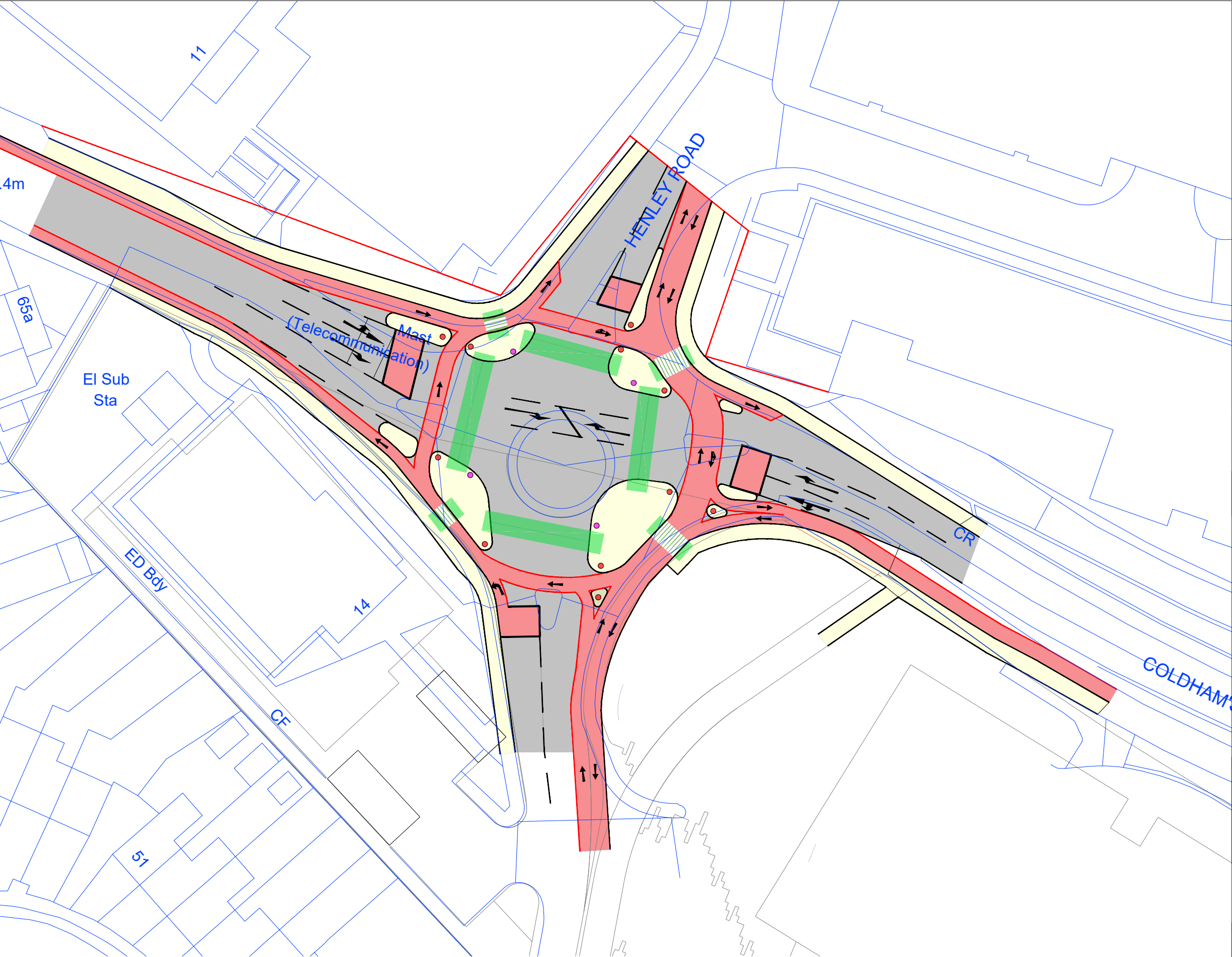




- Existing Layout
- Proposed Carriageway
- Proposed Cycle Lane
- Proposed Footway/Pedestrian Links
- Pedestrian Surface Treatment & Tactile Paving
- Proposed Signal Heads/Poles (11)
- Proposed Pedestrian Stop Buttons (4)

P03	-	22:04:24	UPDATED WITH RED LINE	DM	DM
P02	-	11:04:24	UPDATED AS PER LDA COMMENTS	SR	DM
P01	S0	19:03:24	ISSUED	SR	DM
Status	Date	Description			By Chk

Amendments

Project
Beehive Retail Park, Cambridge

Title
INDICATIVE CYCLOPS
SIGNAL CONTROLLED
ACCESS DESIGN

Client
Railpen

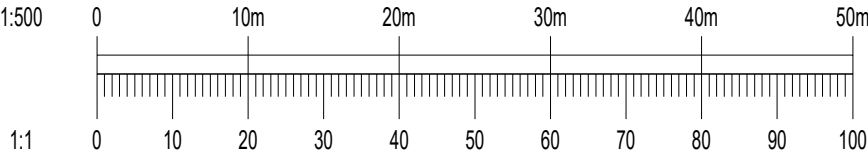


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PRELIMINARY

Designed By	SR	Director	DM	Waterman Ref	WIE17469
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Project - Originator - Volume - Level - Type - Role - Number					Revision
WIE-17469-SA-05-0073-P03					P03



