GREATER CAMBRIDGE PARTNERSHIP

Growing and sharing prosperity

Delivering our City Deal

CITY ACCESS AND BUS SERVICE IMPROVEMENTS UPDATE

Report to: Greater Cambridge Partnership Joint Assembly 15th November 2018

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1. Introduction and Purpose of this Paper

1.1 In June 2018, two papers were presented in parallel to the Board. The first presented an interim update on analysis to define a future world class public transport network for Cambridge, which this paper further develops. The second introduced options for demand management that might provide the necessary road space to deliver those improvements and, in some cases, provide a revenue stream to fund a significant enhancement of services or improvements to local infrastructure.

1.2 In the interim, complementary work has been underway to examine the need for a Clean Air Zone for Cambridge and to develop a Spaces & Movement Supplementary Planning Document (SPD) that seeks to secure the right balance of public space between pedestrians, cyclists and vehicles.

1.3 This paper updates the Assembly on these various workstreams with a focus on developing options for securing a step-change in public transport, reducing congestion and improving air quality in and around Cambridge. It sets out a vision and high-level specification for the future public transport network which will deliver a meaningful reduction in congestion by making public transport the mode of choice. It also considers the technical work undertaken since the last report to evidence the changes required to meet the City Deal traffic reduction target and considerably improve traffic and transportation in Greater Cambridge.

1.4 The Joint Assembly is asked to comment on the progress to date on the City Access programme and the proposal to hold an engagement exercise on options for demand management in early 2019.

2. City Access – Purpose, Vision and Objectives

2.1. The City Access project is designed to reduce congestion in the city centre, improve public transport, cycling and walking, and significantly improve air quality in Cambridge.

2.2. The strategy for achieving this includes the following elements:

- Supporting the transition to sustainable transport (public transport, bike, foot) making travel easier especially for those coming in regularly from outside the city.
- Making public transport vehicles significantly more reliable and attractive including the delivery of a segregated rapid transit system to avoid public transport queuing behind cars.
- Developing cycling and walking as significantly more attractive options.
- Reducing city centre and cross-city vehicular journeys by providing attractive alternatives.
- Delivering enhancements to the public realm and city centre environment.
- Providing better information to help travellers make more informed choices.
- Potentially generating funds through pricing measures to deliver a step change in public transport provision.

2.3. Measures to monitor and track progress of the City Access project include:

- A reduction in car traffic (10-15 per cent reduction on the 2011 figure, equating to a reduction of some 24 per cent over today's levels).
- A shift to public and sustainable forms of transport, including an increase in cycling numbers.
- Reduction in journey times and improved frequency of public transport services to/from key locations.
- Enhanced air quality and emission volumes.
- Improved public realm.

3. Feedback from the first Big Conversation

3.1. Our Big Conversation analysis[1] shows that the GCP's strategic aims for improving transport are supported or strongly supported.

3.2. Feedback from this previous conversation is a driving rationale for the City Access focus on improving public transport and improving congestion. Asked to identify the biggest challenges in travelling in the Greater Cambridge area, respondents told us:

- Traffic and congestion slowing [their] journey (63 per cent City; 77 per cent South Cambridgeshire)
- Lack of public transport (36 per cent City; 62 per cent South Cambridgeshire)
- Safety of alternatives (41 per cent City; 26 per cent South Cambridgeshire)

3.3. Reliability is most frequently cited as the reason for the choice of travel mode (41 per cent). In addition, of those who do not use alternative modes, the top three reasons were due to: speed, reliability and price of public transport.

3.4. South Cambridgeshire residents (where public transport use is much lower than in the City) noted that more frequent and faster services, lower fares and more park and ride options were the most likely things to influence their mode of travel.

4. The scale of the challenge

Capacity and growth analysis

4.1. Greater Cambridge is a national economic success story, an important contributor to UK Plc and host to some of the most productive and innovative parts of the UK economy. The role of the Greater Cambridge Partnership (GCP) is to support the continued economic success of the Greater Cambridge area and to ensure that everyone in Greater Cambridge can access the opportunities offered by that growth.

4.2. In doing so, the GCP is working, and will continue to work, closely with the Mayor and Combined Authority of Cambridgeshire & Peterborough.

4.3. Congestion is a major problem and it threatens the liveability and attractiveness of Cambridge to residents, employees and visitors alike. Economic analysis published in the Cambridgeshire & Peterborough Independent Economic Review (CPIER) suggests that at current rates of transport infrastructure investment, the ability to deliver planned growth is threatened[2]. This led the authors of the CPIER report to conclude that the Greater Cambridge area was the key investment priority in the short/medium term to deliver the region's growth aspirations. The GCP's business stakeholder engagement supports this observation.

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[1] GCP Big Conversation: Summary Report of Survey findings, January 2018

[2] Recommendation #7, CPRI Final Report (p. 13, September 2018). Accessed online: http://www.cpier.org.uk/media/1669/cpier-report-140918-iii-na-highresdownload.pdf

4.4. People are spending too much of their time in traffic jams; congestion has an impact on people's quality of life, on the local environment and on business productivity. Almost a quarter of people's commuting time in Cambridge is spent in traffic jams[3]. Since so little of the network is segregated for public transport this also affects bus users. Bus delays are significant. In the 2017 Big Conversation, Greater Cambridge residents told us that the reliability of journey times was one of the principal reasons for the mode they chose, and one of the most common reasons not to use alternative modes than car[4].

4.5. The GCP has a target of 10 to 15 per cent reduction in city centre traffic flows over 2011 levels, as part of the city deal negotiations that resulted in the £500m devolution funding. Traffic has grown considerably since 2011, this target now equates to a reduction of some 24 per cent over today's levels or the equivalent to one in four cars off the road. Over the same period, employment is forecast to rise by 30 per cent. If all new workers adopted the same travel behaviours as today's workers, an additional 26,000 commuting trips would need to be accommodated on the road network (Appendix 1).

4.6. Most of this employment growth will be located outside of the city centre in areas that are not currently well served by public transport. For most residents west of the M11 or north of the A14, Addenbrooke's/ Cambridge Biomedical Campus (CBC) and other employment locations to the south are an impractically long public transport commute. There are some 30,000 new homes planned to the north and west of Cambridge, and around 20,000 new jobs at CBC, Babraham Research Campus and Granta Park.

4.7. Without intervention it is very likely that the majority of these 44,000 new employees will drive to work, which in the worst-case scenario could imply up to 44,000 additional cars on the road: a 50 per cent increase in car-based commuter traffic on current traffic volumes.

Air quality

4.8. At the same time, there is increasing concern about the impacts of air quality on health across Greater Cambridge. Air pollution is linked to cancer, asthma, stroke, heart disease, diabetes, obesity and dementia. The health problems resulting from exposure to air pollution have a high cost to people who suffer ill health and premature death. Emerging analysis commissioned to consider the case for a Clean Air Zone in Cambridge has estimated that around 50 deaths each year in Cambridge are attributable to poor air quality; around 5 per cent of all deaths. Poor air quality can also deter people from walking and cycling.

4.9. As well as these personal costs, poor air quality imposes additional costs on health services and to business. Nationally, the costs of polluted air are estimated at £20 billion every year. World Health Organisation guidelines, currently under review, are that there is no safe level for the effect of Particulate Matter (PM) emissions on human health.

Quality of place

4.10. Too often streets are designed for cars, not people. Much of the congestion in Cambridge can be attributed to the heavy reliance on private vehicles. Cambridge's city centre streets should be for active travel, social interaction, and space-efficient modes that enable the efficient movement of people to where they want or need to be. Relying on cars, particularly those carrying only one passenger, will only continue to make Cambridge's streets even more congested, undermining the quality of the beautiful, unique historic environment.

[3] 2017 UNRIX International Traffic Scorecard. The Ranking analyses congestion in 1,360 cities worldwide using big datasets from connected cars and devices.

[4] GCP Big Conversation: Summary Report of Survey findings, January 2018

4.11. A Supplementary Planning Document is under development which addresses the question of managing the urban environment of Cambridge and the relative priority of walking, cycling and motorised traffic. A public consultation is planned in 2019.

Social equity and inclusion

4.12. Some parts of Greater Cambridge are being held back by a lack of any viable public transport at all. In some places, people are cut off from opportunities that the rest of the city has to offer by poor public transport access or walk and cycle connections. Poor transport connections compromise economic fairness by limiting access to jobs, education and training. This in turn can isolate people and communities and lead to a less socially integrated city.

5. Delivering a world class public transport system

5.1. To achieve both journey time/congestion and air quality improvements, a step change in provision and uptake of public transport, cycling and walking is required, alongside a significant reduction in car use. High quality public transport services that connect seamlessly to other forms of active, efficient and sustainable travel are required across the city to provide alternatives to car use.

5.2. This means development of a world class transport system that makes it easy to get into, out of, and around Cambridge in ways that enhance the environment and retain the beauty of the City. It will require not only the provision of infrastructure and services, but complementary measures such as integrated ticketing, clear wayfinding and accessible information to ensure seamless and integrated journeys.

5.3. Our vision is for a public transport system that:

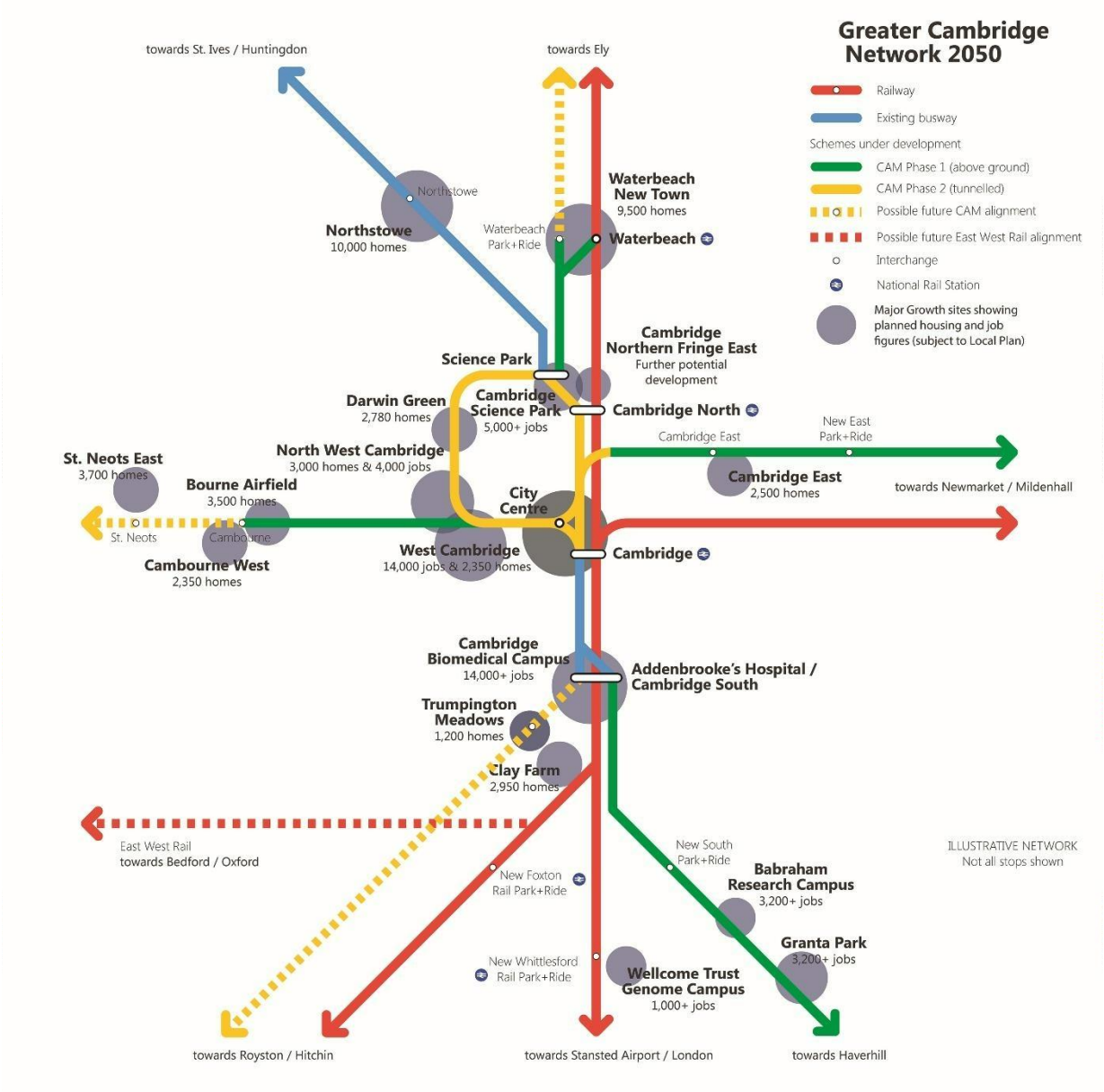
- offers a genuine alternative to the car;
- is rapid, reliable and, where possible, segregated from cars;
- is an integrated network of bus, rail and mass transit services, including timetable, ticketing and information;
- focuses on better serving the key employment centres outside of the city centre: Cambridge Science Park, Cambridge Biomedical Campus, West Cambridge and the cluster around Cambridge Airport;
- is both affordable and feasible to deliver and sustain.

Infrastructure investment: the backbone of the system

5.4. GCP is currently working jointly with the Mayor and Combined Authority of Cambridgeshire and Peterborough to develop proposals for a metro (rapid-transit) system for Cambridge, enabling fast, reliable and high-capacity services for large catchments of the City. The metro is designed as a concentric network, where lines travel in and out of the city core. The metro lines are proposed to operate over ground, until they meet the inner city, at which point they will need to go underground to maintain journey speeds.

5.5. The above-ground segregated elements will be faster and less expensive to deliver and, as such, are proposed for early delivery between 2023 and 2025. The full Cambridgeshire Area Metro (CAM) network delivery is still being programmed but not expected to be operational until the end of the decade.

Figure 1: Future mass transit network



5.6. These CAM Phase 1 schemes, segregated surface level routes, will deliver a significant improvement in public transport accessibility to the major out of centre employment sites that are currently very poorly served. They will also offer the ability for those commuting from further afield to park and continue their journey in on rapid public transport, or in future to get an on demand autonomous vehicle to the station or transport interchange.

Transformed services to support new infrastructure

5.7. The public and sustainable transport network of the future needs to look and feel different so that it is genuinely attractive. The fundamental building block of this is getting journey times and frequencies right. At the moment, for too many people, making a journey by car is the rational choice for them to make. Their car is either faster (on a good day), cheaper (in terms of the out of pocket costs for a single journey), or both. For some people, parking is free and relatively easy. Set against this, public transport can often take longer, and be less comfortable. Some find it confusing and frustrating. Cycling and walking is too often an unsafe, inconvenient or unpleasant experience. When all of this is weighed up, it is not surprising that the majority of commuters choose to travel by car. For individuals this is an understandable decision but the collective impact of those decisions is bad for everyone and the position is untenable.

5.8. To convince people to move away from their cars there must be a step-change improvement of the performance of alternative modes on paper (in terms of journey time and financial costs) but also in terms of the user experience. Getting the offer right means a virtuous cycle where more people are attracted to public transport, walking and cycling, taking car traffic off the road which in turn makes space for public transport to run more freely, and delivers an increase in revenue available to support investment in services. At the moment the reverse is happening: public transport services are not performing and so more people are driving, causing congestion that further undermines public transport services.

5.9. This requires the GCP to proactively intervene, with both incentives and disincentives including:

- Significant improvements to service frequency and journey speeds on public transport: targeted at the most important travel to work flows now and in future and at the park and ride sites.
- Better out of hours services – including through trialling autonomous vehicles on the Guided Busway – to serve those working irregular hours.
- An improvement in the look and feel of the network: providing integrated information on public transport; delivering integrated ticketing; improving real time information; upgrading the quality of experience; and introducing a clean, green public transport vehicle fleet.
- Improvements to cycling infrastructure in terms of safety and user experience, with segregation wherever possible.
- Reprioritising public space to make walking safer, easier and more pleasant way to get around.
- A safe, comfortable and productive way of travelling: for example provision of Wi-Fi on public transport and comfortable safe waiting spaces with integrated services such as parcel collection to make life easier for all residents.
- Providing feeder and last mile provision at key transport interchanges for example around campus employment sites and in the city centre, including linking residents from around Cambridgeshire into the CAM network and travel hubs. This means considering secure cycle parking, cycle sharing and safe walking routes to and from public transport services and potentially autonomous vehicles at campus sites.
- Integrating this provision into future planned development, minimising the need to use cars wherever possible.

Priorities for service improvements

5.10. Public transport competitiveness analysis demonstrates that early delivery of the above-ground elements of CAM will deliver a step change in the attractiveness of public transport for important commuter flows through significantly improved public transport infrastructure.

5.11. However, cross city movements are important, particularly in the context of planned growth patterns. Early delivery of the CAM Phase 1 will not be able to make a significant improvement here, so solutions will need to be developed to improve the speed and reliability cross city travel. There are also important housing and employment locations that the CAM network will not directly serve. CAM and rail will be a core of the future transport network but they will always need to be supported by conventional bus and other feeder services, as well as cycling and walking, to ensure that most commuters have a genuinely faster and cheaper journey by public transport than car.

5.12. Competitiveness analysis has been used to define and prioritise a package of public transport service improvements – evidencing what changes are required to make public transport more attractive than the private car – see Appendix 2. This package is likely to deliver the greatest potential impact in supporting mode shift in commuter travel. The package would include a mixture of service frequency enhancements, journey time improvements and targeted fare reductions. This information will be fed into the Bus Services Review currently under deliberation by the Cambridgeshire & Peterborough Combined Authority and detailed proposals developed.

5.13. This targeted package can include, for example enhanced services to the Cambridge Biomedical Campus site:

- **Haverhill to CBC:** increased service frequency from a bus every 15-20 minutes to a bus every 10-15 minutes, improving journey time from 45-60 minutes to less than 30 minutes.

- **Great Shelford to CBC**: Services at least every 15 minutes, and travel times less than 15 minutes.

- **East Cambridge to CBC**: Service frequencies of at least 15 minutes, with travel times improving from 30-45 minutes to less than 30 minutes.

- **Cherry Hinton to CBC:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, and travel times less than 15 minutes.

- **Royston to CBC:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Cambourne to CBC:** Increased frequencies from a service every 30 minutes or more to one every 15-20 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.

5.14. The public transport network defined above and in Appendix 3 will in principle mean that at least 15,000 commuters could go from a situation where car is their most rational option to one where public transport is better. Services will be substantially improved and journeys will be made easier.

5.15. Someone traveling shorter distances to work, such as Waterbeach to the Cambridge Biomedical Campus (approximately 7.5 - 10 miles), would be able to get to work in under 25 minutes; a significant reduction from their journey time today which can take up to 1 hour 15 minutes and require a change. There are 14,000 new jobs planned at CBC and several thousand more along the science park cluster to the south of CBC.

5.16. West Cambridge, where 14,000 planned new jobs are planned, could be served by outstanding public transport. Someone traveling longer distances such as from Haverhill, approximately 25 miles, would have the benefit of turn up and go services between 7:30-8:30am and a maximum total journey time of up to 50 minutes; more than halving today's actual travel times.

