

Cambridge Eastern Access

STRATEGIC OUTLINE BUSINESS CASE

Part 2: ECONOMIC CASE



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PART 2 | Economic Case

1.0 Overview

This section provides an overview of the requirements for the Economic Case.

1.1 Requirements of the Economic Case

- 1.1.1 The purpose of the economic dimension of the business case is to identify the proposal that delivers best public value to society, including wider social and environmental effects.
- 1.1.2 Demonstrating public value requires a wide range of realistic options to be appraised (the long-list), in terms of how well they meet the spending objectives and critical success factors for the scheme; and then a reduced number of possible options (the short-list) to be examined in further detail.
- 1.1.3 The short-list must include the Business as usual (BAU) scenario, a realistic and achievable ‘do minimum’ that meets essential requirements, the recommended way forward (if this is different) and any other options that have been carried forward. These options are subjected to cost benefit analysis (CBA) or cost effectiveness analysis (CEA), where more appropriate, to identify the option that offers best public value to society.
- 1.1.4 The challenges are:
- To begin by selecting the ‘right’ options for scope, solution, service delivery, implementation and funding, otherwise options will represent sub-optimal Value for Money (VfM) from the outset
 - To justify higher cost options in relation to BAU and the ‘do minimum’
 - To measure and monetise the benefits and risks.
- 1.1.5 This Economic Case forms the second of the five cases which together comprise the Strategic Outline Business Case for the Cambridge Eastern Access project.

1.2 Structure of the Economic Case

- 1.2.1 The DfT’s guidance document, ‘*The Transport Business Case: Economic Case*’, outlines the areas to be covered as part of the Economic Case. At this Strategic Outline Business Case Stage, the following are required to be demonstrated:
- **Chapter 2 | Approach to Economic Appraisal:** Provides an overview of the modelling and economic appraisal process and the options which have been considered.
 - **Chapter 3 | Transport Economic Appraisal:** Provides a narrative on the benefits of the interventions based upon the outputs from the model.
 - **Chapter 4 | Environmental Impacts:** Provides a qualitative summary of the anticipated environmental impacts of the Cambridge Eastern Access project.
 - **Chapter 5 | Social and Distributional Impact Appraisal:** Provides qualitative summary of the anticipated social impacts of the Cambridge Eastern Access project and the anticipated benefits of the scheme from a spatial perspective.
 - **Chapter 6 | Impact on Public Accounts:** Provides details of scheme costs.
 - **Chapter 7 | Value for Money Statement:** Provides evidence for the value for money of the scheme.



2.0 Approach to Economic Appraisal

This section provides an overview of the modelling and economic appraisal process and the options which have been considered.

2.1 Overview

2.1.1 This section details the approach taken to assessing the economic impacts of the Cambridge Eastern Access options, in terms of the transport model used, the scenarios assessed, assumptions made, and the indicators quantified.

2.2 Development of the Cambridge Eastern Access Scheme

2.2.1 The Cambridge Eastern Access scheme comprises two packages of measures which will be delivered in the short term and medium term respectively. The packages were identified following a comprehensive optioneering and assessment process which involved:

- The generation of a long list of potential interventions (which identified 59 in total).
- The sifting the options to create a short list of deliverable measures which would meet the objectives of the corridor.
- The consideration of the timescales in which each would come forward.
- The packaging of the options into alternative approaches.
- The assessment of the packages within the Cambridge Paramics Model.
- The identification of the best performing packages for delivery in the short and medium terms.

2.2.2 The subsequent packages recommended to be taken forward as the Cambridge Eastern Access scheme comprise:

- **Package Option A2 (Hybrid):** This package of measures would be delivered in the short term and seek to rebalance road user priorities on the Newmarket Road corridor through:
 - The reconfiguration of major junctions to benefit pedestrians, cyclists and public transport.
 - The use of technology to better manage the flow of general traffic and hold queuing vehicles away from residential parts of the city.
 - The relocation of the Park and Ride site to a location to the east of Airport Way, to intercept more traffic before it reaches the urban area.
 - The provision of continuous dedicated cycle lanes.
- **Package Option B1 – High Quality Public Transport Route via Coldham’s Lane:** This package will be delivered in the medium term, in and provide a step-change in the capacity and connectivity of bus service provision in the east of the city, through:
 - The provision of a continuous busway from the new Park and Ride facility, to the east of Airport Way, through the current airport site to Coldham’s Lane.
 - The establishment of a permanent bus gate on Mill Road to provide priority for all sustainable transport modes.
 - the operation of a new bus service between the Park and Ride site and Addenbrookes hospital in the south of the city.
 - Additional cycle links would also be provided as part of the package to offer a comprehensive, safe and connected route network in the corridor.

2.2.3 The optioneering process also highlighted the potential benefits of a rail-based investment on the Cambridge to Newmarket line. However, given the strategic multi-agency nature of the works required and the timescales for delivery, the potential benefits of these measures have not been quantified as part of this Business Case.

2.3 Transport Modelling

- 2.3.1 There are two existing models available for use that cover the study area, the Cambridge Sub-Regional Model (CSRM2) and the Cambridge Paramics Model. However, the local validation in the eastern corridor for neither model is considered robust without further adaptation.
- 2.3.2 In particular, journey times in one or more peak or direction, on Newmarket Road, are either too fast or too slow. This would undermine the ability to identify the relative benefits of each of the packages we are seeking to assess.
- 2.3.3 Both models have strengths and weaknesses with respect to use in this study. However, there is a strong focus in the Phase 1 packages on traffic management and Intelligent Transport Systems (ITS) solutions to congestion in the corridor. Such solutions can be better modelled in Paramics than CSRM2 so all packages have been modelled in the Cambridge Paramics model only.
- 2.3.4 It should be highlighted however, that the Paramics model is a highway only model. It enables the respective journey times of general traffic and buses to be identified but does not translate this into changes in demand for both modes.
- 2.3.5 Given the emphasis of this study is on determining the impact of alternative sustainable transport interventions, assumptions have been made in terms of the level of modal split which could be achieved.

2.4 Local Revalidation

- 2.4.1 To address the local model weaknesses, additional traffic count data from recently approved planning applications and Trafficmaster journey time data in the area was provided by Cambridgeshire County Council to enable a re-validation of the model. This approach has been taken due to the inability to collect new data representative of typical conditions to inform the study, as a result of a combination of ongoing roadworks on the A14 and Histon Road, and the outbreak of COVID-19.
- 2.4.2 We have undertaken a local revalidation of the Paramics model to better represent conditions on Newmarket Road. In particular, journey times on Newmarket Road, which were missing from the original Local Model Validation Report (LMVR), have now been improved to the point where they validate in the AM and PM peak and are close to validation in the Inter Peak (IP), as highlighted in [Table 2.1](#) below.

Table 2.1: Comparative Journey Times on Newmarket Road

Time	Direction	Observed Journey Times	Previously Modelled Journey Times	Revalidated Journey Times
Am peak	Inbound (westbound)	13 mins 47 secs	11 mins 27 secs	15 mins 1 sec
Am peak	Outbound (eastbound)	11 mins 3 secs	9 mins 50 secs	10 mins 08 secs
Inter-peak	Inbound (westbound)	12 mins 27 secs	9 mins 8 secs	9 mins 18 secs
Inter-peak	Outbound (eastbound)	11 mins 46 secs	9 mins 16 secs	9 mins 38 secs
Pm peak	Inbound (westbound)	11 mins 27 secs	10 mins 32 secs	10 mins 38 secs
Pm peak	Outbound (eastbound)	12 mins 9 secs	17 mins 21 secs	13 mins 21 secs

2.5 Forecast Demand

- 2.5.1 Forecast demand for the Cambridge Paramics model is derived from the CSRM2. We have selected existing model runs from the CSRM2 scenarios from which to derive our demand. This means that the original CSRM2 model runs were run using variable demand modelling (VDM) but our packages will not have VDM run for each individual package. This is a proportionate approach at this SOBC stage as many scenarios need to be appraised.

2.5.2 The Paramics model is highway based. It can model the reassignment of trips within Cambridge, but it does not have any demand responses beyond this. Reasonable assumptions about mode share under each package have been agreed and these assumptions have been applied manually to the model in sensitivity tests.

2.6 Assessment Years

2.6.1 The Paramics model has a base year of 2017 and we initially set out to create Reference Cases in both 2026 and 2036 forecast years. However, following extensive assessment of the 2036 forecast year and the volume of traffic anticipated to be in the network, we have refocused solely on determining the effectiveness of the packages in 2026. Whilst 2036 will need to be considered in the future, initial model runs showed levels of congestion across the City which distorted the appraisal of the CEA schemes. This issue will need to be addressed at OBC stage.

2.7 Scenarios

2.7.1 The packages have been assessed in two stages to reflect the two phases of intervention. We began with the Phase 1 package testing, with the option determined to be the recommended package there carried through to form part of the 'Do Minimum' scenario for all the Phase 2 packages.

2.7.2 A 'Core Scenario' has been modelled in line with WebTAG. This uses Core growth as defined by the CSRM2 E-series 'Core Minus' demand forecasting and is in line with other GCP scheme modelling.

Table 2.2: Scenarios Assessed

Appraisal Year	Year	CEA Scenario	CEA Scenario Description	Scheme	CSRM2		
					Land Use Scenario	Scheme CSRM run	model ID
Phase 1							
Single Year	2026	Core	Core Scenario	Base - Do Minimum	Core minus	CTC DM	T912_2026
				Option A1			
				Option A2			
				Option A2-hybrid			
Phase 1 Sensitivity Test							
Single Year	2026	Core	Core Scenario	Option A2-hybrid 10% reduction	Core minus	CTC DM	T912_2026
Phase 2							
Single Year	2026	Core	Core Scenario	A2-hybrid – Do Minimum	Core minus	CTC DM	T912_2026
				Option B1			
				Option B3			
Phase 2 Sensitivity Tests							
Single Year	2026	Core	Core Scenario	B1 10% reduction	Core minus	CTC DM	T912_2026
				B1 20% reduction			
				B1 50%/20% reduction			
				B1 10% reduction, no bus-gate at Mill Rd			
				B1 50%/20% reduction, with bus-gate on Coldhams Lane			

2.8 Cycling

- 2.8.1 Cycling benefits, both to existing users and to new users induced by the scheme have been assessed using WebTAG Unit A5.1 and the WebTAG Active Mode Appraisal Toolkit (AMAT). A sensitivity test assuming that cycling levels on Newmarket Road increase to close to the Cambridge average has also been undertaken.

2.9 Summary

- 2.9.1 Use of the Cambridge Paramics model in this way is considered robust enough to test the packages at SOBC stage, although the saturation of the network under some scenarios due to lack of demand responses has led to the Economic Narrative taking the place of formal highway scheme benefits.
- 2.9.2 Cycling benefits have been monetised separately.



3.0 Transport Economic Appraisal

This section provides a narrative on the benefits of the interventions based upon the outputs from the model.

3.1 Overview

- 3.1.1 This section details the outputs generated from the analysis of the Cambridge Eastern Access packages. Given the stage of the Business Case, several areas have been omitted from this assessment including those relating to reliability and regeneration. These will be addressed in the subsequent Outline Business Case.
- 3.1.2 Table 3.1 reflects the economic content of the Appraisal Summary Table from the Appraisal Specification Report, highlighting the areas of focus to determine the impact on the economy.

Table 3.1: Areas of Assessment of the Economic Impacts

Impacts	Sub-impacts	Estimated Impact in OAR	Level of uncertainty in OAR	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/Qualitative/Monetary/Distributional)
Economy	Business users & transport providers	Large	Low	Journey time assessment using model outputs and WebTAG databook values of time to appraise benefits.	Direct vehicle outputs are available in Paramics Discovery.	Economic narrative
	Reliability impact on Business users	Moderate	Medium	Not assessed	Not proportionate to assess at this stage.	N/A
	Regeneration	Neutral	Low	Not assessed	Regeneration is now assessed under the Wider Impacts section	N/A
	Wider Impacts	Large	Medium	Use new DfT VfM 'switching values' to appraise GVA uplift	Large scale new development in corridor which will be constrained by corridor capacity. Switching values is the new DfT VfM method of assessment.	Monetary

3.2 Reference Case Assessment

- 3.2.1 The assessment of the short and medium-term packages was undertaken for a 2026 forecast year, and a 'Reference Case' scenario was generated which depicted conditions on the network with committed developments and background growth in traffic.
- 3.2.2 Comparisons were initially drawn with how the network functions in 2017 (for which a base year model is available), and it was evident that the Newmarket Road corridor and surrounding links would be subject to a significant increase in demand which would impact upon vehicular journey times into and out of Cambridge city, as evident in Table 3.2.
- 3.2.3 Whilst increases in journey times were evident throughout the day and in both directions, it was in the evening peak period in which the impacts were identified as being felt most starkly with journey times almost doubling for trips into the city centre.

Table 3.2: Change in Journey Times (General Traffic) along Newmarket Road between Elizabeth Way and the Quay Interchange

Time	Direction	Time (minutes / seconds)		Change	
		2017	2026	Actual change	% change
AM	Inbound (westbound)	13:59	17:11	03:12	23%
	Outbound (eastbound)	09:25	10:14	00:49	9%
IP	Inbound (westbound)	08:21	08:48	00:27	5%
	Outbound (eastbound)	08:58	09:38	00:40	7%
PM	Inbound (westbound)	09:52	20:57	11:05	112%
	Outbound (eastbound)	12:24	17:11	04:47	39%

3.2.4 A similar pattern was also evident in terms of bus journey times, with increases throughout the day, particularly in the evening peak. Within the inter-peak period very little change was identified, with journey times into the city centre reducing slightly as evident in [Table 3.3](#).

