambridge Station; 3) Coldhams Lane / Brooks Road / Sainsburys Roundabout; and 4) Cambridge Centre / East Road.

11.13. The ATZ assessment highlighted that the majority of the routes are already suitable and provide good pedestrian and cycle facilities, however improvements could be made to maximise the use for pedestrians and cyclists, such as providing tactile paving where it is not present and improvements to and provision of formal cycle route facilities.

11.14. A suite of measures has been outlined to improve the pedestrian and cycle environment within each travel corridor. These measures are subject to discussion and agreement with CCC and GCP.

Traffic Flows

11.15. Traffic surveys were undertaken in November 2022 at the Site access and the surrounding junctions.

11.16. It was identified that Wednesday 16th November 2022 had the higher traffic flows and therefore this day has been used as the basis for the traffic flows for the TA. The AM peak hour has been identified as 08:15 to 09:15 and the PM peak hour between 17:00 to 18:00. A future assessment year of 2030 has been agreed with CCC and the 2022 observed data has been factored to 2030 using the TEMPro version 7.2c industry-standard software.

Trip Generation

11.17. The surveys undertaken of the existing Site in November 2022 have been used to establish the trip generation and modal split at the existing Beehive Centre.

11.18. The trip generation analysis for the Proposed Development is based on the 88,597sqm office/lab GIA and 5,168sqm mixed use GIA floor areas. Trip rates have been derived for each of the uses within Proposed Development including; 1) office / dry lab use; 2) wet lab use; 3) Non-Food Retail; 4) F&B Restaurant / Café; 5) Leisure – Gym; 6) Community use - Doctor's surgery. The modal splits

for the proposed trip generation have been based on the target modal splits set out in the Proposed Development section.

11.19. Two trip generation scenarios have been adopted for assessment which have been agreed with CCC:

- Scenario 1: Uses Target Mode Shares, Trip Internalisation factors & Working from Home Trip factors;
- Test Scenario (Scenario 2): Uses 'Break Even' Car Mode Share in AM Peak, Trip Internalisation factors & Working from Home Trip factors.

11.20. The calculated estimated Net trip generation for Scenario 1 shows there to be an increase in overall people trips at the Site in the AM peak due to the Proposed Development but a minor decrease in the PM peak and significant reduction in the Saturday peak. There would be a significant reduction in car / van driver vehicle trips to the Site. The analysis shows that the reduction would be greatest in the Saturday peak hour, followed by the PM peak hour and then the AM peak hour.

11.21. The Test Scenario, which includes a higher car / van vehicle driver mode share that provides a break-even car / van driver vehicle net trip generation with the existing Site use in the AM peak, produces a slight increase in car / van driver vehicle trips in the PM peak but still a significant reduction in trips in the Saturday peak hour.

Junction Impact Assessment

11.22. It has been agreed with CCC that due to the estimated significant reductions in car / van driver trips in the Scenario 1 trip generation assessment, only junction capacity assessments of the existing and proposed layouts at the Beehive Site access / Coldhams Lane / Cambridge Retail Park junction are required.

11.23. The modelled results in the 2022 AM peak show that the junction currently operates with sufficient spare capacity and negligible queueing and delay amounts.

11.24. To assess the impact of re-providing the Site access/Coldhams Lane/CRP roundabout as a CYCLOPS junction, a LinSig (version 3.2) model of the proposed signalised crossroad junction has been prepared. Two scenarios have been assessed:

- Scenario 1 - 2030 Forecast Baseline plus Proposed Development AM and PM peak hours.
- Scenario 3 - Forecast Baseline plus Proposed Development AM and PM peak hours, in which the car park reaches capacity leading to a 11.5% car driver mode share within the peak hours.

11.25. The results for the 2030 Base plus Proposed Development Scenario 1 and Scenario 3 assessment indicate that the CYCLOPS junction would operate with sufficient spare capacity and queues which could be accommodated without impacting on nearby key junctions.

Proposed Development Car Parking Assessment

11.26. The respective estimated total people trip generation profiles for each land use component during the weekday have been factored by the car / van driver target mode share value, which is 4.8%, within Scenario 1 and the accumulations calculated for each land use.

11.27. The analysis estimates that the maximum car parking accumulation for the Proposed Development

would be 164 spaces during the 11:00 to 12:00 hour.

11.28. It is recognised that this estimated maximum accumulation is notably lower than the proposed parking provision of 395 spaces, nevertheless it would reduce the potential risk of on-street parking near to the Site while the spare provision of spaces could be monitored and some or all of these removed in the future if this was to consistently occur.