5.17. The future services are designed to significantly improve public transport journey times between out of centre locations. Despite only being around 10 miles apart, people living in Cambourne today working in Cambridge Science Park, would take between 80-110 minutes to get to work leaving at 8am using today's public transport network. The future services described above would enable them to get to work in under 30 minutes by public transport which would be a more competitive option than by car.

5.18. This paper is focused on public transport investment but significant improvements to cycling infrastructure across Greater Cambridge are also required. Work will continue to bring forward a programme of investment in cycling and walking.

Deliverability: funding and road space

5.19. The provision of viable, attractive public transport should significantly improve ridership and, as a result, revenues should also increase. However, most cities are not able to support a fully self-supporting bus network. London's bus network, which has very high ridership, runs at a net annual operating deficit of £668m and is therefore cross-subsidised by income from other sources. In Greater Cambridge the estimated revenue cost of an enhanced public transport network is £20m per annum. In the medium term, a source of funding will need to be identified and with increasing pressure on local government finances it is likely that this source will need to be from within transport.

5.20. Delivery of a world class public transport system involves a likely doubling of public transport capacity by 2031[5]. There will be scope to rationalise and make more efficient use of buses and road space but there will also need to be substantial additional vehicles on the roads in particular cleaner, electric vehicles.

5.21. The journey times set out above cannot be achieved in today's city centre traffic and in much of the city centre there is not the physical space to provide full segregation with car traffic levels as they are. To deliver those improvements we will need to make more space for public transport in the city centre, by reducing the number of cars on the road.

5.22. The Strategic Outline Business Case for CAM is being developed and will give more detail on the optimal layout of the city centre network, but even with the delivery of a tunnelled central section (estimated at 2029), it will always be the case that more of the city centre's road space must be directed towards cycling, walking and public transport.

5.23. The next section considers options to deliver that reallocation of road space and revenue support through a range of demand management approaches.

5.24. Alongside this, it is proposed to consider other sources of funding to ensure all options are explored.

Demand management options

5.25. Managing the demand for car travel is an important component in any transport network focused on sustainable modes. To meet the target of 24 per cent reduction in car traffic by 2031, there needs to be more than simply the provision of services and investment in infrastructure (supply). There must be efforts made to manage demand itself.

5.26. Demand management can be based on physical measures (such as access or parking restrictions) or price-based measures (for example parking charges or road pricing). All offer a means of reducing the number of vehicles, and could have several important consequences for Cambridge:

- Reduced congestion in the city centre and around major employment centres, leading to improved reliability, competitiveness and viability of public transport; more road space for public transport, cycling and pedestrians; and improved air quality.

- A potential source of revenues that could be ringfenced for public transport service or infrastructure improvements, including the costs of maintaining highway assets. These improvements would further attract people away from car travel, creating a virtuous cycle.

5.27. In any scenario it is envisaged that a baseline package of measures would be implemented that would include the measures listed in Box 1, below. These measures will contribute to demand reduction targets but are very unlikely to be able to achieve them alone. However, none of these interventions are expected to be able to reduce demand to manageable levels either individually or collectively or raise the funds to pay for new, enhanced public transport services.

[5] Based on a 'policy on' scenario in 2031 where public transport is the future mode of choice for all, including all additional new commuters associated with 44,000 new jobs in Greater Cambridge.

Box 1: Baseline demand management interventions

- Investment in delivering the world class public transport system outlined in Section 4 above, to make sustainable travel more attractive and convenient.
- Targeted on-street parking restrictions (such as residents parking zones)
- Working with employers to reduce the amount of workspace car parking offered, with incentives to transfer workplace parking to more economically productive uses.
- Some element of physical restrictions and road space reallocations in the city centre to discourage through traffic and increase space available for public transport, cycling and walking (the Spaces & Movement SPD is underway and will report in Spring 2019 with specific recommendations).
- Traffic signal optimisation to prioritise bus, cycle and pedestrian movements across the network to reduce delays and improve flow.

5.28. Road space prioritisation – reducing the amount of road space allocated to private vehicles and instead prioritising for public transport and active modes of transport – could help to manage demand in the city centre. The benefit is that by in effect prioritising traffic types, it enhances the reliability of public transport, in turn enhancing its attractiveness as a mode; and instead shifting more of the burden of congestion and travel delays to general traffic. Road space allocation can be in the form of specific modes, in specific lanes, for a minimum number of passengers per vehicle or prioritised in terms of time of day. Physical demand management measures can also counteract a 'creep back' of car traffic and have been used to good effect in London with large scale reallocations of road space to bus and cycle priority following the introduction of the Congestion Charge.

5.29. Traffic modelling carried out to test the impact of strategic road closures in the city centre suggest that more traffic will re-route around the centre than switch to sustainable modes – traffic displacement rather than traffic reduction. This may be part of the solution to allow reallocated road space and improved public realm but is unlikely to be sufficient alone to meet traffic reduction targets.

5.30. Another option is price-based demand management. Preliminary analysis has been carried out to understand the likely impact of price-based measures in terms of congestion reduction, mode shift and revenue generating potential. These measures are:

- Off street parking charges
- A Workplace Parking Levy
- Pollution charging (in parallel with developing proposals for a Clean Air Zone being led by the City of Cambridge in partnership with the GCP)
- Intelligent charging (which might be specified in several different ways).

5.31. Preliminary economic modelling of charging impacts on traffic suggest that various options have the potential to deliver the target traffic reduction of 24 per cent over current levels. Competitiveness analysis suggests that the combination of CAM Phase 1, transformed bus services and demand management would make public transport the best option for around 45,000 current commuters (which represents 85% of the most important commuter routes). New residents of Cambourne, Northstowe, North West Cambridge, Waterbeach, East Cambridge and Trumpington working in Cambridge Science Park, CBC, West Cambridge or the City Centre would all have, competitive public transport commuting options (Appendix 4).

5.32. Charging, depending on how it is set up, could generate between £40m and £60m annual net revenue. This revenue stream offers significant potential to support public transport service improvement costs. Further detailed work would need to be undertaken to establish firm predictions of net revenue. Nevertheless, this is substantially more than the £20m estimated investment in public transport delivery, raising the potential to make further investments in transport infrastructure such as feeder services to

allow residents outside of the city to access CAM, lower fares, significant improvements in road and cycleway maintenance, or leverage to fund investment in public transport infrastructure.

5.33. A summary of the pros and cons of various physical and pricing demand management options is contained in Appendix 5.

6. Other Funding Sources

6.1. Other sources of funding could be explored to deliver the revenue required to support a significant enhancement in public transport provision. This could include wider tax or levy options. Whilst providing revenue, such sources would not deliver a reduction in road use and other measures would be required to free up road space for public transport services.

7. Equity and Equality

7.1. Although the scheme options are at an early stage, elements including pricing will clearly have differential impacts depending on individuals' specific circumstances, including income. Likewise, the quality (or otherwise) of public transport provision can have profoundly differential impacts on different groups of people.[6] It is important that any more detailed work on potential measures clearly identify impacts, both positive and negative, of these measures on different groups of people and makes explicit the likely equalities impact of any measures introduced. The equity implications will be one of the key criterion by which options are assessed and compared. There may be options for mitigating any negative equalities impacts and we would want to explore these as part of the engagement activity we are recommending in this paper.

7.2. Consistency and fairness for those living outside the city boundary, compared with those living within the city is important. ANPR data suggests that around 50 per cent of all recorded trips in Cambridge start and end within Cambridge.[7] This is a principle we would want to test through the recommended public engagement.

7.3. The Public Sector Equalities Duty places a requirement on the public sector to actively promote equality for groups sharing characteristics protected under law as well as to avoid increasing inequality or discrimination faced by people with those characteristics. Protected characteristics under the Equalities Act 2010 are: age; sex; gender identity; race; religion; sexual orientation; marital status; pregnancy & maternity; and disability. In addition to those characteristics protected by law it is good practice to consider disproportionate impacts on those with low incomes.

7.4. A preliminary Equalities Screening Assessment has been carried out and will be updated as technical work progresses on any or all options for demand management. The recommended public engagement event would seek public and stakeholder comment on the equality and equity implications of different options.

[7] Eliasson, J Centre for Transport Studies Stockholm. *Is Congestion Pricing Fair?* 2016

[8] Cambridge ANPR survey report, Oct 2017

Table 1: Preliminary equalities screening of City Access public transport and demand management strategy

Protected characteristic / target group	Preliminary impact screening
Age	• Both young and old people are less likely to own and drive cars, and more likely to be reliant on public transport. • Measures that provide a revenue stream to support better public transport services and/or facilitate the reallocation of road space that improves public transport or walking/cycling provision are likely to positively promote equality for the young and old. • The negative health impacts arising from air pollution due to vehicle emissions are disproportionately damaging for children and older people.
Sex	• No anticipated equalities impact of demand management mechanisms.
Gender identity	• No anticipated equalities impact of demand management mechanisms.
Race	• No anticipated equalities impact of demand management mechanisms.
Religion	• No anticipated equalities impact of demand management mechanisms.
Sexual orientation	• No anticipated equalities impact of demand management mechanisms.
Marital status	• No anticipated equalities impact of demand management mechanisms.
Pregnancy & maternity	• Potential for both minor positive and minor negative impacts. • People travelling babies are more likely to be encumbered when travelling and may prefer to use a car where possible. • For those without access to a car, more and better public transport is likely to make use of public transport with a small baby easier and more accessible.
Disability	• Likely to have mixed impacts. • It is assumed that blue badge holders will be exempt from road pricing mechanisms which minimises the scope for negative equalities impacts. • Physical demand management may have negative equalities impacts if disabled people are prevented from using cars to access parts of the city. • Those with disabilities that do not qualify for a blue badge (for example, those with autism) may nevertheless find use of public transport challenging. Measures that increase the cost or difficulty of car use for these groups may have adverse equalities impacts. • On the other hand, for those disabled people that are reliant on public transport (including but not limited to those with visual impairments) demand management measures that improve public transport have the potential to positively promote equality.
Low income	• Likely to have mixed impacts. • In many places there is a link between deprivation and exposure to poor air quality. This can be masked when looking at formal deprivation data which looks at neighbourhood level because, in general, pollution levels are worse along main roads and in many neighbourhoods, this will be where the cheapest housing is located. • Nationally, the poorest groups in society are much less likely to have access to a car and much more likely to be solely reliant on public transport or to make more PT journeys. • Demand management measures that improve the provision of high quality public transport therefore have the potential for positive equalities impacts. • Air quality measures can have a greater impact upon people with older cars • Shift workers and commuters travelling outside of normal hours can be more heavily reliant upon the private car given limited public transport options.

8. Phasing and implementation

8.1. Phasing will be a critical element of any package development. A substantial and sustained improvements in public transport, walking & cycling travel alternatives is required as a precursor to implementation of other City Access measures.

9. Vision and principles of a Second Big Conversation

9.1. Experience from the first Big Conversation demonstrates that congestion is a major issue facing those who live, work and travel in Greater Cambridge. To better understand the impact of different options for tackling this, and to give local people the opportunity to engage in the early stage of thinking, it is proposed to undertake a second, similar phase of public engagement.

9.2. The second Big Conversation would have a dual focus – to better understand the potential impacts of public transport service improvements, and of different options for tackling congestion and managing demand for road space. It would set out the planned public transport improvements, the offer to different groups of people including those who currently rely on the car, and seek feedback on funding options and priorities, and how different options around services (e.g. frequency and pricing) would support modal shift. It would also show how, by themselves, these improvements are unlikely to be enough to create the journey-time and cost improvements that support modal shift, and seek views on how we could reduce congestion and use different demand management techniques to free up road space and potentially fund a better public transport system.

9.3. The conversation could also explore the public appetite for examining other sources of funding for improvements to local public transport services including council tax or business levy.

9.4. At this stage the conversation would be about the principles of how we manage demand rather than consulting on the specifics of any scheme. At the same time, it will be important to bring to life the public transport offer and choices, as well as how any demand management system could work. This would be an opportunity to engage people living in, working in and visiting Cambridge on how best to tackle the issues set out in this paper. As well as exploring practical, equality and financial impacts the conversation would also look at well-being and quality of life impacts, including air quality.

9.5. It will be important to obtain robust feedback to support future decisions. In particular, given the potential equality impacts, we need to ensure that we hear from harder-to-reach groups. As well as offering the opportunity to attend events and fill out a survey to all who are interested, we envisage that the conversation will include an independent survey covering a representative sample of people.

9.6. One option for exploring a cross section of views would be to ask an independent body to run a citizens' assembly. These typically involve around 100 participants, selected so as to be representative of the impacted groups, who meet to understand the evidence and discuss and propose a solution. They are advisory in nature, offering the opportunity to understand the issues in greater detail.

9.7. In addition, specific business engagement events and meeting organisations with particular needs, for example the police and ambulance service would be included. The conversation should engage the whole travel area, not just the area covered by the GCP, and we will be looking at how best to achieve this – e.g. by advertising the survey more widely, and by running events outside the area.

9.8. Appendix 6 contains preliminary examples of the questions we would ask as part of the conversation. These would be refined following any decision to proceed with the engagement, including an independent QA.

10. Summary and recommendations

10.1. This paper seeks to provide greater shape and definition to the vision, principles and definition of a world class public transport system for Greater Cambridge. It is predicated on providing fast, reliable public transport routes into and through the city, prioritising commuter traffic for mode shift and supporting the public transport system with world class cycling and walking facilities. This will improve quality of life for residents and employees, support Cambridge's continued economic success and improve air quality and thereby health outcomes in the City.

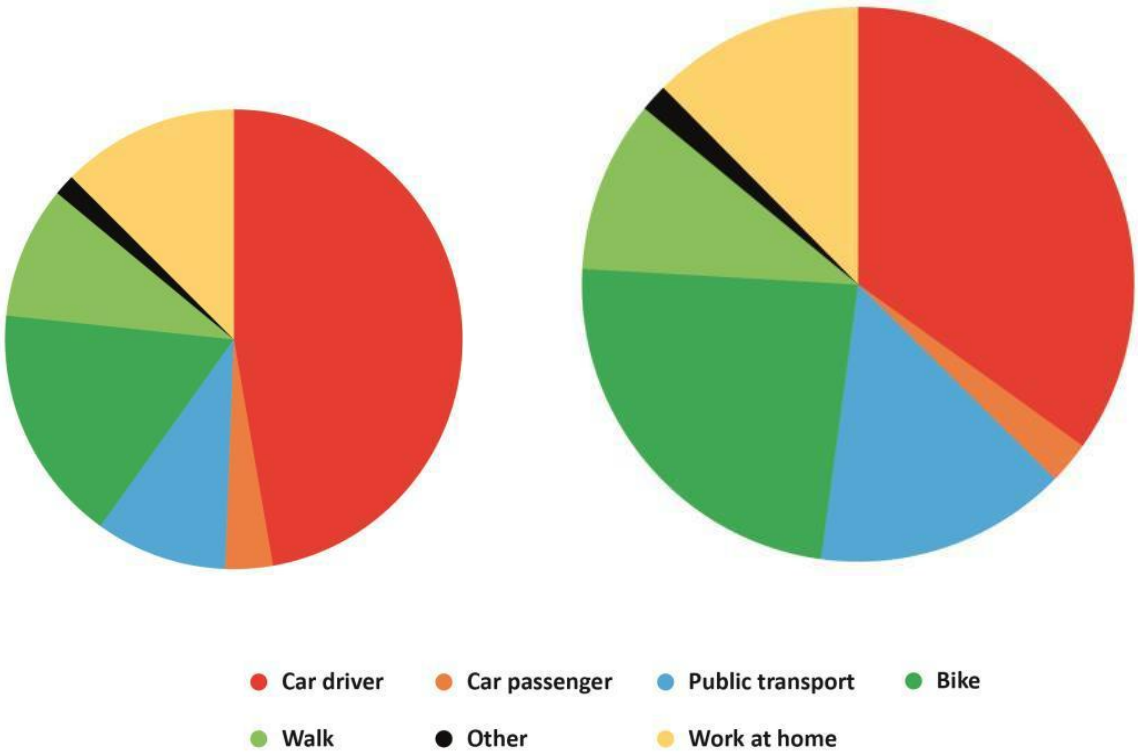
10.2. This public transport system will require both infrastructure investment and service improvement. To deliver a truly world class system is likely to require significant ongoing subsidy as well as increased road space and priority. The paper further sets out the range of options for achieving this through physical and price based demand management mechanisms.

10.3. The Joint Assembly is asked to note and comment on the contents of this paper.

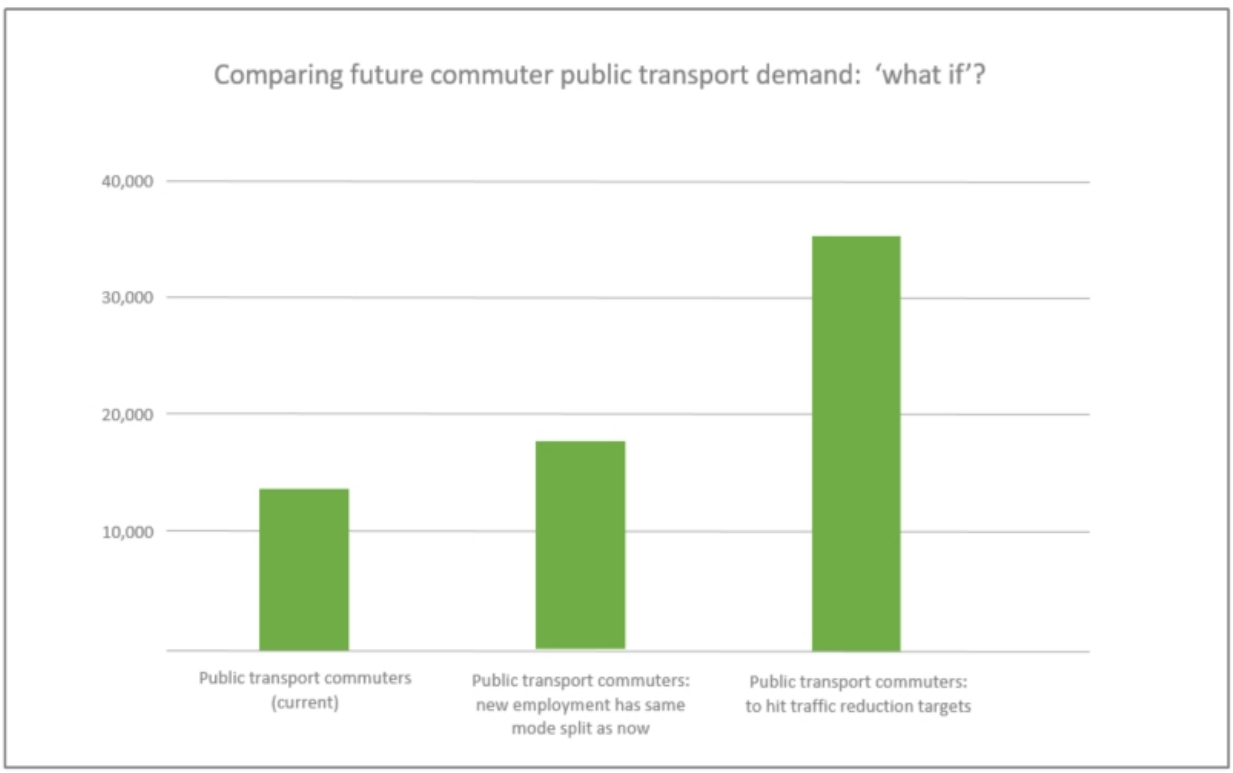
Appendix 1: Implications of growth for public transport, walking and cycling

A significant growth in walking, cycling and public transport is required as Greater Cambridge continues to grow:

2011: 88,000 jobs in Greater Cambridge **2031: 132,000 jobs in Greater Cambridge**



Analysis of public transport demand in different scenarios:



Appendix 2: Public transport competitiveness analysis for key employment locations

Generalised cost analysis has been undertaken for key commuter routes in Greater Cambridge. This can then be used to test whether current routes offer a competitive public transport option compared to the private car, and the impact of different interventions on that competitiveness.