Table 3.3: Change in Journey Times (Buses) along Newmarket Road between Elizabeth Way and the Quay Interchange

Time	Direction	Time (minutes / seconds)		Change	
		2017	2026	Actual change	% change
AM	Inbound (westbound)	12:40	15:15	02:35	20%
	Outbound (eastbound)	10:56	11:25	00:29	4%
IP	Inbound (westbound)	10:41	10:16	-00:25	-4%
	Outbound (eastbound)	10:43	10:43	00:00	0%
PM	Inbound (westbound)	10:55	15:00	04:05	37%
	Outbound (eastbound)	12:57	17:26	04:29	35%

3.2.5 The changes in journey times for both general traffic and buses demonstrate that, without intervention, conditions for all road users will deteriorate. Bus journey times retain a slight advantage over general traffic in 2026 peak periods (as illustrated in [Figure 3.3](#)), but it is clear that the capacity of the corridor will be under significant stress, the ease of access into the city centre will be compromised, and the impact on local communities of queuing traffic will be exacerbated.

3.2.6 Beyond 2026, journey times will deteriorate further still. A review of the volume of traffic in 2036 demonstrated a network saturated with vehicles. No meaningful data could be derived from the model due to the effective gridlock which was present. The OBC will require a hybrid modelling approach using CSRM to assess the reduction on demand resulting from network constraints.

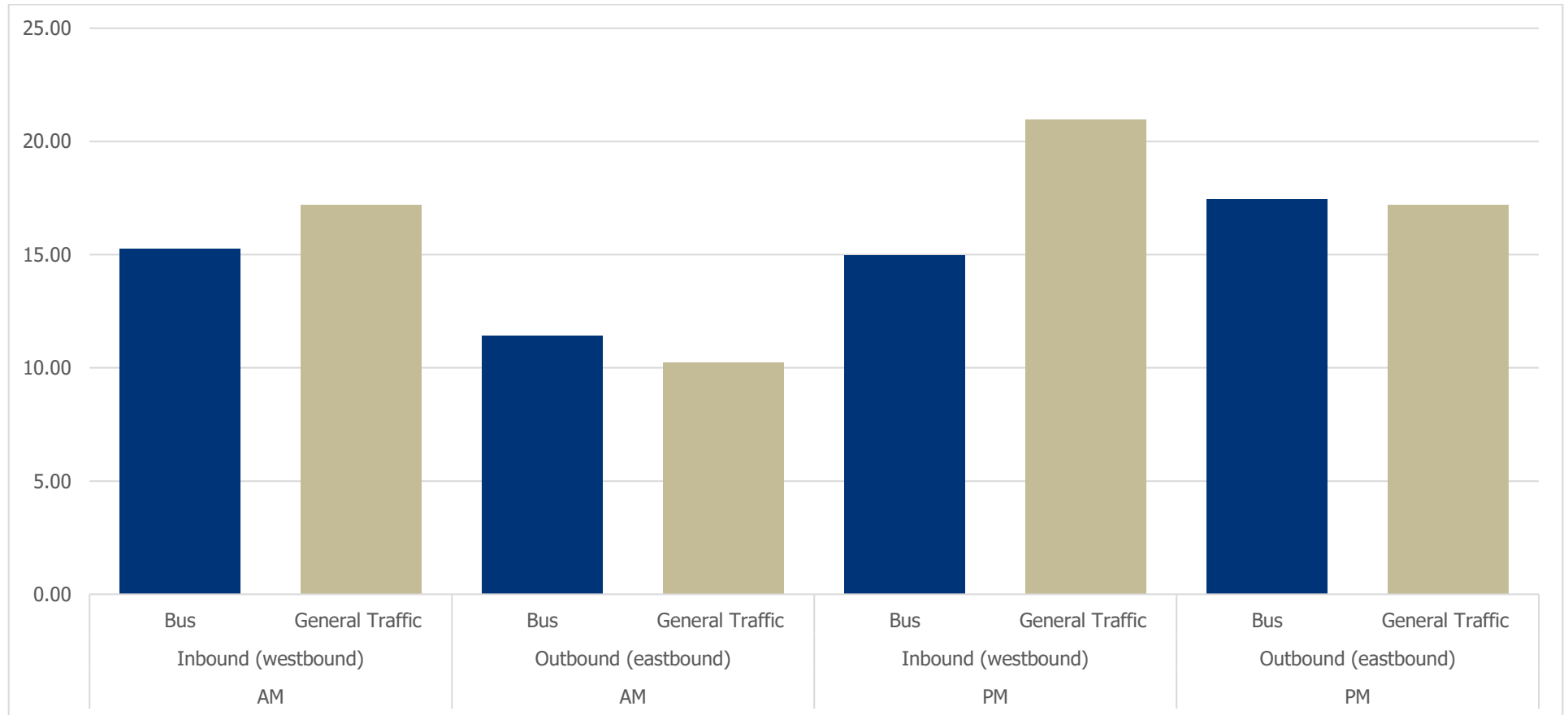
3.3 Short Term Packages

3.3.1 The two packages of measures were identified to deliver improvements in the short-term along Newmarket Road. Both focused on various reconfigurations of major junctions along the corridor, supplemented by the introduction of an Intelligent Transport System (ITS) through which to better manage the flow of traffic.

3.3.2 Newmarket Road is bookended by major roundabouts at the junctions with the A14 (the Quay Interchange) in the east and with Elizabeth Way in the west. Together with major intersections with Coldham's Lane, Barnwell Road, Ditton Lane and Airport Way, they form a hostile environment for pedestrians and cyclists.

3.3.3 The first package of measures (ref. A1) proposes the reconfiguration of the Elizabeth Way and Barnwell roundabouts to signal-controlled crossroad junctions, with new traffic signals and additional highway capacity provided at the Airport Way and Quay Interchange roundabouts.

Figure 3.1: Comparison of Journey Times for General Traffic and Buses in 2026 (Reference Case)



- 3.3.4 These measures primarily intend to provide benefits to buses, non-motorised users and local residents. Walking and cycling improvements will also be provided at the Coldham’s Lane and Ditton Lane junctions.
- 3.3.5 These interventions would be supported by an extension of the existing Park and Ride site, the removal of sections of inbound bus lanes east of the Leper Chapel, the provision of a new outbound bus lane between Elizabeth Way and the Leper Chapel, and the introduction of continuous, segregated cycle lanes in both directions to connect the city centre at Elizabeth Way to the proposed Swaffhams Greenway.
- 3.3.6 The approach demonstrates a clear emphasis and commitment to improving the infrastructure for sustainable travel and reducing the dominance of motorised traffic.
- 3.3.7 The second package (ref. A2) mirrored this approach, but sought to go further, with several additional measures:
- The reconfiguration of the Elizabeth Way and Barnwell Road roundabouts to further reduce the capacity for general traffic and enhance the public realm for pedestrians and cyclists.
 - Consideration of the closure of access onto the A14 at J34 (via Ditton Lane / Horningsea Road).
 - The relocation of the Park and Ride to a site to the east of Airport Way.
 - The widening of Newmarket Road between Airport Way and the Quy Interchange with dedicated highway provision for bus and Park & Ride users.
- 3.3.8 These additional measures were designed to further rebalance road user priorities, providing more capacity to sustainable modes of travel and increase the attractiveness of alternatives to the car.
- 3.3.9 However, the outputs of the modelling process highlighted that due to the existing high level of demand to use Newmarket Road and the surrounding network, both packages would result in increased delays to general traffic, including queuing back onto the A14, whilst failing to secure any tangible improvements in the speed of bus journey times.
- 3.3.10 The impacts were such that no meaningful data could be obtained from the model as it led to a complete saturation of the network and stationary traffic in the study area.
- 3.3.11 Following an iterative process of further analysis and investigation, a hybrid of the two packages was developed which amalgamated the approaches (ref. A2-Hybrid). The reconfiguration of the junctions proposed in Package A1 (that provide greater highway capacity than those proposed in package A2) were adopted and access onto the A14 at J34 was retained.
- 3.3.12 The relocation of the Park & Ride together with the ‘stacking capacity’ and dedicated Park & Ride lane provision on Newmarket Road between Airport Way and the Quy Interchange were brought forward from package A2.
- 3.3.13 The overall approach retains sustainable transport at its heart, but the movement of general traffic does not raise safety or accessibility concerns. The content of the hybrid package is detailed in [Table 3.4](#).

Table 3.4: Schemes Comprising the Short-Term A2-Hybrid Package

Intervention	Schemes
Technology	Introduction of Intelligent Transport System (ITS) technology at all traffic signals to more effectively manage / control flow along Newmarket Road & the wider network.
Highway Capacity	Provision of additional lane(s) on Newmarket Road to east of Airport Way junction.
Bus Lane	Provision of a dedicated busway on Newmarket Road between Quy Interchange and Airport Way. This would also be used by general traffic to access the relocated Park & Ride from the A14.
Junctions	Reconfiguration of Elizabeth Way Roundabout, including the removal of the subway.
	Reconfiguration of the Newmarket Road & Coldham’s Lane junction.
	Signalisation and reconfiguration of the Newmarket Road & Barnwell Road junction.
	Reconfiguration of the Newmarket Road & Ditton Lane junction.

Intervention	Schemes
	Signalisation and additional capacity for the junction of Newmarket Road and Airport Way.
	Signalisation and additional capacity for Quay Interchange
Bus Services	Increase the frequency of existing Newmarket Road P&R services.
	Provide new service from the Newmarket Road P&R to Addenbrookes hospital and the Biomedical Campus.
Bus Lanes	New continuous inbound bus lane between the Leper Chapel and Elizabeth Way.
	New continuous outbound bus lane between Elizabeth Way and the Leper Chapel.
Park and Ride	Relocation of the Newmarket Road Park & Ride to the south of Newmarket Road and east of Airport Way.
Active Travel	Provision of continuous segregated inbound cycle lane along Newmarket Road.
	Provision of continuous segregated outbound cycle lane along Newmarket Road.
	Promotion of Park and Cycle from the Park and Ride site.

3.4 Short Term Hybrid Package Assessment

- 3.4.1 The performance of the hybrid, short-term package of interventions was considered in the context of the Reference Case in the 2026 forecast year (i.e. how the network will operate without intervention), for both buses and general traffic.
- 3.4.2 A sensitivity test was also undertaken to observe the impact on journey times with a 10% reduction in traffic applied to the Newmarket Road corridor. This was undertaken to reflect the impact that the hybrid package would have on modal and temporal choice, since the Paramics microsimulation model used is not demand responsive to such network alterations, other than for route reassignment.

Buses

- 3.4.3 In terms of buses, the hybrid package of measures showed varying levels of improvement to journey times when compared to the 2026 Reference Case. The extent to which journey times improved differed based upon the direction (inbound or outbound) and time (morning or evening peak periods) of travel. [Tables 3.5](#) and [3.6](#) provide a summary of the respective journey times.

Table 3.5: Impact of A2-Hybrid Package on Bus Journey Times

Time	Direction	Time (minutes / seconds)		Change	
		Reference Case	Hybrid Package	Actual Change	% Change
AM	Inbound (westbound)	15:15	13:24	-01:51	-12%
	Outbound (eastbound)	11:25	11:41	00:16	2%
PM	Inbound (westbound)	15:00	19:49	04:49	32%
	Outbound (eastbound)	17:26	09:50	-07:36	-44%

Table 3.6: Impact of A2-Hybrid Package (10% demand reduction) on Bus Journey Times

Time	Direction	Time (minutes / seconds)		Change	
		Reference Case	Hybrid Package (-10%)	Actual Change	% Change
AM	Inbound (westbound)	15:15	12:33	-02:42	-18%
	Outbound (eastbound)	11:25	11:14	-00:11	-2%
PM	Inbound (westbound)	15:00	18:09	03:09	21%
	Outbound (eastbound)	17:26	09:37	-07:50	-45%

3.4.4 The key findings were as follows:

- **Inbound (am)** – Bus journey times showed an improvement, reducing from around 15 minutes in the reference case scenario, to around 13 minutes when the hybrid package was implemented and to 12 minutes when the anticipated impact on overall traffic demand in the corridor is taken into account (i.e. the 10% reduction in demand on the corridor).
- **Outbound (am)** –There is nominal change in bus journey times with either the interventions or demand reduction included within the assessment.
- **Inbound (pm)** – Bus journeys into the city centre would be slower with the hybrid measures in place, increasing from around 15 minutes to almost 20 minutes. With demand reduced by 10%, journey times slow to a lesser extent (18 minutes).
- **Outbound (pm)** –There are substantial improvements, with bus journey times reducing from around 17 minutes to 10 minutes. The further demand reduction had no additional impact.

3.4.5 Significant bus journey time savings have been achieved for those leaving the city in the evening (which from feedback received from Park & Ride users was deemed to be the biggest issues with the existing service), throughout the rest of the day the benefits are somewhat varied, even with demand in the corridor reduced by 10%.

General Traffic

3.4.6 The reallocation of road space to buses and cyclists, the introduction of ITS technology to manage traffic flow, and the reconfiguration of junctions to benefit non-motorised users (but which reduce capacity for general traffic), has had an impact on general traffic journey times throughout the day in the hybrid package. [Table 3.7](#) and [3.8](#) provides the detail of the respective journey times for general traffic.

