Evidence Base

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Introduction

The LTCP is based on a thorough analysis of a range of supporting evidence. This document examines the current transport conditions and socio-economic characteristics of the area, and an assessment of the likely future opportunities and constraints that we will need to plan for.

The previous iteration of the LTP and its precursors developed by Cambridgeshire County Council and Peterborough City Council (and integrated into the CPCAs Interim LTP, 2017) were built off the back of the following data picture:

- Strong economic growth in the Cambridge sub-region, driven by agglomeration in the knowledge-based sectors meant strong job growth. Subsequently, the population was increasing with significant new housing planned, which increased demand for travel. Employment and population growth were also strong for the Peterborough sub-region.
- Subsequently, there was a forecast of significant increases in congestion across significant parts of the road network up to 2041 with a worsening of peak travel journey times. Contemporary poor performance of several routes was noted together with parallel poor performance (in terms of travel times) in the bus network. Areas of concern included the Cambridge radial routes, the A47 into Peterborough, the Peterborough Parkway system as well as localised congestion in the larger towns.
- An inherent weakness in transport connectivity was identified with the links being between the rural fens (covering Fenland as well as parts of East Cambridgeshire and Huntingdonshire) and areas of strong employment growth particularly limited thereby reducing the opportunities for people living in areas of relative deprivation such as north Wisbech.
- The need to move towards decarbonisation was noted alongside the impact of transport on air quality and public health outcomes. There was also an emphasis on improving local connectivity to encourage an increase in active travel and alternatives to the car for short journeys.

This LTCP has been focused around challenging the previous picture, looking at what has happened since the previous LTP was written to change the policy outlook.

Summary of Evidence

The transport network sits on top of a diverse socio-economic geography and the evidence review needed to focus on the main drivers of travel, the location of housing, jobs, and services. Previously high, economic growth was slowing pre-pandemic. This slowdown was particularly noticeable for Peterborough with a decline in figures for GVA, jobs and the number of small and medium sized businesses. During the pandemic, the Cambridgeshire and Peterborough economy saw a reduction in economic activity (a 1.4%% reduction in GVA between 2019 and 2020), however this was considerably less than the 10.6% reduction across the rest of the UK. In 2021 the UK saw an improvement, now above 2019 GVA levels by 2%, the Cambridgeshire and Peterborough economy similarly increased GVA on 2019 levels by 5.7%.

Our economic activity is concentrated in key 'clusters' of 'Knowledge- Intensive' businesses, particularly around Cambridge and Peterborough. The dense concentration of these businesses allows them to take advantage of 'agglomeration benefits' but means that the prosperity they generate is, in turn, concentrated into small geographical areas, this includes campuses dedicated to a certain specialism, for example the Cambridge Bio-Medical Peterborough has an exciting emerging advanced manufacturing cluster with 1,525

manufacturing businesses and 37,500 employees (9% of workforce) based within Greater Peterborough.

There is a significant risk that without careful integrated planning and appropriate development, future economic growth might 'overheat' the economy causing it to 'burn-out' – a scenario widely discussed in CPIER. The most obvious manifestation of this for the Cambridge sub-region is the increase in house prices over the past two decades, driven by population growth, high wages, and the build rate of new homes. This then impacts the transport system as commuting distances lengthen and congestion occurs as pinch-points in the network.

Transport connectivity has a role to play in both enabling and effectively connecting new development, as well as connecting more affordable areas to live with centres of employment and locations for key services and amenities.
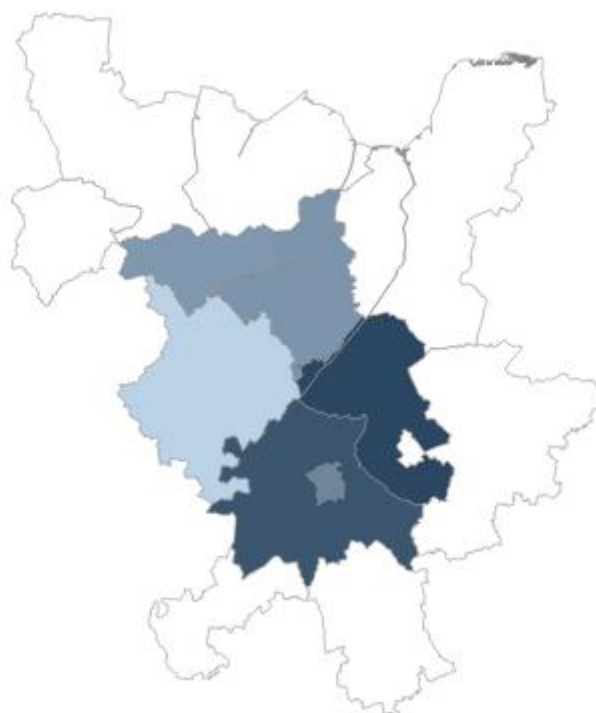