The values presented here are ratios expressing the relative difference between generalised cost by public transport and generalised cost by private car. Positive values denote that public transport has a higher generalised cost (private car is a more attractive option than public transport); negative values denote that public transport has a lower generalised cost (public transport is a more attractive option than private car).

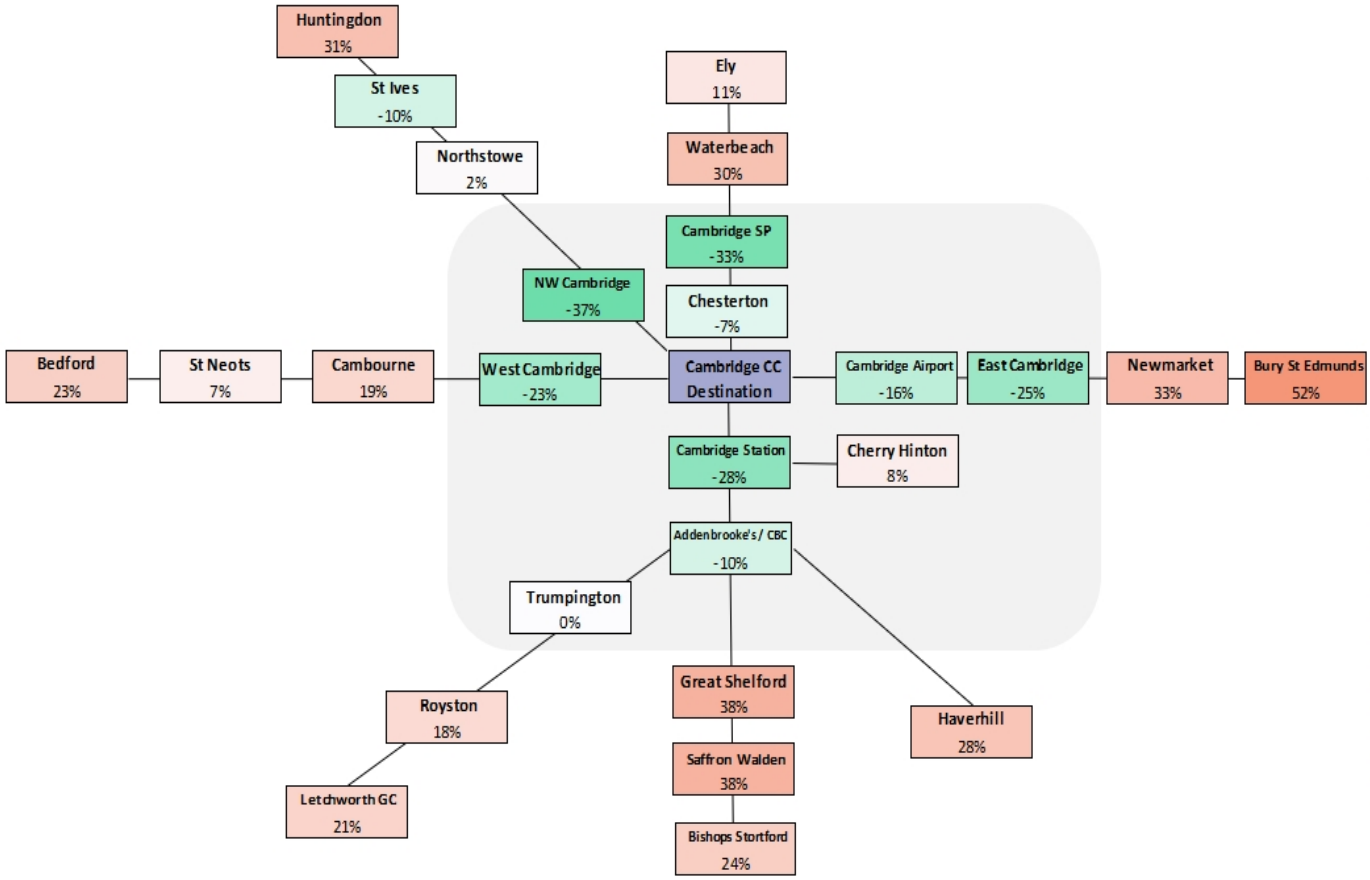
Competitiveness analysis has been undertaken for key employment locations in four scenarios:

- Now – the current situation
- With GCP public transport routes
- With GCP public transport routes and public transport service improvements
- With GCP routes, service improvements and demand management changes

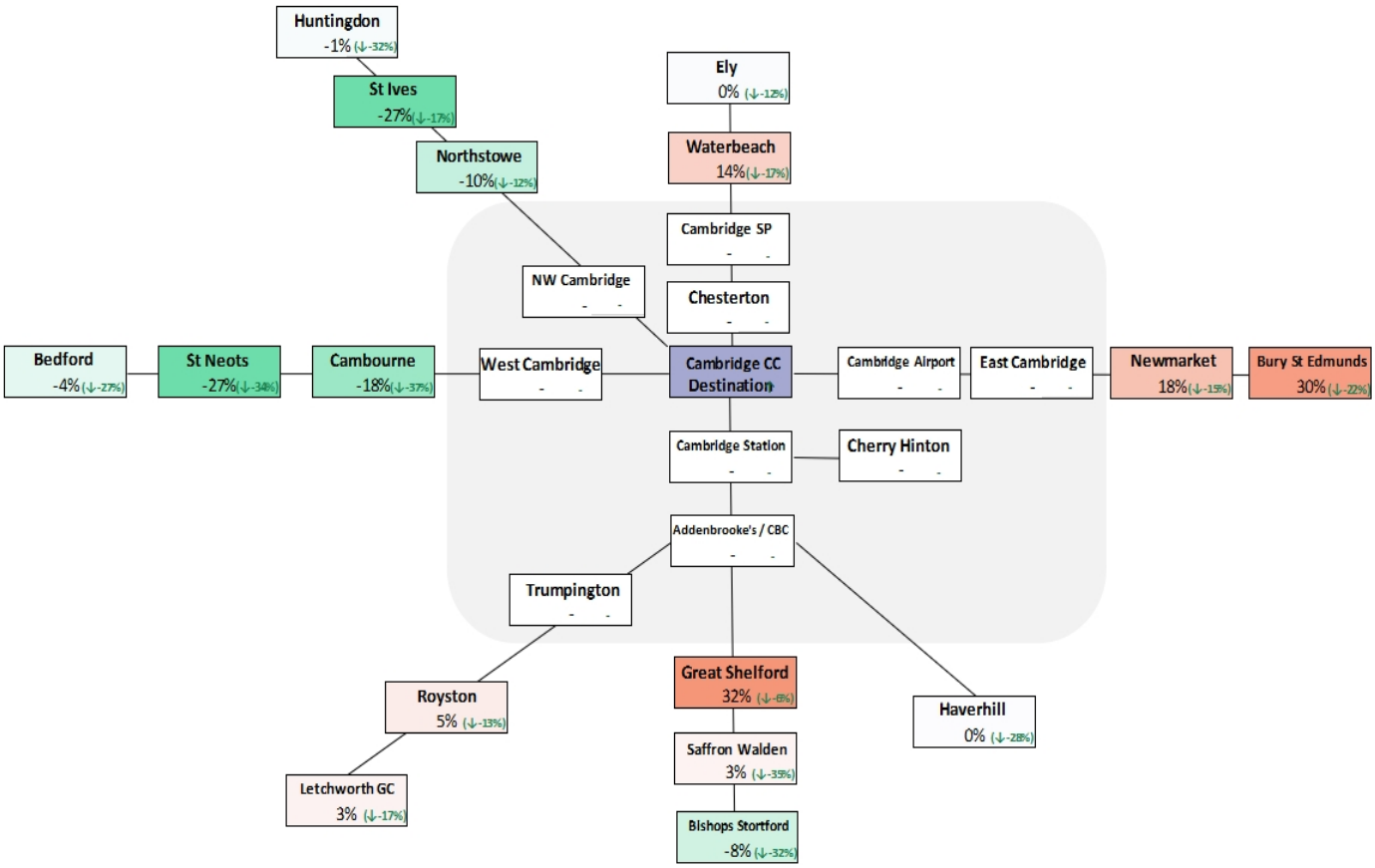
The results are set out below.