Table 3.7: Impact of A2-Hybrid Package on General Traffic Journey Times

Time	Direction	Time (minutes / seconds)		Change	
		Reference Case	Hybrid Package	Actual Change	% Change
AM	Inbound (westbound)	17:11	37:42	20:31	119%
	Outbound (eastbound)	10:14	12:04	01:50	18%
PM	Inbound (westbound)	20:57	36:02	15:05	72%
	Outbound (eastbound)	17:11	10:47	-06:23	-37%

Table 3.8: Impact of A2-Hybrid Package (10% demand reduction) on General Traffic Journey Times

Time	Direction	Time (minutes / seconds)		Change	
		Reference Case	Hybrid Package	Actual Change	% Change
AM	Inbound (westbound)	17:11	29:39	12:28	72%
	Outbound (eastbound)	10:14	11:48	01:35	15%
PM	Inbound (westbound)	20:57	31:42	10:45	51%
	Outbound (eastbound)	17:11	10:48	-06:23	-37%

3.4.7 The key findings were as follows:

- **Inbound (am)** – Journey times for general traffic increased substantially from around 17 minutes to over 37 minutes. The impact of the measures is mitigated in part with a 10% demand reduction applied to the corridor, with journey times reducing to over 29 minutes, yet still over 12 minutes longer than without any new measures in place.
- **Outbound (am)** –There is little tangible impact on journey times, hovering around the 10 to 12-minute mark. This does however equate to a circa 18% increase to journey times.

- **Inbound (pm)** – There is a similar picture with large increases in journey time, from around 21 minutes in the reference case, to 36 minutes in the hybrid package with some slight reduction to around 32 minutes with reduced demand in the corridor.
- **Outbound (pm)** –The journey times for general traffic reduces significantly from around 17 minutes to 11 minutes, mirroring the impact on bus journey times.

3.4.8 Except for a reduction in journey times for outbound trips in the evening peak, in isolation the hybrid package has significant negative implications for vehicles trying to get into and out of the centre of Cambridge. Whilst queues do not stack back onto the A14, they impact many minor roads which feed into Newmarket Road.

Comparison

3.4.9 The overall impact on bus journey times is mixed, with negligible benefit to AM outbound journey times, whilst PM inbound journeys worsen. However, AM inbound and PM outbound journeys experience significant improvement under the Cambridge Eastern Access scheme.

3.4.10 Although this only materialises in around a 2 minute time saving for AM peak journeys into the city, the return journey in the PM peak is forecast to offer a circa 7 and a half minute time saving which is substantial. Given that the AM inbound and PM outbound are the priority directions of travel, it can be concluded that the Eastern Access scheme offers significant benefit to bus users, specifically those using the Newmarket Park and Ride service. This will serve to reduce the negative perceptions of public transport usage along the corridor and encourage a modal shift towards bus use in the future.

3.4.11 Conversely to bus journey times along Newmarket Road, general traffic journey speeds deteriorate significantly, particularly when travelling inbound in both the AM and PM peaks. Under the assumption that drivers do not change current habits, general traffic is forecast to experience additional delays of around 20 and 15 minutes in the AM and PM peak periods respectively, significantly increasing journey times for general traffic into the city from the East.

3.4.12 This is largely due to the reconfiguration of the major roundabout junctions along Newmarket Road in addition to the implementation of the ITS. However, such differences in journey time will only help to make bus journeys into the city more attractive and could therefore deter commuters away from private car use, with bus journeys almost 25 minutes faster in the AM peak into Cambridge.

3.4.13 It is also worth noting however, that significant journey time savings are realised for general traffic in the outbound direction during the PM peak with forecast reductions of approximately 6 minutes. General traffic journey times away from the city in the PM peak are therefore not too dissimilar to those experienced by future bus users along the corridor. The relative performance of both modes is highlighted in [Figures 3.2 and 3.3](#).

3.4.14 The figure highlights how increasing the attractiveness of sustainable transport in comparison to travelling by car has been achieved through the implementation of the measures contained within the short-term hybrid package. Whilst PM gains are marginal, the AM peak offers significant journey time savings for those commuting into the city by bus.

3.5 Medium Term Packages

3.5.1 With a hybrid approach to short term interventions in the corridor incorporated into a future 2026 scenario, two further packages were then assessed to reflect measures which could be introduced in the more medium term, in advance of the opening of the Cambridgeshire Autonomous Metro.

3.5.2 Both packages would see the provision of a new busway through the Cambridge Airport site, running parallel to the east of the runway. In the first package (ref. B1), buses would then re-join the existing highway network at Coldham's Lane to the southeast of the Sainsbury's roundabout.

- 3.5.3 Buses would then travel northwest before turning left at the Sainsbury's roundabout onto Brooks Road, then joining Mill Road before heading into the city centre, utilising a bus gate located at the bridge over the trainline.
- 3.5.4 The second approach (ref. B2) would follow a similar route but instead of turning onto Coldham's Lane at the end of the busway, buses would instead head into the city via a new bridge over the train line (along the current alignment of The Tins), before travelling through Brookfields and on to Mill Road.
- 3.5.5 Initial feedback from the public consultation identified multiple issues regarding the impact on Brookfields, the Mill Road Conservation Area, and The Tins and the adjacent open space, such that package B2 was not taken forward to be considered in any further detail.
- 3.5.6 An assessment of the bus routing via Coldham's Lane and Mill Road (ref. B1), utilising the bus gate was subsequently undertaken. The key feature of the package was the bus gate on Mill Road. Whilst not a heavily trafficked route, the model highlighted that the road closure to general traffic would cause significant queuing on alternative routes such as Coldham's Lane, to the extent that buses seeking to take advantage of the bus gate were being delayed by the re-routing traffic.
- 3.5.7 A sensitivity test was conducted to determine if a more comprehensive and strategic approach would alleviate the issue based upon the complementary provision of a modal filter / bus gate on Coldham's Lane, at the railway bridge northwest of the Sainsbury's roundabout. This did not resolve the issue and compounded queuing across the network.
- 3.5.8 A further sensitivity test which applied a 50% demand reduction to vehicles which would have previously used Mill Road, together with a 20% reduction to Newmarket Road traffic, still resulted in significant delays elsewhere on the network, to the extent that buses were getting caught up in the queues.
- 3.5.9 Finally, a variation of the package was modelled which included the busway and routing via Mill Road, but which omitted the bus gate, as well as a variation that had bus gates at Mill Road and Coldham's Lane. [Figure 3.4](#) and [3.5](#) illustrates the comparative journeys times for the option with and without the bus gate in place.
- 3.5.10 Without the bus gate, bus service provision via the busway and Mill Road provides a reasonable, albeit slightly slower connection into the city centre, than Newmarket Road based services. The main advantage it provides however, is in terms of the enhanced connectivity it provides in serving the potential redevelopment of the Cambridge Airport site, the thriving district centre based around Mill Road, and Cambridge Station.
- 3.5.11 An additional package comprising longer term aspirations focused on improving the rail offer to the east of the city (ref. B3). This would see the double tracking of the existing Newmarket to Cambridge single-track line together with the provision of new stations at Cambridge 'East' and at Six Mile Bottom.
- 3.5.12 An analysis of the patronage generated by the new infrastructure and an increase in service frequency to two trains per hour highlighted that any increase in demand would be limited. Whilst the package would provide a step-change in the quality of rail connectivity, it would only be through the development of the Cambridge Airport site and/or new housing and employment provision at Six Mile Bottom that it could be justified.

Figure 3.2: Comparison of Journey Times for General Traffic and Buses in 2026 (A2-Hybrid Package)

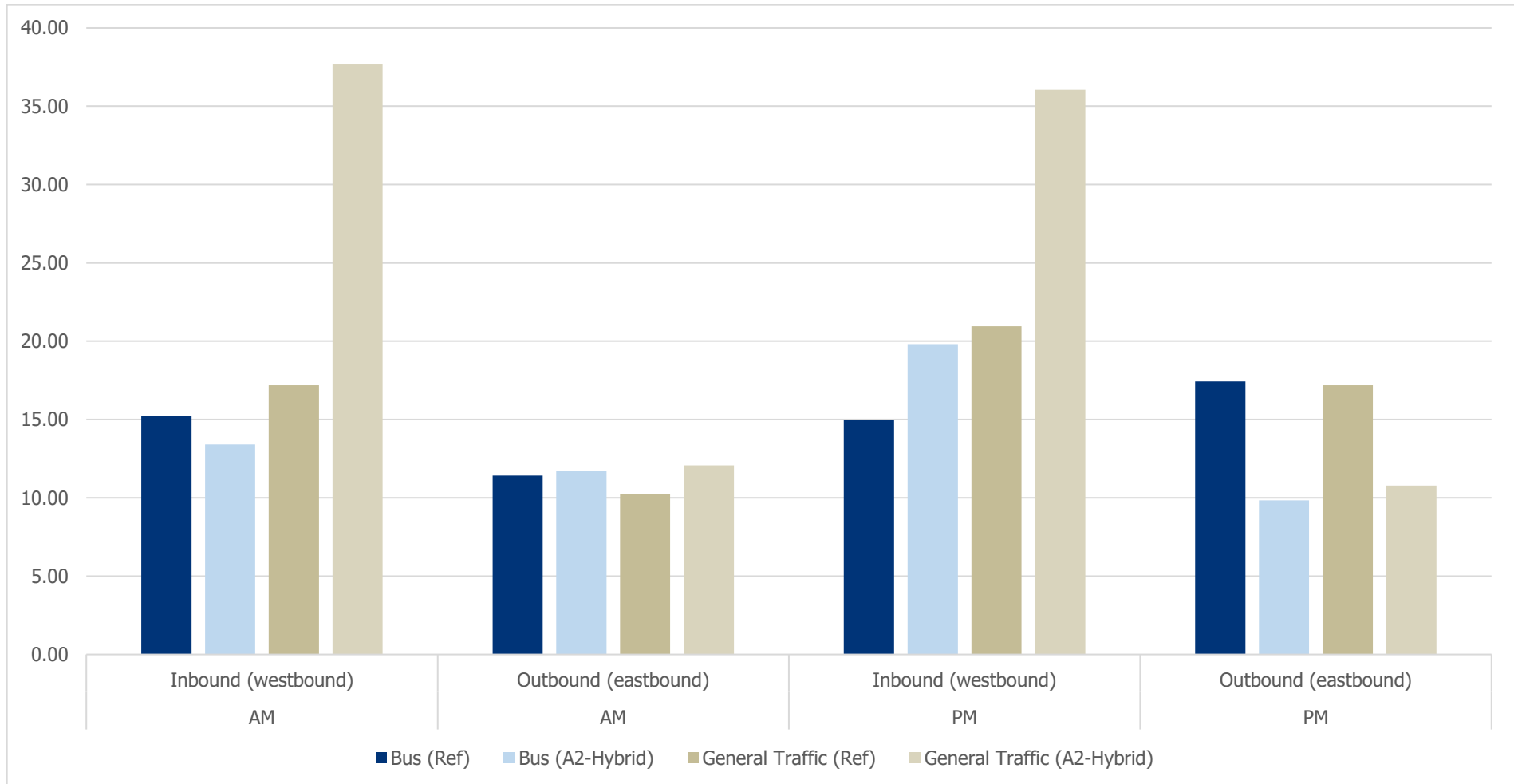


Figure 3.3: Comparison of Journey Times for General Traffic and Buses in 2026 (A2-Hybrid Package with 10% reduction)

