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Cambridge Northern Fringe East (CNFE)

Transport Strategy

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Pell Frischmann

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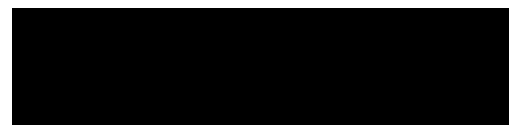
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Executive Summary

Pell Frischmann has been commissioned by U+I and Town to prepare a Transport Strategy in relation to the development of the Cambridge Northern Fringe East (CNFE) area as a mixed-use development. The focus of this Transport Strategy is the area of the CNFE core site currently occupied by Anglia Water's Recycling Centre and Cambridge Golf Driving Range and referred to in this report as the Core Site, as well as the additional plots of land to the south of the guided busway and north of the station which make up the wider CNFE area (CNFE).

The CNFE development scheme has evolved over a period of many years with a substantial amount of work completed by Cambridgeshire County Council (CCC) and their appointed consultants. This has included the development of a strategic transport model and associated scenario testing. The transport analysis undertaken to date has led to a series of conclusions regarding the mix and volume of development that can be accommodated when accounting for the predicted person and vehicular trip generation of the area. This includes delivering a development with a focus on travel by sustainable modes and reduced residential parking provision to achieve an acceptable transport network impact as defined by the identified vehicle trip budget.

This Transport Strategy has been prepared to provide the context of the current transport and highway assessment work completed in relation to the development of the CNFE site along with expectations and next steps for the delivery of a comprehensive transport strategy for the scheme.

The CNFE core site masterplan identifies a development providing 5,600 dwellings, 2 primary schools, 1 secondary school and a mix of commercial, retail, community and health land uses. The CNFE site provides additional retail and commercial floorspace as well as an additional 3,000 residential units. As part of the scheme proposals the residential element is to be delivered with a residential parking provision of 0.2 spaces per dwelling.

The CNFE site is located within an area where considerable transport and highway mitigation schemes are being implemented with the site itself assisting in the delivery of these schemes. It benefits from being located close to the Cambridgeshire Guided Busway and the full extent of the site being within 1.5km of Cambridge North Railway Station.

The overall focus of the Transport Strategy is to confirm that the development will be brought forward in line with the CCC transport modelling work completed to date and more specifically ensure it is aligned with the trip budget identified within the A10 Ely to Cambridge Transport Study. The study itself identifies the importance of achieving a high volume of internal trip assignment and limiting car parking provision.

In their respective roles as the local and strategic highway authorities Cambridgeshire County Council and Highways England have been consulted as part of the process of developing this Transport Strategy. Engagement with both authorities has confirmed that the CNFE site will only be accepted if it works within the trip budget defined in the A10 Ely to Cambridge Transport Study. In this regard the mix and scale of development is not fixed but the external trip generation is fixed.

Working within the A10 study trip budget Cambridgeshire County Council have advised that no additional traffic modelling is required of this scheme other than that required to determine the localised impact on the proposed site access junctions and access onto Milton Road via the two existing junctions of Milton Road / Cowley Road / Cambridge Science Park and Milton Road / Cowley Road West. This will be undertaken as part of the next stage of work.

A HIF bid has been submitted and this transport strategy forms an addendum to this. All transport analysis supporting this bid has been carried out within the framework of the Combined Authority's developing LTP and the Ely to Cambridge Transport Multi Modal Study (Feb 2018) using sub-regional model CSRM2, which covers major development including CNF.

The impact of the scheme on the transport network after the implementation of a comprehensive package of mitigation outlined in the Ely to Cambridge A10 study will be net neutral. Net neutrality will be achieved by working within a specific 'trip budget' which apportions vehicular trips from CNFE at a level which the Ely to Cambridge PSOBC indicated would be commensurate with the scale of development proposed on the site.

This Transport Strategy identifies a series of interventions and solutions to mitigate the volume of car trips that may otherwise be generated and enable the development to be delivered within the CCC identified ceiling figure. The CNFE transport strategy will ensure vehicle trips are within the defined budget through infrastructure schemes and sustainable transport initiative including:

- We will build on Cambridge's tradition of cycling with walking and cycling being the main forms of movement at CNFE. This will include an onsite cycle hub.
- CNF will rebalance an employment-dominated part of Cambridge, achieving a sustainable mix of housing, work, retail and leisure and reducing the need to travel
- It will exploit its proximity to sustainable transport infrastructure including the guided busway, Cambridge North Station, cycling infrastructure, and walking routes. A high frequency bus will be provided throughout the site so all residents are within 400m of a bus stop.
- Travel demand management measures and a bold commitment to car parking restraint will reduce car use.
- Delivery and service vehicle movements will be reduced through a consolidation centre/ delivery hub and underground waste storage.
- The strategy will tie into work undertaken by the Cambridge Greater Partnership linking to proposed improvements to bus / cycle / pedestrian facilities on Milton Road, as well as connecting to proposed Greenways and the Chisholm Trail.

The CNFE vehicle trip generation will be within the trip budget set by the A10 study and the trip generation of the site will be monitored on a phase by phase basis to ensure the trip budget is not exceeded. Therefore, in order for the full scheme to be constructed, the mode share targets must be achieved.

We have considered the impacts on the local transport network (all trips in AM peak):

- Driving (1,700 trips) Most will travel outside of the city centre, impacting mainly on accesses into the site from Milton Road, and the Milton (A10/A14) Interchange. These junctions have been identified within the A10 Study and will receive funding to provide improvements to mitigate any impact
- Cycling (3,400 trips) Most will be travelling towards the city centre or the Science Park increasing use of new cycling infrastructure on the Chisholm Trail and Milton Road. The new connection across the Milton Road will improve access to the Science Park from CNFE and Cambridge North Station
- Walking (1,750 trips) Most will be travelling to the city centre or Science Park, making use of the proposed new connection across Milton Road
- Bus (1,250 trips) Most will be travelling to the city centre and towards the south of Cambridge. An additional service will be implemented, benefiting new exiting public transport users.
- Rail (600 trips) Most will be travelling to London via Cambridge

The strategy for the site is supported by Cambridgeshire County Council through the local planning process, so is a scheme that has political backing for both the development and the approach to sustainable transport. Undertaking a sensitivity test with a significantly higher vehicle trip generation therefore does not align with the above and would be contrary to both the AAP and the A10 study.

The economic impact appraisal of the CNFE site (as discussed with MHCLG and DFT) therefore considers this core scenario and uses the Cambridge Sub-Regional (CSRM2) strategic transport model to provide inputs to a TUBA assessment in line with WebTAG guidance. The initial, high-level assessment modelling of the transport external costs with the CNFE traffic demand shows a transport cost of -£[REDACTED] across the network.

Although in accordance with WebTAG guidance this figure is misleading, in that it assesses the whole impact of the development but excludes all of the benefit that the development will deliver through its contribution to the mitigation package set out in the A10 Study. That study quantified the transport user benefits of the proposed mitigation package at £810m (at 2018 prices). The CNFE site provides a contribution of £[REDACTED]

towards these mitigation measures – equating to ■■■% of the overall mitigation costs. Therefore, the same proportion of benefit should be attributed to CNFE, a transport user benefit of £■■■■■

The true impact of the proposed development on the transport network is therefore only -£■■■■■. However, in accordance with WebTAG guidance we have modelled the more substantial impact through our economic case.

The A10 study will evolve and further work undertaken by Cambridgeshire County Council as part of the next stages of the business case. This work will include appraisal of the environmental and social impacts. Therefore, at this stage a qualitative review of the impacts has been undertaken for the HIF submission and this is considered to be proportional.

The transport mitigation package and the developments masterplan will lead to significant improvements in the travel options in the area following the redevelopment of the site. The mode shares that will be achieved at CNFE are likely to become the norm in Cambridge and this site will have a competitive advantage because of its accessibility and be a catalyst for improvements in air quality and noise in this area.

It has been proven in the preliminary strategic outline business case that there is a mitigation package that can unlock the CNFE and wider development in this area. These schemes will evolve through the latter stages of the business case, and accident appraisal will be undertaken as part of this work. Given the CNFE development is seeking to reduce severance and remove pedestrian/ cyclist/ vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of accidents on Milton Road.

The impact of the walking and cycling improvements on existing physical activity has been considered qualitatively at this stage as the schemes are evolving in response to ongoing discussions with stakeholders. The masterplan will reduce severance (discussed below) and therefore increase the likelihood of people choosing to walk and cycle. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.

The masterplan will promote include a mix of land uses that will be active at different times of the day and front streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. Therefore, a qualitative assessment of the security and journey quality impacts is that these will be a positive.

The site currently has a severe impact on severance due to the local road network, railway line and the CWRC. The CNFE development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 (connecting Cambridge with Waterbeach and Milton Park), and a new link across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The proposed development will break down these barriers and therefore it is considered the severance and accessibility impacts will be largely positive.

Improved access to Cambridge North Station and the Science Park, and an enhanced bus service serving local users with more frequent and reliable bus services will be provided, with any pump-priming bus costs met by the developer. At this stage a qualitative assessment suggests that there will be a largely positive option and non-use value.

This report has identified the next stages of assessment required to enable delivery of the CNFE site. This focuses on completing viability assessments of the proposed transport solutions and engagement with the relevant stakeholders to maintain buy-in regarding the ability to deliver the transport strategy.

A number of programmed actions will take the project forward with the aim of a planning application to be submitted in 2022, construction to start in 2023 and the first homes completed in 2026. Overall the target for construction completion is 2037.

1 Introduction

- 1.1 Pell Frischmann has been commissioned by U+I and Town to prepare a Transport Strategy in relation to the development of the Cambridge Northern Fringe East (CNFE) area as a mixed-use development. The focus of this Transport Strategy is the area of the CNFE currently occupied by Anglia Water's Recycling Centre and Cambridge Golf Driving Range and referred to in this report as the core site, as well as the additional plots of land to the south of the guided busway and north of the station which make up the wider CNFE area (referred to as CNFE).
- 1.2 The CNFE development scheme has evolved over a period of many years with a substantial amount of work completed by Cambridgeshire County Council (CCC) and their appointed consultants. This has included the development of a strategic transport model and associated scenario testing. The transport analysis undertaken to date has led to a series of conclusions regarding the mix and volume of development that can be accommodated when accounting for the predicted person and vehicular trip generation of the area. This includes delivering a development with a focus on travel by sustainable modes and reduced residential parking provision to achieve an acceptable transport network impact as defined by the identified vehicle trip budget.

Site Context

- 1.3 The development site extends from the A14 in the north to Chesterton in the south and the Fen Rail Line in the east to Cowley Road in the west. The Core site location is identified in **Figure 1.1** with the development areas that make up the wider CNFE site also identified.

Figure 1-1 CNFE Site Location



Source: © OpenStreetMap contributors with Pell Frischmann annotations

Development Proposal

- 1.4 The development proposals for the CNFE core site currently consists of the following scale of development:
- [REDACTED] dwellings of which [REDACTED]% is to be affordable.
 - [REDACTED] primary schools.
 - [REDACTED] secondary school.
 - Community and Health Centre – 5,178 sq.m.
 - Commercial Floor Space – 36,203 sq.m.
 - Retail Floor Space – 7,810 sq.m.
- 1.5 A copy of the current scheme masterplan is provided at **Appendix A**.
- 1.6 As part of the scheme development, car parking provision will be 0.2 spaces per dwelling and cycle parking provision one space per bedroom. Car parking will be provided within three 6 storey flexible parking structures and cycle parking will be provided 50% within buildings and 50% in external shelters.
- 1.7 The non-residential landuses will also have appropriate car parking levels to ensure that the level of external trips are limited to that which is within the overall trip budget.
- 1.8 As part of the scheme development a bus route will be provided through the site with all dwellings to be within 400m of a bus stop. Initial engagement with Stagecoach has indicated that the existing Citi2 service could be routed along the development spine at the same 10-minute frequency daytime (Mon-Sat) as existing; and with a 30min frequency evenings and Sunday.
- 1.9 The wider CNFE site includes an additional:
- [REDACTED] dwellings.
 - Community and Health Centre – 2,640 sq.m.
 - Commercial Floor Space – 18,585 sq.m.
 - Retail Floor Space – 3,855 sq.m.