L. Target Mode Share Justification Study



Project Otter – Beehive Redevelopment, Cambridge

Target Mode Shift Further Justification

Waterman Infrastructure & Environment Ltd

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Client Name: Railpen
Document Reference: WIE17469.TA – Appendix L
Project Number: WIE17469

Quality Assurance – Approval Status

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)

Revision	Status	Date	Prepared by	Checked by	Approved by
Appendix L	A1	August 2024	J. Hamp / D. Martin Senior Transport Planner	J. Hamp / D. Martin Senior Transport Planner	v. Lasseaux Associate Director

Comments

Revision		Status	
Pnn	Preliminary (shared; non-contractual)	S1	Coordination
Cnn	Contractual	S2	Information
		S3	Review & Comment
		S4	Review & Authorise
		S5	Review & Acceptance
		A0, A1, An	Authorised & Accepted (<i>n</i> =work stage if applicable)

Disclaimer

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1. Target Mode Shift Further Justification

1.1 Introduction

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.

The target modal splits set out within the Transport Assessment (TA) are shown below in [Table 1](#).

Table 1: 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%

2. Existing Mode Shares

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. 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.

Table 2 compares the Census 2011 Method of Travel to Work (Workday Population) dataset with the comparable mode shares set out above.

Table 2: Site Wide Mode Shares

Travel Mode	2011 (Workday Pop) 006	2011 (Resident Pop) 006	2011 (Workday Pop) 008	2021 (Workday Pop) 006	Existing survey mode share
Underground, metro, light rail, tram	0.0%	0.2%	0.1%	0.1%	0.0%
Train	1.9%	3.1%	6.6%	1.7%	0.0%
Bus, minibus or coach (includes Park and Ride)	4.4%	9.2%	8.1%	3.9%	0.0%
Taxi	0.5%	0.6%	0.2%	1.0%	0.0%
Motorcycle, scooter or moped	1.1%	1.4%	1.0%	1.3%	0.0%
Driver a car or van	64.8%	40.6%	44.0%	57.6%	54.0%
Passenger in a car or van	4.6%	4.6%	4.6%	4.8%	4.0%
Bicycle	15.5%	28.8%	21.6%	17.7%	19.0%
On foot	6.9%	11.0%	13.5%	10.5%	23.0%
Other method of travel to work	0.4%	0.5%	0.3%	1.4%	1.0%
Total	100%	100%	100%	100%	100.00%

Table 3 demonstrates that the existing modal splits derived from the Census 2011 'Workday Population' dataset is the most onerous in terms of having the highest car/van driver mode share and the lowest bicycle and pedestrian mode shares

Table 3: Mode Share differences from 'Base' Modal Share

Travel Mode	2011 (Workday Pop) 006	2011 (Resident Pop) 006	2011 (Workday Pop) 008	2021 (Workday Pop) 006	Existing survey mode share
Underground, metro, light rail, tram	0.0%	+0.20%	+0.10%	+0.10%	0.00%
Train	1.9%	+1.20%	+4.70%	-0.20%	-1.90%
Bus, minibus or coach (includes Park and Ride)	4.4%	+4.80%	+3.70%	-0.50%	-4.40%
Taxi	0.5%	+0.10%	-0.30%	+0.50%	-0.50%
-0.5%Motorcycle, scooter or moped	1.1%	+0.30%	-0.10%	+0.20%	-1.10%
Driver a car or van	64.8%	-24.20%	-20.80%	-7.20%	-10.80%
Passenger in a car or van	4.6%	+0.00%	+0.00%	+0.20%	-0.60%
Bicycle	15.5%	+13.30%	+6.10%	+2.20%	+3.50%
On foot	6.9%	+4.10%	+6.60%	+3.60%	+16.10%
Other method of travel to work	0.4%	+0.10%	-0.10%	+1.00%	+0.60%
Total	100%	0.00%	0.00%	0.00%	0.00%

The survey data comparison assessment in [Tables 2 and 3](#) indicate that the current 'baseline' travel patterns on the Site are closer to the target mode shares within [Table 1](#) than indicated in the Census 2011 Method of Travel to Work (Workday Population) dataset for output area Cambridge 006. Therefore the modal shift required to achieve the targets within [Table 1](#) would be less and thus are considered more achievable.

3. Walking Mode Share Justification

A 15.5% target mode share for people walking to / from the Proposed Development has been adopted within this TA, which is an increase from the 6.9% recorded within the 2011 Census for workplace population trips within the Cambridge 006 MSOA. It is noted, the other mode shares assessed for the Site within [Table 3](#) are closer to the mode share target.

A justification of achieving a +8.6% increase in the walking mode share is presented in this section:

3.1 Cambridge Policy Targets and Population Density

As discussed within the TA, 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.

The Sustrans Greater Cambridge Walking and Cycling Index 2024 sets out that 56% of residents walk or wheel at least 5 days a week, up from 50% in 2019 and 54% in 2021.