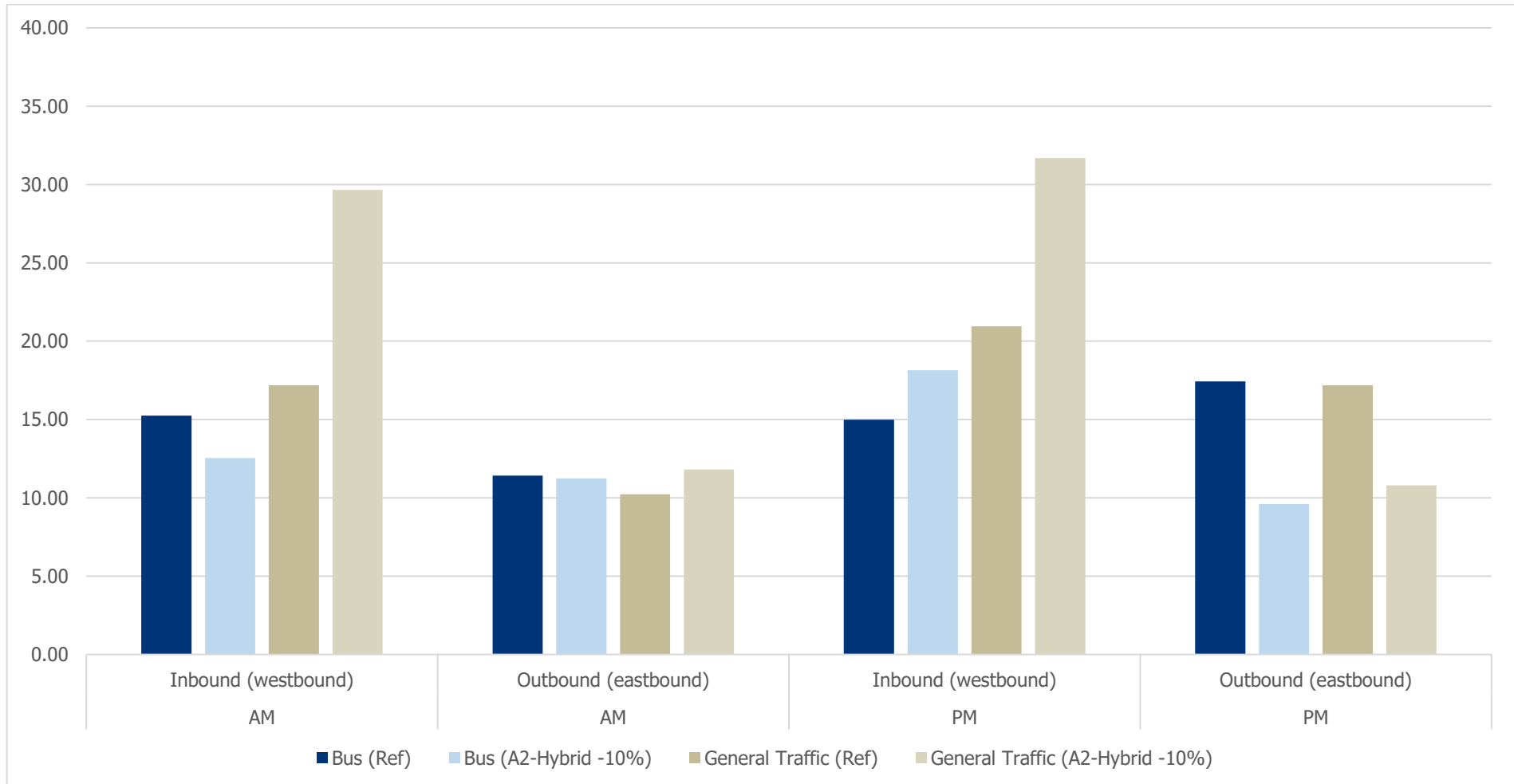


Figure 3.4: Comparison of AM Bus Journey Times

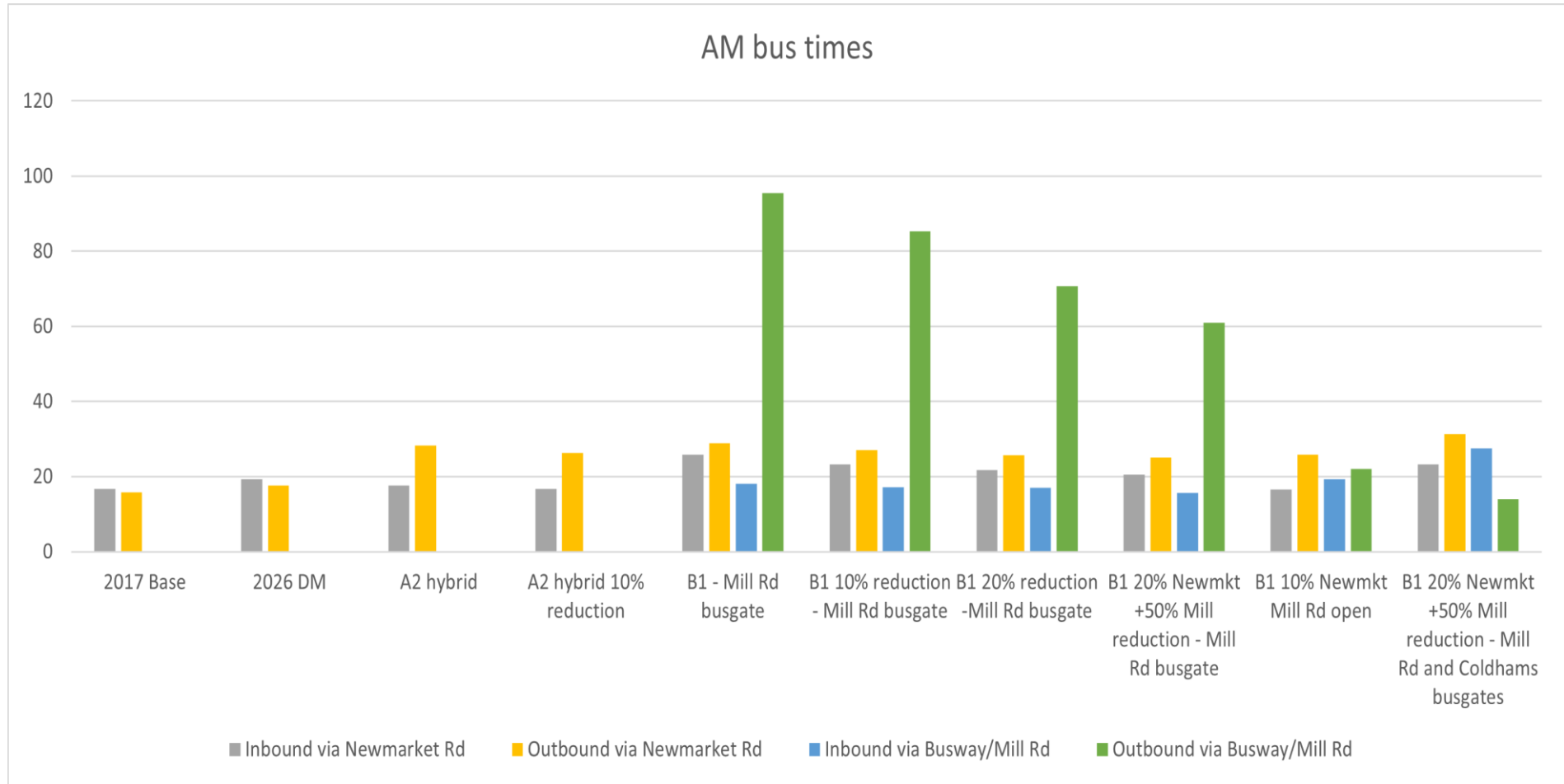
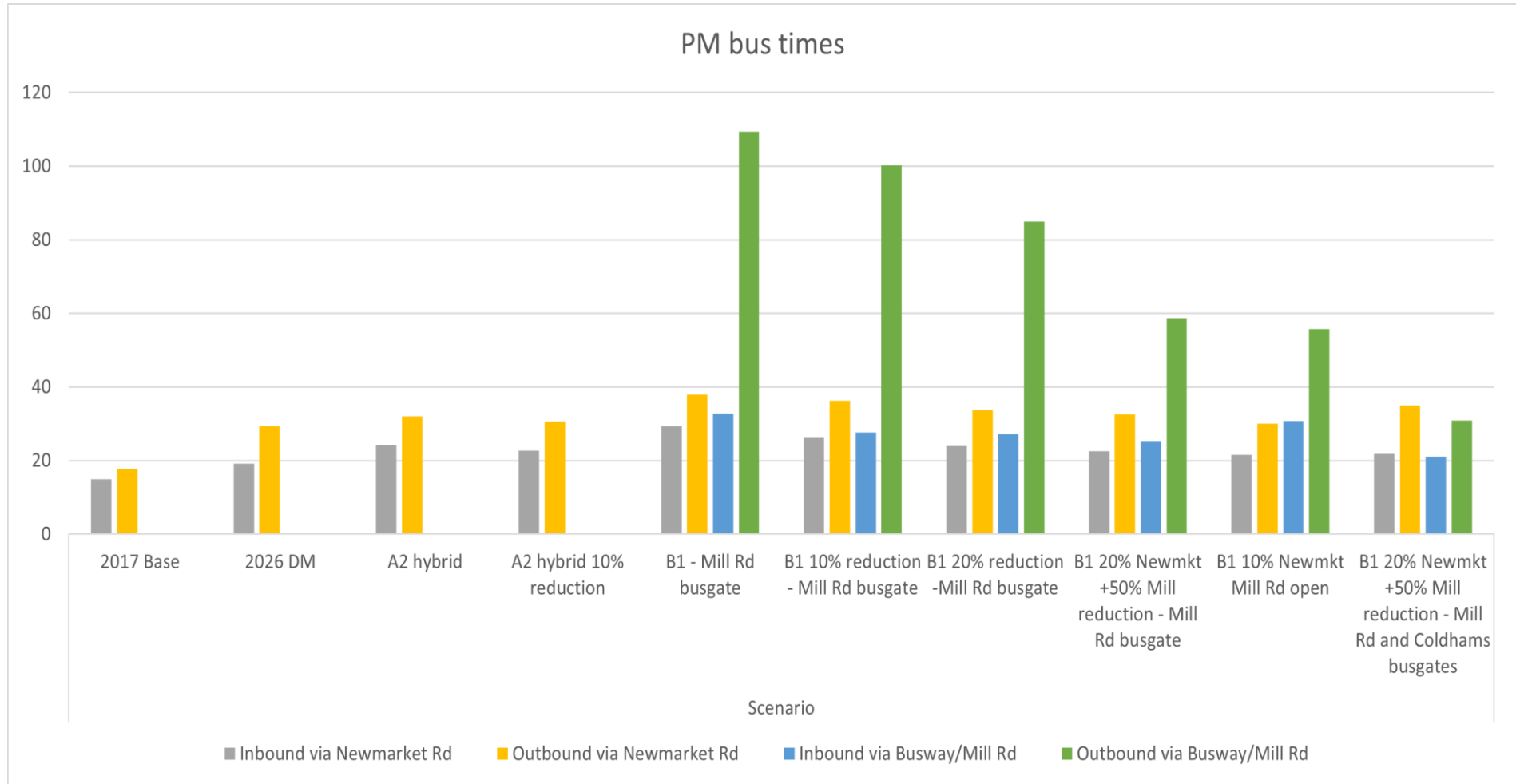


Figure 3.5: Comparison of PM Bus Journey Times



3.6 Cycling and Pedestrian Benefits

- 3.6.1 The actual and perceived barriers to movement formed by Newmarket Road and the major intersections with Elizabeth Way, Coldham's Lane, Barnwell Road, Ditton Lane and Airport Way in particular, will be significantly reduced within the short-term hybrid package. This will see improvements not just to east-west movements into the city, but also north-south connectivity between Chesterton and the city centre and within Barnwell, a community currently severed by the heavily trafficked Newmarket Road and Barnwell Road / Ditton Lane corridors.
- 3.6.2 In addition, the reallocation of road space to provide a continuous cycle link segregated from general traffic and safe, direct pedestrian links free of guard railing and other street clutter, will further add to the attractiveness and comfort of active travel modes in the corridor. The interventions proposed within the hybrid package will significantly transform the public realm along the Newmarket Road corridor, particularly at the sites of the existing roundabouts at Elizabeth Way and Barnwell.
- 3.6.3 One of the key objectives of the scheme is to transform the corridor from an unattractive, car-dominated and hostile environment to one that provides a pleasant streetscape and becomes an exemplar green corridor that is favourable to pedestrians and cyclists. To this end, the hybrid package proposed as part of the Cambridge Eastern Access scheme has the potential to revolutionise this part of the city. A highly desirable route into the city will also further encourage people to undertake journeys on foot or by bicycle.
- 3.6.4 From a journey time perspective, benefits will be derived by both pedestrians and cyclists for numerous movements, not just those in and out of the city centre.
- 3.6.5 At present, for example, pedestrians walking north/south between McDonalds and the library on Barnwell Road, must use a staggered, signal-controlled pedestrian crossing on Newmarket Road, some 50m from the desire line. This equates to an additional walking distance of 100m in total which, combined with the two-staged crossing via a pedestrian refuge, could potentially add a further two minutes to pedestrian journey times.
- 3.6.6 A new signalised crossing at Ditton Lane would give further priority to pedestrians and cyclists, allowing them full signal control with which to negotiate the junction. There are currently no formal crossing points at this junction and since vehicles either exit or enter the junction via Ditton Lane on every traffic phase, this makes the junction very difficult to cross. Less confident pedestrians and cyclists could therefore be delayed for some time at this junction at present, waiting to cross at Ditton Lane. A new signalised crossing would reduce delays for these groups and improve safety generally.
- 3.6.7 The form and function of the reconfigured junctions will generate benefits beyond quantifiable journey time, safety and modal share metrics. The improvements they will present to the public realm could transform Newmarket Road as a gateway into the city centre.
- 3.6.8 The reconfiguration of the Elizabeth Way roundabout will help to address the actual and perceived severing effect of the inner ring road and reconnect the east of the city with the city centre by removing the existing subways and replacing them with at-grade signal crossings. This reconfiguration will be a major statement, not just for Newmarket Road, but for Cambridge itself, as the city looks to move away from car dominance to a more sustainable, attractive and healthy environment where walking and cycling become the modes of choice for shorter journeys.
- 3.6.9 With regards to quantifiable cycle benefit, the DfT Active Mode Appraisal Toolkit (AMAT) assessment tool has been used to derive monetised benefits associated with the improvements set out in the hybrid package.
- 3.6.10 Newmarket Rd was divided into seven sections, with the existing cycling provision in each section being roughly the same. Each section was assigned to one of the categories in WebTAG Unit A5.1 Table 1 as shown in the following table:

Table 3.9: Existing Cycling Provision on Newmarket Road

Link ID	Start point	End point	Length (km)	Cycling provision
1	Quy Interchange	Hotel/Spa Access	0.650	No facilities
2	Hotel/Spa Access	Marshall Access (opposite Jaguar)	2.500	Off-road cycle track
3	Marshall Access (opposite Jaguar)	Barnwell Road	0.768	Segregated on-road cycle lane
4	Barnwell Road	Ditton Walk	0.572	Non-segregated on-road cycle lane
5	Ditton Walk	Swanns Road	0.230	Segregated on-road cycle lane
6	Swanns Road	Godesdone Road	0.822	No facilities
7	Godesdone Road	Elizabeth Way	0.265	Non-segregated on-road cycle lane

3.6.11 Cycling usage data for the corridor is limited to a single count site on Newmarket Road near Airport Way. This gives a 12 hour cycle count of 269 trips in both directions. We have used this value for all seven links in the standard assessment that follows as additional data could not be collected due to the Covid-19 pandemic: it is likely that flows, and benefits, on links closer to the city centre will be significantly higher. Traffic counts were used to calculate the total number of users on the corridor and this was used to estimate the proportion of cyclists.

3.6.12 WebTAG Unit A5.1 was used to calculate an uplift to the number of cyclists due to the improved facilities on each of the seven links. The WebTAG calculated uplifts are given in the table below. The cycle usage, along with the cycling provision without scheme (existing provision in Table 3.9) and with scheme (Off-road cycle track for all seven links), was input into the WebTAG AMAT spreadsheet, which gives benefits separately for each link.