A: City Centre

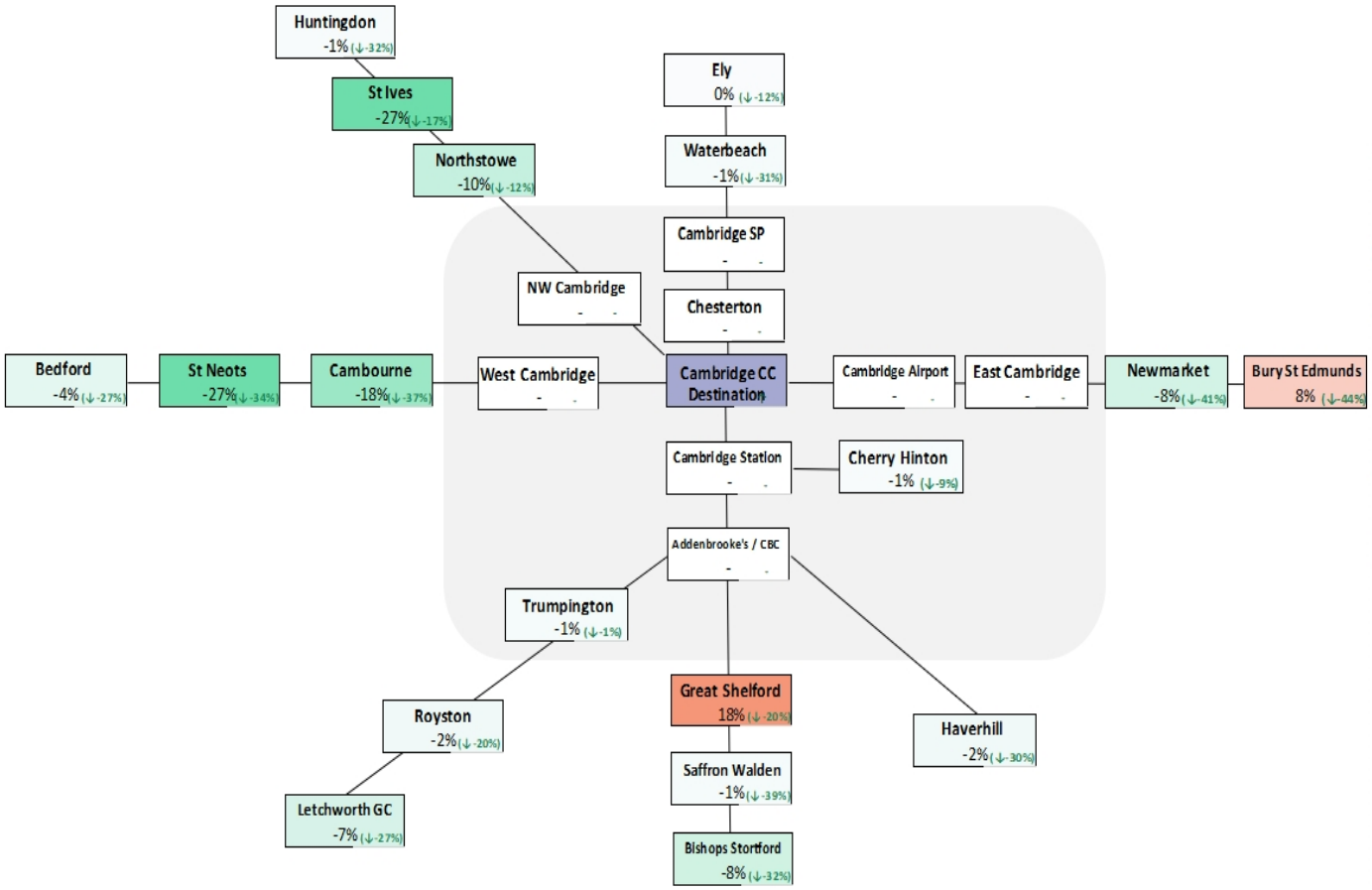
Now



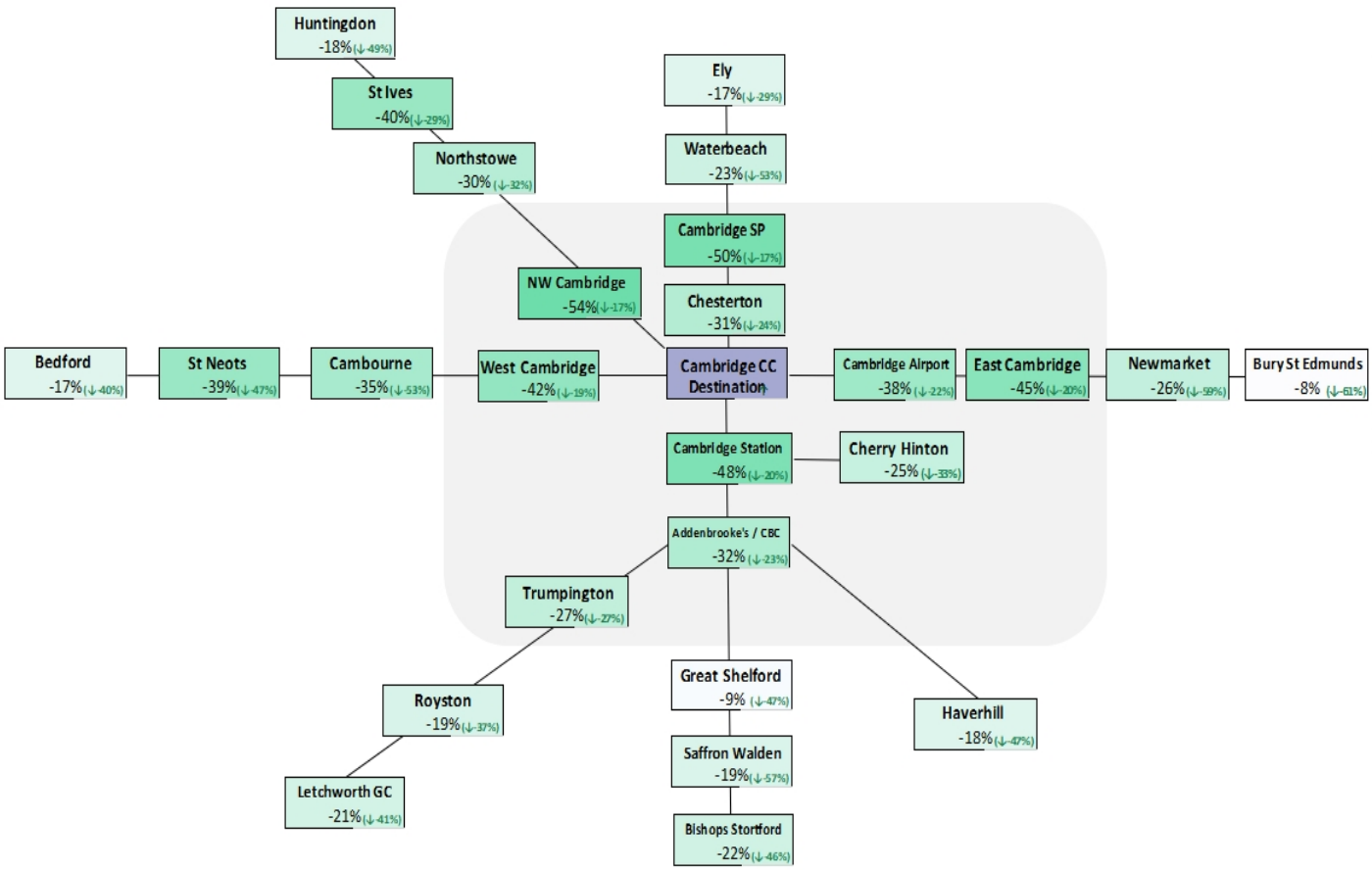
With GCP public transport routes



With GCP public transport routes and public transport service improvements

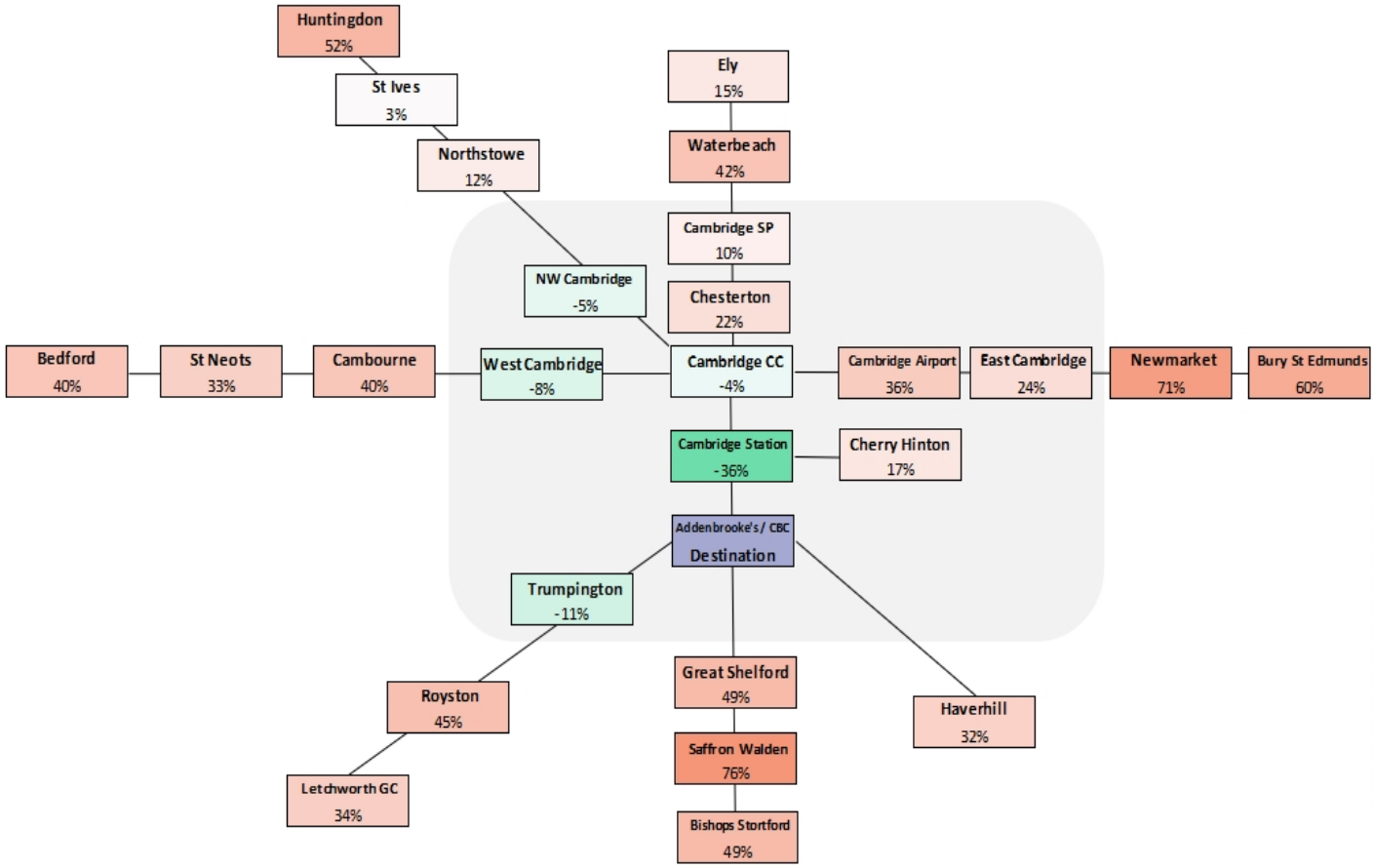


With GCP routes, service improvements and demand management changes

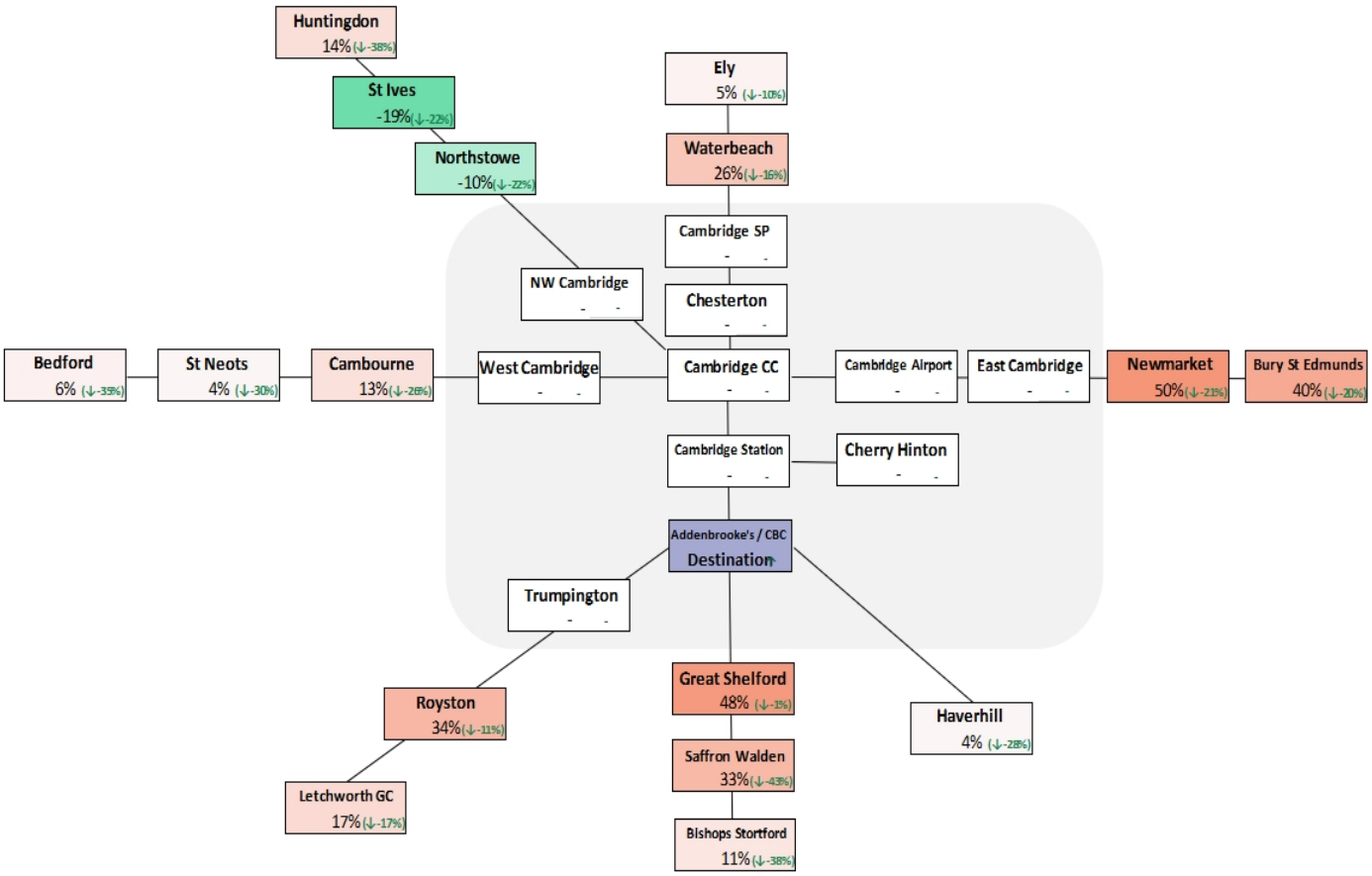


B: Cambridge Biomedical Campus / Addenbrooke's Hospital

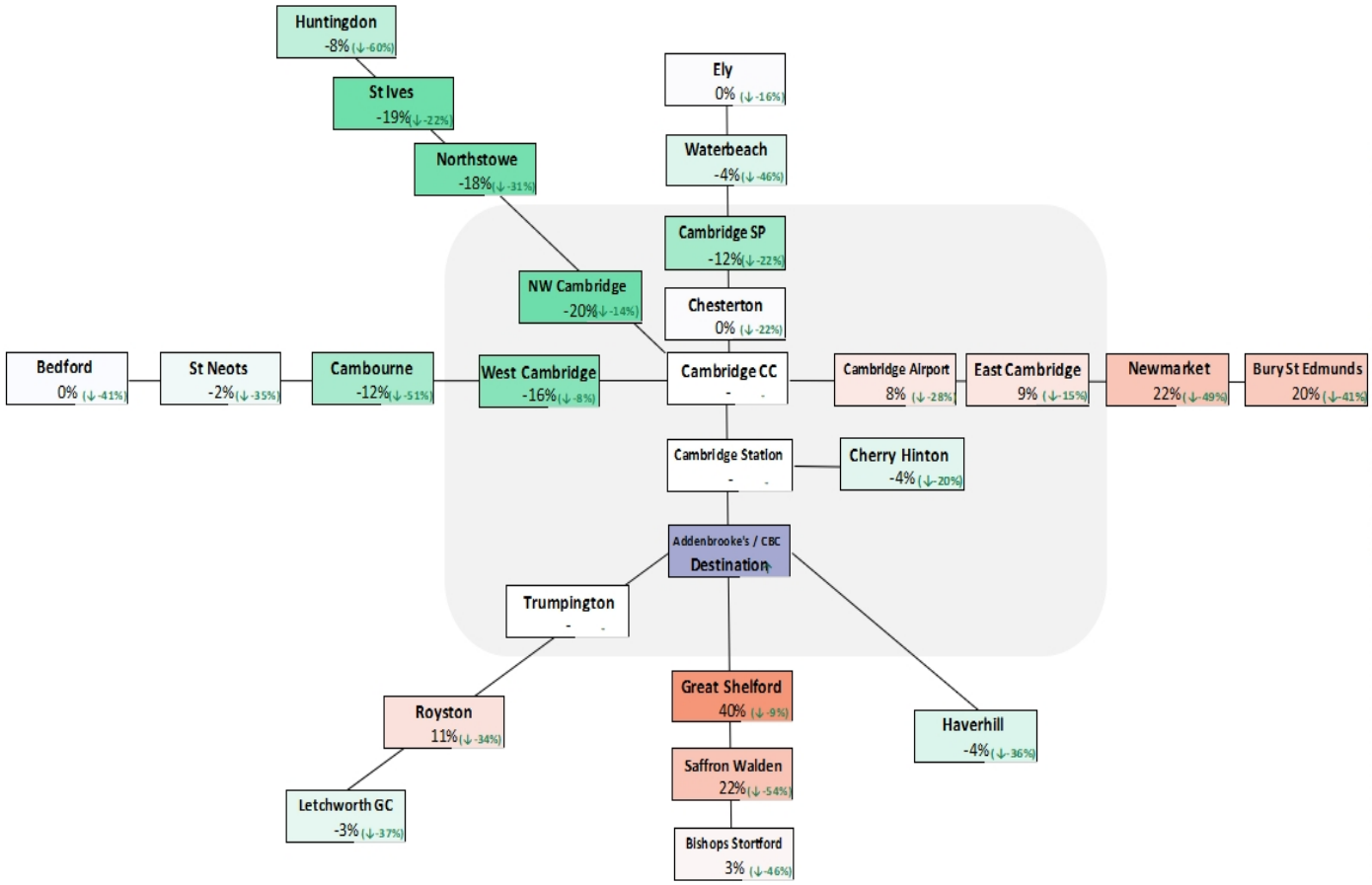
Now



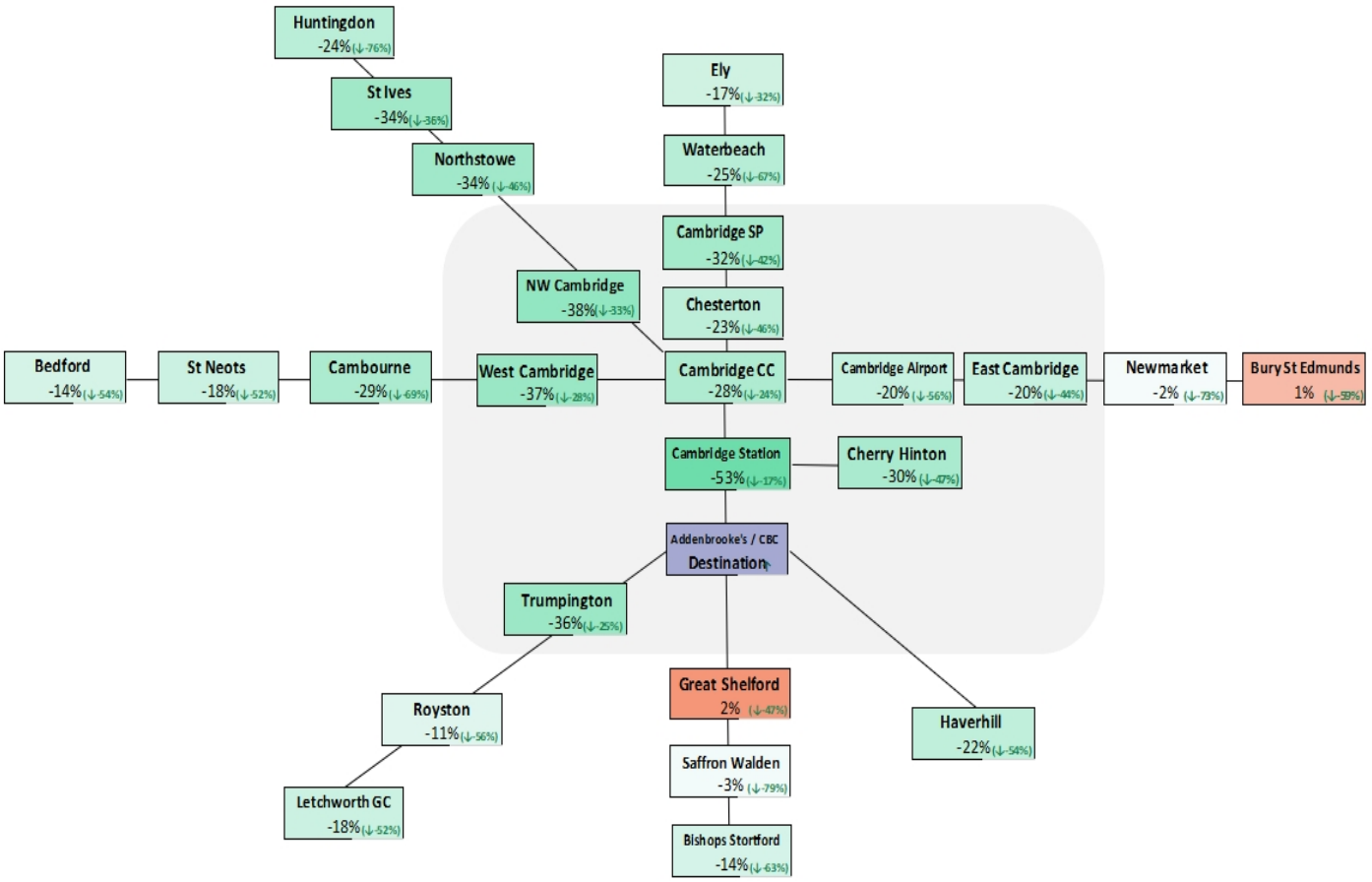
With GCP public transport routes



With GCP public transport routes and public transport service improvements

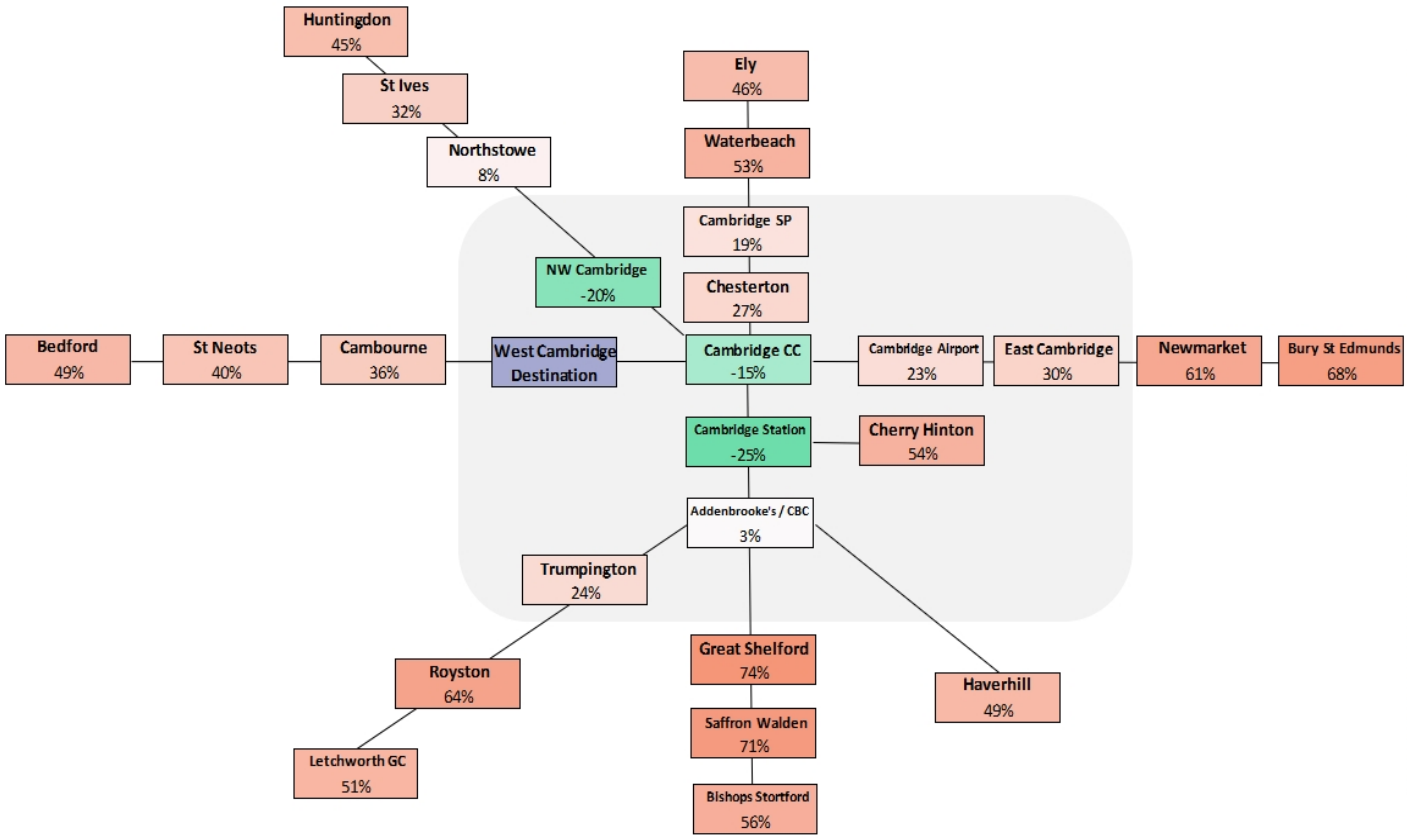


With GCP routes, service improvements and demand management changes

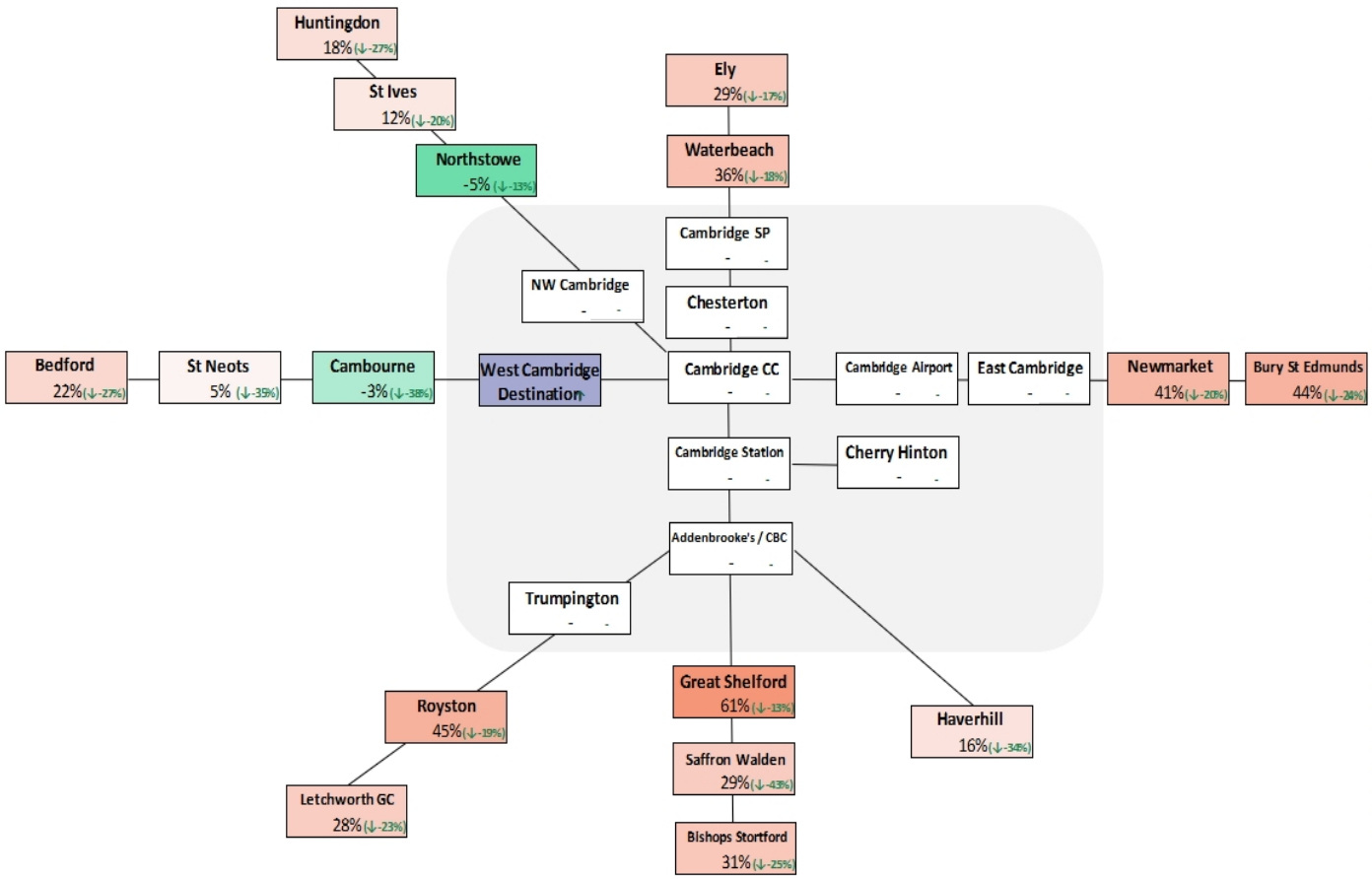


C: West Cambridge

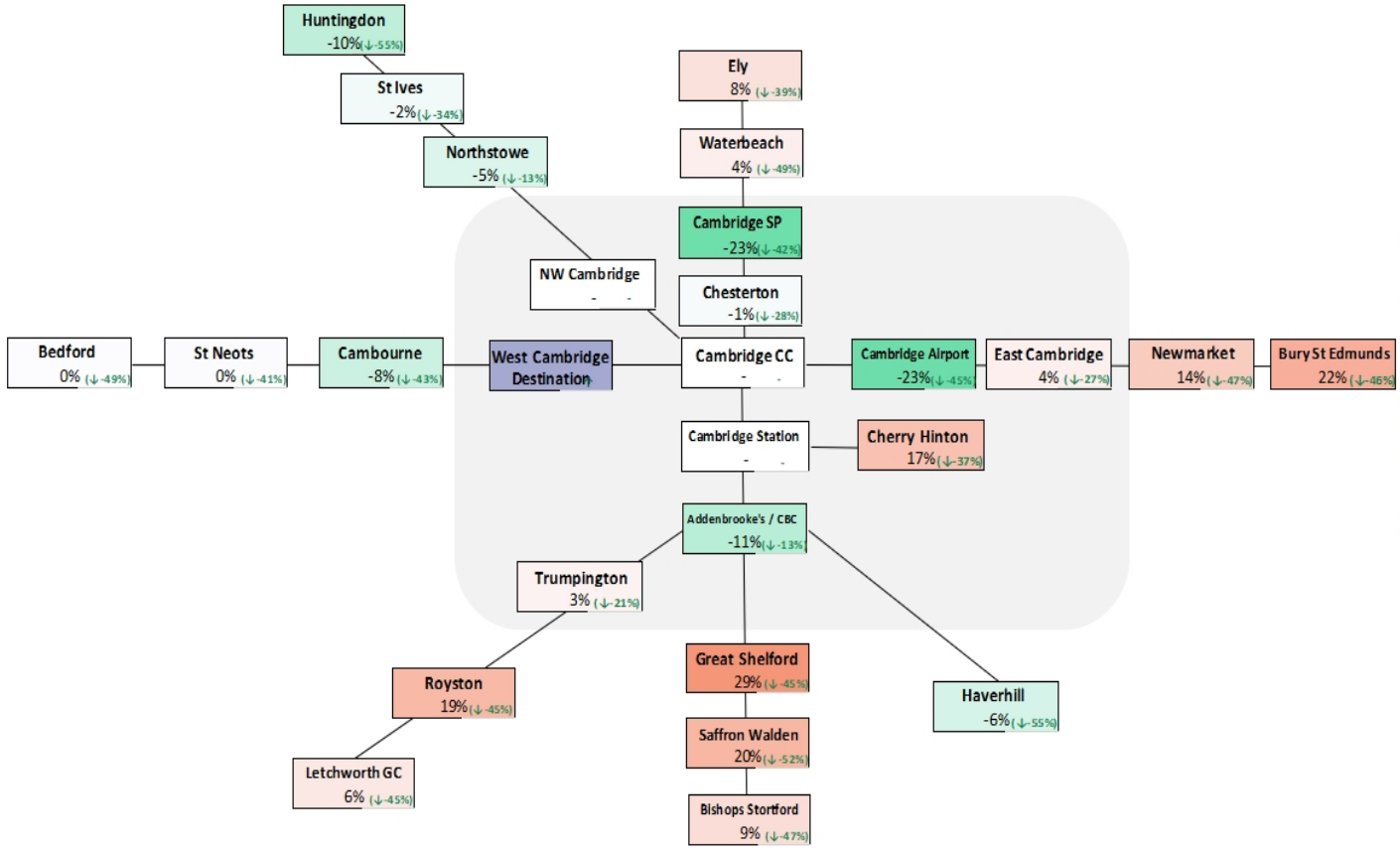
Now



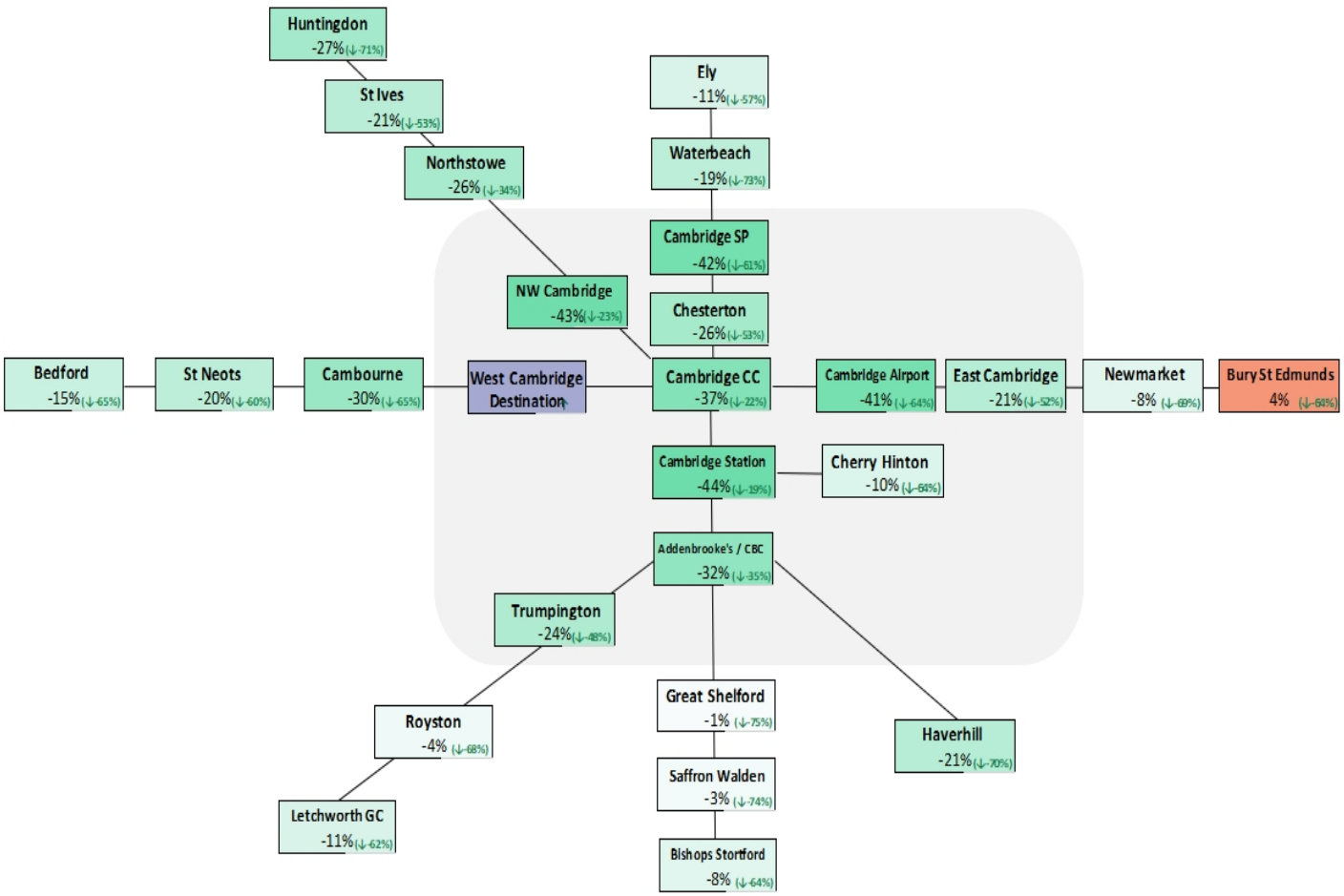
With GCP public transport routes



With GCP public transport routes and public transport service improvements

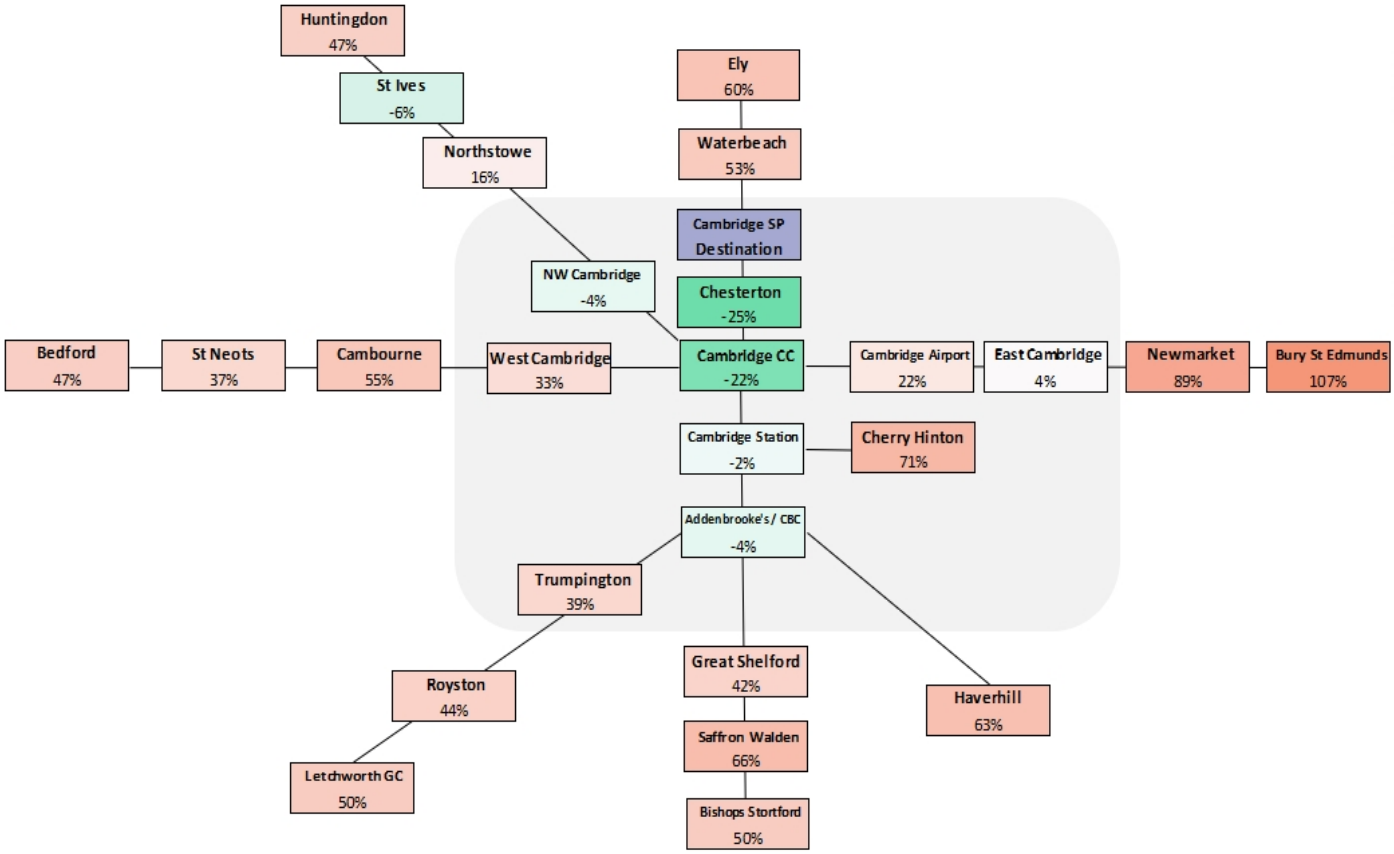


With GCP routes, service improvements and demand management changes

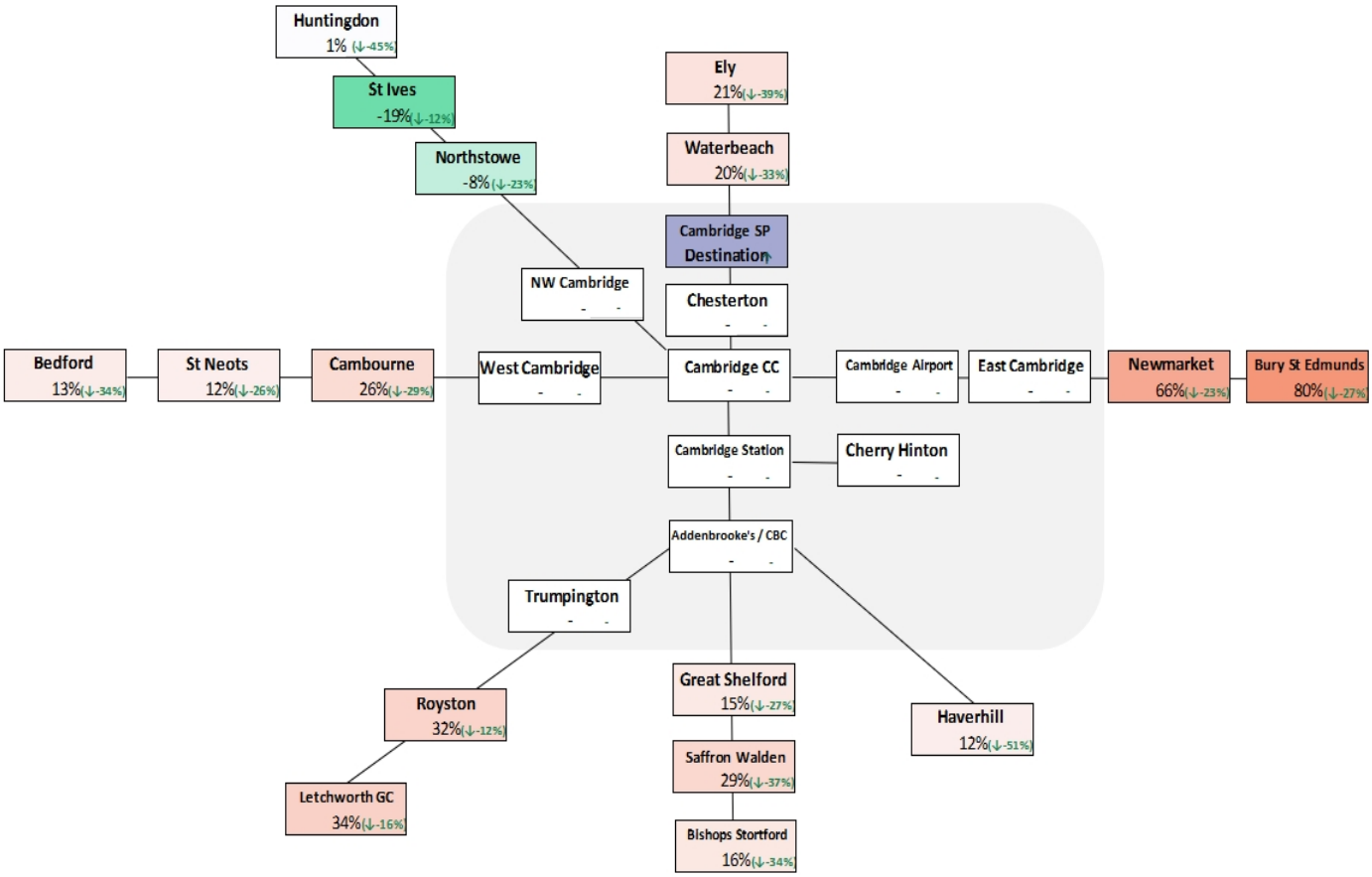