In addition, it was recorded that 97% of all residents walk and 79% of residents think their local area is overall a good place to walk. 61% of residents agree that increasing space for walking and cycling would improve their area. 52% of walking and wheeling trips are destination trips (e.g for work/school).

The Sustrans Greater Cambridge Walking and Cycling Index 2024 indicates that the population of Greater Cambridge and within the area surrounding the Site favour active modes of transport and would be open to walking to walking to work if possible.

With regard to the walking catchment, the population within 2km of the Site is 32,455 based on 2021 Census data. The walking target mode share of 15.5% in the Proposed Development trip assessment equates to 1,000 employees walking to the Site (based on the estimated figure of 6,450 employees).

The increase in walking mode share from the 2011 workday population mode share for employees would result in an increase of 555 employees walking which equates to 1.7% of the 2km radius population.

It is likely that some employees would walk further than a 2km distance given the past and growing emphasis on active travel in Cambridge, with measures provided since 2011 to support an increase in walking and further measures planned, such as the GCP Newmarket Road Eastern Corridor proposals and Chisholm Trail improvements, along with the disincentivising of car use in the city.

It should also be noted that the walking mode share for commuters in the local area is likely to have increased since 2011, although this cannot be properly established from the 2021 Census due to the impact of Covid-19 restrictions and associated effects on travel behaviours.

Department for Transport Active Mode Appraisal Toolkit

The DfT Active Mode Appraisal Toolkit has been used to assess the impact of the physical pedestrian interventions/improvements that are proposed on the surrounding highway network.

The toolkit is being used to assess the potential modal shift impact as well as health and journey quality benefits which will arise from the proposed walking interventions/improvements. The following assumptions/parameters have been used within the DfT toolkit:

- Intervention based on a 6 year period.
- Trips without proposed intervention have been based on the daily total person trips from the trip generation (10,442 daily trips) split by the existing workday Census modal split (6.9%).

- Trips with proposed intervention have been based on the daily total person trips from the trip generation (10,442 daily trips) split by the target mode share (15.5%).
- Percent of walking trips using the intervention/improvements has been set as 85% of walking trips as the intervention/improvements cover the majority of walking routes to the Site as well as walking routes through the Site.
- Indicative intervention/improvement costs for walking and cycling are grouped. Therefore 25% of the total walking/cycling costs have been assumed for walking, which is split evenly between the intervention years.
- Default assumption in the toolkit have been maintained.

The DfT Active Mode Appraisal Toolkit indicates the hard intervention/improvements proposed would result in a 10.2% increase of the walking mode share, an improvement in 'health' by 86.5% and an improvement in journey quality by 3.3%. The mode shift change calculated from the DfT toolkit for the hard measures is in excess of the required walking mode shift change to achieve the target walking mode share of 15.5%.

In addition, the DfT toolkit does not take into account that the local population in Greater Cambridge are active and likely to walk to work if possible which is demonstrated in the overall walking levels outlined in The Sustrans Greater Cambridge Walking and Cycling Index 2021.

3.2 Travel Plan and Soft Measures

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. These measures are outlined below:

- Maas - providing a mobile app/website portal for all employees to access travel information and sustainable travel incentives. Allows all travel information relating to walking to be integrated onto one platform.
- Travel Information Packs, which will provide information on the health benefits of walking and maps to aid wayfinding from the local area to the Site.
- Shower, changing and locker facilities on-site for employees walking.
- Mobility Hub on-site will support walking to/from the Site and will provide advice as necessary.

While the impact of the soft measures that will be introduced via the Travel Plan above cannot be quantified into a modal split shift, it is expected these measures will support and increase the expected modal shift change arising from the physical interventions/measures.

3.3 Case Studies

Up to 2020, the TRICS Consortium coordinated a suite of surveys and questionnaires for a large mixed-use development in Cambourne, Cambridgeshire. Cambourne Village was established as a 'free-standing community' of 4,250 dwellings, in addition education, retail, community and leisure uses.

A baseline survey was carried out in 2014 (ahead of the 2020 completion) to set interim mode share targets. A follow up survey was carried out in 2015 following implementation of travel measures. Within a year, the walking mode share for Cambourne increased to 20%, a rise of 6% within a year. The walking mode share achieved in Cambourne is in excess of the 15.5% target at the Proposed Development.

Cambourne is considered to be in a more rural location compared to the Proposed Development, where walking is less viable compared to an urban setting where the Proposed Development is. This indicates

that the Proposed Development has the potential to achieve an even higher walking mode share compared to the development in Cambourne.

3.4 Conclusion

It is therefore considered that there is a reasonable likelihood and therefore sufficient justification for the 15.5% target mode share for walking trips to / from the Proposed Development to be realised and also accommodated by the highway network.

4. Cycling Mode Share Justification

A 40% target mode share for people cycling to / from the Proposed Development has been adopted within this TA, which is an increase from the 15.5% recorded within the 2011 Census for workplace population trips within the Cambridge 006 MSOA. It is noted, the other mode shares assessed for the Site within [Table 3](#) are closer to the mode share target.

A justification of achieving a +24.5% increase in the walking mode share is presented in the following text.