Report Context

- 1.10 The currently available traffic evidence base has been produced by or on behalf of CCC. This Transport Strategy utilises the current evidence base in order to develop a transport strategy for the CNFE site which minimises car use and the need to travel and maximises the use of sustainable modes of travel. This is particularly relevant given that the current CCC evidence base identifies that part of the strategy for the CNFE area is dependent on providing restricted levels of car parking.
- 1.11 Taking full account of the vehicle trip budget determined from the A10 Ely to Cambridge Transport Study (Strand 3), this report sets out the scale and type of transport mitigation required for the CNFE site to be delivered. The parking provision of 0.2 spaces per dwelling is aligned with the trip budget.

Development Transport Strategy

- 1.12 The transport strategy is predicated on delivering a comprehensive sustainable transport package. It incorporates and embraces current and emerging technologies in transport planning and smart cities to maximise the attractiveness of walking, cycling and public transport to minimise the impact vehicles will have within the development and on the wider highway network. The following summary of measures and interventions set out how the aspiration for a 'Transport Neutral' development will be achieved.

- A network of walking and cycling facilities that are designed to maximise comfort and accommodate peak demands, drawing upon the TfL Healthy Streets approach.
- Green streets (pedestrian and cycle only streets) within the development.
- Variable messaging round the development to provide information on public transport services (in real time), congestion, air quality alerts.
- Cycle parking provided at a level that facilitates use of this mode, and cycle hubs linked with existing schemes in Cambridge.
- Consolidated collection points for deliveries and waste and pick up/ drop off from taxis to minimise the number of vehicles circulating through the site.
- Minimise the number of car parking spaces provided on site, and provide electric vehicle charging at all spaces to maximise the uptake of electric vehicles.
- Car club vehicles provided in locations on the periphery of the development to minimise the number of vehicles circulating through the site. Requirement for all car club vehicles to be electric vehicles.
- Provision of electric vehicle charging at all car parking locations in the development and integrate this with onsite combined heat and power network, or renewable energy generation sources.
- Provide an underground refuse collection system to consolidate the frequency and number of refuse collection vehicles that need to enter the site.
- Trees provided within the streetscape to provide shade and shelter from the weather to help encourage walking through the development.
- Corridors within the site to be future proofed to allow retro fitting of mass public transit systems running through the development.
- Comprehensive network of SuDS within the street network to assist with management of infiltration of the rainwater.
- Consider the use of smart road technologies such as solar roads, electric charging of vehicles in the road surface, self-healing road materials, and sensors in car parking bays that allow drivers to more efficiently navigate to available car parking bays.
- Mobility as a Service (MaaS) will also be promoted as part of the development to facilitate travel by more sustainable modes.

1.13 The north eastern extent of Cambridge benefits from substantial recent, and ongoing transport infrastructure development and upgrades. These provide an established base point from which the CNFE benefits and which provides a focus for connection to / from the CNFE development area. A summary of this base point provision is as follows:

- Cambridge North Rail Station providing regular services (4 per hour during the peak hour) providing a 5-minute journey time connection between the station and Cambridge City Centre. The station provides 1,000 cycle parking spaces.
- The Cambridgeshire Guided Busway (CGB) connecting Cambridge City Centre with Huntingdon with guided (bus only) section between St Ives and the A3109 Milton Road, Cambridge. The busway now incorporates an 875m segregated section between Cambridge North Rail Station and Milton Road.
- High frequency bus services (Citi 2) to supplement the CGB providing connection between Cambridge North Station and Addenbrooks with a weekday, 10-minute service frequency (6 buses per hour in each direction).
- National Cycle Network 51 (Oxford to Colchester) runs adjacent to the guided section of the CGB route. The busway extension to Cambridge North Rail Station incorporates the off-road cycle route.
- The Chisholm Trail. Running between Cambridge and Cambridge North Rail Stations a largely off-road pedestrian and cycle link currently under construction.

- Off road cycle link between Cambridge North Station and Waterbeach with potential for upgrade as part of the Waterbeach Greenway proposals.

Structure of Report

1.14 The remainder of this report is split into 8 further sections. These sections are summarised as follows:

- **Section 2** summarises the local highway context and considers the accessibility of the site by non-car modes.
- **Section 3** explains the proposed and emerging transport schemes being developed for the North Cambridge area.
- **Section 4** summarises the stakeholder engagement completed to date.
- **Section 5** sets out the transport strategy for the CNFE site, summarising the measures to be brought forward to enable the development area to manage vehicle trip generation and focus travel on sustainable modes.
- **Section 6** provides the forecast vehicle trip generation of the CNFE core site and the CNFE against which future site transport assessments will be assessed. It determines what the impact is likely to be on the local transport network and provides an overview of the economic impact.
- **Section 7** explains the gap analysis summarising the further work that will be required to support a future planning application for the CNFE site.
- **Section 8** sets out the current expectations with regards to the timescales for the delivery of the development.
- **Section 9** provides a summary and conclusion to the report.

2 Baseline Transport Situation

Introduction

- 2.1 This Chapter of the Transport Strategy document sets out the baseline, transport conditions in and around the proposed CNFE development site. It is based on the outcomes of a desk-based research exercise carried out between September and October 2018 and site visits undertaken in October 2018.

Site Location and Description

- 2.2 The development site extends from the A14 in the north to Cambridge Business Park / Cowley Road in the south and the Fen Rail Line in the east to Cowley Road in the west. The site location and approximate limits of the development area are as presented in **Figure 1.1** with the more immediate site context identified in **Figure 2.1**.

Figure 2-1 CNFE Site Context



Source: © OpenStreetMap contributors with Pell Frischmann annotations

Surrounding Highway Network

Strategic Road Network

A14 (T)

- 2.3 The A14(T) runs east to west along the northern boundary of the CNFE development area. It is a trunk road which forms part of the Highways England strategic road network and provides a link between Felixstowe in the east to the M1, M6 and A14 (Cattorpe Interchange) to the west.

- 2.4 Milton Interchange (Junction 33 of the A14) is a grade separated junction which provides an interchange between the A14, A10 and the A1309.
- 2.5 The A14 is currently the subject of major highway construction upgrade works between Cambridge and Huntingdon (the Cambridge to Huntingdon improvements scheme which began in November 2016). The works are proposed for completion by [REDACTED] and include a new bypass south of Huntingdon and widening of the A14 between Swavesey and Girton.
- 2.6 Upgrade works are also ongoing at junction 33. The works incorporate;
- Bypass lane from the eastbound off slip to A10;
 - Alteration to lane assignments between the A10 and Cambridge Road (for Milton); and
 - Widening of southbound circulatory carriageway to provide a third lane.

A10

- 2.7 The A10 runs north from junction 33 of the A14. It is a single carriageway link providing connection between junction 33 of the A14 and Waterbeach Village, approximately 4.5km north of junction 33, and Ely approximately 20km from the junction.

Local Road Network

Milton Road

- 2.8 A1309 Milton Road is a main route into Cambridge City Centre, providing highway access to major employment sites including the Cambridge Science Park, St Johns Innovation Centre and Cambridge Business Park. Milton Road is subject to a 30mph speed limit in the vicinity of the junctions with Cowley Road and Kings Hedges Road. North of the junction with Cowley Road North, the speed limit increases to 50mph.
- 2.9 To the south of the Milton Road / Cowley Road / Cambridge Science Park junction, Milton Road forms a signalised junction with the CGB.

Cowley Road

- 2.10 Cowley Road is a two-way carriageway which runs along the western and southern boundary of the Water Recycling Centre. Running along the southern boundary of the site it provides access to the Cowley Road Industrial Estate, and Cambridge North Station. It is subject to a 30mph speed limit. The section running alongside the eastern boundary is subject to a speed limit of 20mph and provides access to St John's Innovation Park. For the remainder of this report Cowley Road is referred to as Cowley Road (West) and Cowley Road (South).

Public Transport

Rail

Cambridge North Station

- 2.11 Cambridge North Station opened in May 2017 and is located to the south east of the site. It is between 600m and approximately 1.5km of the furthest part of the site. The approximate walk distances from the station at 500m, 1km and 1.25km intervals are identified in **Figure 2-2** confirming the majority of the site is within 1km.

Figure 2-2 Distances to Cambridge North Train Station



Source: © OpenStreetMap contributors with Pell Frischmann annotations

- 2.12 Cambridge North Station is managed by Greater Anglia and is served by rail services operated by Thameslink, Greater Anglia and Great Northern, serving destinations including Cambridge Central, London King's Cross, London Liverpool Street, Norwich and Ely. The station benefits from a total of four rail services in each direction per hour during peak hours.
- 2.13 The station has 3 platforms, as well as parking for 450 cars and 1,000 bicycles.
- 2.14 As part of the station development, a number of transport infrastructure improvements were also provided around the station and these are summarised below:
- An extension of the Cambridgeshire Guided Bus (CGB) route from Milton Road to Cambridge North Station;
 - A new cycleway linking the existing cycleway along the CGB with Cambridge North Station and south to Cambridge City Centre via a new link through Moss Bank;
 - A new cycleway running parallel to Cowley Road along a disused Network Rail access track linking Cambridge North Station with Milton Road, the Cambridge Science Park and Milton village;
 - The provision of a new Station Access Road linking Cowley Road with Cambridge North Station, including the provision of a segregated footway and cycleway along the western side and a footway on the eastern side; and
 - A new station square ('Cambridge Square') including disabled car parking, drop-off facilities and a taxi rank.

Bus Services

Cambridgeshire Guided Busway (CGB)

- 2.15 The CGB provides connection between Cambridge and St Ives with the with guided (bus only) section running between St Ives and the A3109 Milton Road, Cambridge. The stops nearest to the CNFE Core Site are located on the bus way approximately 130m west of the Milton Road / CBR junction.
- 2.16 The busway incorporates an 875m segregated section between Cambridge North Rail Station and Milton Road. Bus routes A and D provide a connection between St Ives and Cambridge City Centre via Cambridge Science Park with some services also stopping at Cambridge North Station. Route A continues to Addenbrook's Hospital with some services also continuing to Royston.
- 2.17 Routes A and D run on a combined Monday – Saturday frequency of 4 per hour in each direction. Service frequency on a Sunday is 2 per hour.
- 2.18 On a weekday, during the period 07:00 – 09:00 up to 10 services are provided per hour inbound to Cambridge and 5 services outbound. This is supplemented with 7 outbound services between 16:00 – 18:00.
- 2.19 Route C runs between St Ives and Cambridge City Centre. Services do not stop at Cambridge North Station. This route provides a Monday - Saturday service frequency of 1 - 2 buses per hour, in and outbound. Sunday frequency is one per hour in both directions.