D: Cambridge Science Park

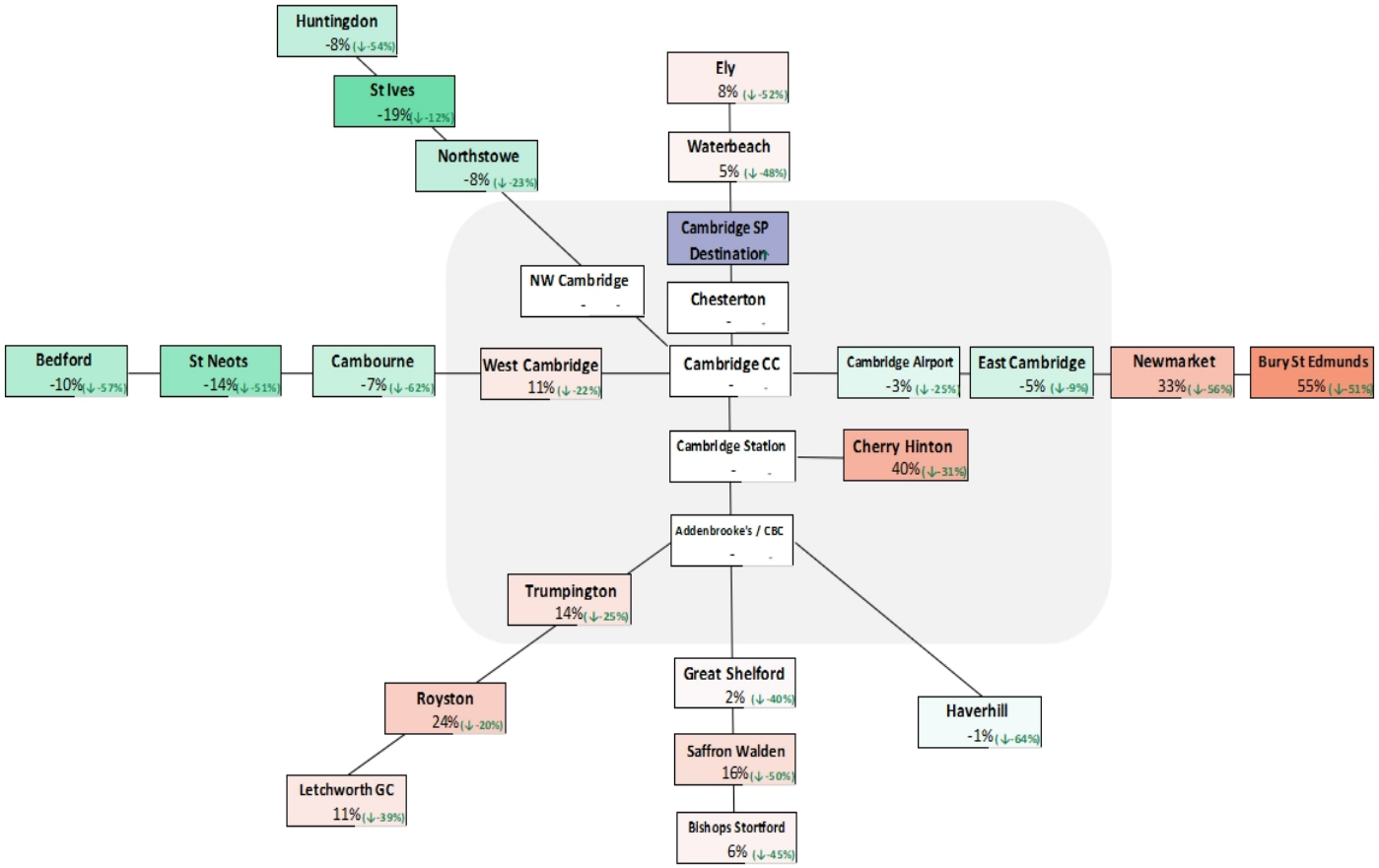
Now



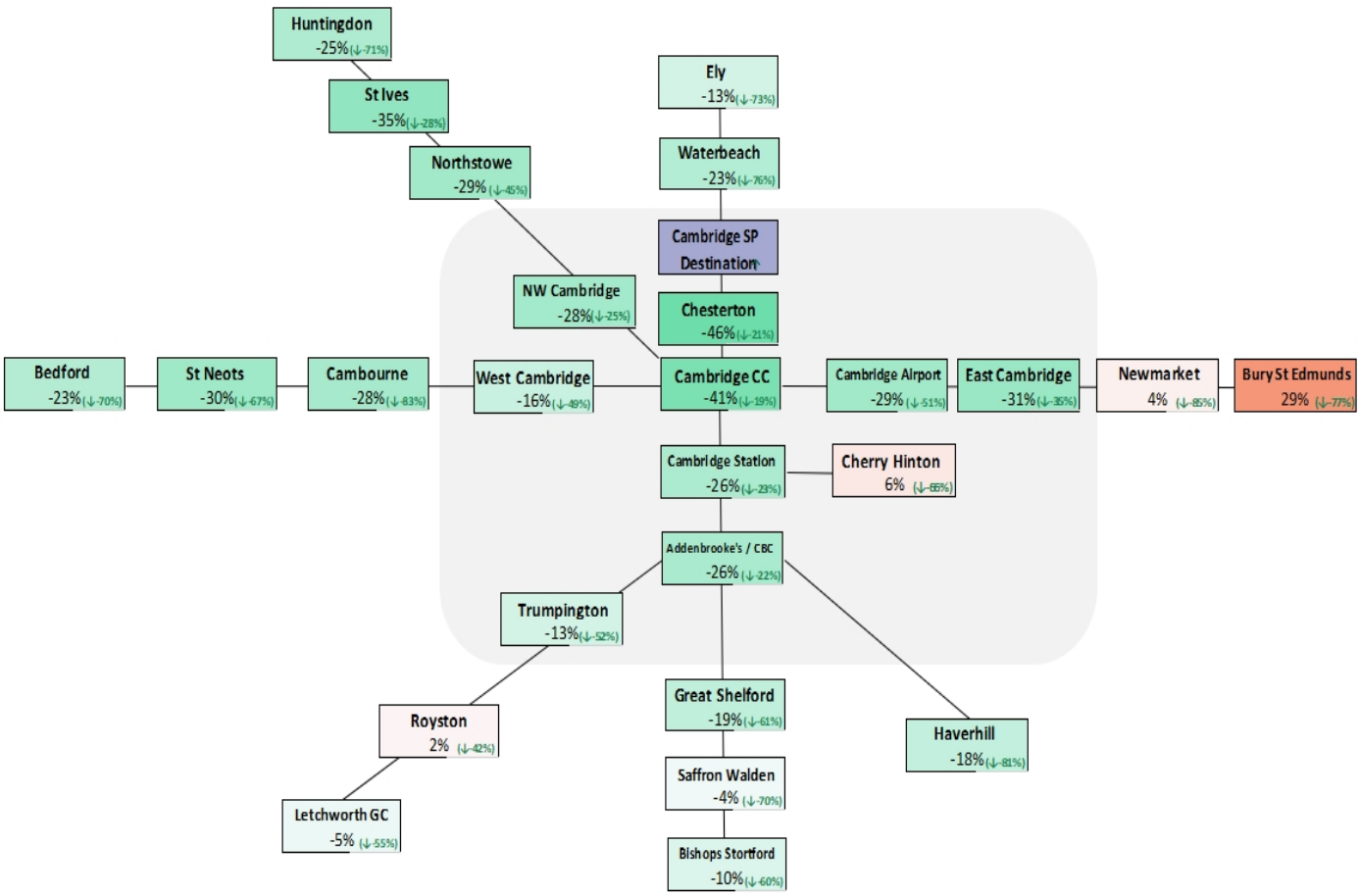
With GCP public transport routes



With GCP public transport routes and public transport service improvements

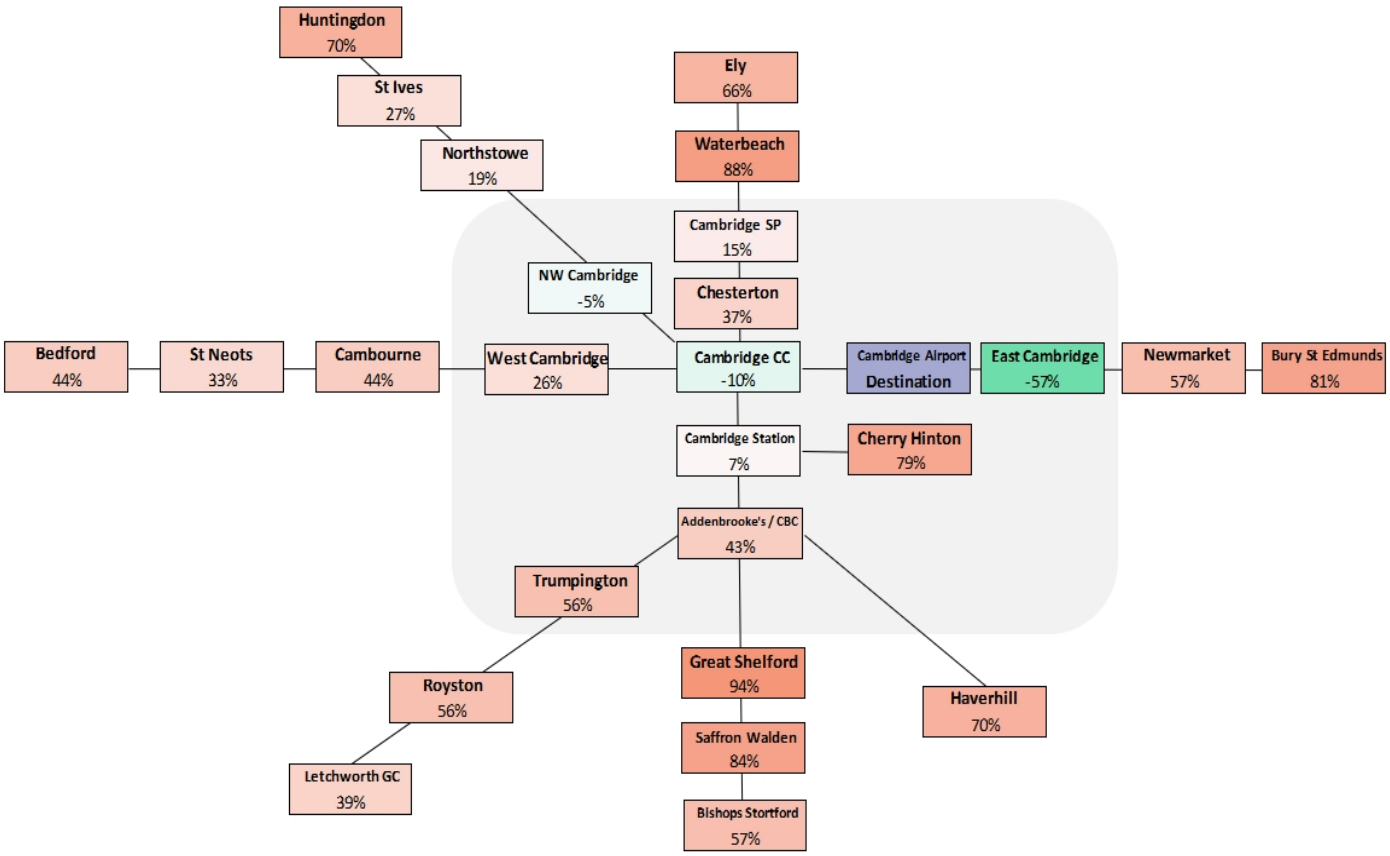


With GCP routes, service improvements and demand management changes

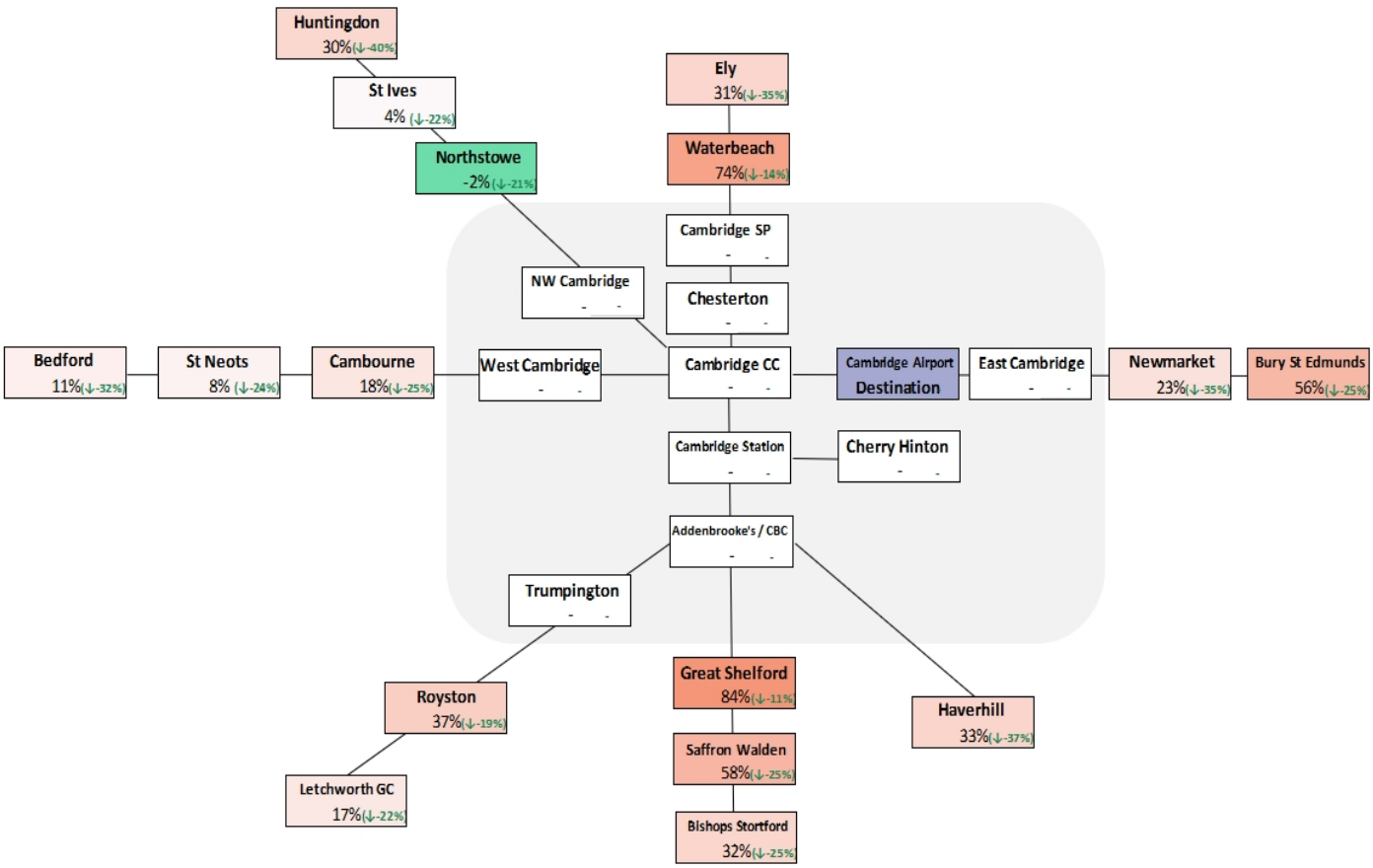


E: Cambridge Airport

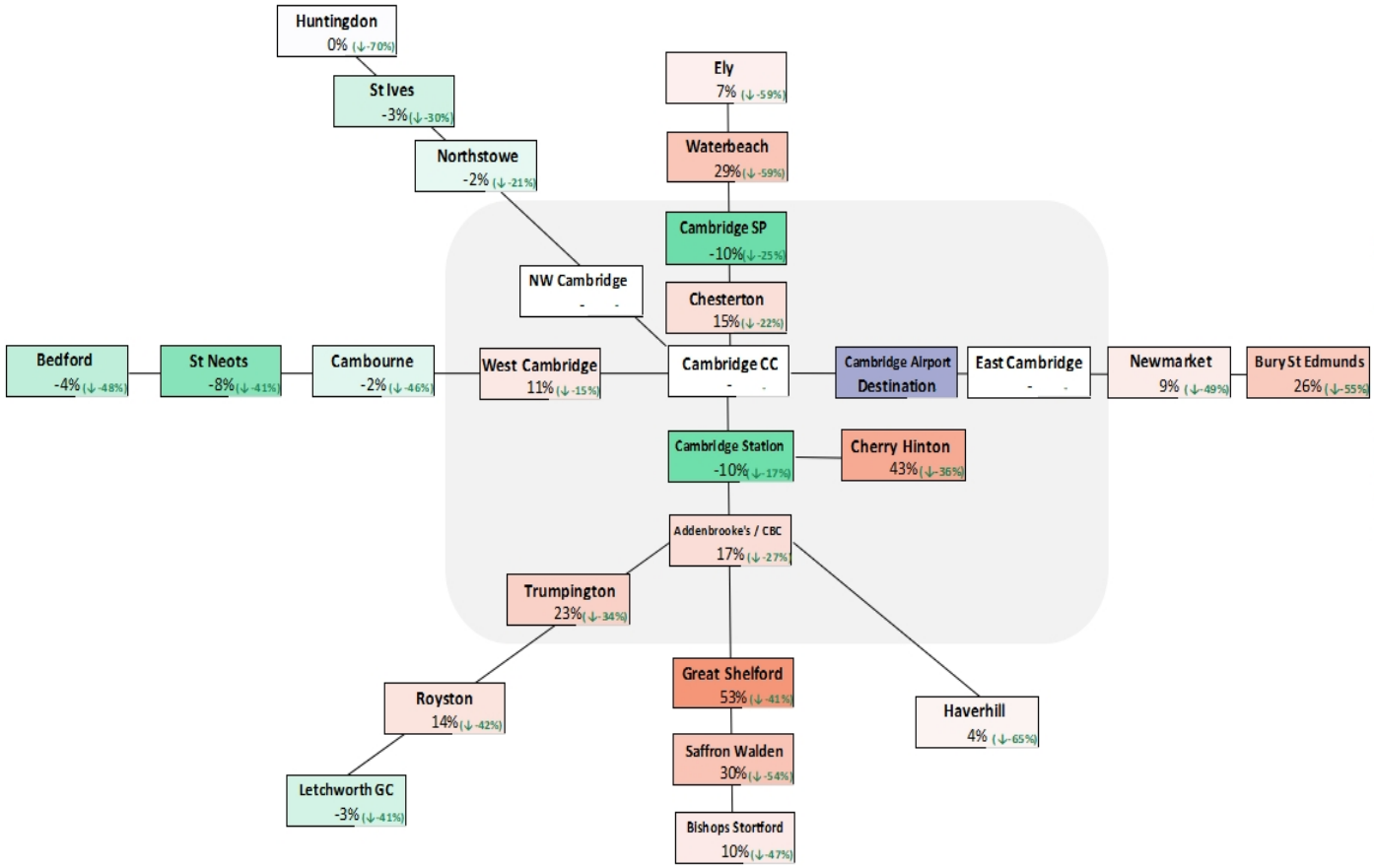
Now



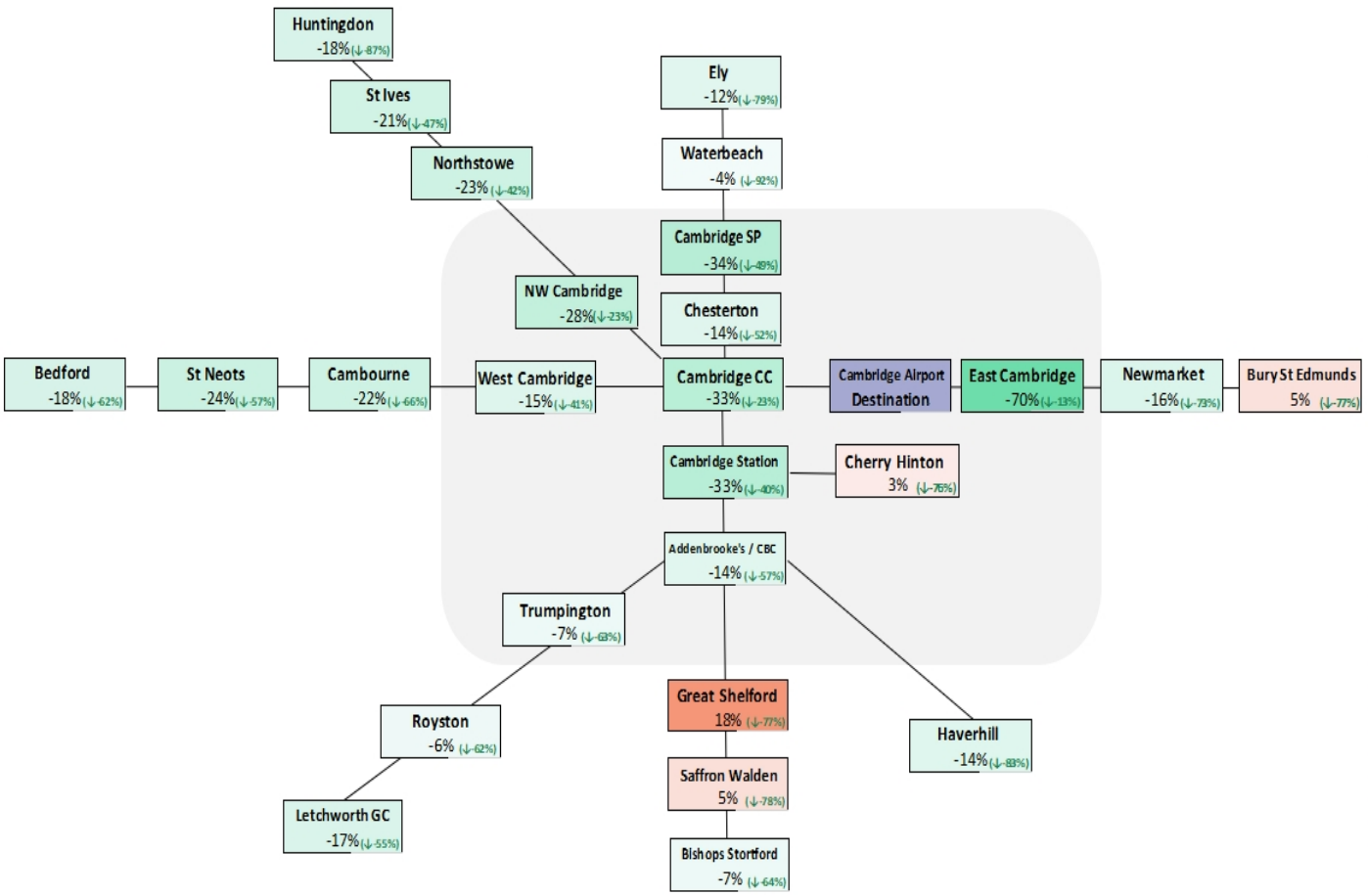
With GCP public transport routes



With GCP public transport routes and public transport service improvements

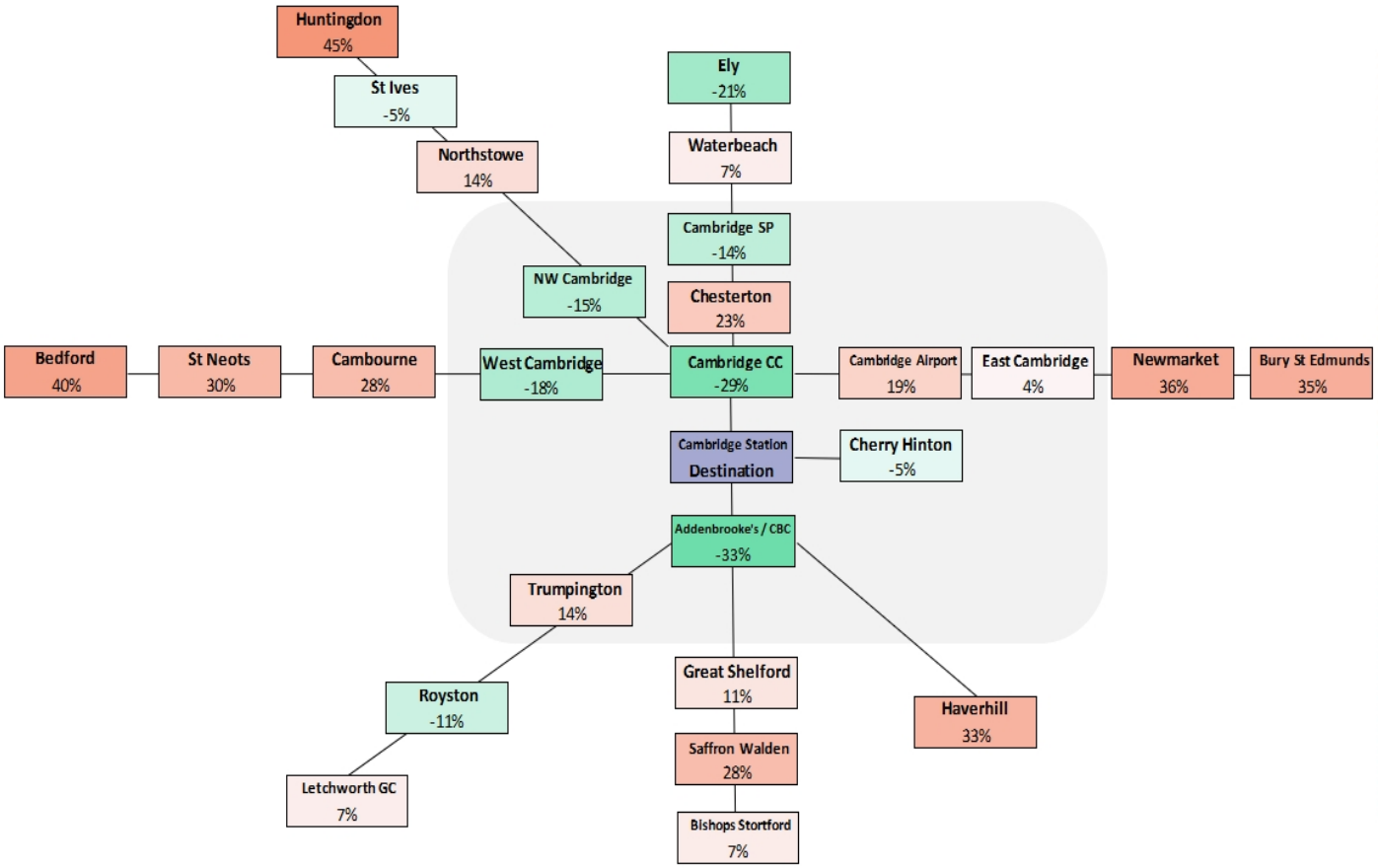


With GCP routes, service improvements and demand management changes

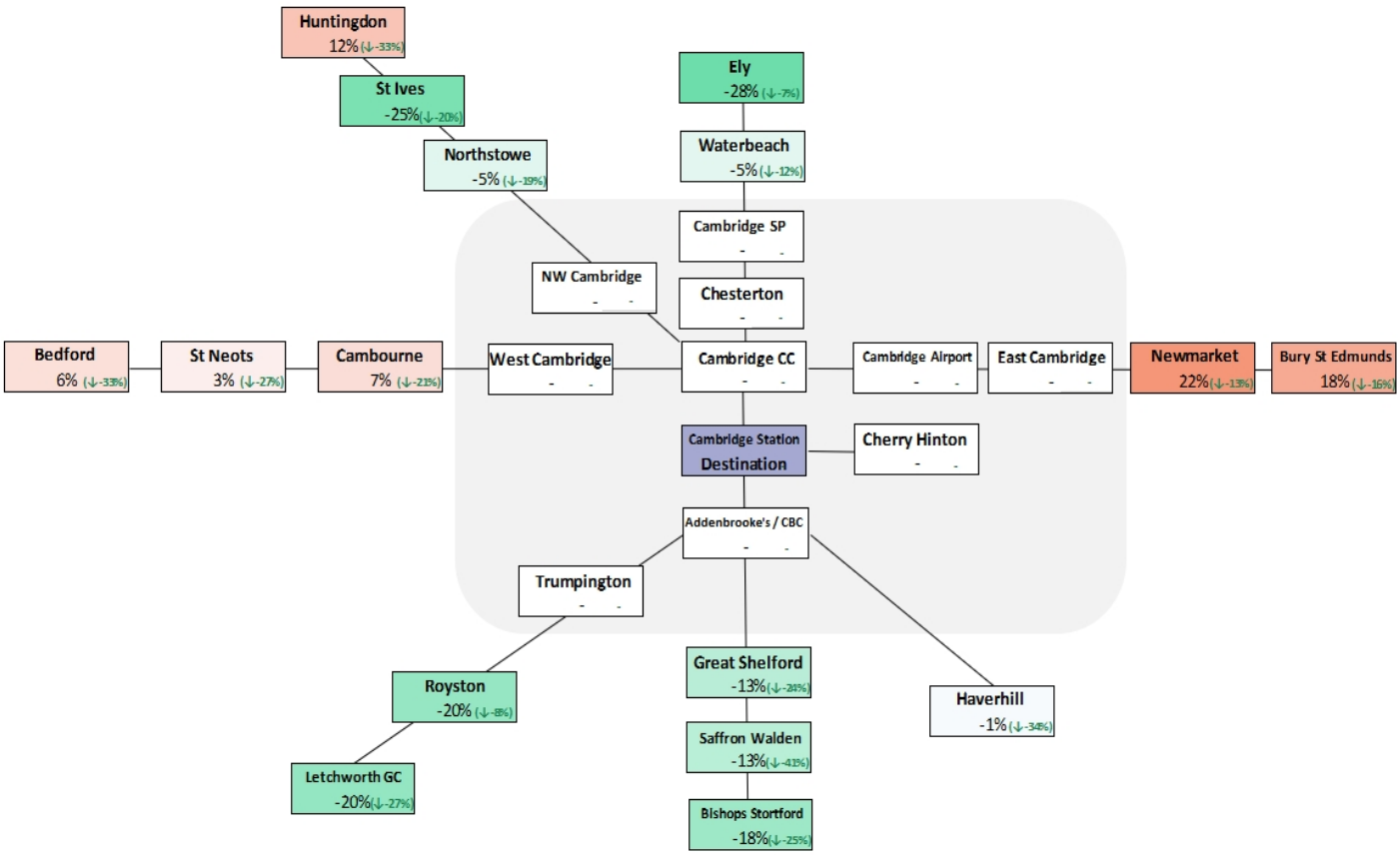


F: Cambridge Station

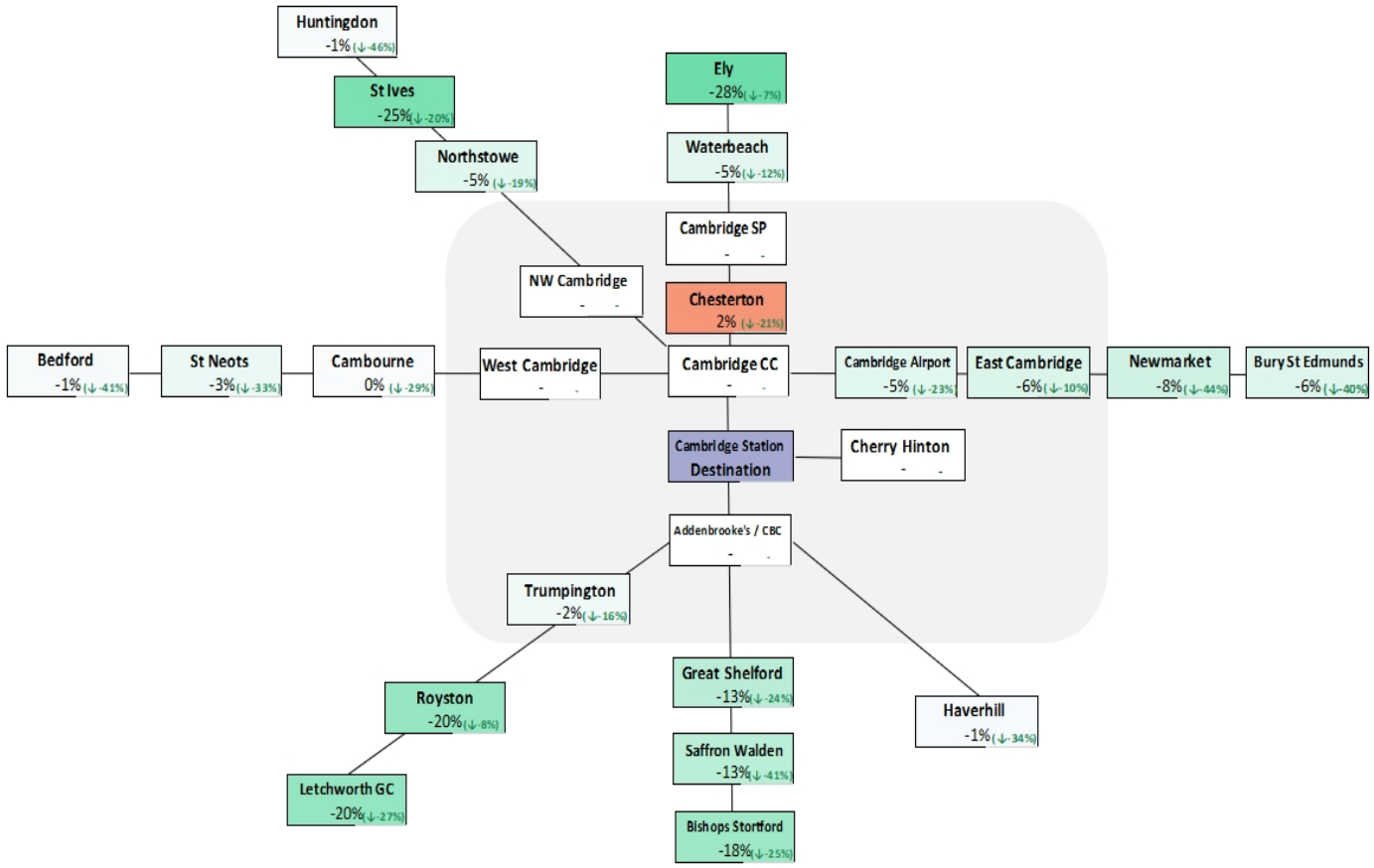
Now



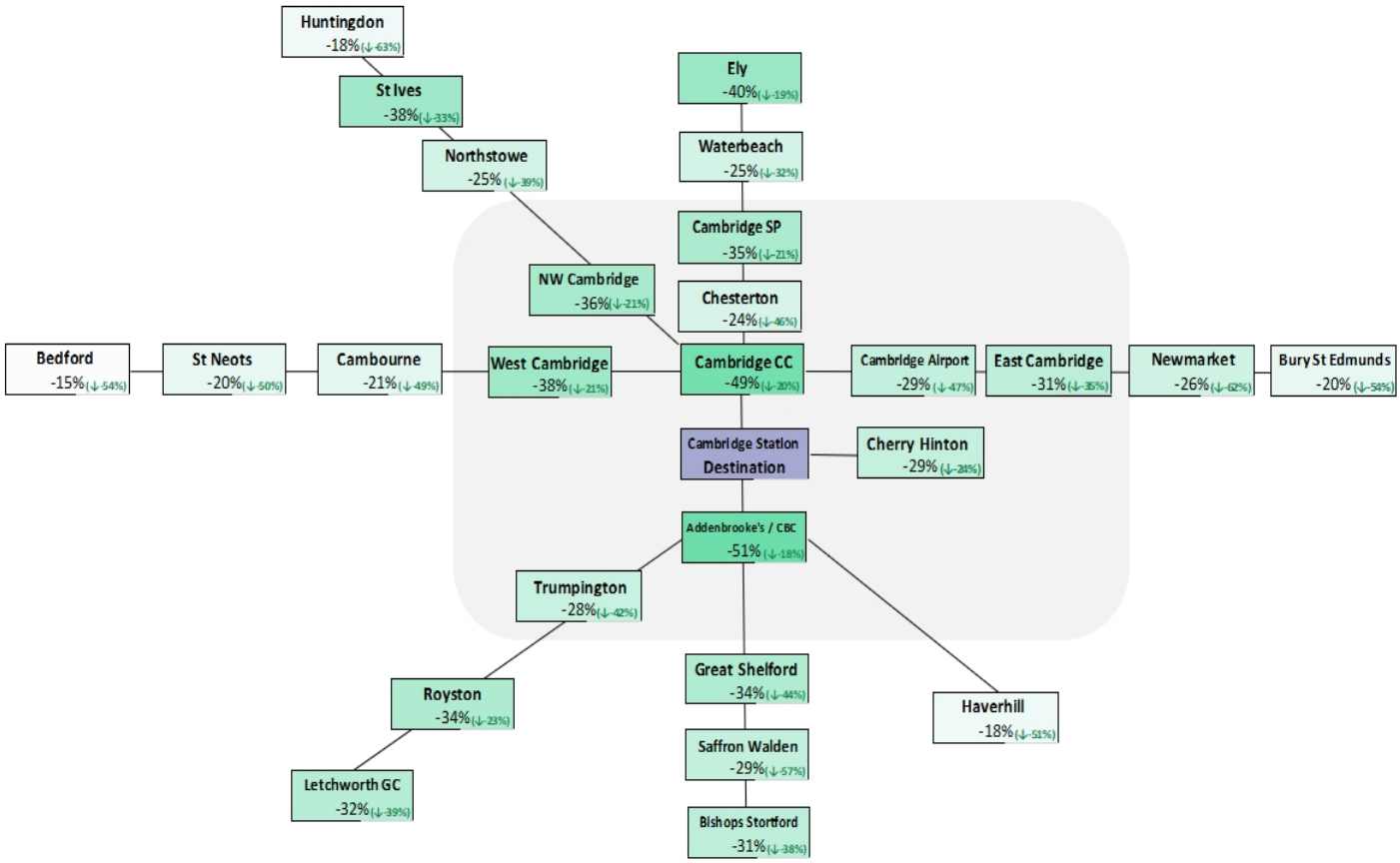
With GCP public transport routes



With GCP public transport routes and public transport service improvements



With GCP routes, service improvements and demand management changes



Appendix 3: Prioritised list of public transport service improvements