4.1 Cambridgeshire Policy Targets and Population Density

As discussed within the TA, this target was based on the target cycle mode share adopted in the Cambridge City New Deal (dated 2014) which aimed for 40% cycling trips within the city by 2023. This future year of 2023 has now clearly been reached and the mode share is likely to further increase, as with the walking mode share, due to the growing emphasis on active travel in Cambridge and increased provision to support the increases due to measures such as the GCP Newmarket Road Eastern Corridor proposals and Chisholm Trail improvements, along with the disincentivising of car use in the city.

The Sustrans Greater Cambridge Walking and Cycling Index 2024 sets out that 45% of residents cycle at least once a week and 66% of residents responded that they do cycle. 70% of residents support more cycle tracks being provided along roads with physical separation of cycle lanes from traffic and pedestrians, even when this would mean less space for other road users. In terms of cycle safety and satisfaction, 64% of residents think their local area overall is a good place to cycle.

The Sustrans 2021 index also recorded residents attitudes to cycling. Only 21% of the population state that they did not want to cycle, however 35% of the population cycle regularly. A total of 44% of the population stated that they do not cycle but would like to, are new or returning to cycling or occasionally cycle, which indicates there is scope to significantly increase the percent of population cycling within Cambridge.

With regards to cycle improvements, the improvements which were identified as helping to cycle more were more traffic free cycle routes (80%), more cycle tracks along roads (78%) and more signposted local cycle routes through quiet areas (69%), all of which are being proposed.

Cambridgeshire's Active Travel Strategy states that the city of Cambridge has the UK's highest level of cycling with 29% of its working residents cycling to work in 2011.

With regard to the cycling catchment, the population within 5km of the Site is 145,672 based on 2021 Census data. The cycling target mode share of 40.0% equates to 2,580 employees cycling to the Site (based on the estimated figure of 6,450 employees). The increase in cycling mode share from the 2011 mode share for employees would result in an increase of 1,580 employees cycling which equates to 1.08% of the 5km radius population.

4.2 Department for Transport Active Mode Appraisal Toolkit

The DfT Active Mode Appraisal Toolkit has been used to assess the impact of the physical cycle interventions/improvements that are proposed on the surrounding highway network. The toolkit is being used to assess the potential modal shift impact as well as health and journey quality improvements from the proposed cycling interventions/improvements. The following assumptions/parameters have been used within the DfT toolkit:

- Intervention based on a 6 year period.
- Trips without proposed intervention have been based on the total person trips from the trip generation (10,442 daily trips) split by the existing workday Census modal split (15.5%).

- Trips with proposed intervention have been based on the total person trips from the trip generation (10,442 daily trips) split by the target mode share (40.0%).
- Percent of cycling trips using the intervention/improvements has been set as 85% of cycling trips as the intervention/improvements cover cycling routes through the Site as well as most routes to/from the Site.
- Indicative intervention/improvement costs for walking and cycling are grouped. Therefore 75% of the total walking/cycling costs have been assumed for cycling, which is split evenly between the intervention years.
- The proposed cycling numbers have been based on trip generation scenario 1.
- Default assumption in the toolkit have been maintained.

The DfT Active Mode Appraisal Toolkit indicates the hard intervention/improvements proposed would result in a 9.1% increase in the cycling mode share, as well as an improvement in 'health' by 39% and an improvement in journey quality by 51.9%.

The mode shift change calculated from the DfT toolkit for the hard cycle interventions/measures would increase the cycle mode share to 24.6%, which remains below the target mode share of 40.0%.

However, it should be noted, the primary function of the DfT Active Mode Appraisal Toolkit is to perform a cost benefit analysis of improvements on a section of road/cycle route and provide a possible modal shift on that section of highway and is not to assess the potential modal shift change of a development.

The toolkit indicates that the proposed hard interventions/measures would increase the cycling mode share to the Site, however further analysis on the additional cycle capacity which can be delivered via the proposed hard interventions/measures on surrounding roads is provided below.

4.3 Cycle Measures Capacity

With regard to the estimated values placed on improvements to cycle lane capacity, industry guidance suggests that a 1.5 metre-wide cycle lane, such as those proposed either side of Coldhams Lane, can accommodate up to 3,500 cycles per hour. In addition, a 4 metre-wide cycle lane, as proposed through the Site, can accommodate 8,000 two-way cycle trips per hour.

In addition, the Cambridgeshire's Local Cycling and Walking Infrastructure Plan (2022) states that smaller improvements such as lighting, signage, etc would increase one-way cycle trips by 100-200 a day, medium actions such as improved crossings, segregation would increase one-way cycling trips by 200-500 a day and significant actions to improve safety issues would improve one-way cycling trips by 500 or more a day. An extract from the Cambridgeshire's LCWIP is shown in [Figure 1](#) below:

Figure 1: Cambridgeshire's Local Cycling and Walking Infrastructure Plan - increase in cycling by measure

Effectiveness				
Criteria	Score 0	Score 1	Score 2	Score 3
Forecast increase in cycling trips	<100 cyclists/day (one way trips)	100-200	200-500	>500
Improvements in road safety	No improvements	Smaller improvement such as improved lighting, signage etc.	Medium actions such as improved crossings, segregation etc.	Significant actions to improve safety where existing road safety issues have been identified

Up to 30 cycle improvements measures in the surrounding area are proposed (albeit not all will be agreed or implemented). On the basis that 60% of the measures would be smaller improvements (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 5100 one-way daily cycling trips as a minimum (applying the lower scale of potential trip increases).