Cowley Road

- 2.20 Bus stops are located on Cowley Road South served by bus route Citi 2. The eastbound stop is located approximately 160m east of the Milton Road / Cowley Road / Cambridge Science Park junction and the westbound stop approximately 115m west of the Milton Road / Cowley Road / Cambridge Science Park junction.
- 2.21 Citi 2 runs between Cambridge North Station and Addenbrooks Hospital. It runs in both directions on a frequency of one bus every 10 minutes on a weekday one every 10 minutes on a Saturday and one every 30 minutes on a Sunday.

Milton Road

- 2.22 The nearest Milton Road bus stops are located north and south of the Milton Road / Cowley Road / Cambridge Science junction.
- 2.23 The northbound stop is located approximately 130m south of the junction and southbound stop approximately 90m north of the junction. These stops are served by the 9 / 9x and the Milton Road Park and Ride.
- 2.24 Service 9 / 9x runs north and south between Cambridge City Centre and Ely. The service runs on an hourly frequency but with northbound services increasing to two buses per hour between 16:47 and 18:44 and southbound services increasing to two buses per hour between 17:00 – 19:30.
- 2.25 **Table 2.1** provides a summary of the above identified services with **Figures 2.3** and **2.4** providing network route maps.

Table 2-3 Summary of Bus Services

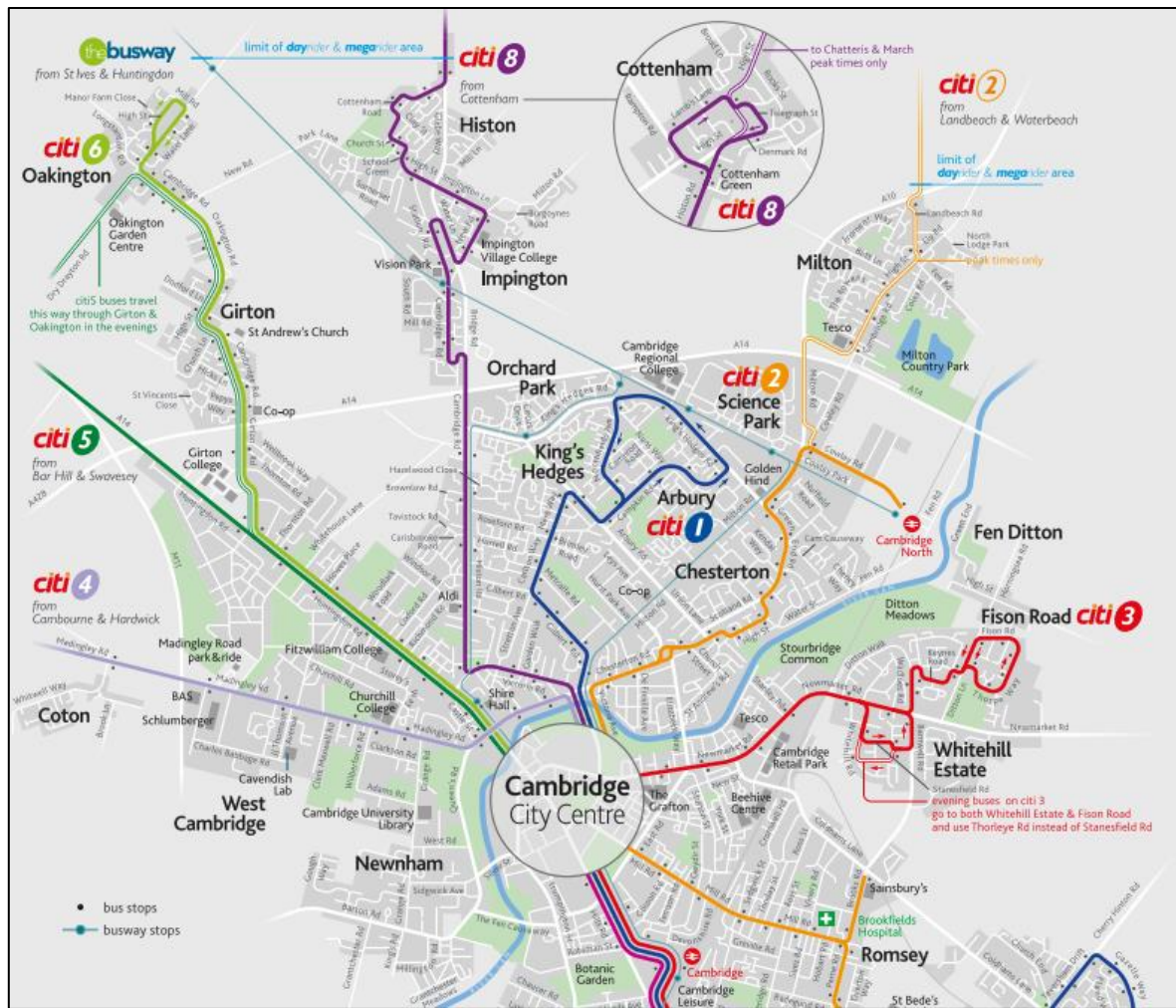
Service	Route	Frequency		
		Monday – Friday	Saturday	Sunday
CGB A & D	St Ives – Cambridge – Royston	4 per hour	4 per hour	2 per hour
CGB C	St Ives – Cambridge	Up to 2 per hour	Up to 2 per hour	1 per hour
Citi 2	Cambridge North Station – Addenbrooks Hospital	6 per hour	6 per hour	2 per hour
9 / 9x	Cambridge City Centre - Ely	One per hour	One per hour	No Service

Figure 2-4 Cambridgeshire Bus Network Map



Source: <https://www.stagecoachbus.com/maps>

Figure 2-5 Cambridge City Bus Network Map



Source: <https://www.stagecoachbus.com/maps>

Milton Road Park & Ride

- 2.26 The Milton Road Park & Ride (P&R) is located approximately 800m north of junction 33 of the A14 and is accessed from the A10. The P&R provides a 792 space car park along with covered cycle parking to accommodate 50 bicycles. Services connect the P&R with Cambridge City Centre starting at 06:20 Monday to Friday, 07:20 on a Saturday and 09:00 on a Sunday.
- 2.27 Monday to Friday service frequency is one bus every 10 minutes in each direction after 07:00 every 10 minutes in each direction after 08:00 on a Saturday and every 15 minutes in each direction on a Sunday.
- 2.28 Services stop at Milton Road, adjacent to Cambridge Science Park during all hours of operation with southbound stops stopping on the Science Park access road, rather than Milton Road, before 09:00.

Pedestrian Environment

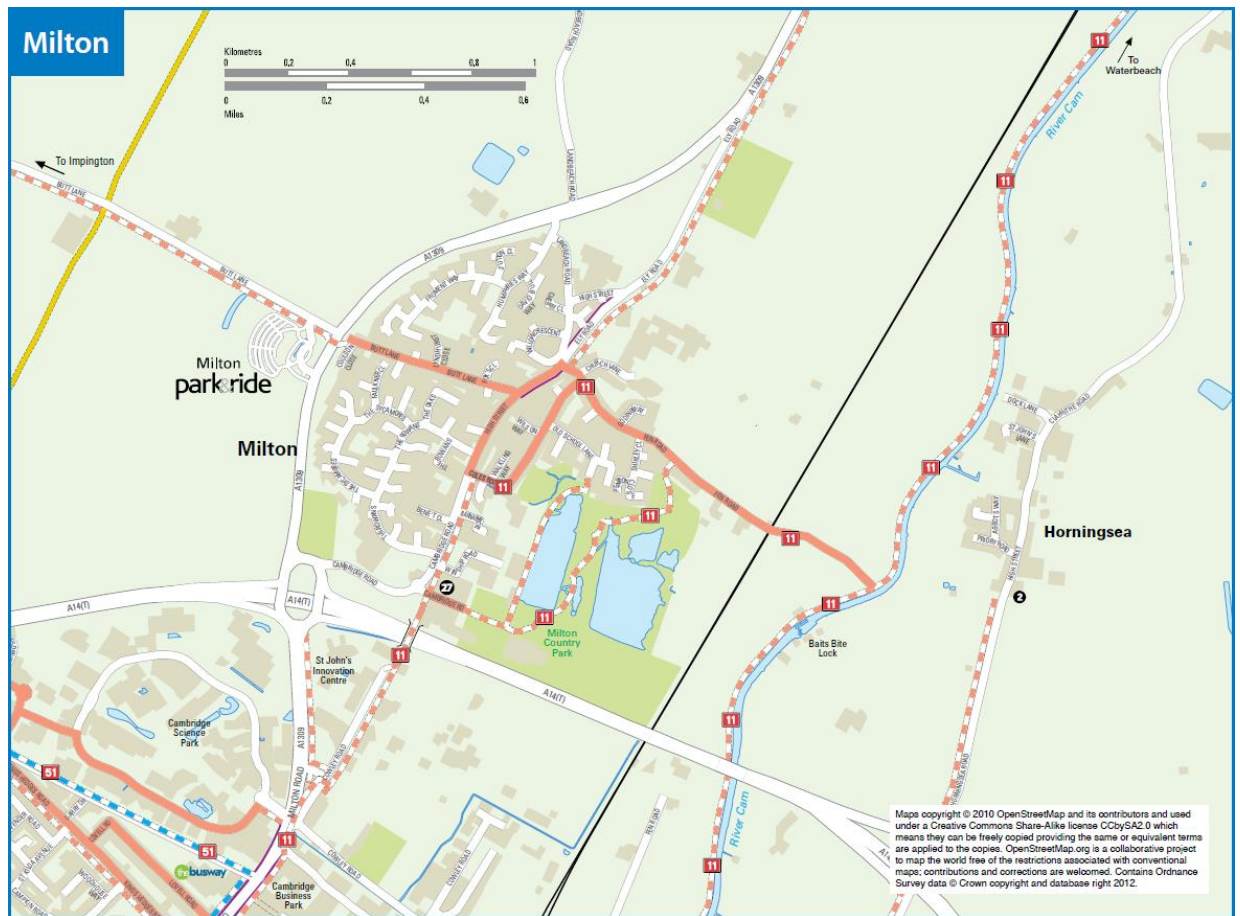
- 2.29 The CNFE site sits adjacent to an extensive pedestrian network with prominent north / south links running along Milton Road and east west links along Cowley Road South providing connection between Milton Road and Cambridge North Station.
- 2.30 A shared foot / cyclepath runs along the south side of Cowley Road South providing a segregated connection to Cambridge North Station. A narrow footway is also provided along the northern side of Cowley Road South albeit there is a section of approximately 100m, adjacent to the southern boundary of Cowley Industrial Estate, where no footway is available.

- 2.31 Cowley Road West provides a footway along the western side of the carriageway with a shared foot / cyclepath running along the eastern side of the carriageway. The shared foot / cycleway provides connection onto the shared foot / cycleway running along the east side of Milton Road and the shared link that runs along the south side of Cowley Road South to Cambridge North Station. Toucan crossings for pedestrians and cyclists over the Milton Road / Cowley Road / Cambridge Science Park facilitate connections between these routes.
- 2.32 On Milton Road a footway is provided along the eastern side of the carriageway from junction 33 of the A14. The footway extends north of junction 33 providing a footway connection to Milton. The footway then runs south to Chesterton Road. Along the western side of the carriageway a footway is provided from the Science Park access south to Chesterton Road. The footway providing direct connection into the Science Park.
- 2.33 The Milton Road pedestrian crossings located nearest to the site are at the junction of Milton Road / Cowley Road / Cambridge Science Park. The four-arm signalised junction includes toucan crossing arrangements for pedestrians and cyclists over the southern arm of Milton Road and Cowley Road South.
- 2.34 Located 100m south of the Milton Road / Cowley Road / Cambridge Science Park the Cambridge Business Park junction (Milton Road / Cowley Park) also incorporates toucan crossing arrangements on the southern arm of Milton Road and Cowley Park. Using either the Milton Road / Cowley Road / Cambridge Science Park junction or Milton Road / Cowley Park junction pedestrians are able to safely access both of the Milton Road bus stops nearest to the CNFE Core site.