The recommendations in this appendix result from a generalised cost analysis. The purpose of the work was to develop a high level view of how competitive public transport is with car, for key commuter flows (derived from an analysis of Census travel to work data). Further, to think about what investment might be necessary to make public transport competitive than car in future, to indicate the order of magnitude of change required. These investments can then be prioritised by how many commuters are travelling from A to B now, or because they are future strategic growth locations.

This appendix gives the headline findings of that analysis, which can inform a number of current and future investments such as the bus services review and traffic signals review.

a) Priority improvements to serve the biggest current demand flows

Improvements are ordered from highest to lowest demand for flows with at least 500 commuters as analysed from the journey to work data from the 2011 Census.

- **Cambourne to Cambridge city centre:** increased frequency from a service every 30 minutes or more to every 15 minutes, improving journey time from 30-45 minutes to less than 30 minutes.

- **Haverhill to CBC:** increased service frequency from a bus every 15-20 minutes to a bus every 10-15 minutes, improving journey time from 45-60 minutes to less than 30 minutes.

- **Northstowe to Cambridge city centre:** Service frequencies of at least a bus every 20 minutes, and marginal improvements to existing travel times of 25 minutes, as provided by CAM.

- **Great Shelford to CBC**: Services at least every 15 minutes, and travel times less than 15 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).

- **Ely to Cambridge city centre**: Services at least every 30 minutes, with vehicle travel times between 15-30 minutes.

- **Great Shelford to Cambridge city centre**: Services at least every 15 minutes, and travel times improving from 30-45 minutes to 15-30 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).

- **East Cambridge to CBC**: Service frequencies of at least 15 minutes, with travel times improving from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures as well).

- **Cherry Hinton to CBC:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, and travel times less than 15 minutes.