The trip generation assessment undertaken for the proposed land uses based on agreed trip rates and cycling mode share (40%) estimates a total of 4,177 two-way cycling trips a day. Based on the above, the proposed cycle improvement measures would support an increase in daily cycling trips in excess of the target mode shift increase.

A figure of 4,593 cycle parking spaces is proposed at the Site which equates to a provision for 71% of employees and therefore significantly exceeds the provision required for 40% of employees cycling. The cycle parking and other facilities being provided (showers, lockers etc.) would therefore ensure that cyclists are more than sufficiently catered for, and this would further encourage cycle travel to / from the Site.

4.4 Travel Plan and Soft Measures

As well as the expected modal shift change which is expected to arise as a benefit of the proposed cycling interventions and improvements, the Travel Plan will also introduce a suite of soft measures to increase employees cycling to and from the Site. These measures are outlined below:

- Maas - providing a mobile app/website portal for all employees to access travel information and sustainable travel incentives. Allows all travel information relating to cycling to be integrated onto one platform.
- Travel Information Packs, which will provide information on the health benefits of cycling and local cycling maps of the surrounding area.
- Shower, changing and locker facilities on-site for employees cycling to and from the Site.
- Offer of Cycle to Work scheme which can allow employees save up to 42% on bikes and cycling equipment. This offer will help employees buy cycles.
- On-site maintenance facilities within the bike store and at the mobility hub with trained maintenance staff on-site.

- Mobility Hub on-site will support cycling to/from the Site and will provide advice as necessary as well as host regular free cycle services for staff.
- Bi-annual cycle training for all staff and bike maintenance courses.
- Cycle parking facilities for staff and visitors.

While the impact of the soft measures that will be introduced via the Travel Plan above cannot be quantified into a modal split shift, it is expected these measures will support and increase the expected modal shift change arising from the physical interventions/measures.

4.5 Case Studies

There are numerous examples improved cycle infrastructure has led to a significant increase in the cycle levels and mode shares in the area. Examples include:

- London cycle superhighway: A north-south cycle superhighway in London led to a 32% increase in cycling along that route, which indicates high quality dedicated routes can lead to a significant travel pattern shift. Within the first 10 weeks of the scheme opening, the route has one million rides, which previously 95% would have been made by another mode or not at all. After a survey of route users, 7/10 users said it has prompted them to start cycling or to cycle more often.
- Leicester removal of Belgrave Road Flyover: The Belgrave Road Flyover was removed and the key link from the Golden Mile to Central Leicester was redeveloped with more pedestrian and cycle friendly infrastructure such as dedicated off-road cycle routes. The removal of the flyover led to a 16% increase in walking and a 43% increase in cycling.

The examples above demonstrate that the cycle modal target for the Proposed Development is achievable if supported through appropriate infrastructure improvements.

4.6 Conclusion

It is therefore considered that there is a reasonable likelihood and therefore sufficient justification for the 40.0% target mode share for cycling trips to / from the Proposed Development to be realised and also accommodated by the highway network.

5. Bus Mode Share Justification

A total 16% target mode share for people using a bus to / from the Proposed Development has been adopted within the TA, which is a significant increase from the 4.4% recorded within the 2011 Census for workplace population trips within the Cambridge 006 MSOA. It is noted, the other mode shares assessed for the Site within Table 3 are closer to the mode share target.

The 16% target bus mode share comprises 8% share for additional trips on regular bus services, 8% share for additional trips on Park & Ride services (comprising the 16% mode share for bus services without the combined rail trip). A justification of achieving a +11.6% increase in the bus mode share is presented in this section:

5.1 Cambridge Policy Targets

As discussed previously, the 16% target figure is 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.

Bus use is seen to be on the rise across Cambridgeshire which would support the target bus mode share. The Cambridgeshire Local Transport Plan states that:

'Bus patronage in Cambridgeshire increased by 61% between 2001 and 2008, with a 100% increase in Cambridge and between 2011/12 and 2012/13 an additional 209,113 passenger journeys were made across Busway and Park & Ride services.'

5.2 Existing Park and Ride Services

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 5652 car parking spaces and a total bus seat capacity of circa 2250 bus seats an hour (based on a frequency of one bus per 10 minutes and a bus capacity of 75 seats).

As part of the GCP Eastern Access proposals, the Newmarket Road 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.

5.3 Proposed Increase in Bus Services

The development proposals will contribute to increasing the 'commuter' bus frequencies to nearby population centres outside of Cambridge to support employees who live outside of Cambridge to travel to the Site sustainability.