Table 3.10: Cycling Usage and Benefits on Newmarket Road

Link ID	Start point	End point	Without scheme	With scheme	PVB (£'000s)
1	Quy Interchange	Hotel/Spa Access	269	331	860
2	Hotel/Spa Access	Marshall Access (opposite Jaguar)	269	269	0
3	Marshall Access (opposite Jaguar)	Barnwell Road	269	271	179
4	Barnwell Road	Ditton Walk	269	282	663
5	Ditton Walk	Swanns Road	269	270	248
6	Swanns Road	Godesdone Road	269	349	1,124
7	Godesdone Road	Elizabeth Way	269	275	288

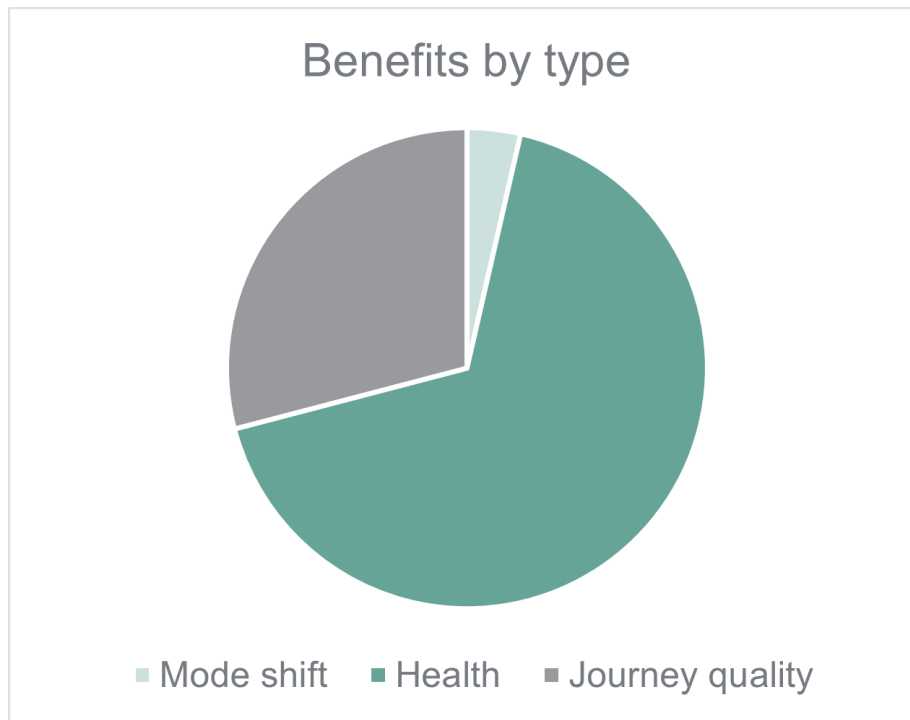
3.6.13 Using the WebTAG methodology, the overall benefit to cyclists has been calculated at £3.363m. The benefits are split between Health (67.2%), Journey Quality (29.2%) and Mode Shift (3.6%).

3.6.14 With regards to journey time savings, these are realised through the continuous provision of dedicated cycle links along the corridor, meaning that riders do not have to negotiate sections of intermittent provision that can take time to traverse.

3.6.15 Furthermore, the introduction of crossings on the desire lines will reduce the distance required to cycle the length of the corridor. Although a small amount of delay will be incurred at the traffic signals, the guarantee of a cycling phase at the lights will mean that users will be assured that they will be able to continue their journeys safely and unopposed.

3.6.16 This is a significant improvement over the existing situation where cyclists may be giving way to traffic for long periods of time, particularly within the network peak hours.

Figure 3.6: Cycling Benefits on Newmarket Road (WebTAG)



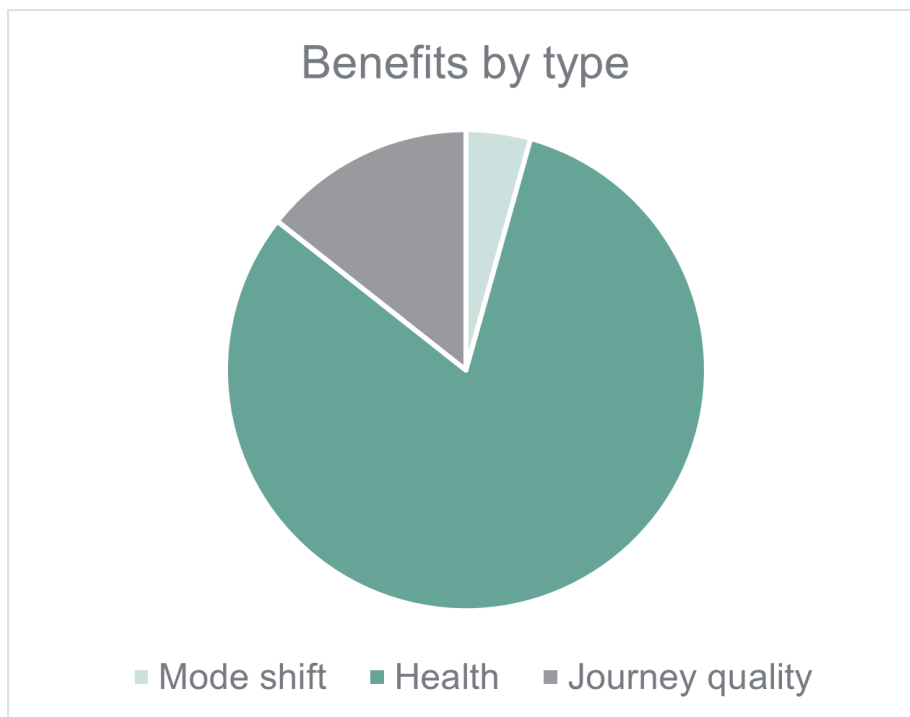
- 3.6.17 The expected journey time savings have not been included in the benefits as they are subject to detailed design.
- 3.6.18 The WebTAG assessment above was not felt to truly reflect conditions in Cambridge, where there are significantly higher levels of cycling in the city than elsewhere in the country. In particular, the cycling levels on Newmarket Road are very low for Cambridge.
- 3.6.19 A sensitivity test has therefore been undertaken with more robust assumptions of cycling usage and uptake for Newmarket Road, more in line with the rest of Cambridge.
- 3.6.20 Firstly, it was assumed that the cycling numbers on the built-up part of Newmarket Road are double that shown at the Airport Way cycle counter. Secondly, it was assumed that the with-scheme modal share for cycling on the built-up section would rise to 10% (a conservative estimate given the respective journey to work modal splits for the MSOAs within the corridor, which range from 10.5% to 27.7%).
- 3.6.21 The following table sets out the assumptions for the sensitivity test.

Table 3.11: Cycling Usage and Benefits on Newmarket Road

Link ID	Start point	End point	Without scheme	With scheme
1	Quy Interchange	Hotel/Spa Access	269	331
2	Hotel/Spa Access	Marshall Access (opposite Jaguar)	269	269
3	Marshall Access (opposite Jaguar)	Barnwell Road	538	2,263
4	Barnwell Road	Ditton Walk	538	2,263
5	Ditton Walk	Swanns Road	538	2,263
6	Swanns Road	Godesdone Road	538	2,263
7	Godesdone Road	Elizabeth Way	538	2,263

- 3.6.22 The benefits for each of the seven links were recalculated using the individual AMAT worksheets, but it was found that the benefits for each link were very high and consistently similar. The issue with this method is that each AMAT worksheet was claiming benefits for the additional riders separately, whereas, based on our assumptions, the same riders would be using all (or most) of the links in a single trip.
- 3.6.23 A new AMAT worksheet was created that covered links 3, 4, 5, 6 and 7 as a single section. This was given the “On-road non-segregated cycle lane” category for the existing provision.
- 3.6.24 Using the sensitivity test methodology, the overall benefit to cyclists has been calculated at £ 20.686m. The benefits are split between Health (80.7%), Journey Quality (15.0%) and Mode Shift (4.3%).

Figure 3.7: Cycling Benefits on Newmarket Road (Sensitivity Test)



3.7 Conclusion

- 3.7.1 An exhaustive process has been undertaken through which to identify schemes and packages to improve the capacity and connectivity of transport provision on Newmarket Road, and reduce the impact of traffic on communities in the east of the city.
- 3.7.2 Their assessment in the Cambridge Paramics Model has identified some key findings:
- The level of demand in the corridor in 2026 is such that, without intervention, there will be significant impacts on journey times for general traffic and buses, and the quality of the environment for pedestrian and cyclists. The network is close to exceeding capacity if action is not taken.
 - However, due to this level of demand, it is not possible to improve provision for sustainable travel without significant detriment to the journey times for general traffic. Furthermore, the benefits which can be derived for bus users are tempered by the sheer volume of traffic on the network.
 - In some sections there is not the physical space to provide bus priority measures, resulting in buses also being delayed, although the CAM tunnels would significantly complement the busway.
 - Without more strategic interventions through which to reduce the overall demand on the network, through the City Access programme, the effectiveness of any investment in the corridor to improve sustainable transport capacity and connectivity will be limited.

- 3.7.3 Despite these caveats, the short term investment through which to rebalance road user priorities along Newmarket Road, supplemented by a medium to longer term investment in the Cambridge to Newmarket rail corridor, represent the best way through which to meet the future travel demand in the east of the city.
- 3.7.4 Further assessment of their effectiveness should be undertaken using a demand responsive model, such as the Cambridge Sub-Regional Model (CSRM), with wider city-wide 'City Access' measures also incorporated. A revalidation exercise on the eastern corridor will be required to the CSRM to enable this to be undertaken robustly.

4.0 Environmental Impacts

This section provides a qualitative summary of the anticipated environmental impacts of the Cambridge Eastern Access project.

4.1 Overview

- 4.1.1 The Cambridge Eastern Access scheme options are anticipated to have both positive and negative impacts on various aspects of the built and natural environment, based upon the direct impact of the investment in sustainable transport provision and the indirect impacts of increase queuing and delays for general traffic.
- 4.1.2 Given the stage of the Strategic Outline Business Case, several areas have been omitted from this assessment including those relating to air quality, noise and greenhouse gases. These will be addressed in the subsequent Outline Business Case. However, the measures proposed promote the use of public transport, walking and cycling, and restrict access by private cars: whilst the benefits will need to be assessed in quantitative terms, and need to be considered as a part of the wider City Access programme, a broadly positive impact is anticipated. In the meantime [Table 4.1](#) reflects the areas of focus for this SOBC, as contained within the Appraisal Specification Report. For each of the impact areas, a high-level qualitative analysis is provided alongside a rating to demonstrate the extent to which the option will have a perceived positive or negative effect.

Table 4.1: Areas of Assessment of the Environmental Impacts

Impacts	Sub-impacts	Estimated Impact in OAR	Level of uncertainty in OAR	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/ Qualitative/ Monetary/ Distributional)
Environmental	Noise	Neutral	Medium	Not assessed	Not proportionate to assess at this stage.	N/A
	Air Quality	Slight	Medium	Not assessed	Not proportionate to assess at this stage.	N/A
	Greenhouse gases	Neutral	Low	Not assessed	Not proportionate to assess at this stage	N/A
	Landscape	Moderate	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Qualitative
	Townscape	Neutral	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Qualitative
	Heritage of Historic resources	Slight	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Qualitative
	Biodiversity	Slight	Medium	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Qualitative
	Water Environment	Slight	Medium	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Qualitative

4.2 Landscape

- 4.2.1 Coldham's Common, Ditton Meadows and the open countryside to the east of the city provide some high-quality landscapes with various levels of protection and which are highly regarded by local residents. The area is characterised by predominantly urban environments, with suburbs and small villages further east on the edge of Cambridge.
- 4.2.2 The cityscape is dominated by areas of residential, retail and industrial development which becomes more rural and predominantly agricultural land further east. The area is principally low lying and flat without any significant landscape features. The potential impact of the Cambridge Eastern Access schemes is summarised in [Table 4.2](#).

Table 4.2: Landscape Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> The relocation of the Park and Ride in open countryside to the east of Airport Way and the urban area will have an impact on the landscape. However, the low-level nature of such infrastructure, with minimal buildings of any height (certainly none taller than a single storey), together with the ability to screen any such provision should help to partly mitigate any such impact. The additional lane to be provided on Newmarket Road to the east of Airport Way to accommodate queuing traffic would see the loss of hedgerows, trees and some other mature vegetation. The provision of a busway adjacent to the runway of Cambridge Airport would conceivably have an impact on the landscape of the area, which is currently open and slightly raised when viewed from Airport Way. However, given that the airport site is likely to be vacated and redeveloped the additional impact of the busway is likely to be negligible. A new cycle link between Barwell Road and the Chisholm Trail via Coldham's Common is likely to raise local concern. On balance however, a new cycle link will be a low impact intervention from a landscape perspective. 	Negative

4.2.3 On balance, elements of the scheme are likely to have implications on the amenity of existing landscape features in the east of the city. Attention should be paid to ensure that enough mitigation is provided to negate these impacts.

4.3 Townscape

4.3.1 The quality of the townscape and public realm is an important factor when considering the 'liveability' of a place. It helps to foster a sense of civic pride and conviviality. However, at present the townscape along Newmarket Road is of low value. Together with the number of residential properties built up tightly to the carriageway boundary through East Barnwell, it is imperative that the Cambridge Eastern Access scheme helps to enhance the townscape and the associated public realm. [Table 4.3](#) provides a summary of the perceived impacts.