Figure 1 - Employment Growth 2015-2022, CPCA Constituent Authorities

We sponsor the monitoring of employment growth by the Centre for Business Research (University of Cambridge). The latest (2022 data), shows accelerated (5.7%) job growth for East Cambridgeshire as well as South Cambridgeshire (5.3%) and Cambridge (4.1%). Whilst other areas such as Fenland (3.7%), Peterborough ((3.6%), and Huntingdonshire (2.2%) are growing at rates just over 3%, closer to the national average.

Our region has adopted what the CPIER described as a 'blended spatial strategy' where housing development is taking place in different types of location. Looking at current adopted local plans, 26% of growth is expected on the edge of city locations (either Cambridge or

Peterborough), 27% in market towns, and 22% in new settlements. Based on current travel patterns these will have differing outcomes. City fringe growth in Cambridge has been shown to yield at least 41% active travel mode share and only 33% travel by car (active travel for edge of Peterborough new developments is less). New settlements without a dedicated public transport route (rail or busway) have over 70% of people travelling by car to get to work and access other services.

Traffic, Congestion, and Delay

Congestion and delay act to limit the effectiveness of the transport network. The average delay on local 'A' roads compared to free flow in 2022 for the Cambridgeshire and Peterborough area in seconds per vehicle per mile was 25.1 seconds. The pandemic saw a drop of 17.6% in 2020 from 2019, the 2022 figure is 7.7% below 2019 representing a recovery in congestion, this trend is reflected across the UK. Individually, in 2022Cambridgeshire recorded 25.6 seconds and Peterborough at 23.8 seconds per vehicle per mile. In addition, the road network often lacks resilience, where alternative routes do not exist (e.g., main inter-urban links across The Fens) or where opportunities for increasing highway capacity do not exist (e.g., in Cambridge and historic towns and cities where the network is constrained by listed buildings and historic streetscape).

The annual road traffic for all motor vehicles in Peterborough peaked in 2019 at 1.23 billion. During the pandemic road traffic declined by 21.6% in 2020 to 970 million before rising to 1.08 billion in 2021, 12.5% below 2019 volumes. Cambridgeshire peaked in 2017 at 5.02 billion, declining by 0.9% over the following two years to 4.97 billion. During the pandemic road traffic declined by 19.8% to 3.99 billion before showing a move towards recovery increasing to 4.46 billion in 2021, 10.4% below 2019 volumes.

Congestion levels show ongoing problems within Cambridgeshire, particularly along the A1309, and A1134 which have highest average vehicle delay (flow weighted) of 81.1 and 71.3 second delays, respectively. In 2021 4.46 billion vehicle miles were travelled on roads in Cambridgeshire.

The focus in Peterborough continues to be around selected junctions of the Parkway network and areas of new housing development. On a smaller scale, there are also significant congestion points for some Peterborough roads. The A1129 has the highest average vehicle delay (flow weighted) of 73.9 seconds, with A1179 (39.5), A605 (35.6) and A15 (29.9) all having delays over Peterborough's average 23.8 seconds. In 2021 1.08 billion vehicle miles were travelled on roads in Peterborough.

Congestion is not only detrimental for drivers of cars, lorries, and other vehicles, but also for people taking buses, cyclists, pedestrians, and other non-motorised users. On average, more than 20% of bus services within the Combined Authority region run late, in large part due to congestion. Average excess waiting time for frequent services in Cambridgeshire in 2020/21 is 1.2 minutes, a reduction from last recorded 2.1 minutes in 2018/19. Peterborough's last recorded average excess waiting time was in 2018/19 at 3.8 minutes, up from 2.5 minutes in 2016/17, however without more recent published data we cannot report on the current trajectory. Future growth in housing and employment, and associated travel, is expected to result in worsening traffic congestion as capacity on the network becomes increasingly constrained, and act as a brake on the economy.