The TPC will be in regular contact and discussions with bus operators on how to improve bus services and connectivity to the Site. A summary of bus service improvements/uplift in bus seats is set out below:

- 300 or 375 seats per hour on Milton P+R (new service)
- Additional 225 seats per hour on the Newmarket P+R (900 in both directions now to 1125 in the future) and a new link to the railway station.
- Additional 675 seats on the out of town services (note across the peak period, not per hour).

The bus improvements above would result in a net increase of 525 P+R bus seat an hour from the Milton Road/Newmarket Road P&R's and an additional 675 bus seats for out of town bus services across a three hour peak period, or circa 225 seats per hour. The Proposed Development would therefore provide an increase in bus seat capacity 'towards' to the Site by 750 bus seats in each peak hour, potentially rising to 825 seats an hour towards the Site. An additional 750 - 825 bus seats towards the Site equates

to an additional bus seat for 11.6% - 12.8% of staff. These additional seats would account for the target increase of +11.6% bus mode share. There will also be additional 'standing' capacity.

The trip generation within the TA states that there will be an additional 99 bus trips and 99 P&R trips in the AM Peak and 103 bus trips and 103 P&R trips in the PM Peak. These additional trips have been calculated by applying the 8% mode share for both buses and the P&R. The proposed additional P&R seats and bus seats for outer town bus services can accommodate the increase in bus trips to achieve the 8% P&R mode share and 8% bus mode share targets and the overall 16% bus mode share target.

In addition, there would be another 173 and 179 bus trips in the AM and PM peaks relating to linked trips from Cambridge Train Station and Cambridge North Train Station. These additional bus trips of employees using the bus to access the Site from the train station can also be accommodated within the additional 825-900 bus seats which will be provided as part of the Proposed Development.

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.

5.4 Travel Plan and Soft Measures

As well as the expected modal shift change arising as a benefit of the proposed increase in bus capacity, the Proposed Development will also introduce a suite of soft measures to increase employees using the bus through the Travel Plan. These measures are outlined below:

- Reprovision of bus stop within the Site which will provide large bus shelters with seating, live departure information and a good public realm environment to encourage bus use.
- Maas - providing a mobile app/website portal for all employees to access travel information and sustainable travel incentives. Allows for real time timetable information to be accessed by employees.
- Travel Information Packs, which will provide information on bus and P&R services and local bus route maps.
- Offer of bus/P&R season ticket loans which will allow employees to purchase a monthly or yearly season ticket tax free which is then paid back in instalments.
- Mobility Hub on-site will provide information on bus services on and around the Site.

In addition to the Travel Plan measures, the Parking Management Plan has set out how parking on-site will be controlled via permits linked to each employer and through car parking charging on-site. The pricing strategy for parking on-site will purposely be prices to be higher than the P&R to encourage P&R use.

5.5 Travel Time Comparison

A journey time comparison has been undertaken, comparing the journey time to travel to the Site using the Newmarket Road P&R and Milton P&R and driving and parking on York Street, one of the unrestricted roads surrounding the Site.

Table 4: Comparative Journey Times

Location	P&R (including bus waiting time)	Driving plus walking to Site
Milton Road	10-minute max bus journey plus max 15 bus wait (total max 25 minute journey time)	12 – 24 minute drive plus circa 5 minute walk (total 17 – 29 minute journey time)
Newmarket Road	8-minute max bus journey plus max 10 minute bus wait (total max 18 minute bus journey)	8 – 14 minute drive plus circa 5 minute walk (total 13 – 19 minute journey time)

Table 4 demonstrates that the max travel time using the P&R would be within the average journey time range for driving and parking on the surrounding roads and walking onto the Site and therefore driving and parking on the surrounding highway network would not provide a time saving benefit for employees.

5.6 Case Studies

The Cambourne development in Cambridgeshire mentioned achieved similarly significant increases in the bus mode share which demonstrates that the proposed increase in bus mode share of +11.6% is achievable.

Following the implementation of the Travel Plan measures, the bus mode share at the development increased from 0% in 2014 to 9% in the interim survey and then to 15% in the 2015 survey. This demonstrates that a mode share shift larger than that proposed at the development is achievable in a more rural location without the benefit of five P&R Sites.

JP Morgan's Bournemouth Corporate Centre at Chaseside in Bournemouth is home to more than 4,000 employees. A Travel Plan was implemented at the Site to reduce single occupancy car trips by JP Morgan staff commuting to and from work at the Site and to facilitate and promote sustainable travel to work choices.

Staff travel surveys show that good progress has been made since 2002 in achieving the travel objectives that were set, including a 26% reduction in car use, offset by improved walking, cycling and dedicated bus services.

A JP Morgan Shuttle Bus service was introduced, and overall there was an increase in the bus mode share of 12% from 2002 to 2017, which demonstrates that a modal shift change similar to that proposed at the development can be achieved and maintained for a long period of time.

5.7 Conclusion

It is therefore considered that there is a reasonable likelihood and therefore sufficient justification for the 16.0% target mode share for bus trips to / from the Proposed Development to be realised and also accommodated by the highway network.

6. Rail Mode Share Justification

A 16% target mode share for people using rail services to / from the Proposed Development has been adopted within the TA, which is a significant increase from the 1.9% recorded within the 2011 Census for workplace population trips within the Cambridge 006 MSOA. It is noted, the other mode shares assessed for the Site within Table 3 are closer to the mode share target.