Cycle Environment

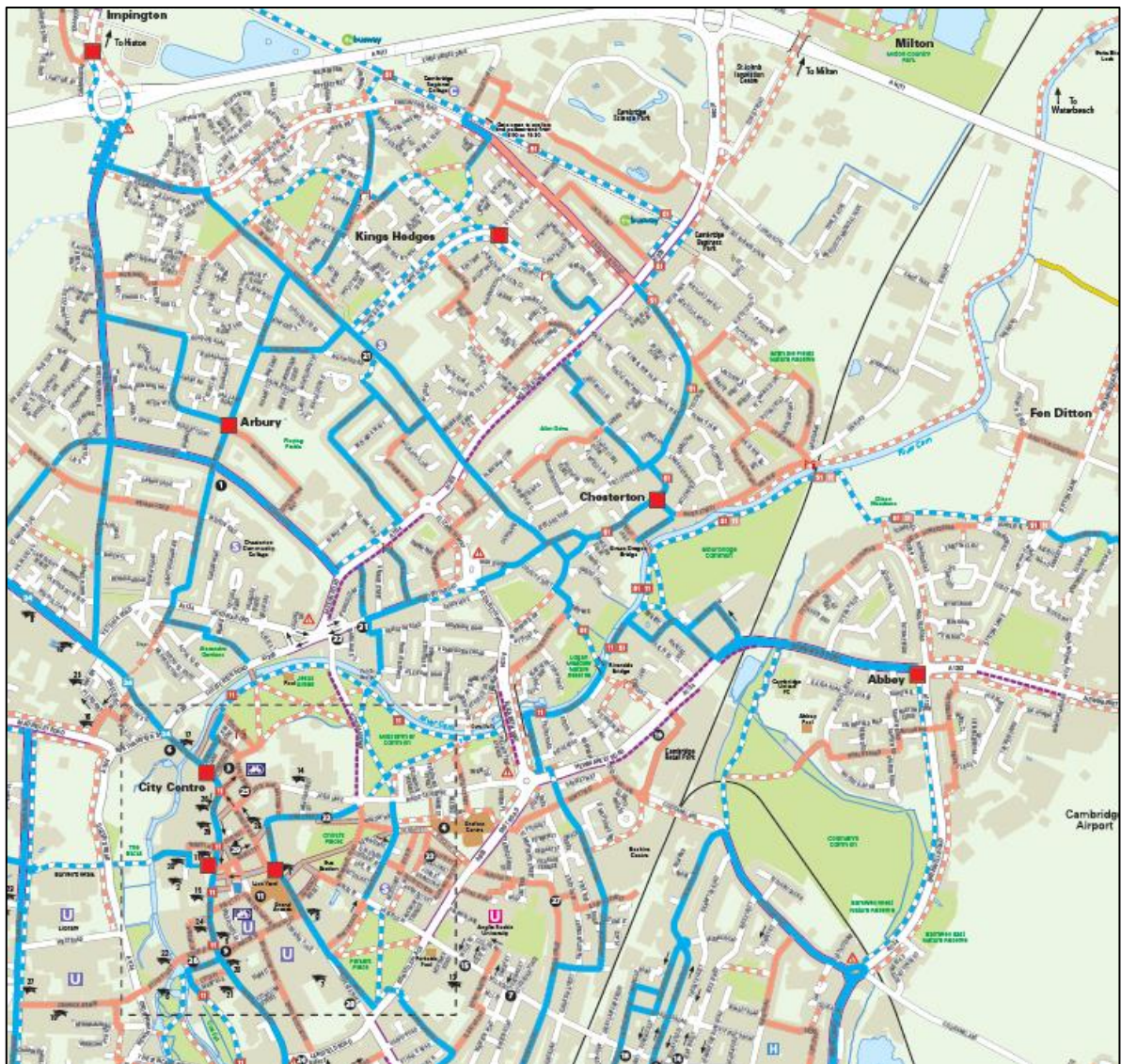
- 2.35 In addition to the shared foot / cycleways summarised above the cycle infrastructure available close to the site incorporates two National Cycle Networks (NCN). These are as follows:
- National Cycle Network 51 (Oxford to Colchester). Runs adjacent to the guided section of the CGB route with an extension included as part of the CGB extension introduced to Cambridge North Station. NCN 51 provides a link to Northstowe and St Ives.
 - National Cycle Network 11. The section currently constructed incorporates connecting between Waterbeach and Cambridge City Centre.
- 2.36 The primary route of NCN 11 runs to the east of the development site with the nearest connection provided from Fen Road approximately 1.5m south east of the site. Access is via the connection introduced from Cambridge North Station onto Moss Bank. However, secondary routes are also signed running along the shared foot / cycleway along Cowley Road West with connection south onto the Milton Road shared foot / cycleway. Running north the route crosses the A14 via the Jane Coston Bridge. The route runs through Milton providing a connection back into the primary NCN11 route approximately 1,2km east of Milton. Figure 2.5 identifies the route of NCN11 within the vicinity of the development site and Milton with Figure 2.6 presenting the wider cycle network for Cambridge.

Figure 2-6 Milton Cycle Links



Source: <https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/cycling/cycle-routes-and-maps/>

Figure 2-7 Cambridge Cycle Links



Source: <https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/cycling/cycle-routes-and-maps/>

3 Proposed and Emerging Transport Schemes

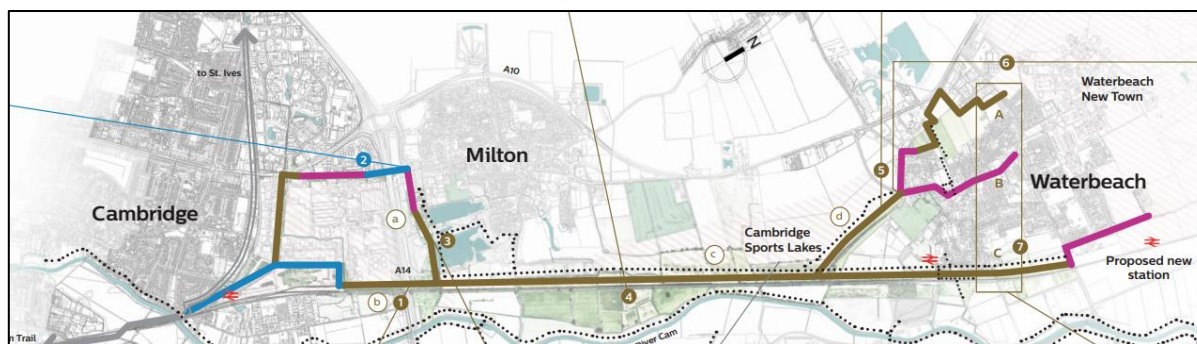
Milton Road

- 3.1 The Greater Cambridgeshire Partnership (GCP) Milton Road scheme proposes improvements to public transport, bicycle and walking infrastructure on the key north / south arterial route so as to *'make these sustainable travel options a more attractive alternative to the car, and to improve journey times.'* The proposed scheme is currently under public consultation and focuses on provision of the following infrastructure.
- Segregated cycle lanes on both side of the road located between the footway and verge;
 - Introduced new length of outbound bus lanes to supplement the existing provision;
 - Floating bus stops;
 - Copenhagen style priority junction crossings;
 - Signalised junction and roundabout redesigns to provide either off road cycle crossings or segregated cycle crossings.
 - Junction improvements to provide improved legibility for pedestrians and cyclists.
 - Northbound bus lane;

Waterbeach Greenway

- 3.2 Cambridgeshire County Council are currently consulting on the upgrading and the provision of new greenways that provide links to / from and within Cambridge.
- 3.3 An existing Greenway provides connection to / from Waterbeach running primarily alongside the River Cam from Fen Road in Cambridge however with the route susceptible to pooling of water and being indirect the review has focused on providing a new more direct route.
- 3.4 The focus of the new greenway is for a route with a minimum width of 2m that runs broadly parallel to the Fen Rail Line and provides connection south to Cambridge North Station. Crossing the A14 two routes are proposed to provide connection to the station. These routes are summarised as follows:
- A new A14 underpass located west of the railway line providing onward connection to Cambridge North Station on a route located between the rail line and the CNFE core site.
 - The second greenway is routed via Jane Coston Bridge which crosses the A14 approximately 350m east of junction 33 and connects the route into Cowley Road West. The route enables connection to Cambridge North Station via the cycle way running alongside the CGB.
- 3.5 South of the station the cycle link provided to Moss Bank and in turn Fen Road provides onward connection to the centre of Cambridge. It enables tie in to the Chisolm Trail.

Figure 3-1. Proposed Route of New Waterbeach Greenway¹



Source: www.greatercambridge.org.uk/greenwaysconsultation

Chisholm Trail

- 3.6 The Chisholm Trail connects Cambridge North Station with Addenbrooks Hospital via Cambridge Station. The trail will primarily run on traffic free routes and enables connection to destinations including Cambridge Retail Park.
- 3.7 The route construction has been commissioned with a build phase of up to 5 years envisaged. The Greater Cambridge Partnership Consultation Leaflet supplied confirms the route proposals.

Cross City Cycling – Links to Cambridge North and Science Park

- 3.8 One of 5 route upgrades across the city the link to Cambridge North and Science Park is split across three phases. These are as follows:
- Phase 1 – Green End Road from Water Lane to Nuffield Road - Constructed.
 - Phase 2 – Green End Road from Nuffield Road to Milton Road – Currently under Construction.
 - Phase 3 – Nuffield Road – Construction to be confirmed.
- 3.9 The upgrades focus on providing designated on road cycle lanes which incorporate associated measures, such as floating bus stops, so as to provide improved highway safety, reduce congestion and improved air quality.

A10 Ely to Cambridge Transport Study

- 3.10 The Ely to Cambridge Transport Study is an assessment of the potential benefits of a range of transport and transport / highway infrastructure interventions and is described as a *'wide ranging multi modal strategy'* that incorporates three strands. The identified strands are:
- Strand 1 – Overall transport requirements on the corridor.
 - Strand 2 – Specific requirements for growth at Waterbeach.
 - Strand 3 – Specific requirements for growth at CNFE / Cambridge Science Park (CSP)
- 3.11 Strand 3 focuses on review as to how *'further growth at Cambridge Northern Fringe East and the Cambridge Science Park might be accommodated on the transport network.'* Due to existing and forecast traffic congestion along the A10 / A14 / Milton Road *'analysis suggests that without mitigation*

¹ Source

or measures to limit car use and provide better alternatives for many trips into the area, development traffic would displace other traffic to less appropriate routes.’ Consequently, the studies ‘recommended strategy for unlocking growth at the CNFE and the Cambridge Science Park is as follows:

- *Providing a form and mix of development that enables access to many services and facilities by residents, workers and visitors to be made locally or without the need to travel by car, supported by a policy of demand and parking management for developments in the area.*
- *Reducing the number trips that are made to and from the CNFE / CSP area by car, and providing infrastructure and services to allow for these trips to be made by other means*
- *Further study into the provision of additional vehicular capacity where it would address access and congestion issues without adding to congestion problems elsewhere on the strategic and local road networks. This should include consideration of the capacity that could usefully be provided at the site accesses and at the A14 / A10 / A1309 Milton Interchange.’*

4 Stakeholder Engagement

Introduction

- 4.1 During the process of preparing the Transport Strategy, Pell Frischmann has engaged with key stakeholders to understand assessment work completed to date along with the ongoing work required to achieve stakeholder support for the scheme development. The following section of the report summarises the consultation that has been undertaken with minutes of identified meetings provided at **Appendix B**.