There will be significant growth in the number of commuting trips originating in the areas around the City of Cambridge and to the west of Peterborough. Consequently, the A47

between Peterborough and Wisbech, together with radial routes serving Cambridge, will all see significant rises in congestion by 2041.

Transport Connectivity

Overall, the region has relatively good transport connectivity, with strong links to major cities, ports and airports outside the region, and good connections between major urban areas within it. From Peterborough and Cambridge urban areas, London can be reached by rail in under an hour, London Stansted Airport can be accessed on direct Cross-Country rail services, and the A14, A1(M) and M11 provide good strategic connectivity, including for freight travelling to the ports of Harwich, Ipswich, and Felixstowe on the East Coast.

The strategic freight that travels through Cambridgeshire rather than has a destination in Cambridgeshire can have significant, negative impacts on our communities, especially if the strategic networks experience disruption. This high-level connectivity is critical for ensuring that the region's businesses have easy access to the staff, suppliers, and markets they need, and that tourist attractions can flourish. For example, VisitBritain's latest three-year averaged published data (2017-19) shows that domestic tourism alone brought an estimated 1.385 million visitor trips and £210 million annually into the area's economy.
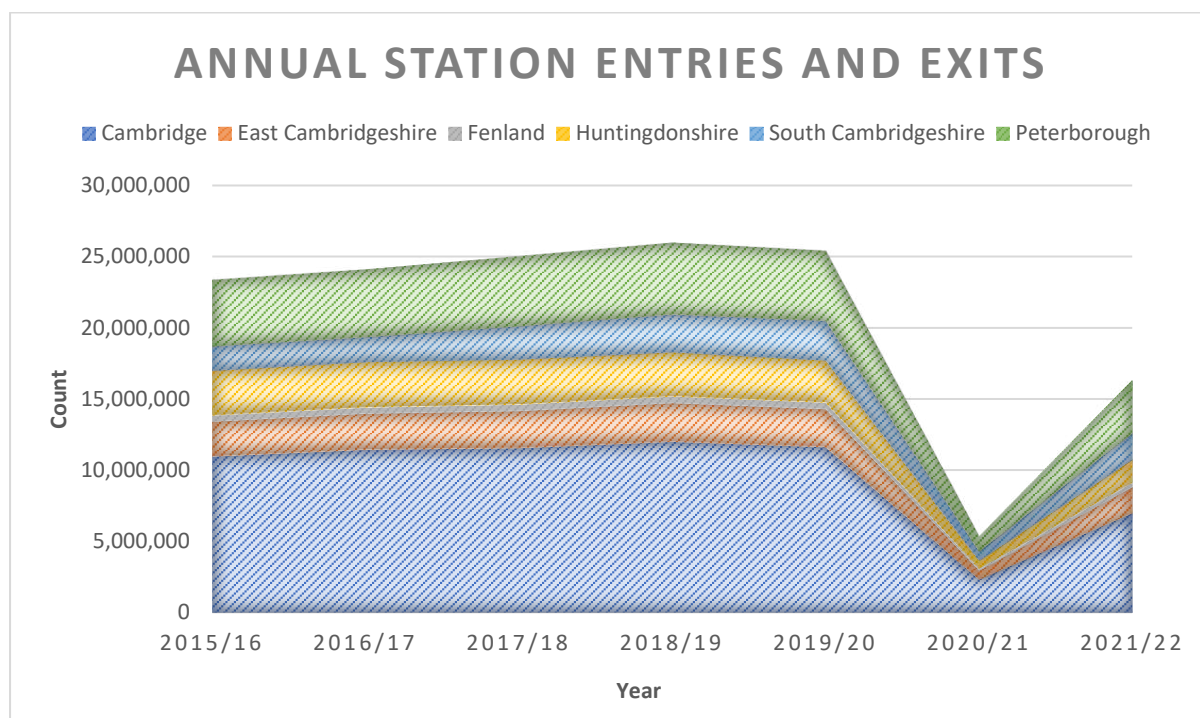
Connectivity within our region is variable, with larger urban areas benefiting from significantly better transport network coverage than their small town and rural counterparts. This translates into poorer access to jobs and opportunities for rural residents. From 2019, in Cambridge 94%, and in Peterborough, 97% of residents are within 15 minutes by walking or public transport of a local primary school. By contrast, in South Cambridgeshire and East Cambridgeshire this figure falls to 81% and 78% respectively.

Although 95% of the population of Cambridgeshire and Peterborough are within 30 minutes of employment centres (and a further 99% are within 60 minutes), many rural areas either lack direct public transport accessibility or suffer from lengthy journey times that make it difficult to those without a car to access jobs and services elsewhere.