Table 4.3: Townscape Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> The reconfiguration of several junctions along Newmarket Road, together with the use of Intelligent Transport Systems to help control the flow of vehicles, will further help to reduce the dominance of traffic along Newmarket Road, and see the reallocation of road space through which to enhance the public realm and setting of buildings along the corridor. The package will also help to contribute towards reducing the severing effect of Newmarket Road and the detrimental impact this has on the townscape. The relocation of the Park and Ride site could in turn offer an opportunity for the redevelopment of the site to enhance the townscape in the area. The route via Coldham's Lane incorporates a section of carriageway widening on the approach to the Sainsbury's roundabout. There are no outstanding features to the townscape in the area and the works are unlikely to impact upon the quality of the townscape. 	Major Positive

4.3.2 Improvements to Newmarket Road associated with the Cambridge Eastern Access scheme can reduce the severing effect of the road and see a reallocation of road space through which to improve the public realm and wider townscape. However, in the second phase of works, which would include more major infrastructure interventions, the impacts are likely to be more negative without significant mitigations being provided.

4.4 Heritage of Historic Resources

- 4.4.1 The Cambridge townscape is internationally renowned and there are several notable buildings on Newmarket Road, not least the Grade 1 listed Leper Chapel. This, together with the conservation area focused upon Mill Road, form the focus for the protection of historic assets when considering the Cambridge Eastern Access impacts, summarised in [Table 4.4](#).
- 4.4.2 It is worth noting that at this stage, only heritage assets above ground have been considered. There is potential for these scheme options to have an impact upon below-ground historical resources or heritage sites such as areas of archaeological interest. Such considerations will be accounted for later within the development of the Full Business Case, where the extent and impact of land take becomes more defined. Below-ground historical resources of heritage will therefore not be considered any further within this SOBC.

Table 4.4: Historic Resources Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> The package focuses on better management of traffic along Newmarket Road and in doing so, may help to improve the setting of the Leper Chapel. There may also be an element of the package helping to reduce the corrosion impact of the emissions from vehicles on the Chapel. The reallocation of road space to pedestrians and cyclists along Newmarket Road could enhance the setting of the Chapel, providing individuals with more opportunities to admire the structure. The introduction of a bus gate on Mill Road, whilst primarily to benefit the efficiency of bus journey times, is also likely to lead to a reduction in traffic in the Conservation Area. Whilst the scheme doesn't go as far as completely removing traffic to enable resurfacing and reuse of road space to enhance the quality of the public realm and thus the character of the conservation, it nevertheless could improve the conviviality of Mill Road and the opportunity to enjoy and experience the conservation area. 	Positive

- 4.4.3 The Cambridge Eastern Access scheme has real potential to enhance the historic character of the eastern corridor, particularly at the Leper Chapel and along Mill Road. Reducing traffic in these areas of the city will create a more pleasant environment for people walking and cycling past these areas of conservation and therefore add to the quality of sense of place.

4.5 Biodiversity

- 4.5.1 In the east of the corridor, the area is characterised by arable fields separated by hedgerows with occasional trees. Whilst most of these fields will have limited potential to support notable or protected species, the hedgerows and trees will have potential for bats and nesting birds. The potential impact of the Cambridge Eastern Access schemes on biodiversity are highlighted in [Table 4.5](#).

Table 4.5: Biodiversity Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> There will be very little change to natural habitats through implementation of the ITS scheme. The reconfiguration of junctions along Newmarket Road will also do little to impact upon biodiversity either way. However, the addition of queueing lanes to create further highway capacity on Newmarket Road to the east of Airport Way may require the clearance of hedgerows and mature trees amongst other vegetation which could impact upon biodiversity. There is the potential that the destruction of grassland on the airport site could affect breeding birds. Other on-road interventions, as well as those proposed for walking and cycling will also have a minimal impact upon biodiversity. 	Negative

- 4.5.2 Whilst at this stage there is no design detailing the extent of land acquisition for various components of each option, there are advantages to knowing that some of the major infrastructural components can be delivered within already developed land, minimising the impact on biodiversity. The relocation of the Park and Ride site and the widening of Newmarket Road to the east of Airport Way will also require further consideration. GCP is committed to a minimum 20% net biodiversity gain which would ensure that any habitat lost was replaced.

4.6 Water Environment

- 4.6.1 There are several significant watercourses in and around the east of the City, not least Coldham’s Brook and the River Cam into which it flows. There are also two areas of wetland of interest – to the immediate south of the Quy Interchange and a smaller site immediately adjacent to the east of Barnwell Road, whilst two lagoons located between Cherry Hinton Brook and the Newmarket – Cambridge rail line are an important feature to the south of the airport site. The potential impact of the Cambridge Eastern Access schemes on these features are highlighted in [Table 4.6](#).

Table 4.6: Water Environment Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> The major infrastructure provision associated with the package are unlikely to impact upon key features of the water environment. The precise location of a new Park and Ride has still to be determined and care should be taken to ensure that it is not located too far to the east of Airport Way, which would bring it near to the wetland area. However, it is worth noting that a loss of field space and an increase in area of non-permeable hardstanding will require an adequate drainage system to mitigate this impact. The new cycle link proposed between Barnwell Road and the Chisholm Trail via Coldham’s Common will be near to both the wetland area near Barnwell Road and the alignment of Coldham’s Brook. Care should be taken to avoid any impact on these features; and given the relatively low level of intervention the route would constitute; any impact is likely to be minimal. 	Neutral

4.7 Summary

- 4.7.1 The Cambridge Eastern Access scheme is predicted to have some impact on the landscape and biodiversity of the corridor. However, on balance the positive impacts are anticipated to outweigh the negative impacts through reducing the dominance of general traffic on the townscape and heritage sites.

5.0 Social & Distributional Impact Appraisal

This section provides a qualitative analysis and summary of the anticipated social and distributional impacts of the Cambridge Eastern Access scheme.

5.1 Overview

- 5.1.1 The Cambridge Eastern Access scheme is anticipated to impacts on various aspects of individual's day to day life, both directly from the impact of new infrastructure and services provided, and indirectly as a result of the impacts of this investment. The impacts of the scheme will also differ from a spatial perspective.
- 5.1.2 The social and distributional impacts which are required to be assessed as part of the development of the Business Case have several common features, and as such, these two areas have been combined for this assessment, as detailed in [Table 5.1](#).
- 5.1.3 Several areas have been omitted from consideration at this stage including those relating to accidents and severance. These will be addressed in the subsequent Outline Business Case.

Table 5.1: Assessment of Social & Distributional Impacts

Impacts	Sub-impacts	Estimated Impact	Level of Uncertainty	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/ Qualitative/ Monetary/ Distributional)
Social	Physical activity	Moderate	Medium	Unit A5-1 Active mode appraisal	Cycling has a high mode share in Cambridge. WebTAG active mode appraisal is the approved methodology even for later-stage appraisal.	Narrative
	Journey quality	Slight	Medium		Cycling has a high mode share in Cambridge. WebTAG active mode appraisal is the approved methodology even for later-stage appraisal.	Narrative
	Option values	Slight	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
Social & Distributional	Accidents	Neutral	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
	Security	Neutral	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
	Access to services	Slight	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
	Affordability	Slight	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
	Severance	Slight	Low	High-level desk study assessment	Simple assessment at this stage before final alignments are decided.	Narrative
Distributional	User Benefits	Large	Low	Not assessed	Not proportionate to assess at this stage.	N/A
	Noise	Slight	Medium	Not assessed	Not proportionate to assess at this stage.	N/A
	Air Quality	Slight	Medium	Not assessed	Not proportionate to assess at this stage.	N/A

5.2 Physical Activity

- 5.2.1 At present the levels of cycling to work for those living along the Newmarket Road corridor are high, but decrease significantly further to the east, away from the city centre as demonstrated in [Figure 5.1](#), whilst levels of walking to work are comparatively low throughout the corridor as evident in [Figure 5.2](#).
- 5.2.2 [Figure 5.3](#) highlights the proportion of the population citing poor health at the time of the last Census (2011). There is a clear concentration of such individuals in the east of the city, demonstrating the appropriateness of intervention in rebalancing road user priorities in favour of active travel along Newmarket Road and the wider network. [Table 5.2](#) highlights how the measures which comprise the Cambridge Eastern Access scheme will impact upon physical activity.

Table 5.2: Physical Activity Impacts Summary Table

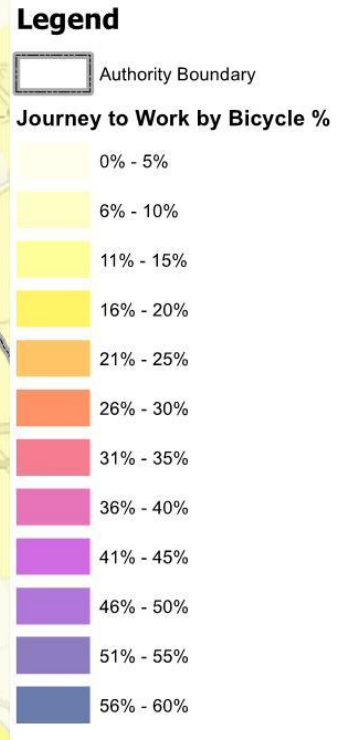
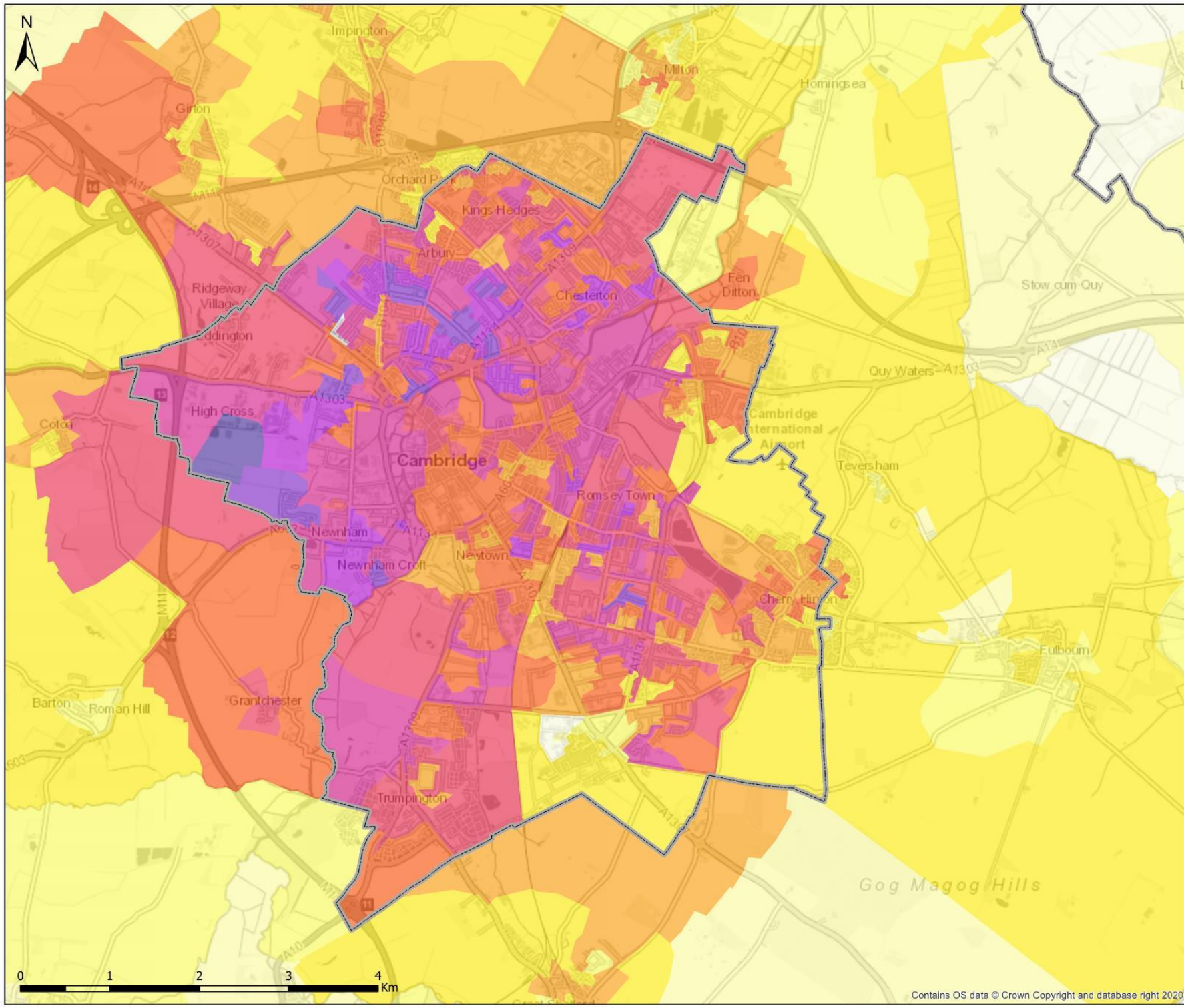
Perceived Impacts	Rating
<ul style="list-style-type: none"> The emphasis the Eastern Access scheme places on reprioritising road users will go a long way towards addressing these figures and the travel habits they reflect. The reconfiguration of major junctions at Elizabeth Way and Barnwell Road will reduce the severing effect on walking and cycling trips, increasing the attractiveness of active travel, and subsequently levels of well-being. The provision of safe, segregated and continuous cycle lanes will make cycling a realistic and attractive alternative to the car for many. Coupled with the growth in popularity of e-bikes, the potential is there to see sections of the population cycling, who have never cycled before. The benefits of the cycle improvements have been quantified with predicted monetised benefits in excess of £20m, predominately as a result of the health benefits which will be derived from a more active local population. It should also be noted that these benefits are based solely on the improvement in infrastructure on the links along Newmarket Road. Further benefits will be derived as a result of the major junction improvements and more localised cycle improvements contained with the package of measures to be taken forward. 	Major Positive

5.3 Journey Quality

- 5.3.1 The quality of the transport offer in the Newmarket Road corridor will improve considerably through investment in the package of measures which comprise the Eastern Access Scheme. In terms of cleanliness, facilities, information and the environment, benefits will be experienced by those using public transport, walking or cycling, the views of travellers will improve, and stress reduced. [Table 6.3](#) highlights how these sub-factors of journey quality will be addressed by all road users.