Planning & Highway Authority Engagement

- 4.2 A combined meeting was held with Cambridgeshire County Council CCC, Cambridge City Council (CCiC) and Highways England (HE) on 9th October 2018.
- 4.3 Discussions were focused on agreeing the expectations of the A10 Ely to Cambridge transport study trip budget, the suitability of the proposed CNFE Transport Strategy and future expectations regarding highway infrastructure, requirement of assessment work and funding of mitigation.

A10 Study

- 4.4 CCC has clarified the work completed to date in relation to the A10 Study and the transport modelling completed. This confirmed that a vehicle trip budget had been identified against which the CNFE site would be assessed and that the development should not exceed this volume. The findings of the A10 study confirmed the trip budget that the CNFE site was required to meet but that the development scale and mix was not fixed.
- 4.5 Subject to the development proposals meeting the requirements of the trip budget it was agreed by the relevant highway authorities that no additional transport modelling would be required and that the scope of the CNFE Transport Strategy would be acceptable.

Key Links

- 4.6 A strong link between Cambridge North Station and Cambridge Science Park is identified as being an essential part of the wider site development. As part of this work CCC explained Cambridge Science Park's transport consultants have investigated the spatial requirements for landing a foot/cycle bridge on the western side of the A10 Milton Road. Utilising this link as the western end of an elevated connection into the proposed development (or an underpass) would be beneficial to the wider site Transport Strategy.

Transport Network Proposals

- 4.7 It has been identified that the existing vehicular access into Cambridgeshire Science Park via Milton Road is due to be removed in late 2019.
- 4.8 The proposed Waterbeach Greenway (off-road route for pedestrians, cyclists and equestrians) will run north-south alongside/through the site and will need to be accommodated in the masterplan.

Contributions

- 4.9 It was acknowledged that the CNFE site will be required to provide a highways contribution (for wider proposed infrastructure schemes) that would be directly linked with the quantum of development across the full CNFE / Cambridgeshire Science Park and wider development aspirations for north of the A14. However, cost estimates for measures linked only to the proposed development (e.g. site access, connection to Cambridge Science Park and site-specific public transport improvements), will need to be calculated separately.

Stagecoach

- 4.10 The proposals for the CNFE core site were introduced to Stagecoach on Monday 1st October 2018.

- 4.11 The focus of discussions to date has been with regard to the scope for diverting an existing Stagecoach service to serve the middle of the CNFE core site.
- 4.12 Stagecoach identified that the most relevant services that could be diverted into the CNFE core site would be either CGB service D or the Citi 2 with Citi 2 seen as the service that provided the best opportunity to penetrate the site. This could be maintained on the current weekday 10 minute service frequency thereby providing a frequent connection between Addenbrookes Hospital, the City Centre, Cambridge Science Park and Cambridge North Station.
- 4.13 Stagecoach also commented on the Masterplan and the importance of providing bus stops within the site such that all dwellings are located within 400m of a bus stop. The Masterplan as presented may not be adequate to enable the north east corner of the site to provide an appropriate route to a stop within 400m. If this remained the case it may prove necessary for some of the Citi 2 buses to undertake an additional diversion further into the site. This may require an additional vehicle to be provided in order to maintain the 10 minute service frequency of Citi 2.

5 Transport Strategy

Introduction

- 5.1 The emerging transport strategy for the CNFE site has been developed accounting for the scale and type of development proposed, the transport and highway assessments undertaken to date by Cambridgeshire County Council and the need to align with the A10 Ely to Cambridge Transport Study whilst restraining residential parking to a ratio of 0.2 vehicle parking spaces per dwelling.

Access Arrangements

- 5.1 Vehicular access to the Core CNFE site will likely be provided to and from Cowley Road South and East via up to five separate junctions with two providing connection along the western boundary and three along the southern boundary. The proposed access points are shown on the masterplan supplied in **Appendix A** and include a direct link to enable direct connection between the Cambridge North Station and the centre of the site. This direct connection is subject to the development of the Cambridge Commercial Park as part of the wider CNFE development area.
- 5.2 Vehicular access proposals will incorporate upgrades to the two Milton Road / Cowley Road junctions. The details are subject to further assessment including junction specific capacity modelling and assessment.
- 5.3 All primary access points will be constructed to a standard to be agreed with the local highway authorities with footways and segregated cycleways to be incorporated where required. They will also seek to futureproof the development to enable the future implementation of mass public transit systems.
- 5.4 With primary accesses being provided onto both Cowley Road South and East the site foot and cycle infrastructure will tie in directly to the shared foot / cycle ways along both routes. This includes a site corridor running from the centre of the site to the south east corner to enable a link to NCN 51 running south to Cambridge North Station.
- 5.5 In addition to the combined foot / cycle / vehicle access points three foot / cycle links are currently proposed to be introduced. These potential measures are summarised as follows:
- A new foot and cycle bridge over the A14 to connect to Cambridge Road thus facilitating connection into NCN 11 that runs through Milton.
 - A new foot and cycle bridge over the railway line to link east to Fen Road.
 - A pedestrian and cycle route across Milton Road (in the form of an improved at-grade crossing, overpass or underpass).
- 5.6 The development will also seek to incorporate an extension to the Chisholm Trail with this to run along the eastern boundary of the site thus tying in to the network of links to be introduced across the site and the foot / cycle access points proposed from the northern and eastern boundaries of the site.
- 5.7 The boundary treatment along Cowley Road South will seek to allow a segregated foot / cycleway to be introduced with a series of pedestrian / cycle avenues running north / south enabling permeable connection into / out of the site.

Public Transport Provision

- 5.8 As part of the scheme development a high frequency bus service will be provided through the site with all dwellings to be within 400m of a bus stop.
- 5.9 Initial engagement with Stagecoach has indicated that the existing Citi 2 service will be routed to run within the site adding stops between Milton Road and Cambridge North Station. The service runs on a frequency of one bus every 10 minutes in each direction, the inclusion of the service therefore

providing the CNFE Core Site with a high frequency service that will connect the site with Ely, Waterbeach, Milton, Cambridge City Centre and Addenbrooks Hospital.

Parking Arrangements

- 5.10 The scheme car parking provision for the residential element of the scheme will be at a maximum ratio of 0.2 spaces per dwelling (1,780 parking spaces). Car parking will be provided within three 6 storey flexible parking structures. Current expectation is that one electric vehicle charging point will be provided for every 10 spaces, with passive provision provided to increase the provision in the future.
- 5.11 Non-residential landuses will also have appropriate levels of parking to ensure that the trip budget for the area is achieved.
- 5.12 Cycle parking provision will be one space per bedroom with 50% of all parking provided within buildings and 50% in external shelters.

Internal Movement Strategy

- 5.13 The site will be designed to enable the permeable movement of people with a principle route corridor included that directs movement of people between the site and Cambridge North Station and Cambridge Science Park. Ease of movement is focused on pedestrian and cycle connections to:
 - Cambridge North Station,
 - Cambridge Science Park,
 - Cambridge Guided Busway Stops and
 - Existing, and upgraded cycle networks including NCN 11 and 51 along with the Milton Road segregated cycle links.

Parking / Waiting / Loading Management

- 5.14 To supplement the extensive sustainable travel interventions proposed it will be necessary to ensure an appropriate no parking / limited waiting strategy is introduced with comprehensive site wide TROs. This will need a site wide restriction on kerbside parking.
- 5.15 Given the retail and commercial uses proposed, the parking / waiting restrictions will need to be supplemented by appropriate loading permissions so as to minimise obstruction and facilitate efficient loading and unloading arrangements. Given that much of the community and retail provision will be located within the centre of the site the focus of the delivery regime will be on consolidation and restricting the timing of deliveries. This could be linked to the proposed delivery hub summarised below to provide an incorporated residential / commercial facility.

Further Measures to Minimise Vehicle trips

Cycle Hubs

- 5.16 It is intended that a Cycle Hub will be introduced at the centre of the site providing cycle parking and charging along with a shop for bike repairs and maintenance. There is also an intention to introduce a cycle hire scheme loaning a mix of Brompton, traditional and electric bikes depending on the requirements of the user.

Consolidation Centre / Delivery Hub

- 5.17 The scale of the development enables a consolidation centre / delivery hub to be considered as a viable option thus consolidating and minimising delivery vehicle trips. Goods are delivered from external sources to the hub, sited on the perimeter of the development or off site, with these then transferred where size permits, by bicycle to residents. The consequential benefit is a reduction in

vehicles, reduced conflict with vulnerable road users, and reduced pollution. An example of this model is Zedify who currently operate in Cambridge.

Refuse Collection

- 5.18 The envisaged strategy is for the introduction of an underground waste storage system across the site. Details of these arrangements will be clarified as the scheme progresses however similar schemes have been introduced to enable large centralised underground containers to be installed. This has the benefit of enabling waste to be collected less frequently than typical kerb side arrangements with the potential for demand sensors and real time information to be used.

Mobility as a Service (MaaS)

- 5.19 MaaS provides a focus on consolidating and integrating sustainable travel options into a single point of access for the user. A MaaS system enables a single point of payment for all modes and allows for the user to focus on the most suitable option for travelling without need to review a series of options separately.

Site Wide Travel Plan

- 5.20 The site will be supported by an extensive site-wide travel plan ensuring connection and linkage between Travel Plan Co-ordinators across the residential and employment uses. The Travel Plan will incorporate commitment and management to ensure a site wide sustainable travel website is set up, this could be co-ordinated with a wider development / community website, to ensure residents are able to access information on sustainable travel.
- 5.21 The travel plan will also provide for the development of sustainable travel welcome packs designed accordingly for residents and employees.
- 5.22 In developing a Travel Plan the site will align itself with other organisations within Cambridge but most specifically those across The Cambridge Science Park, St Johns Innovation Centre and Cambridge Business Park. Currently an area wide travel plan applies to all of these as part of the Travel Plan+ area. The plan covers the period April 2018 – March 2021.
- 5.23 Whilst the development timescales for the CNFE core site extend beyond the current end date of the Travel Plan the developers for the CNFE core site will engage with the Travel Plan+ group during the development of a planning application so as to start feeding in ideas both in terms of new opportunities that the CNFE core site may be able to support but also how measures within the existing area wide Travel Plan may benefit the CNFE core site such that sustainable travel habits can be developed from day one of occupation.

6 Trip Assessment

Introduction

- 6.1 The focus of this Transport Strategy is aligned with the A10 Ely to Cambridge Transport Study to maximise trip internalisation and travel by sustainable modes and minimise vehicle trips. However, rather than directly transfer the trip rates that can be derived from the work completed within the A10 study this Transport Strategy further refines the trip forecasts. This refinement accounts for the proposed scale of development on the CNFE site and a constrained residential car parking provision of 0.2 spaces per dwelling.