Before the pandemic bus passenger numbers were in decline. Cambridgeshire saw a reduction of 11.9% between 2014/15 and 2018/19 (2.6 million fewer passenger journeys) whilst Peterborough saw a reduction of 19.3% (2.1 million fewer). In 2020 during the pandemic bus ridership fell by 69.6% in Cambridgeshire (13.5 million fewer) and fell by 70.8% in Peterborough (6.3 million fewer). Bus ridership remains significantly below pre-pandemic levels, with passenger journeys on local bus services in 2021 for Cambridgeshire 35.7% lower and Peterborough 37.1% lower than 2019 volumes.

Overall levels of travel into the cites of Peterborough and Cambridge by other modes of transport were also knocked by the pandemic but likewise are showing signs of recovery. In Peterborough rail passenger annual movements peaked in 2018/2019 at 5.1m, before falling to lows of 1.1m in 2020/2021, before showing signs of recovery with 3.7m passengers in 2021/2022. This trend can also be seen in Cambridge with rail passenger annual movements in and out peaking in 2019/2020 for both Cambridge North (950,000) and Cambridge Central (11.6m), with this making Cambridge Central the busiest station in the East of England. This dropped to 220,000 (Cambridge North) and 2.3m (Cambridge Central) in 2020/2021 before showing signs of recovery with 730,000 (Cambridge North) and 7m (Cambridge Central) in 2021/2022. While rail travel in Cambridgeshire and Peterborough is showing signs of recovery these figures are still significantly below pre-pandemic levels, particularly for commuting trips.

Intercity rail movement has been reduced considerably (commuting previously made up over 50% of heavy rail use).

ANNUAL STATION ENTRIES AND EXITS

Legend: Cambridge, East Cambridgeshire, Fenland, Huntingdonshire, South Cambridgeshire, Peterborough

Y-axis: Count — 0, 5,000,000, 10,000,000, 15,000,000, 20,000,000, 25,000,000, 30,000,000

X-axis: Year — 2015/16, 2016/17, 2017/18, 2018/19, 2019/20, 2020/21, 2021/22

For those without access to a car, rising fares and general cost of living are reducing the affordability of the public transport network. Fares have risen across the region, broadly in line with the national average, and significantly faster than Retail Price Index (RPI) (for example, bus fares have increased nationally by an average of 66% since 2005; whilst the cost of motoring has increased by 27% in the last 10 years). This threatens to increase 'car-dependency' – the position whereby an individual has no viable option available other than to use a car when making a journey.

As well as significantly improving bus services and affordability, one potential solution is to further promote the use of active travel modes wherever appropriate. The efficient use of road space makes them an effective way of tackling congestion in key locations, and the range of other benefits they bring, such as improvements to air quality, reductions in greenhouse gases, and improvements to public realm, are closely aligned to several of the LTCP's key objectives.

The use of active travel modes is already broadly popular within Cambridgeshire and Peterborough, and sees high levels of investment, particularly in Greater Cambridge where £16 per head is spent on cycling per annum, a higher figure than in any other area of the UK. Cambridge enjoys the highest proportion of adults who cycle at least once a week within the United Kingdom at 42.6% in 2021, the closest comparator being Oxford at 33.5%. However, in other areas of Cambridgeshire and Peterborough, levels of cycling are lower, South Cambridgeshire (22.3%), Huntingdonshire (12.4%), Peterborough (9.5%), Fenland (9.4%), and East Cambridgeshire (8.5%). Only East Cambridgeshire in below the English national average of 9.1%. New technology, such as the advent of affordable electric bikes, is already

allowing new groups of people to cycle and lengthening the distance many are willing to travel by bike.

Similarly for proportion of adults who do any walking or cycling once a week, in 2021 Cambridge leads (85.8%), followed by South Cambridgeshire (78.7%), Huntingdonshire (78.3%), East Cambridgeshire (71.5%), Fenland (67.4%), and Peterborough (62.5%). The English national average is 71.2%, in the Cambridgeshire and Peterborough area only Fenland and Peterborough are under this national average. Between 2016-2021 the cities of Peterborough and Cambridge have seen a decline in active travel at -6.8% and -1% respectively. Moderate increases have been seen for Fenland (0.6%) and East Cambridgeshire (2%). Large increases have been seen for South Cambridgeshire (5%) and Huntingdonshire (7.5%). The English national average has increased by 0.7% between 2016 and 2021.