A justification of achieving a +14.1% increase in the rail mode share is presented in this section:

6.1 Mode Share Target

As discussed previously, the 16% target figure is 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 to and from both bus stations.

It should be noted, the existing rail mode share for the workday population where the Site is very low, due to the nature of the existing employment uses within the existing area being mostly retail, which is less likely to generate employee trips by rail. Cambridge as a whole has a higher Workday Population rail modal share of 4.5%.

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.

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.

It has been demonstrated in this chapter that the Proposed Development is delivering sufficient walking, cycling and bus improvements to accommodate the increase in walking, cycling and bus trips, including the additional walking, cycling and bus trips arising from commuters travelling to the Site from Cambridge Train Station and Cambridge North Train Station.

On this basis, the Proposed Development will provide sufficient capacity for an increase of +14.1% rail mode share to access the Site from the Cambridge Train Station and Cambridge North Train Station.

6.2 Train Capacity

The trip generation within the Transport Assessment demonstrates that when a 16.0% train mode share is achieved, a total of 198 rail trips and 205 rail trips will be generated within the AM and PM Peaks.

The TA sets out there are circa 18 rail services from Cambridge Train Station an hour, which are often the same services that proceed to stop at Cambridge North Station. There are circa 7,686 seats available on the services to/from Cambridge Train Station during the peak hours.

The proposed number of rail trips would account for 2.6% of the total seat capacity in the AM Peak and 2.7% of the total seat capacity in the PM Peak. It is therefore considered that the Proposed Development and target mode share for rail trips would have a negligible impact on the train network into Cambridge, or the routes from the Stations to the Site.

6.3 Travel Plan Soft Measures

As well as the expected train modal shift change which is expected to arise as a result of the better connectivity of the Site to the stations, the Proposed Development will also introduce a suite of soft measures to increase employees using the train to travel to and from the Site through the Travel Plan.

These measures are outlined below:

- Maas - providing a mobile app/website portal for all employees to access travel information and sustainable travel incentives. Provides real time rail timetable information;
- Travel Information Packs, which will provide information on the rail services to Cambridge and timetable information;
- Offer of train season ticket loans which will allow employees to purchase a monthly or yearly season ticket tax free which is then paid back in instalments; and
- Mobility Hub on-site will provide information on train services to and from Cambridge.

While the impact of the soft measures that will be introduced via the Travel Plan above cannot be quantified into a modal split shift, it is expected these measures will support and increase the expected modal shift change arising the new profile of employment on-site and better connectivity of the Site to the Stations.

6.4 Summary

It is therefore considered that there is a reasonable likelihood and therefore sufficient justification for the 16.0% target mode share for train trips to / from the Proposed Development to be realised and accommodated.

7. Car / Van Driver Mode Share Justification

The reduction from the 64.8% car mode share recorded for workplace travel and 40.6% for residential based local travel within the local MSOA in the 2011 Census is substantial however it is noted that this has likely reduced since the 2011 Census was undertaken, although this cannot be confirmed by the 2021 Census due to the effects of Covid-19 on travel patterns. Nevertheless, some of the industry included within the MSOA from which the existing mode shares were recorded requires car use more than the Proposed Development uses due to vehicles being used for work-based purposes.

A justification of achieving a +59.9% decrease in the car driver mode share is presented in this section.

7.1 Car Parking Provision

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 space. 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.

This is considered reasonable and allows for some marginal flexibility with the estimated employee numbers. This also aligns to the vision of both the developer and the local authorities to significantly reduce car use in the area. The proposals from the GCP for the Newmarket Road Eastern Corridor to re-purpose some of the highways lane capacity to sustainable travel modes are testament to this vision from the local authorities.

The trip generation assessment undertaken for the proposed land uses based on agreed trip rates estimates a total of 509 two-way car / van driver trips during a weekday, which is significantly fewer car trips than the 10,974 two-way car / van driver trips recorded at the existing Site.

This is largely due to the proposed change in land use at the Site from the retail use which generates a high turnover of trips during the day compared to the predominant office / research uses and the reduced need for car travel with office / research uses as travelling with goods is not generally required, hence a greater use of other modes of travel.

7.2 Parking Management

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. The Parking Management Plan sets out the following measures which will restrict parking and driving towards the Site:

- A ANPR system will record vehicles accessing and egressing the Site. All staff and delivery drivers are required to pre-register their numberplate, which will allow the ANPR to track repeat unauthorised vehicle access.
- Parking permits will be allocated to companies on-site based on their respective floor area.
- Access to the multi storey car park will be controlled using an automatic barrier to prevent unauthorised access. Companies with parking permits will have to pre-register using the vehicle numberplate before entering the multi-storey car park. When booking a parking space, there will be a charge to park for the day.
- A Site wide approach requiring for all companies to use the same provider for common deliveries (i.e comestibles and stationery) can be included within companies lease clause.
- All at-grade parking will be disabled parking. Disabled parking will be free.