Trip Generation, Distribution and Mode Share

- 6.2 In order to determine person trip generation, and subsequently modal trip generation, the 2011 census data has been interrogated. Journey to work mode share has been derived for travel to and from the 2011 super output area within which the CNFE site is located. This provides a total of the top 16 areas including the CNFE super output area, where residents are most likely to travel to / from.
- 6.3 Three additional zones have also been allocated to account for other journeys within Cambridgeshire, other journeys outside of the Cambridgeshire area (assumed to be by car), and other journeys by rail (made possible by the opening of Cambridge North Station following Census release in 2011).
- 6.4 The residential trip distribution is derived from the census for key destinations accounting for the point of origin being the 2011 super output area within which the CNFE site is located whilst for the employment trips assignment is based on the point of destination being the 2011 super output area within which the CNFE site is located.
- 6.5 The scale of development proposed will require education and local retail facilities to be provided within the site. Therefore, for the purposes of a trip assessment to inform the transport strategy, it has been assumed that trips to these land uses will be internal to the site and therefore have not been considered further in this assessment.
- 6.6 From the base point of residential mode split the mode share has been adjusted to account for the proposed parking regime that will limit residential parking provision to 0.2 spaces per dwelling. The key assumptions are as follows:
- No trips within the 2011 super output area that the CNFE site is located will be made by car.
 - Car trips to census output areas adjacent to the development site are reduced to account for the overall focus on minimising car travel, the proximity to the busway and the proposed diversion of buses into the site, and to reflect that Cambridge is a city where walking and cycling are higher in the mode hierarchy.
 - Walking and cycling mode share to and from the super output area containing the Cambridge Science Park (CSP) has been increased to account for the new links into CSP and its expansion.
 - Additional rail trips to destinations such as London and Ely have been assumed to account for the opening of the new Cambridge North Station following the release of the census data, and the improvements to the rail network that have occurred and are planned e.g. Thameslink and East-West Rail respectively.
 - The mode share for CNFE employment trips is unchanged from the census baseline.
- 6.7 The mode share has been split to account for each 2011 Census Super Output Area thereby accounting for distance and public transport routing. Accounting for the adjusted mode share the AM period (7am to 10am) and PM period (4pm to 7pm) approximate vehicle trip generation for the proposed CNFE site is identified in **Table 6.1**.

Table 6-1 CNFE Site Forecast External Vehicle Trips

Peak	AM (7am to 10am)		PM (4pm to 7pm)	
Direction	Inbound	Outbound	Inbound	Outbound
Vehicle trips	1,289	2,122	1,945	1,739

6.8 The forecast trips are lower than the equivalent trip rate within the A10 Ely to Cambridge Transport Study, Strand 3 CNFE / Cambridge Science Park (CSP) Transport Report as the CNFE site Strategy trips have been adjusted to account for the proposed level of on-site residential car parking provision. For clarity the peak period trip generations utilising the Strand 3 residential external trip rate are as identified in **Table 6.2**.

Table 6-2 A10 Study CNFE Site Forecast External Trips

Peak	AM (8am to 9am)		PM (5pm to 6pm)	
Direction	Inbound	Outbound	Inbound	Outbound
Vehicle trips	2,718	3,090	2,640	2,704

6.9 It is noted that the figures presented as part of the A10 Study will form a basis of a trip budget, although it is understood that the final trip budget is being refined. The tables show that the vehicle trips presented within this strategy align with the vehicle trips provided as part of the A10 Study.

6.10 The multi-modal trip generation has also been derived as part of the assessment. As discussed previously the mode share was defined on a zone by zone basis for the residential and business land uses to give an overall number of trips by mode. The zonal mode shares for residential trips are shown in **Table 6.3** and **Figure 6.1**.

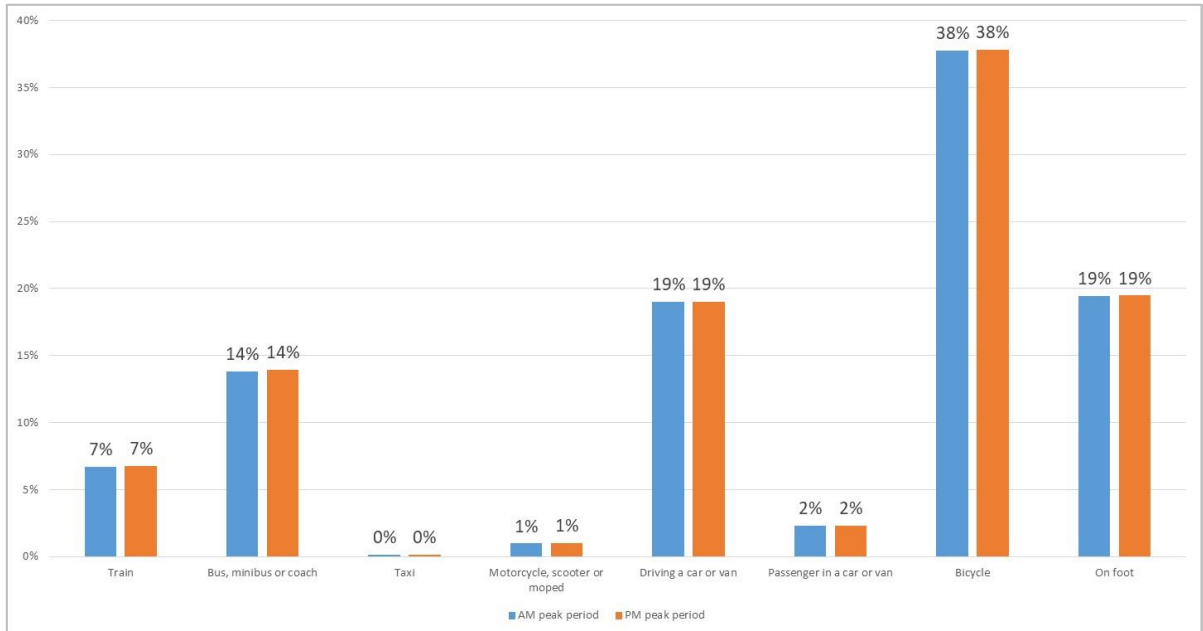
Table 6-3 Forecast External Residential Mode Split

Mode	AM peak period	PM peak period
Train	7%	7%
Bus, minibus or coach	14%	14%
Taxi	0%	0%
Motorcycle, scooter or moped	1%	1%
Driving a car or van	19%	19%
Passenger in a car or van	2%	2%
Bicycle	38%	38%
On foot	19%	19%

6.11 These mode splits align with the aspiration to create an exemplar sustainable development on the northern fringe of Cambridge, and those outlined in the A10 Study which specified mode shares of 14% for bus and 7% for train.

6.12 Cambridge already has a high proportion of residents choosing to cycle in and around the city so a mode share of 38% aligns with what is currently observed in some parts of the city. The Science Park, which will be expanded, is likely to be a significant work destination for residents of the proposed development and therefore a walking mode share of 19% is considered to be appropriate in the context of this development.

Figure 6.1 AM and PM peak period



Multi Modal Trip Generation

6.13 The two-way multi modal trip generation for the CNFE site is shown in **Table 6-4**.

Table 6-4 Multi Modal Trip Generation

Mode	AM (7am to 10am)	PM (4pm to 7pm)
Train	1,253	1,384
Bus, minibus or coach	2,591	2,860
Taxi	30	33
Motorcycle, scooter or moped	182	200
Driving a car or van	3,401	3,684
Passenger in a car or van	425	466
Bicycle	7,010	7,690
On foot	3,611	3,965

Development Impact

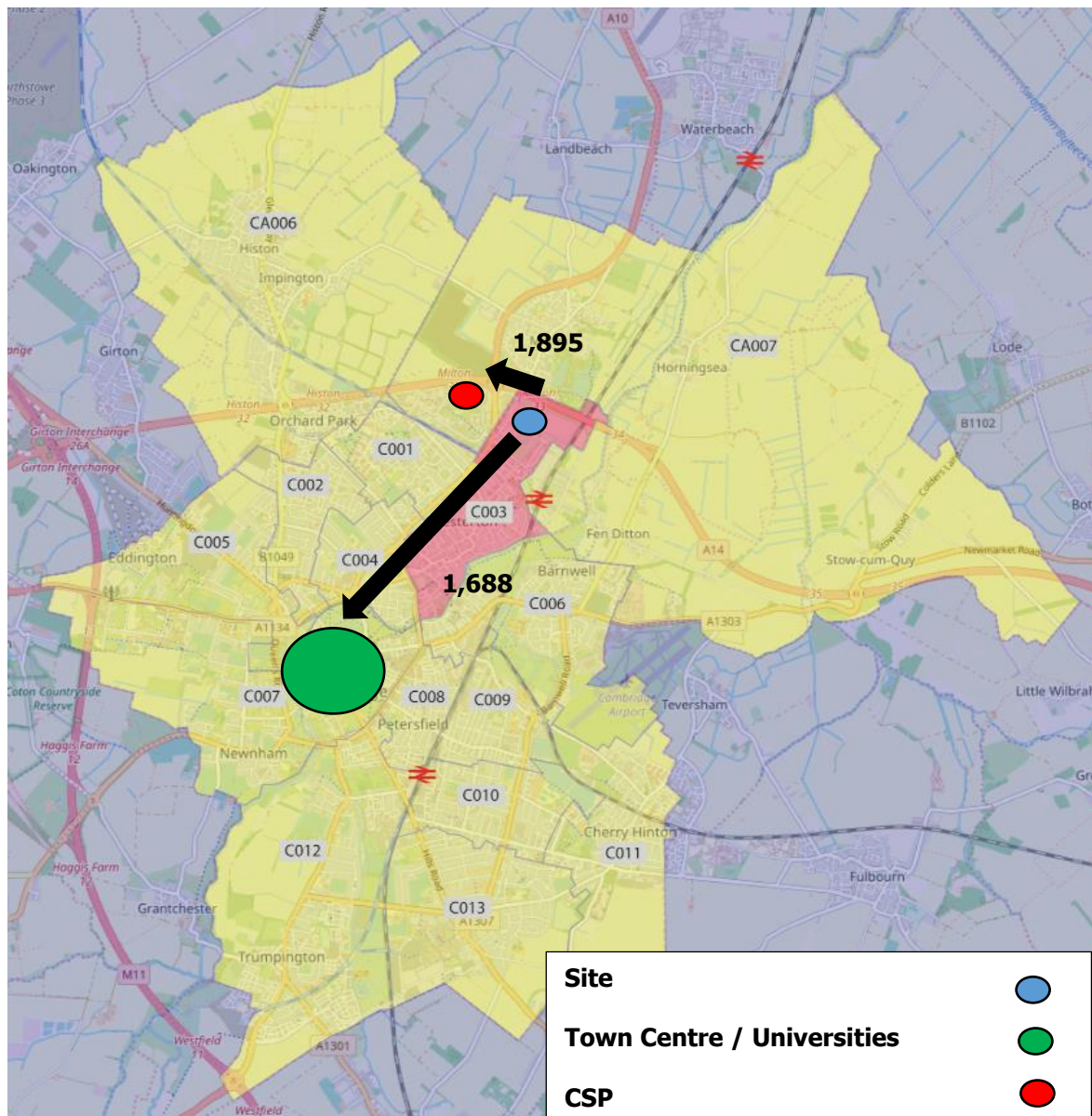
Vehicles

- 6.14 The impact on the local road network has been quantified through the economic assessment and the vast majority of the vehicles originating from the site are likely to be travelling to the wider area outside of the city centre. As a result, the vehicles largely impact upon the accesses into the site from Milton Road, as well as the Milton Interchange to the north where the A10 connects to the wider Strategic Road Network (the A14). These junctions have been identified within the A10 Study and will likely receive contributory funding from the development to provide improvements to mitigate any impact resulting from development traffic.