Decarbonising Transport

Promoting the uptake of public transport and active travel modes will have a significant, positive environmental and societal impact. The proportion of carbon dioxide (CO_2) emissions produced by transport has seen a marked increase in all Local Authorities in Cambridgeshire and Peterborough over recent years.

In 2020, total CO_2 emissions in Cambridgeshire and Peterborough were 6,572 kilo-tonnes. In the same year per capita emissions in Cambridgeshire (8.5 tonnes) were higher than in Peterborough (5.0 tonnes) and the East of England average (4.9 tonnes).

The highest proportion of CO2 emission in Cambridge derived from Domestic emissions (34.93%) followed by Public Sector emissions (21.75%) and transport emissions (20.41%). In Peterborough, the sectors of equivalent significance were road transport emissions (37.46%), Domestic Emissions (24.96%) and Land Use, Land-Use Change and Forestry (LULUCF) Emissions (15.47%).

There remains a considerable disparity between the cities and more rural districts, where car ownership and usage are higher. This is represented in the data showing that Fenland has a comparable per capita emission (13.4 tonnes) to East Cambridgeshire (13.9 tonnes). Both being by far the highest in the CPCA area. Forecasted traffic growth will subsequently result in an overall increase in CO_2 emissions, without a move to improved public transport provision in rural areas this trend will become inevitable.

The UK wide contribution of transport emissions to total CO2 emissions is 34.31%. Overall, transport emissions across our region have reduced by 13.95% between 2015 and 2020. Whilst for the UK in the same period there was significantly more progress with reducing transport emission with a reduction of 22.87%.

The Climate Change Commission for the CPCA area has produced its final report. This Plan aims to ensure that the recommendations made to reduce carbon emissions from transport are progressed, developed, and implemented wherever possible, including:

- A 15% reduction in driven car miles by 2030;
- The rollout of electric vehicle charging infrastructure, bringing those districts with low provision up towards the levels of the best;
- A transition towards zero emission bus and taxi fleets by 2030 – including improvements to public transport, trials of on-demand electric buses, and infrastructure for walking and cycling; and

- Exclusion of diesel van and trucks from urban centres by 2030.

With transport being the main cause of greenhouse gases in Cambridgeshire and Peterborough, the LTCP becomes central to reducing emissions successfully and fairly.

Equity, Equality, and Safety

There continues to be a disparity in the type of economic growth across the CPCA region. This is particularly evident when comparing the growth of micro (0-9 employees) and small (10-49) businesses. Between 2015-2022 the number micro businesses increased across all the Cambridgeshire and Peterborough area districts with highest increase being recorded in Peterborough (32%) with other districts following at Fenland (27%), South Cambridgeshire (10%), Cambridge (9%), East Cambridgeshire (9%), and Huntingdonshire (6%).

Across the UK the count of micro businesses increased by 13.9%. In the same period, small businesses at the highest rate in Huntingdonshire (27%) with other districts following at Peterborough (26%), Fenland (21%), South Cambridgeshire (18%), Cambridge (14%) and East Cambridgeshire (5%). Across the UK the count of small businesses increased by 5%. A recent report by OSCI into 'left behind' neighbourhoods (areas with high deprivation and relatively poor infrastructure) in England identified Wisbech in Fenland. One Wisbech ward scoring in the top one hundred for places with such characteristics out of over 8,000.

Looking at the Index of Multiple Deprivation, Peterborough ranks as the 51st most deprived out of 317 district and unitary councils nationally. Peterborough is therefore in the most deprived 20% (quintile) of local authorities in England. This is reflected in lower-than-average health and educational outcomes for the city.

The trend in those Killed or Seriously Injured (KSI) on the areas roads is relatively flat, increasing between 2015-2017 then falling between 2017-2020, comparing 2015 and 2021 figures there has been an increase of 83. Given the increases in road traffic this should be viewed relatively positively. Each area continues to have different high-risk groups; for Peterborough, pedestrians & motorists; Cambridge, cyclists & pedestrians; elsewhere in Cambridgeshire, motorists, and motorcyclists.

Public Health and Air Quality

Across Cambridgeshire & Peterborough, there are areas that suffer from poor air quality. Hotspots with a high concentration of business activity and transport movements lead to localised air quality problems. There are five Air Quality Management Areas (AQMAs) in the region linked to the transport network. Addressing the causes of these hotspots, as well as other locations where poor travel-related air quality negatively impacts our health is key to the overall success of this LTCP.