- 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.
- As part of the Travel Plan measures, a regular suite of travel and parking surveys will be carried out, typically every 1-2 years, including at key pre-occupancy stages as the development is completed.
- 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.
- Third party car parking management company will be hired enforce against non-compliance with the parking management plan.
- Monitor and Manage: the 'Monitor and Manage' strategy sets out a framework and protocol for the management of vehicle use at the Site. The Monitor and Manage approach will be enforced through a range of measures including conditions of employment, registration of all vehicles used by staff and/or organisations using the Site, pre-booking of parking spaces within the multi-store car park and streetscape provision and monitoring of car park use through ANPR.
- Mode Share Incentive Scheme (MSIS): The MSIS will incentivise the delivery of mode share targets. It is anticipated that financial payments, if incurred, will be used by GCP to fund measures to support sustainable transport, address congestion, improve road safety and/or improve local air quality.
- The reduction in car use and increase in use of sustainable modes of transport will be supported through the Travel Plan.

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.

7.3 Research into City Car Use Reduction

Evidence of car use reduction has been sought to provide added justification for targeted low levels of car use at the Proposed Development. Research on car use reduction in cities has been undertaken by 'The Conversation', an online journalistic review platform, in an article published on 14th April 2022 and entitled '*12 best ways to get cars out of cities – ranked by new research*'.

This screened nearly 800 peer-reviewed reports and case studies from across Europe published since 2010 which discussed and quantified where and how cities had successfully reduced car use. It was found from the review that the most effective measures are introducing a congestion charge, which reduces urban car levels by between 12% and 33%, and creating car-free streets and separated bike lanes, which has been found to lower car use in city centres by up to 20%. A table showing the ranked top 12 car reducing measures is summarised below.

Figure 2: City Car Use Reduction Strategies Ranked by The Conversation (2022)

City car use reduction strategies ranked			
INTERVENTIONS	'STICK' ELEMENTS	'CARROT' ELEMENTS	EFFECTIVENESS
1. Congestion charge	Drivers pay to enter city centre	Revenues go to city's sustainable transport schemes	12-33% reduction in city-centre cars
2. Parking & traffic control	Remove parking spaces, alter traffic routes	Replace parking spaces with bike lanes and walkways, add car-free streets	11-19% drop in city-centre cars
3. Limited traffic zone	Exclude cars from part of the city (except residents)	Violation fines fund public transport	10-20% reduction in city-centre cars
4. Mobility service for commuters		Workers given free public transport pass, then private shuttles to workplace	37% drop in car commuters
5. Workplace parking charge	Drivers pay to park at work	Cash-out scheme for employees to use public transport; parking revenues fund public transport	8-25% reduction in car commuters
6. Workplace travel planning	Parking management and removal of spaces	Discounts for public transport; improved bike infrastructure; advice to help commuters use public transport/walk/cycle	3-18% drop in car use by commuters
7. University travel planning	Reduced parking on campus	Discounts for public transport; improved bike infrastructure; advice and promotion to students and staff of car alternatives	7-27% reduction in car use by university commuters
8. Mobility services for university		Free public transport pass and shuttle connections for students	24% drop in students commuting by car
9. Car sharing		Car sharing access integrated to work and neighbourhoods	12-15 private cars replaced by each shared car
10. School travel planning		Advice and events to help students and parents walk, cycle or carpool to school	5-11% reduction in car use for school trips
11. Personalised travel planning		Discounted public transport; advice to help city residents walk and cycle	6-12% drop in car use share among residents
12. App for sustainable mobility		Rewards for achieving targets for walking, cycling or using public transport	73% - proportion of app users declaring reduced car use

Source: Kuss and Nicholas, 2022, Case Studies on Transport Policy • Get the data • Created with Datawrapper

With regard to how this would affect car use at the Proposed Development, it is noted that of the 12 car-reducing measures included within the study the following 5 measures are included as part of the development proposals or proposed / planned by local authorities:

- Congestion Zone – 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. The study found a reduction of 12-33% in car travel with a congestion charge in place.

- Mobility service for commuters – The development proposals include the provision of free / low priced bus services. The study found a reduction of 37% in car travel with a mobility service for commuters in place.
- Workplace parking charge – The development proposals include the charging of on-site parking. The study found a reduction of 8-25% in car travel with workplace charging for commuters in place.
- Workplace travel planning – The development proposals include workplace travel planning. The study found a reduction of 3-18% in car travel with workplace travel planning in place.
- App for sustainable mobility - The development proposals include the provision of this app amongst employees at the Site. The study found a reduction of 3-18% in car travel with use of the app.

Given the above measures listed and the reductions in car use found to be associated with these, it is therefore likely that the volume of car trips generated by the Site would fall by a significant amount. It is nevertheless noted that the relatively low parking provision at the Site would remove the potential for high levels of car use in the first instance, so the reductions due to these measures would serve to reduce the volumes of car trips at the Site further resulting in a relatively low amount of car-based travel.

7.4 Conclusion

It is therefore considered that there is a reasonable likelihood and therefore sufficient justification for the 9.4% mode share by motor vehicles (i.e. car/van drivers and passengers) to be realised.

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