5.4 Option Values

- 5.4.1 The Cambridge Eastern Access scheme will provide a substantial change in the availability of transport services in the study area. The creation of a new multi-modal transport hub on the edge of the city, supplemented by high quality public transport routes into the city centre and new orbital bus services providing access to Addenbrookes Hospital to the south, will transform the travel choice available to residents and visitors to the city.
- 5.4.2 Investment to provide continuous, segregated cycle corridors in and out of the city will also ensure that cycling is a realistic option for cyclists of all abilities, a further evolution in the transport offer in the east of the city. Overall, it is estimated that the delivery of the Cambridge Eastern Access scheme will see a strong beneficial impact to travel options within the corridor.



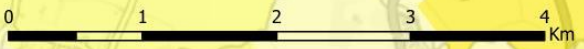
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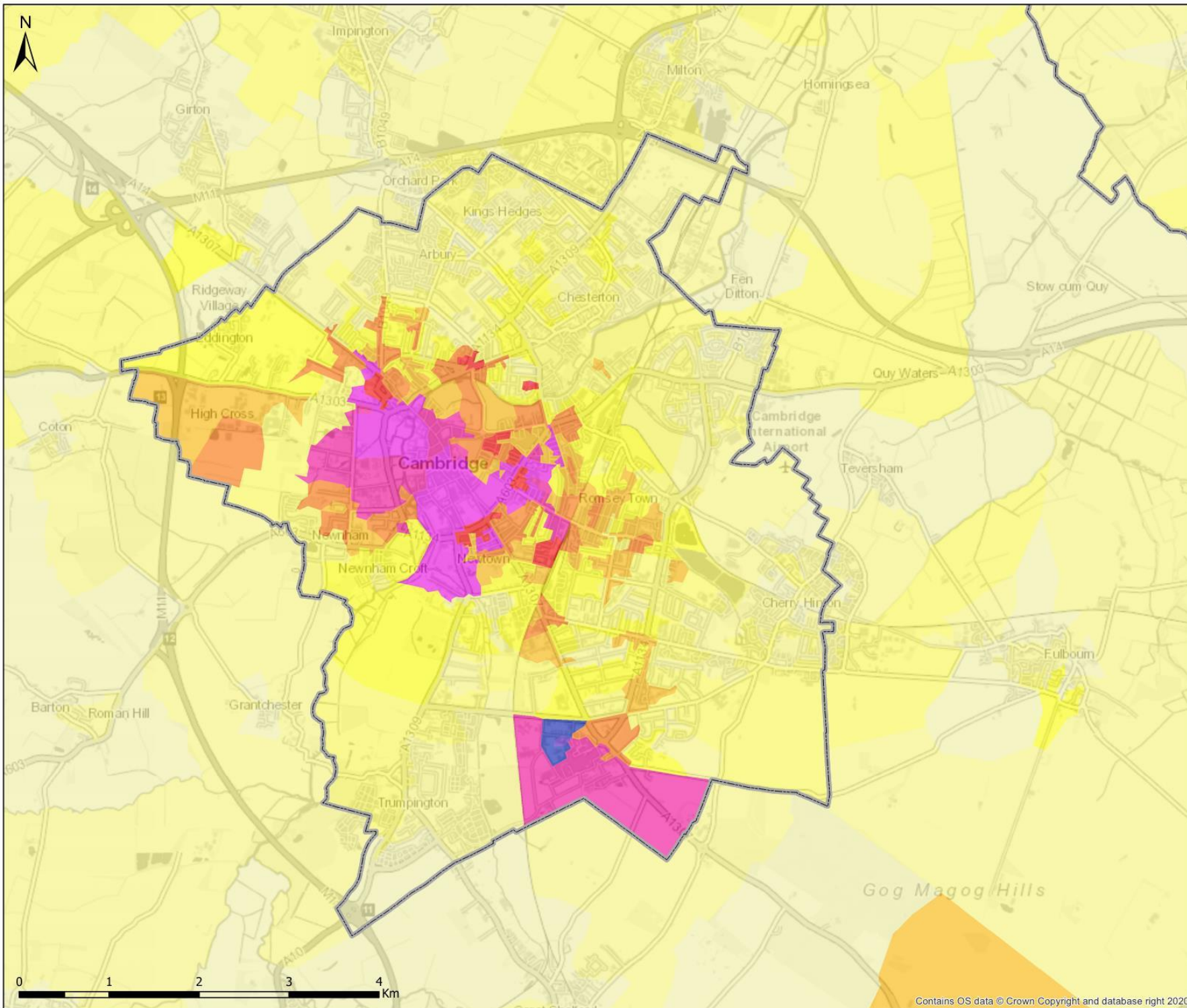
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Figure 5.1: Journeys to Work by Bike in Cambridge



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Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
HTS	JIC	29/03/21	BK	29/03/21	ASG	29/03/21
Project No.	Office	Type	Drawing No.	Revision		
A081175-146	35	18	058	-		



Legend

Authority Boundary

Journey to Work by Walk %

- 0% - 5%
- 6% - 10%
- 11% - 15%
- 16% - 20%
- 21% - 25%
- 26% - 30%
- 31% - 35%
- 36% - 40%
- 41% - 50%
- 51% - 60%
- 61% - 70%
- 71% - 80%
- 81% - 90%

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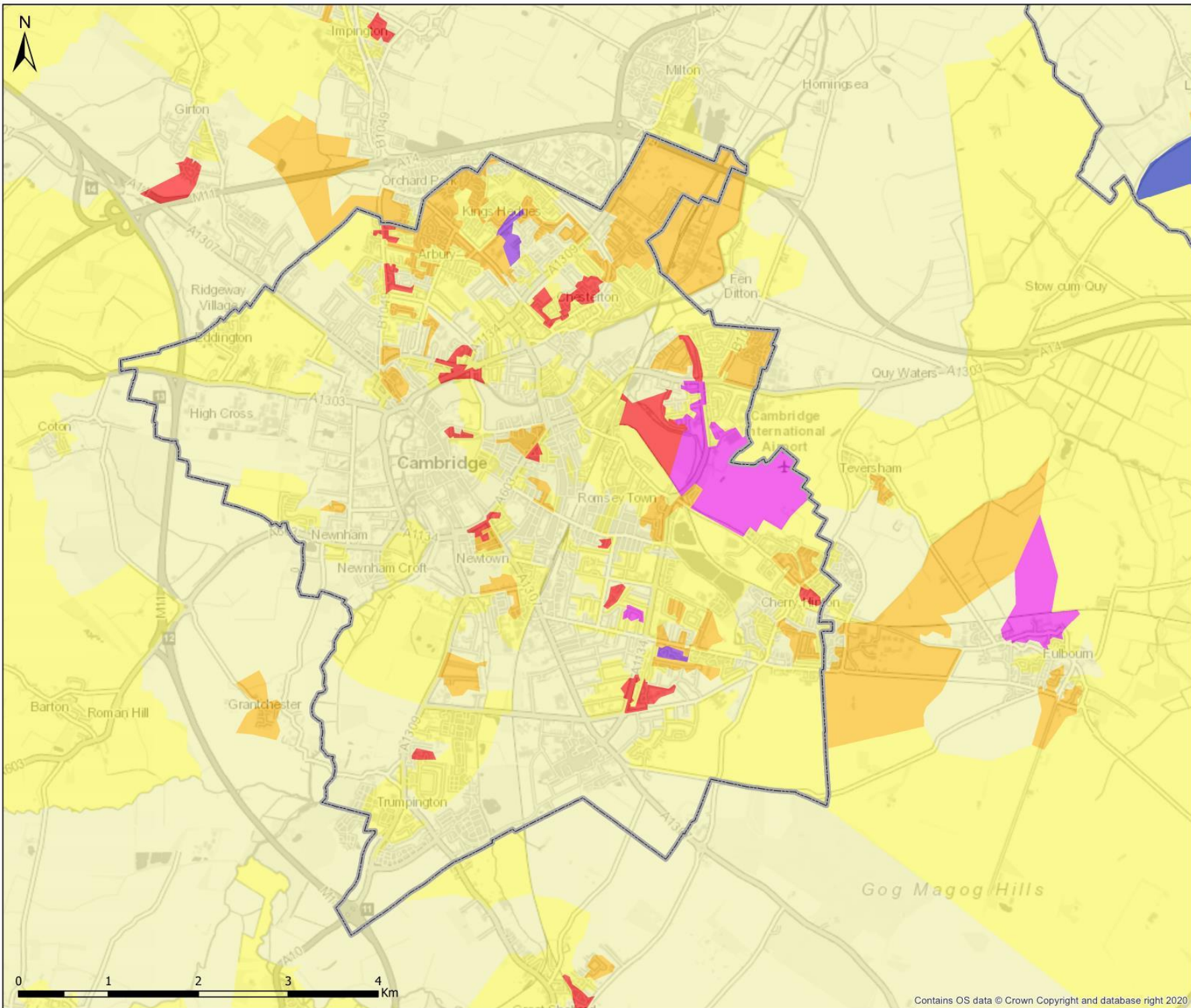
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Figure 5.2: Journeys to Work on Foot in Cambridge



Scale @	Drawn	Date	Checked	Date	Approved	Date
A3	JJC	29/03/21	BK	29/03/21	ASG	29/03/21
Project No.	Office	Type	Drawn No.	Revision		
A081175-146	35	18	057	-		



Legend

Authority Boundary

Bad or Very Bad Health %

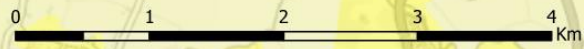
- 0% - 3%
- 4% - 6%
- 7% - 9%
- 10% - 12%
- 13% - 15%
- 16% - 18%
- 19% - 21%

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Figure 5.3: Population Reporting Bad or Very Bad Health



Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	29/03/21	BK	29/03/21	ASG	29/03/21
Project No.	Office	Type	Drawing No.	Revision		
A081175-146	35	18	061	-		

Table 5.3: Impacts on Journey Quality

Mode	Quality Factors (and Sub-Factors)			Rating
	Traveller Care (Cleanliness, Facilities, Information, Environment)	Travellers' Views	Traveller Stress (Frustration, Fear of Potential Accidents, Route Uncertainty)	
Pedestrians	<ul style="list-style-type: none"> The reallocation of road space and investment in public realm improvements will create a more attractive and higher quality environment for pedestrians. 	<ul style="list-style-type: none"> The reduced dominance of traffic on the Newmarket Road corridor and the removal of through traffic on Mill Road, will improve the views of pedestrians and ambience of the public spaces. 	<ul style="list-style-type: none"> The provision of direct, surface level pedestrians' crossings at Elizabeth Way and Barnwell Road will reduce personal security fears and frustrations at having to deviate off desire lines. 	Major Positive
Cyclists	<ul style="list-style-type: none"> Continuous, segregated cycle lanes along Newmarket Road, together with the signing and promotion of routes will raise knowledge and awareness of the cycle offer. 	<ul style="list-style-type: none"> The additional cycle routes to be provided and promoted to complement investment in Newmarket Road, will enable cyclists to travel through attractive areas of open space. 	<ul style="list-style-type: none"> The step-change in dedicated cycle facilities, including the continuous, segregated cycle lanes along Newmarket Road, will reduce road safety concerns and contribute towards a comprehensive network which removes uncertainty for less confident cyclists. 	Major Positive
Public Transport User	<ul style="list-style-type: none"> A modern, new multi-modal interchange on the edge of the city will provide a high-quality gateway into the city, complete with real time information and comfortable waiting facilities. 	<ul style="list-style-type: none"> The relocated transport interchange will be located on the edge of open countryside with unhindered views of open fenland. 	<ul style="list-style-type: none"> The management of traffic flow along Newmarket Road and dedicated bus priority measures will help to improve journey time reliability and reduce frustration associated with queuing and delays. 	Major Positive
Motorists	<ul style="list-style-type: none"> Variable message signage will be provided highlighting the faster journey times offered via the Park and Ride / busway. 	<ul style="list-style-type: none"> No tangible impact. 	<ul style="list-style-type: none"> Additional delays will be a cause of frustration to some, but improved signage/information and reduced speed of traffic could address road safety fears and increase awareness of alternatives. 	Negative

5.5 Accidents

5.5.1 There are several locations along Newmarket Road where concentrations of accidents have been recorded in recent years (see [Figure 5.4](#)). A detailed appraisal of the impacts of the scheme on accidents will be undertaken as part of the Outline Business Case, however [Table 5.4](#) highlights the perceived benefits of the measures on road safety.