- **Royston to Cambridge city centre**: Service frequencies of at least a bus every 20-30 minutes, and marginal improvements to existing travel times of 25-30 minutes.

- **Trumpington to Cambridge city centre**: Maintain existing frequencies of a service every 10 minutes with improved travel times from 15-30 minutes to less than 15 minutes.

- **Haverhill to Cambridge city centre:** Maintain existing frequencies of a service every 15-20 minutes, improved travel times from over 60 minutes to 30-45 minutes.

- **Royston to CBC:** Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Cherry Hinton to Cambridge city centre:** Maintain existing service frequencies of less than 10 minutes, and marginal improvements to travel times between 15-30 minutes.

- **Northstowe to Cambridge Science Park:** Increased frequencies from a service every 20-30 minutes to one every 15-20 minutes, and maintained travel times between 15-30 minutes.

- **Chesterton to Cambridge Station:** Increased frequencies from a service every 15-20 minutes to one every 10-15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Cambourne to CBC:** Increased frequencies from a service every 30 minutes or more to one every 15-20 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.

- **Ely to Cambridge Science Park:** Increased frequencies from a service every 30 minutes or more to one every 10-15 minutes, and improved travel times from 30-45 minutes to less than 30 minutes.

b) Priority improvements to serve future growth centres

The following improvements are intended to serve locations that are identified as major growth sites with greater than 5000 homes or jobs at both origin and destination. These are ordered by existing demand as analysed from the journey to work data in the 2011 Census.

- **Haverhill to CBC:** As identified above.

- **Northstowe to Cambridge Science Park**: As identified above.

- **Cambourne to CBC**: As identified above.

- **Cambourne to Cambridge Science Park**: Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 45-60 minutes to less than 30 minutes.

- **Northstowe to CBC:** Maintain frequencies for a service every 20-30 minutes, and improved travel times from 45-60 minutes to less than 30 minutes.

- **Cambourne to West Cambridge site**: Increased frequencies from a service every 30 minutes or more to a service every 15-20 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Northstowe to West Cambridge site**: Maintain frequencies for a service every 20-30 minutes, and marginal improvements on existing travel times of less than 30 minutes.

- **Haverhill to Cambridge Science Park:** Increased frequencies from a service every 20-30 minutes to a service every 15-20 minutes, and improved travel times from longer than 60 minutes to less than 45 minutes.

- **Waterbeach to Cambridge Science Park:** Increased frequencies from a service every 30 minutes or more to a service every 10-15 minutes, with maintained travel times of less than 15 minutes. (This route may only be competitive with car with price-based demand management measures).

- **Waterbeach to CBC**: Increased frequency from every 30 minutes to every 15 minutes, improving journey time from 40+ minutes to 25 minutes.

- **Haverhill to West Cambridge site:** increased frequency from a service every 30 minutes to a bus every 10-15 minutes, improving journey time from 100 minutes to 50 minutes.

- **Waterbeach to West Cambridge site**: Increased frequency from a service every 30 minutes or more to every 15-20 minutes, with improved travel times from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures).

The following improvements are intended to serve locations identified as major growth sites with at least one of the sites with greater than 5000 homes or jobs, and one growth site with less than 5000 homes or jobs. These are ordered by existing demand as analysed from the journey to work data in the 2011 Census.

- **Cambourne to Cambridge city centre**: As identified above

- **Northstowe to Cambridge city centre**: As identified above.

- **East Cambridge to CBC**: As identified above.

- **Haverhill to Cambridge city centre**: As identified above.

- **East Cambridge to Cambridge Science Park**: Maintain frequency of a service at least every 15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Waterbeach to Cambridge city centre:** Increased frequency from a service every 30 minutes or more to 20-30 minutes, with improved travel times from 30-45 minutes to 15-30 minutes.

- **West Cambridge site to Cambridge Science Park:** Increased frequency from a service every 20-30 minutes to one every 15-20 minutes, with travel times maintained at 15-30 minutes. (This route may only be competitive with car with price-based demand management measures).

- **Cambridge Science Park to CBC:** Increased frequency from a service every 20-30 minutes to a service every 15-20 minutes, with travel times maintained at 15-30 minutes.

- **St Neots to Cambridge Science Park:** Increased frequency from a service every 30 minutes or more to one every 15-20 minutes, with improved travel times from 45-60 minutes to less than 30 minutes.

- **Saffron Walden to CBC:** Increased frequency from a service every 30 minutes or more to one at least every 15 minutes, and improved travel times from 30-45 minutes to less than 30 minutes. (This route may only be competitive with car with price-based demand management measures, or changes to existing fare structures).

- **St Neots to CBC:** Services at least every 30 minutes, and improved travel times from over 60 minutes to less than 30 minutes.

- **Trumpington to Cambridge Science Park:** Increased frequency from a service every 15-20 minutes to one every 10-15 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.

- **St Neots to West Cambridge site:** Increased frequency from a service every 30 minutes or more to one every 15-20 minutes, with improved travel times from 15-30 minutes to less than 15 minutes.

- **East Cambridge to West Cambridge site:** Increased frequency from a service every 15 minutes to one every 10 minutes, with maintained travel times of 30-45 minutes. (This route may only be competitive with car with price-based demand management measures).

- **Saffron Walden to Cambridge Science Park:** Increased frequency from a service every 30 minutes or more to a service every 10-15 minutes, and a travel time of 45-60 minutes to less than 30 minutes.

- **Cambridge Science Park to West Cambridge site**: Increased frequency from a service every 30 minutes or more to a service every 10-15 minutes, and improved travel times from 15-30 minutes to less than 15 minutes.

- **Trumpington to West Cambridge site**: Increased frequency from a service every 10-15 minutes to one every 10 minutes or less, with maintained travel times of 15-30 minutes.

- **CBC to West Cambridge site:** Maintain frequency of a service every 10-15 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.

- **Saffron Walden to West Cambridge site**: Increased frequency from a service every 30 minutes or more to a service every 15-20 minutes, with improved travel times from 45-60 minutes to less than 30 minutes.

- **St Neots to Cambridge City centre:** Increased frequency from a service every 30 minutes or more to a service every 15-20 minutes, with improved travel times from 30-45 minutes to less than 30 minutes.

Appendix 4: Growth areas – competitiveness of public transport

Now

From/To	Cambridge CC	Addenbrooke's / CBC	Cambridge SP	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-37%	-5%	-4%	-5%	-20%	-15%
Cambourne	24%	61%	91%	66%	42%	47%
Trumpington	0%	-11%	39%	56%	24%	14%
East Cambridge	-25%	24%	4%	-57%	30%	4%
Waterbeach	84%	151%	98%	161%	157%	80%
Northstowe	2%	12%	16%	19%	8%	14%

With GCP public transport routes

From/To	Cambridge CC	Addenbrooke's / CBC	Cambridge SP	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-37%	-5%	-4%	-5%	-20%	-15%
Cambourne	-18%	13%	26%	18%	-3%	7%
Trumpington	0%	-11%	39%	56%	24%	12%
East Cambridge	-25%	24%	4%	-57%	30%	4%
Waterbeach	26%	38%	35%	88%	48%	7%
Northstowe	-10%	-10%	-8%	-2%	-5%	-5%

With GCP public transport routes and service improvements

From/To	Cambridge City Centre	Addenbrooke's Hospital / CBC	Cambridge Science Park	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge		-20% (-14%)				
Cambourne	-18% (-37%)	-12% (-51%)	-7% (-62%)	-2% (-46%)	-8% (-43%)	0% (-29%)
Trumpington	-1% (-1%)		14% (-25%)	23% (-34%)	3% (-21%)	-2% (-16%)
East Cambridge	-37% (-12%)	9% (-15%)	-5% (-9%)		4% (-27%)	-6% (-10%)
Waterbeach	-1% (-36%)	-4% (-46%)	5% (-48%)	29% (-59%)	4% (-49%)	-5% (-12%)
Northstowe	-10% (-12%)	-18% (-31%)	-2% (-23%)	-2% (-21%)	-5% (-13%)	-5% (-19%)

With GCP public transport routes, service improvements and demand management

From/To	Cambridge CC	Addenbrooke's Hospital / CBC	Cambridge Science Park	Cambridge Airport	Cambridge West	Cambridge Station
North West Cambridge	-54% (-17%)	-38% (-33%)	-28% (-25%)	-28% (-23%)	-43% (-23%)	-36% (-21%)
Cambourne	-35% (-53%)	-29% (-69%)	-28% (-83%)	-22% (-66%)	-30% (-65%)	-21% (-49%)
Trumpington	-27% (-27%)	-36% (-25%)	-13% (-52%)	-7% (-63%)	-24% (-48%)	-28% (-42%)
East Cambridge	-45% (-20%)	-20% (-44%)	-31% (-35%)	-70% (-13%)	-21% (-52%)	-31% (-35%)
Waterbeach	-23% (-53%)	-25% (-67%)	-23% (-76%)	-4% (-92%)	-19% (-73%)	-25% (-32%)
Northstowe	-30% (-32%)	-34% (-46%)	-29% (-45%)	-23% (-42%)	-26% (-34%)	-25% (-39%)

Appendix 5: Key features of Demand Management Options

	Workplace Parking Levy (WPL)	Intelligent Charging	Parking Controls	Toxicity Charge (T-Charge)	Physical measures
Feedback from business (as recorded at Big Conversation business briefings unless otherwise stated)	• Some business saw WPL as an opportunity to develop land currently used for parking. Many businesses were opposed to WPL because of the impact on low paid staff. Examples include Colleges with low paid staff working outside office hours who park at the College	• Recognition that some form of congestion charging is required and support for it being 'intelligent'. Marked preference for this over WPL	• Some support for more parking controls. Some businesses supported expansion/extended hours of existing P&R sites and new P&R sites	• Some recognition that pollution/emissions need to be tackled	• 'Tackling Peak Time congestion' (summer-autumn 2016) resulted in negative feedback from businesses. In particular 'The least popular option was the introduction of the 6 Peak-time Congestion Control Points'
Big Conversation (Resident feedback from the Systra survey)	• The Systra residents' survey indicates that this is a low scoring demand management option (significantly below Intelligent Charging)	• The Systra residents' survey indicates that this is the highest scoring demand management option (above parking controls and WPL).	• The Systra residents' survey indicates that this is a low scoring demand management option (significantly below Intelligent Charging)	• The Systra residents' survey indicates that this is the second highest scoring demand management option (well above parking controls and WPL).	• Not explicitly addressed in the Big Conversation survey, although previous attempts to manage demand through physical measures have been poorly received by the public.
Demand Impact	• A £1000 WPL is extremely unlikely to meet the desired 15% demand reduction (impact is estimated at 2%). This is partly because only 40% of the levy is assumed to be passed on to employers. • Experience from Nottingham suggests that a WPL may have a supply effect with a reduction in available car parking space in the run-up to implementation as employers reduce their parking spaces to avoid the levy. In this way it could act as a catalyst to physical demand management.	• Significant impact on demand as this measure can lead to the targeted reduction of 15% from baseline by 2030. This is a particularly effective long-term measure as all vehicles will be charged and the measure is thus not affected by the significant clean-up in the vehicle fleet over time.	• Parking controls will lead to some reduction in flows, but are unlikely to meet demand reduction target either alone or in combination with WPL. • Parking controls furthermore need to be more aggressive as people that are among this group in our model are already subject to parking charges and are therefore likely to be among a less price sensitive user class. • Increasing city centre parking charges by £5 per use could lead to an estimated 4% traffic demand reduction.	• Potential to reduce flows at early stages of scheme as a significant proportion of vehicles are defined as polluting. As pool of polluting vehicles however decreases over time a T-charge becomes ineffective. Can reduce flows of 12,000 in the 'Road and Parkin Charge' scenario – will however at no point in time meet target reduction.	• For targeted road closure schemes, demand reduction is estimated to be approximately 8%. • Prohibiting car traffic from most of the city centre inside the inner ring road could reduce morning peak demand by around 24%.

Potential Revenue Impact	• **WPL can be a relatively effective tool for generating revenues (model outputs suggest that a £1000 charge could generate £13m).**	• **Will provide a significant source of income for the council in all scenarios as all vehicles are charged (net revenue estimates vary from ~£40 to ~£90 million depending on scheme definition.**	• **An increase of city centre parking charges by £5 per usecould lead to an estimated £16m annual additional revenue.**	• **Will provide a healthy source of revenue at early stages as pool of polluting vehicle are still a significant proportion of the total vehicle fleet (can produce a maximum of £25m in 2021). Revenues will however gradually decrease to zero over time as fleet cleans up.**	• **None directly** • **May be indirect increases in public transport farebox revenue if demand for public transport is boosted because of physical demand management measures.**
Equality Impact	• Disadvantaged people are less likely to be in employment – but it may form an unintended barrier to unemployed people being able to afford to find and take paid employment. • Furthermore, employers are most likely to bear the costs of a WPL. • Small businesses may find the cost harder to absorb than big business. This impact could be mitigated by exempting small business.	• Significant and positive impacts as high revenues can be invested in PT improvements that is relatively popular among disadvantaged health, income and age groups. • However low-income groups that have no option of using PT will be particularly negatively affected by a charge as they will spend a higher proportion of their income on the scheme.	• As with an intelligent charging, disadvantaged people could benefit more from parking controls due to their higher PT uptake. • However low-income groups that have no option of using PT will be particularly negatively affected by a charge as they will spend a higher proportion of their income on the scheme.	• Compared to Intelligent Charge, disproportionately affects lower income groups as this group is more likely to drive high emitting vehicles. This is due to higher prices for more modern, low polluting cars. • Some positive impacts at beginning of scheme as initial revenues can be invested in PT which is used disproportionately by disabled, older and/or lower income groups. This positive effect however fades as revenues decrease.	• Physical demand management measures may have negative equalities impacts on those that are physically impaired and need to drive. • Physical demand management measures remove choice from the driving public.
Pros: opportunities and benefits	• The main pro is the potential to impact commuter behaviours including modal shift if businesses choose to pass on the charge. • There is also the likelihood that some businesses will be incentivised to release car parks for more productive uses (e.g. housing or employment) providing windfall and infill sites in the city centre and at key employment locations.	• Greatest potential to deliver the 10-15% reduction in traffic, modal shift and the other City Access objectives • Significant potential for funding for improved, subsidised public transport and sustainable alternatives which helps to address concerns about low paid workers • Potential modal shift to sustainable transport options • Potential flexibility may allow change over time. This could provide a means of adjustment in	• Potentially an effective way to achieve modal shift to sustainable transport options • Reduced parking might over time lessen problems caused by queues for car parks if there is sufficient modal shift • Space freed up from parking can be used in ways that contribute to the GCP aims	• Health benefits and public realm benefits from reduced emissions • Through traffic may avoid the area and thus reduce congestion • Vehicle owners (businesses and individuals) may change their vehicles over time • This may encourage new delivery operations e.g. electric fleet, freight consolidation	• Can influence congestion and public realm in specific areas • This may lead to improved air quality and better health outcomes. • It could contribute to a safer and more welcoming environment for walking and cycling with congestion reduction benefits as well as the health benefits of increased activity levels.

		response to feedback from those affected • Could be managed in conjunction with the T-charge thus increasing efficiency		• Could be managed in conjunction with Intelligent Charging thus increasing efficiency	• Potential modal shift to sustainable transport options
Cons	• Relatively small potential for funding improvements ('carrots') in comparison to Intelligent Charging. • Very limited impact on overall demand due to low propensity of workplace parking • Business opposition • For those businesses that don't release land but choose to pay the Levy, it is not clear what proportion would absorb a Levy as a business overhead (which would be likely to have minimal traffic reduction impact) and what proportion would pass the cost on to individual drivers.	• There is a perception that this option would negatively impact those travelling from outside the city more than those living in Cambridge. The ANPR survey results show around 90,000 trips (50% of total – 24-hour survey period) are "internal to internal". This suggests that the impact would fall on both groups in almost equal measure.	• The impact on overall demand due to parking charges is limited and will not be able to meet the demand targets in isolation • The revenue potential of this mechanisms is significant but not as great as that of intelligent charging • Effective use of parking controls for demand management may reduce revenues, with a negative impact on City and County Council budgets (particularly significant for City given its relatively high proportion of overall budget).	• Risk of displacement rather than behavioural change • Will become increasingly obsolete in the coming years as the overall vehicle fleet transitions to clean vehicles • As the charge becomes obsolete the demand impact will be reduced to negligible and revenues will also be virtually eliminated	• Risk of displacement rather than behavioural change • Strong previous business opposition
Main impacted group	• Businesses in the affected area • People working for businesses in the affected area	• All drivers in charging area	• All drivers needing to park. Does not impact through traffic (except potentially where affected by increased queues for car parks caused by limited parking)	• All drivers of vehicles that attract the T-charge	• All drivers in affected area
Implementation timeframe	• 18-24 months, including business consultation	• c.3 years, including statutory consultation	• Subject to City decision-making	• c.3 years, including statutory consultation	• 18-24 months, including business consultation

Appendix 6: Example questions for a public engagement process

This appendix sets out preliminary examples of the questions we might ask as part of the conversation. These would be refined following any decision to proceed with the engagement, including an independent QA.

- Which of the following would make you more like to use PT?
  - Faster journey times
  - More reliable journey times
  - Increased service frequency
  - Lower fares
- If the GCP raised money to spend on public transport improvements, what should we spend it on to best improve travel in and around Cambridge?
- What sources of revenue should we be looking at to improve public transport?
- In your opinion, how serious is the impact of congestion in and around Cambridge?
- To reduce congestion, I would prioritise a solution that:
  - Improves air quality
  - Enables faster public transport
  - Makes public transport more reliable
  - Means cheaper fares on public transport
  - Creates more space for pedestrians and cyclists
  - Speeds up my journey times when travelling by car, even if at a cost
  - Still allows me to drive into and around the city, even if at a cost
  - Targets those driving at the busiest times
- Would you support limiting vehicle access to some streets if it reduced congestion and/or created more pleasant streets?
- Would you support an increased parking charge if:
  - The money was used to provide world class public transport
  - Attractive alternatives were in places to using the car
  - Overall journey times through and into Cambridge decreased
  - There were more residents parking zones
- Would you support a workplace parking levy if:
  - The money was used to provide world class public transport
  - Attractive alternatives were in place to using the car
  - Overall journey times through and into Cambridge decreased
- Would you support an intelligent charge if:
  - The money was used to provide world class public transport
  - Attractive alternatives were in place to using the car
  - It [initially] only affected the most polluting vehicles
  - Overall journey times through and into Cambridge decreased
  - If it was only payable when congestion was at its worst
- There are many options for designing a charge, tell us:
  - How much would a charge need to be for you to switch to our improved public transport system?
  - What time(s) of day should a charge apply?
  - Draw the area on a map where you think a charge should apply
  - Should everyone pay the charge? Should there be exemptions/reductions?
- How would each of the options above affect you?
- How do you currently get into/around Cambridge? How many journeys a week so you make into / around Cambridge using the following modes: car, bike, PT etc.
- [If drive] what time(s) do you normally use your car in Cambridge?
- Info on postcode
- Diversity information