The transportation of goods by freight plays a key role in servicing Cambridgeshire and Peterborough's industry, communities and supporting our growth and economic development. Freight offers our residents choice as consumers and businesses, keeping the county thriving and attractive. As we continue to grow, so does the volume of goods traffic and the potentially adverse impact on our local communities' public health, safety, and air quality.

Future of Mobility – Electric and Digital Connectivity

Reducing greenhouse gas emissions and removing air quality management areas requires a multifaceted approach, including encouraging better use of active travel modes such as walking and cycling, improving public transport, and increasing the number of electric vehicles

in use. Electric vehicles require appropriate infrastructure, such as charging points, before they become a viable transport option.

The more urban areas of South Cambridgeshire, Cambridge, and Peterborough all have charging point numbers broadly in line with the national average, while the more rural areas of East Cambridgeshire, Huntingdonshire and Fenland have numbers significantly below the national average. If widespread roll-out of electric vehicles is to become a reality across Cambridgeshire and Peterborough, a concerted effort will be needed to provide better charging provision across its geography, not only in more urban areas.

There are several barriers to uptake of EVs and hydrogen vehicles in Cambridgeshire and Peterborough and nationally, including:

- A lack of charge points – at home, at destination locations and on the strategic road network. Grid constraint – new and existing developments lack the necessary electricity distribution capacity to install charge points;
- Cost of vehicles – new EVs are significantly more expensive than internal combustion engine vehicles;
- Battery technology – Battery technology is constantly improving, but current batteries have limited energy density and take a long time to charge, making it difficult to compete with gasoline;
- Public perception – as an unfamiliar technology, not yet adopted at scale, there are issues around perceived reliability/range etc;
- Varied charging adapters – different car makes/models use different adapters decreasing the number of available charge points; and
- Varied business models – different payment methods prohibit the uptake of Electric Vehicles.

The *East Anglian Alternative Fuel Strategy* and *Electric Vehicle Implementation Strategy* will ensure our continued focus on the development of the appropriate infrastructure across the region.

In the same way that electric vehicles require charging infrastructure to make their roll-out a reality, autonomous vehicles need good mobile coverage to operate effectively. It is expected that for autonomous vehicles to be effective 5G coverage will be required. 5G is currently unavailable in some areas of the UK, but current rates of 4G coverage provide a good proxy for what 5G coverage might look like in the future.

Potential Future Trends: Post Covid-19

The Covid-19 pandemic has had a very specific impact on trends in transport and travel. It has depressed travel across all modes of transport and accelerated the propensity for people to work at home; referencing 'Working from Home Propensity and Capacity Release' "Our model predicts that if people who used to commute by car and who are now working from home were to continue to do so for two days per week, between 10% to 12% of peak hour traffic would be removed".

Whilst the actual long-term changes are yet to be established, the National Infrastructure Commission study 'Behaviour Change and Infrastructure Beyond Covid-19' provides a firm understanding of the possible scale and scope of the changes. Noting that it is not just the Covid-19 pandemic that will be driving the increase in home working. Research for British Telecom, Open Reach estimates that the impact of the roll out of full fibre broad band will see

one million more people working from home, saving an estimated 300m commuter trips by 2025.

Focusing on four specific trends, working from home, social wariness, dispersal from cities and the use of virtual tools the author's scenarios show a possible future reduction in public transport use for travel to work in the range of 10%-20%. Within all scenarios there is an increase in demand for digital connectivity and digital services and modest (10%) reduction in private car travel. However, these figures need to be seen in the context of predicted population growth, which is very high in some parts of the region.

Previous forecasts on the potential of an economic recovery predicted a point by which the economic value lost during the pandemic would be restored (excluding any resurgence of the virus). However, the likelihood of this materialising soon has been tempered down with slowing economic growth amid persisting supply shortages and rising inflation. This means that the point from which a proper view of the pandemic's longer-term impacts on travel will be delayed. We have commissioned a renewal of the Regional Transport Model and a significant data collection exercise for this will be carried out in spring 2023. This is the point at which the extent to which changes will revert or endure across our area will be known. Until that point it would be premature to assume that long-term behaviour change will be significant enough to change transport policy.

campus which has a full-time equivalent employment of 16,000. Clusters are not limited to development within self-contained campuses, but rather can be city wide. For example