Walking and Cycling

- 6.15 Of the 7,010 additional cyclists associated with the proposed development during the three hour AM peak, the majority (over half) of these will be travelling towards either the city centre or the science park. Similarly, most of walking trips are also likely to walk to either the city centre or the science park.
- 6.16 This will result an increase in the number of cyclists using the new cycling infrastructure on the Chisholm Trail and along Milton Road. Further funding from the proposed transport contribution can be allocated to upgrading these facilities to cater for the increase in cyclists. The total number of cyclists going to / from these destinations during the AM peak period is shown in **Figure 6.2**.

Figure 6.2 Key Cycle Destinations AM Peak Period (7am to 10am)



6.17 The development of the site will open the area, breaking down the severance created by the local road network, railway line and the Anglian Water Recycling Centre. An additional link over the A14 will allow the Waterbeach development to the north, to connect with the City, whilst also providing a connection to Milton Country Park. As part of the development proposals, a new link across Milton Road will deliver a safe direct route from the both the CNFE site and the station directly into CSP. Both these new links could significantly benefit existing pedestrians / cyclists as well as facilitating movement to / from the site.

Public Transport

6.18 Most of the additional bus passengers resulting from the proposed development will be travelling to the city centre and towards the south of Cambridge. The size of the development allows for an additional service to be implemented which will cater for the new residents. This will benefit exiting public transport users by providing an additional service.

6.19 The recently opened Cambridge North Station will be able to cater for the additional rail passengers associated with the proposed development. The majority of whom are likely to commute to London. The introduction of the East West Rail link would also provide cross country routes allowing fast and convenient access from the site to other key locations such as Oxford and Milton Keynes.

Economic Impact

Available transport models:

- 6.20 A package of pre-existing models developed by and for Cambridgeshire County Council was used to assess transport impacts as part of the Ely to Cambridge Transport Study including Strand 3 CNFE/CSP Transport Report (February 2018), and the Ely to Cambridge Transport Study, Preliminary Strategic Outline Business Case (January 2018). The study utilised the Cambridgeshire County Council Cambridge Sub-Regional Model (CSRM2). The CNFE site was a core part of the assessment and the model has been used by CCC to consider the impacts of development on this, and other sites, across Greater Cambridge and the wider model study area.
- 6.21 CSRM2 is a WebTAG compliant strategic transport model which uses base data from 2015, including:
- Validation against traffic and transportation counts
 - All networks (highway, PT, walk, cycle)
 - Representation of parking and Park and Ride
 - Base transport movement data
 - Base land use data
 - Matrices with up-to-date mobile phone data

Modelling Transport External Costs:

- 6.22 For the purposes of the assessment of Transport User Costs, Cambridgeshire County Council's transport consultants (██████████) used a Reference Case 2031 version of the highway component of the CSRM2 model. This incorporates all committed transport schemes up to 2031 and all underlying growth and committed Local Plan development, excluding the CNFE site.
- 6.23 Cambridgeshire County Council agreed that the model was fit for purpose for use in the Strand 3 work and preparation of the Preliminary Strategic Outline Business Case and Highways England has been engaged throughout the A10 study.
- 6.24 The Reference Case also includes a number of committed strategic highways measures that are programmed for delivery across the study area including Highways England's A14 Cambridge to Huntingdon Improvement and associated junction works. The committed transport improvements provide a large localised increase in capacity. These will be complemented by other measures identified in the Ely to Cambridge Transport Study which the local authorities are currently exploring. The mitigation package for the CNFE site will likely include contributions towards other, more significant, transport schemes and measures including some of those identified via the A10 study. For these interventions the development will likely be required to make financial contributions that are reasonable in scale and kind, the levels of which will be determined as the site proceeds through the planning process.
- 6.25 A second 2031 model run has also been developed that incorporates the additional trips associated with the CNFE development.
- 6.26 The CNFE development trips have been determined through a stand-alone multi-modal trip generation and trip distribution assessment, utilising person trip rates, Office for National Statistics (ONS) Census data and an aspirational mode share that reflects the exemplar nature of the proposals in terms of creating a high level of sustainability and public transport accessibility and achieving a low vehicular mode share. These trips have been distributed to origins and destinations using the same trip distribution as forecast by the CSRM2 model for the Northern Fringe.
- 6.27 Importantly, the low vehicular mode share for the proposed CNFE housing-led development is in line with the trip budget assessed in the A10 Ely to Cambridge Transport Study. Cambridgeshire County Council are fully supportive of this strategy.
- 6.28 The outputs from these two model run scenarios have been input into TUBA to provide an assessment of the Transport External Costs associated with the additional highway trips.

- 6.29 The economic impact appraisal of the CNFE site (as discussed with MHCLG and DFT) therefore considers this core scenario and uses the Cambridge Sub-Regional (CSR2) strategic transport model to provide inputs to a TUBA assessment in line with WebTAG guidance. The initial, high-level assessment modelling of the transport external costs with the CNFE traffic demand, but no significant site-specific mitigation, shows a worst-case unmitigated transport cost of -£[REDACTED] across the network.
- 6.30 This figure needs to be viewed in the context that, in practice, development of the site would also include a package of transport mitigation, the details of which will be identified as the development proceeds through the planning process. This package will likely include significant contributions to the mitigation package set out in the A10 Study which themselves bring significant transport benefits. That study quantified the transport user benefits of the proposed mitigation package at £[REDACTED] (at 2018 prices). With the the CNFE site potentially providing a contribution of £[REDACTED] towards these mitigation measures (equating to 38% of the overall mitigation costs), if the same proportion of benefit were attributed to CNFE, a transport user benefit of £[REDACTED] results.
- 6.31 The true impact of the proposed development on the transport network is therefore only -£[REDACTED]. However, in accordance with WebTAG guidance we have modelled the more substantial impact through our economic case to provide a ‘worst case’ unmitigated measure of potential disbenefit.
- 6.32 The full breakdown is included within the Economic appraisal.

Prob not lawful as CIL regs prohibit tariff-style contributions

Environmental and social impact

- 6.33 The A10 study will evolve and further work undertaken by Cambridgeshire County Council as part of the next stages of the business case. This work will include appraisal of the environmental and social impacts. Therefore, at this stage a qualitative review of the impacts has been undertaken for the HIF submission and this is considered to be proportional.
- 6.34 The transport mitigation package and the development masterplan will lead to significant improvements in the travel options in the area following the redevelopment of the site. The mode shares that will be achieved at CNFE are likely to become the norm in Cambridge and this site will have a competitive advantage because of its accessibility and be a catalyst for improvements in air quality and noise in this area.
- 6.35 It has been proven in the AAP transport modelling and preliminary strategic outline business case that there is a mitigation package that can unlock the CNFE and wider development in this area. These schemes will evolve through the latter stages of the business case, and accident appraisal will be undertaken as part of this work. Given the CNFE development is seeking to reduce severance and remove pedestrian/ cyclist/ vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of accidents on Milton Road.
- 6.36 The impact of the walking and cycling improvements on existing physical activity has been considered qualitatively at this stage as the schemes are evolving in response to ongoing discussions with stakeholders. The masterplan will reduce severance (discussed below) and therefore increase the likelihood of people choosing to walk and cycle. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.
- 6.37 The masterplan will promote include a mix of land uses that will be active at different times of the day and front streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. Therefore, a qualitative assessment of the security and journey quality impacts is that these will be a positive.
- 6.38 The site currently has a severe impact on severance due to the local road network, railway line and the CWRC. The CNFE development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 (connecting Cambridge with Waterbeach and Milton Park), and a new link across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The proposed development will break down these barriers and therefore it is considered the severance and accessibility impacts will be largely positive.

- 6.39 Improved access to Cambridge North Station and the Science Park, and an enhanced bus service serving local users with more frequent and reliable bus services will be provided, with any pump-priming bus costs met by the developer. At this stage a qualitative assessment suggests that there will be a largely positive option and non-use value.

7 Strategy Progression

Introduction

- 7.1 A range of feasibility studies have been completed in relation to matters that influence the development of the CNFE area including Cambridgeshire County Council transport and corridor studies and developer led feasibility assessments for site development.
- 7.2 Within the context of transport and highways these studies direct the focus of the design, construction and mitigation solutions for the site and provides a pre planning context. To progress the CNFE site through to submitting a planning application it will be necessary to confirm that the proposed strategy can be delivered.
- 7.3 In terms of the site masterplan this will be focused on further site iterations albeit focused on maintaining the connections, particularly by foot and bicycle, identified in the masterplan supplied at **Appendix A**. The other items or 'Gaps' that will need to be clarified are as summarised over the remainder of this Section of the report.

Public Transport

- 7.4 The evolution of the transport strategy has included engagement with Stagecoach with regards to providing bus connection for the site. This has identified that service Citi 2 could be diverted from Cowley Road South.
- 7.5 The next steps of the public transport strategy will determine:
- Siting of bus stops to enable a maximum walking distance of 400m to all dwellings.
 - Likely Citi 2 timetable alterations to accommodate the routing into and through the site.
- 7.6 As part of this process further consultation will be held with Stagecoach to enable the evolving solution to fit with their commercial and operational expectations.
- 7.7 A demand review of current bus use, both of the Citi 2 and CGB will be necessary to determine the level of additional frequency on either route and what element of additional capacity relates to the CNFE area.
- 7.8 Engagement with the rail operator for Cambridge North Station will be completed so as to enable a comprehensive sustainable transport strategy to be complete and ensure the strongest possible links between the station and the CNFE site.

Cycle & Pedestrian Network

- 7.9 Indicative designs for cycle and pedestrian connections will be produced to show how these will look and confirm the siting of these routes within the masterplan. These will range from the primary routes down to the pedestrian / cycle avenues.
- 7.10 The proximity of the site to Cambridge North Station provides a key element of the Transport Strategy for the CNFE area. The ability for cyclists making a multi modal trip to park at the station will have a direct bearing on the volume of residents making the multi modal trip. Consequently, capacity analysis will be required to identify if further cycle parking is required at the Station and the volume required in relation to the CNFE site.
- 7.11 A viability review will also be necessary to ascertain how a link can be provided from the CFNE Core Site into the potential Cambridge Science Park foot/cycle bridge that will cross Milton Road to the south east of the CNFE core site.

Car Club

- 7.12 Given the focus on a residential parking provision of 0.2 spaces per dwelling and consequently expected low car ownership the site is likely to benefit from the inclusion of at least one car club space to supplement the extensive range of sustainable travel connections. Given the low level of expected car ownership across the site it will be necessary to consult with car club operators to determine the expectation as to the number of car club spaces to be introduced and potentially how this could be delivered as part of a multi travel mode club.

MaaS

- 7.13 The delivery of a MaaS system will require investigation to understand whether a system is already emerging across Cambridge or whether an appropriate system and business model needs to be developed. In this regard engagement with a range of stakeholders will be necessary with the initial focus of this engagement CCC, CCiC and HE in order to gain their buy in and ensure it is suitable for Cambridge.

Parking / Waiting / Loading

- 7.14 A site wide parking / waiting order would provide a blanket approach to enabling enforcement and minimise potential for residents / employees to seek to bring vehicles to the site other than where designated spaces are provided. The detail as to how this is best implemented and secured in a legal agreement will require consultation with Cambridgeshire County Council.

Highways

- 7.15 Investigate the impact of the CNFE area upon the Milton Road corridor particularly the operation of the Milton Road / Cambridge Science Park / Cowley Road and Milton Road / Cowley Road junction. This capacity review will account for the following:
- CNFE parking ratio of 0.2.
 - Traffic growth associated with forecast traffic growth accounting for development at Cambridge Science Park and Waterbeach.
 - Mitigation requirements at Milton Road / Cambridge Science Park / Cowley Road and / or Milton Road / Cowley Road junctions.
- 7.16 This work is currently being undertaken by the council in relation to the development of the Area Action Plan. The results of the modelling work will then be used to determine the impact and the vehicle trip budget associated with the CNFE site.