11.29. Another scenario has been assessed to establish the car / van driver mode share that would result in the maximum parking accumulation reaching the 395 spaces proposed. This car / van driver mode share was calculated to be 11.5%

Target Mode Shift Further Justification

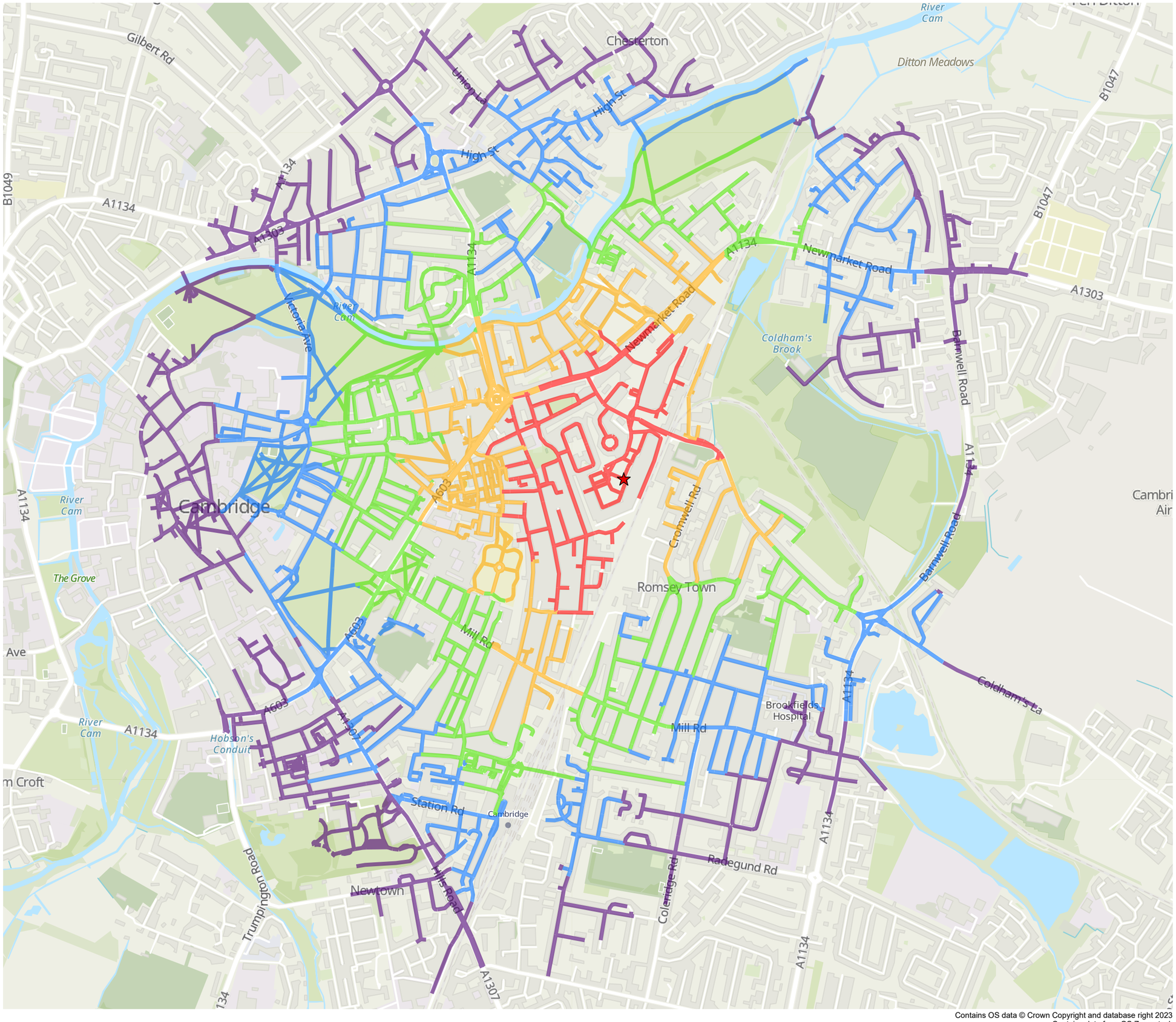
11.30. The target mode share figures are considered achievable in terms of population within a walking and cycling distance from the Site, as well as the off-site measures being proposed, the additional bus seats provided within the peak hours and the proposed rail capacities and connections within the Site. The reduction in car driver mode share will be driven by the significant reduction in parking across the Site.

Conclusion

11.31. Based on the above assessment, the Proposed Development is deemed to be compliant with local, regional and national policy and would not have an unacceptable impact on highway safety or severe residual cumulative impacts on the road network.