Other

- 7.17 Preliminary investigations regarding the viability, siting and size of the following:
- Cycle Hub.
 - Consolidation Centre / Delivery Hub.
 - Refuse Collection.
- 7.18 The viability exercise will be developed in conjunction with relevant stakeholders, particularly the potential cycle hire companies and the current Cambridgeshire County Council Waste operator. This will support the scheme masterplan and provide the evidence that the proposed arrangements are suitable for the site.

8 Development Phasing and Delivery Timescales

Project Programme

- 8.1 An overall programme for development of the CNFE core site has been prepared taking the scheme from the current masterplan, through to planning application, determination, construction and subsequently completion. The current practical completion for all phases of the Core development is 2043.
- 8.2 The current project programme is summarised in **Table 8.1**.

Table 8-1 Development Timetable

Task	Completion Date
Pre Planning	
HIF Application	December 2018
HIF Approval	February 2019
HIF Drawdown Longstop Date	May 2019
Planning	
Area Action Plan Submitted	July 2021
Area Action plan Adopted	July 2022
Hybrid Planning Application Commences	September 2019
Hybrid Planning Application Submitted	March 2022
Hybrid Planning Application Approved	December 2022
One	December 2030
Two	December 2028
Three	March 2033
Four	February 2032
Five	July 2035
Six	March 2037
Cambridge Water Recycling Centre (CWRC) Relocation	
DCO Process Commences	January 2019
DCO Permission Obtained	February 2021
Relocation Commences	April 2021
Relocation Completed	April 2024

End of Existing CWRC Decommissioning	April 2025
New Development	
Site Infrastructure Commences	June 2023
First Homes Complete	December 2026
First Phase Complete	December 2028
Final Phase Complete	March 2037

Phasing

- 8.3 As part of the delivery programme a review of scheme phasing has been undertaken so as to account for this within the overall development programme.
- 8.4 Phasing proposals have been developed for the residential and associated commercial / leisure elements of the scheme. This will be brought forward over six phases of development with the first phase to be completed in [REDACTED]. The completion dates for each of the six phases is identified in **Table 8.2**.

Table 8-2 Timetable for Development Phases

Development Phase	Completion Date
One	[REDACTED]
Two	[REDACTED]
Three	[REDACTED]
Four	[REDACTED]
Five	[REDACTED]
Six	[REDACTED]

9 Summary and Conclusions

- 9.1 This Transport Strategy has been prepared to provide the context of the current transport and highway assessment work completed in relation to the development of the CNFE site along with expectations and next steps for the delivery of a comprehensive transport strategy for the scheme.
- 9.2 The CNFE core site masterplan identifies a development providing [REDACTED] dwellings, [REDACTED] primary schools, [REDACTED] secondary school and a mix of commercial, retail, community and health land uses. The CNFE site provides additional retail and commercial floorspace as well as an additional [REDACTED] residential units. As part of the scheme proposals the residential element is to be delivered with a residential parking provision of 0.2 spaces per dwelling.
- 9.3 The CNFE site is located within an area where considerable transport and highway mitigation schemes are being implemented with the site itself assisting in the delivery of these schemes. It benefits from being located close to the Cambridgeshire Guided Busway and the full extent of the site being within 1.5km of Cambridge North Railway Station.
- 9.4 The overall focus of the Transport Strategy is to confirm that the development will be brought forward in line with the CCC transport modelling work completed to date and more specifically ensure it is aligned with the trip budget identified within the A10 Ely to Cambridge Transport Study. The study itself identifies the importance of achieving a high volume of internal trip assignment and limiting car parking provision.
- 9.5 In their respective roles as the local and strategic highway authorities Cambridgeshire County Council and Highways England have been consulted as part of the process of developing this Transport Strategy. Engagement with both authorities has confirmed that the CNFE site will only be accepted if it works within the trip budget defined in the A10 Ely to Cambridge Transport Study. In this regard the mix and scale of development is not fixed but the external trip generation is fixed.
- 9.6 Working within the CCC trip budget no additional traffic modelling is required of this scheme other than in determining the impact on proposed site access junctions and access onto Milton Road via the two existing junctions of Milton Road / Cowley Road / Cambridge Science Park and Milton Road / Cowley Road West.
- 9.7 This Transport Strategy identifies a series of solutions to mitigate the volume of car trips that may otherwise be generated and enable the development to be delivered within the CCC identified ceiling figure. These measures include:
- A Cycle Hub.
 - A Consolidation Centre / Delivery Hub.
 - Underground Waste Storage.
 - Provision of a high-frequency bus service within the site with all residents to be located within 400m of a bus stop.
- 9.8 This report has identified the next stages of assessment required to enable delivery of the CNFE site. This focuses on completing viability assessments of the proposed transport solutions and engagement with the relevant stakeholders to maintain buy-in regarding the ability to deliver the transport strategy.
- 9.9 A number of programmed actions will take the project forward with the aim of a planning application to be submitted in 2022, construction to start in [REDACTED] and the first homes completed in [REDACTED]. Overall the target for construction completion is [REDACTED].

Appendix A - Masterplan



Appendix B – Stakeholder Engagement

<h1>Pell Frischmann</h1>		Project No. 102027
		Version No. Draft 1
MEETING MINUTES		Project CNFE - Transport
Date		29/10/2018
Subject Cambridge Northern Fringe East (CNFE) – Housing Infrastructure Fund (HIF) Transport Discussions		By Chkd [REDACTED]
Location	Cambridgeshire County Council, Shire Hall, Castle Street, Cambridge, CB3 0AJ	
Date and Time	Tuesday 9 October 2018 10:00-11:30	
Attendees	[REDACTED]	
Apologies	None	
Circulation	As above plus: [REDACTED]	

ITEM	DESCRIPTION	ACTION
1 2.	[REDACTED] and [REDACTED] opened the meeting by setting out their client's aspirations to bring forward the redevelopment of the existing Anglian Water Cambridge Water Recycling Centre at Cowley Road, Milton. They explained the purpose of the HIF bid submission, which is to fund a scheme for the relocation of the existing Water Recycling Centre to a new site and for the remediation of the existing site to facilitate a new Cambridge Northern Fringe East (CNFE) housing-led development.	
2 4.	[REDACTED] and [REDACTED] confirmed that the CNFE 'Core Site' was likely to accommodate around [REDACTED] dwellings plus commercial and retail space. However, they also identified that by relocating the Water Recycling Centre to another location, this would extinguish the existing 'odour zone', potentially allowing additional housing development to be built-out within the wider CNFE area.	
3	LMW discussed the outcomes of transport modelling work undertaken as part of the Cambridgeshire County Council (CCC) 'Ely to Cambridge A10 Transport Study'. LMW confirmed that, within the transport modelling, an allowance in terms of a total number of trips, or trip budget, had been allowed for the CNFE site. LMW stated that it was not the role of the Study to identify how many dwellings could be accommodated on the site, provided that the total traffic generated by the proposed development remained within the trip	

	budget allowed for within the Study. ■■■ confirmed that the level of development within the CNFE site is not set by the Study and can vary as long as the overall volume of trips set out within the trip budget is adhered to.	
4	■■■ confirmed that she did not expect any further transport modelling work as part of the Study at this stage.	
5	■■■ confirmed that it is the intention of the Transport Strategy that will accompany the CNFE HIF bid submission to align with the assumptions and trip budget contained within the Study. ■■■ confirmed that this would be acceptable.	
6	■■■ confirmed that the Transport Strategy for the proposed development in terms of traffic generation would be acceptable provided that the expected traffic generation remains within the Study trip budget. ■■■ confirmed that this would be the case.	
7	CCC officers reiterated the importance of creating a strong link between Cambridge North Station and Cambridge Science Park (CSP) and confirmed that CSP's transport consultants have investigated the spatial requirements for landing a foot/cycle bridge on the western side of the A10 Milton Road, which could potentially form the western end of an elevated connection into the proposed development site (or an underpass). It has been agreed that the link will be incorporated within the design and the HIF submission.	
8	■■■ noted that the existing vehicular access into CSP via Milton Road is due to be removed in approximately one years' time.	
9	■■■ noted that there is a proposed Waterbeach Greenway (off-road route for pedestrians, cyclists and equestrians) which will run north-south alongside/through the site. The Greenway is currently under consultation and provides a link under the A14.	
10	■■■ confirmed that CCC will calculate and provide a likely highways contribution (for wider proposed infrastructure schemes) that would be directly linked with the quantum of development. However, cost estimates for separate measures linked only to the proposed development (e.g. site access, connection to CSP and site-specific public transport improvements), will be separate to this figure.	

Pell Frischmann		Project No. 102027
		Version No. Draft 1
MEETING MINUTES		Project CNFE - Transport
Date 24.10.2018		By Chkd ██████████
Subject Cambridge Northern Fringe East (CNFE) – Stagecoach Cambridge Transport Discussions		
Location	Stagecoach Cambridge, 100 Cowley Rd, Cambridge CB4 0DN	
Date and Time	Monday 1st October 2018 14:00-15:00	
Attendees	████████████████████ ██ ██	
Apologies	None	
Circulation	As above plus: ██ ██ ██ ██	

ITEM	DESCRIPTION	ACTION
1 2.	████ opened the meeting by setting out the client's aspirations to develop Cambridge Northern Fringe East (CNFE) area. █████ explained that the core site was likely provide █████ homes and associated retail / commercial space, although the removal of the water treatment plant will also extinguish the 'odour zone' allowing for additional houses to be built out.	
2 4.	████ enquired as to the impact of the CNFE development of the existing Stagecoach operation.	
5.	████ explained that the industrial estate which includes the Stagecoach depot was not contained within the core site that was being brought forward by the CNFE scheme but formed part of the wider site which was enabled by the relocation of the Cambridge Water Treatment Works and subsequent removal of the odour zone which currently limits development.	
3 7.	████ explained Stagecoach's possible concerns with the relocation of the depot; as this may require a redesign of the bus network depending on the location of the of the relocation site.	
8.	████ then explained how the existing network operates; drivers change over shift in the city centre (at Drummer Street); they start at the depot at the beginning of the day and only return to the depot at the end of service. ████ inquired as to what facilities would be available at Cambridge North station on completion and if that might be viable as a bus layover area.	
4 10.	████ then showed the indicative masterplan for the CNFE core site, and asked what opportunities there would be to serve the core of the site with either a diversion of an existing service / enhanced service.	

	<p>■■■ set out that the two most relevant services are the 'D' (Trumpington – St.Ives) which uses the busway, and the '2' which is a standalone service between Addenbrookes, the City Centre and Science Park. It was felt that the '2' gave the best opportunity to penetrate the site.</p> <p>The existing '2' service runs on a 10 minute frequency during the day Mon-Sat, with a 30-min frequency in the evening and on a Sunday.</p>	
5	<p>It was discussed that a diverted '2' along the proposed development spine road running at the same frequency as the existing (10 min daytime) would be suitable starting point. ■■■ noted that the top-right of neighbourhood 6 on the indicative masterplan would be a challenging walk to the nearest stop, therefore this may need further consideration. If at least some of the buses on the service had a further diversion further into the site to ensure all the site was within the recommended walk distance of a stop then it may be necessary to add an additional vehicle to maintain the 10 minute service frequency.</p>	
6	<p>■■■ thanked both ■■■ and ■■■ for their assistance and would be in touch as the scheme progressed.</p>	