APPENDICES

A. Walking and Cycling Isochrones



The Site

0-0.4 from Access point

0.4-0.8 from Access point

0.8-1.2 from Access point

1.2-1.6 from Access point

1.6-2.0 from Access point

Project Details	WIE17469-100: Beehive Centre, Cambridge
Figure Title	Figure 1: Walking Catchment
Figure Ref	WIE17469-100_GIS_FTP_1B
Date	July 2024
File Location	N:\Projects\WIE17469-100\9_GIS\WIE17469-105_GIS_TP

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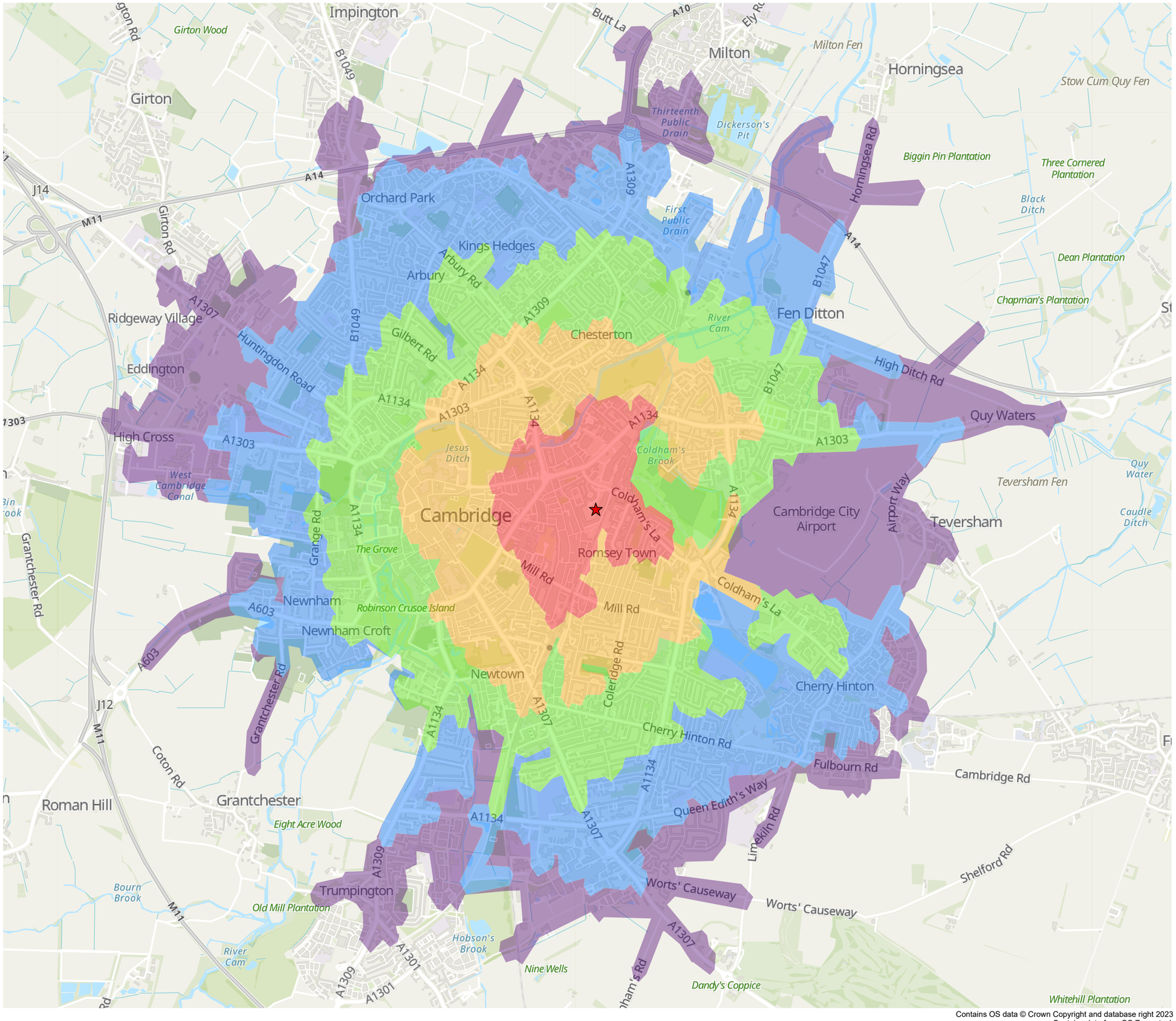

Contains OS data © Crown Copyright and database right 2023
Contains data from OS Zoomstack

The Site
0-1km from Access Point
1-2km from Access Point
2-3km from Access Point
3-4km from Access Point
4-5km from Access Point

N

0 0.25 0.5 1 km

Project Details	WIE17469-100: Beehive Centre, Cambridge
Figure Title	Figure 2: Cycle Catchment
Figure Ref	WIE17469-100_GIS_FTP_2B
Date	July 2024
File Location	N:\Projects\WIE17469-100\9_GIS\WIE17469-105_GIS_TP

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B. GCP Newmarket Road Proposals