Table 5.4: Road Safety Impacts Summary Table

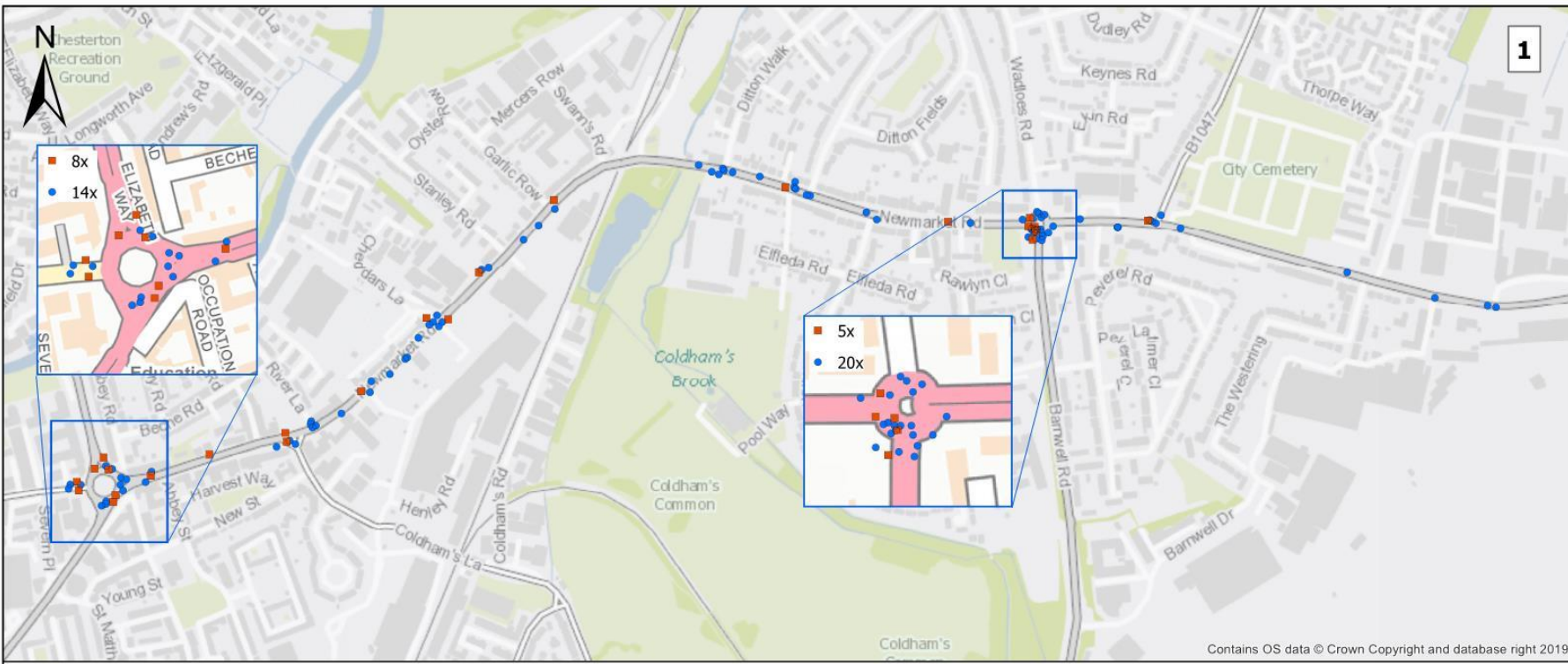
Perceived Impacts	Rating
<ul style="list-style-type: none"> Reconfigured junctions will improve safety for cyclists and pedestrians, with dedicated crossing phases and direct provision reducing jay walking. More cyclists and pedestrians using the corridor represent more vulnerable road users with the inherent additional safety concerns they present. Mode shift and demand management measures could reduce the overall level of traffic and associated road safety risk. At grade pedestrian crossing will increase safety risk compared to segregated subways in place at the Elizabeth Way roundabout. Signalised junctions will better regulate flow of traffic and reduce the level of decision making required of road users. Continuous, segregated cycle lanes will reduce conflicts with general traffic. The busway will provide the fully segregated movement of vehicles away from general traffic, pedestrians and cyclists. More appropriate routing of traffic away from heavily populated streets (Mill Road in particular). 	Major Positive

5.6 Security

5.6.1 Data has not been obtained on reported crime in the corridor, and there is no information available on the fear of crime which often has an even greater impact on individuals travel behaviours. There are several perceived benefits from the Cambridge Eastern Access scheme however, as illustrated in [Table 5.5](#) below.

Table 5.5: Security Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> From a personal security perspective, the Cambridge Eastern Access scheme will deliver two major areas of direct and indirect benefits. Through the removal of the pedestrian subways at the Elizabeth Way roundabout and their replacement with surface level signal-controlled crossings, an actual and perceived threat to personal security concerns will be eradicated. Pedestrians will be able to access the city centre without the need to navigate the secluded, poorly lit and isolated underpasses. Furthermore, the overall investment to increase the volume of pedestrians and cyclists in the corridor will in turn generate more natural surveillance and 'eyes on the street'. The improvements to the public realm which will be secured on the back of the removal of general traffic from Mill Road, and the reallocation of road space, the package of measures will contribute towards the vitality and viability of public spaces, and the inherent safety this offers. 	Major Positive



Legend

Collision Severity

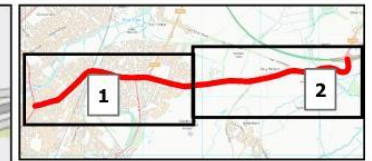
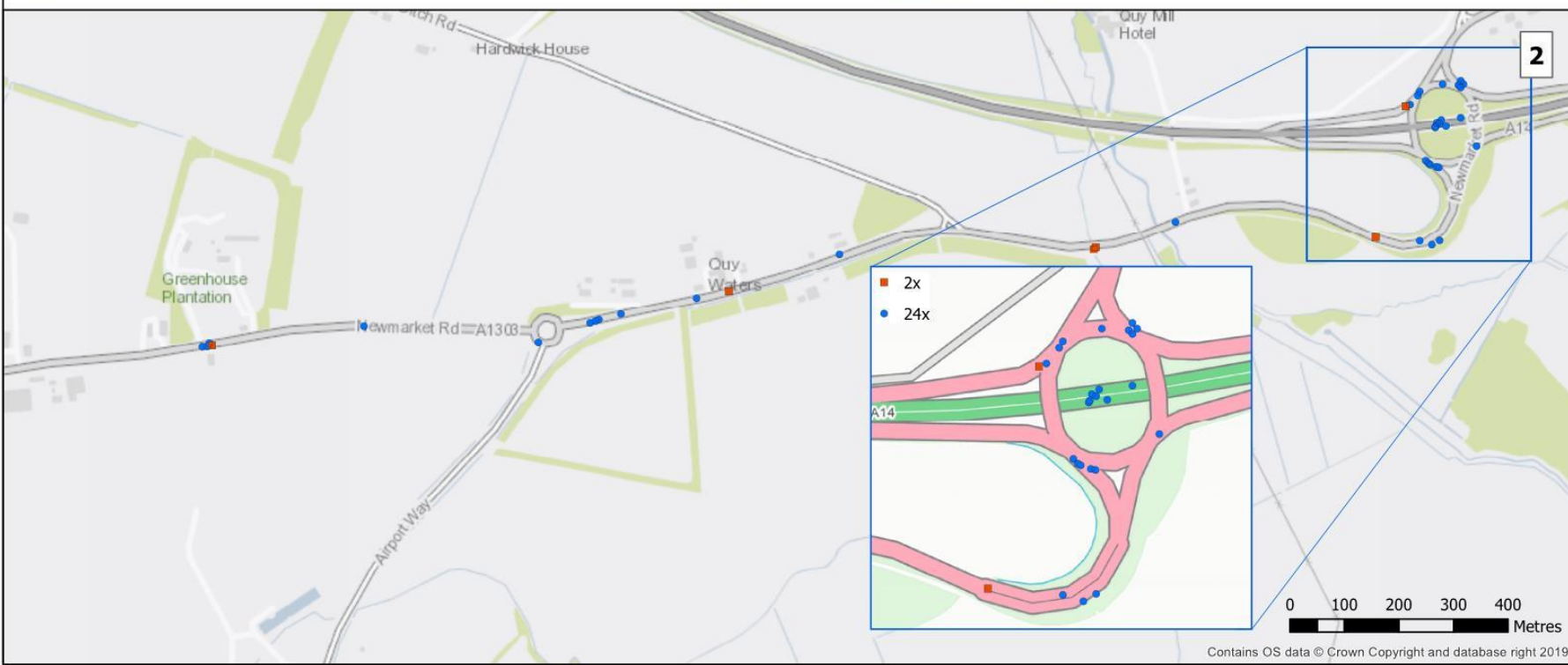
- Serious
- Slight

Number of Collisions:

	Fatal	Serious	Slight	Total
2014	0	5	24	29
2015	0	6	25	31
2016	0	5	26	31
2017	0	6	21	27
2018	0	2	15	17
2019*	0	6	10	16
Total	0	30	121	151

* 2019 includes January to August only.

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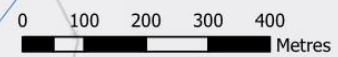
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Figure 5.4: Accidents along Newmarket Road Corridor



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Project No.	Office	Type	Drawing No.	Revision		
A081175-146	35	18	015	-		

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5.7 Access to Services

- 5.7.1 Improving connectivity to jobs and opportunities, particularly by sustainable modes of travel is one of the three overarching objectives for the corridor. This is particularly important for areas of deprivation where there are often greater difficulties in accessing the jobs market, and for those households without use of a car, where opportunities may be limited as a result.
- 5.7.2 Some of the most deprived parts of the city are located along the Newmarket Road corridor (see [Figure 5.5](#)), and improved access to these opportunities will improve these households' life chances. The ability of the Eastern Access scheme to achieve this is summarised in [Table 5.6](#).

Table 5.6: Access to Services Impacts Summary Table

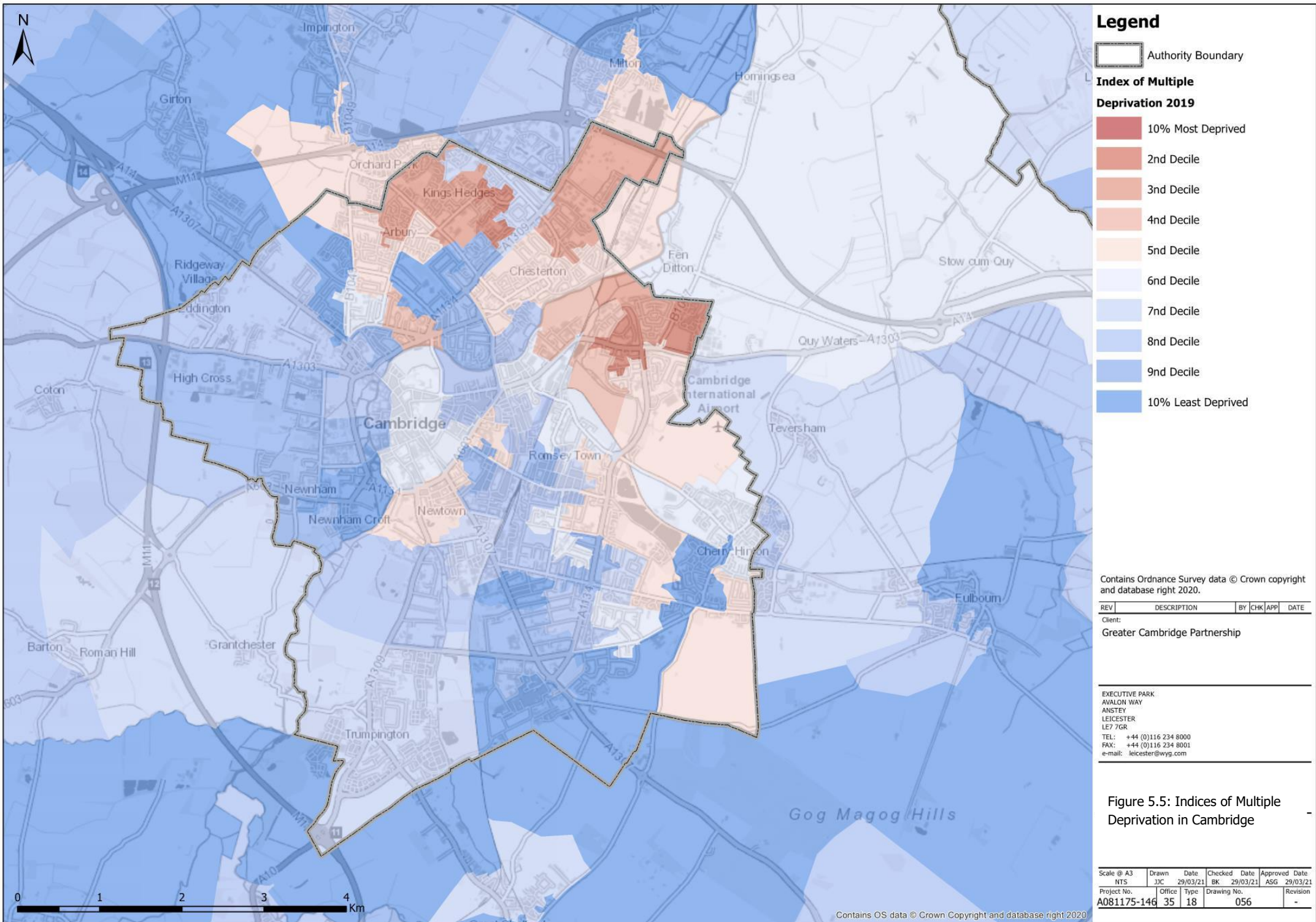
Perceived Impacts	Rating
<ul style="list-style-type: none"> The package of measures which comprise the Cambridge Eastern Access scheme will improve connectivity in several ways. It will reduce journey times by bus and improve journey time reliability. It will also see the provision of new services between the new transport interchange and Addenbrookes Hospital, providing direct connections to a significant employment sector in the city. Measures to improve pedestrian and cycle facilities will support these improved connections by making the physical environment more accessible, particularly for those of limited mobility or who have safety and personal security concerns. In doing so, the increase in travel choice will combat barriers those households face who do not have access to a car. 	Major Positive

5.8 Affordability

- 5.8.1 The cost of transport can be a barrier for some households in accessing employment and services. Car ownership and even the costs of public transport can contribute towards social and economic exclusion, an issue particularly pertinent in Barnwell which has some of the highest levels of deprivation in the city.
- 5.8.2 It should also be recognised that Cambridge is an expensive city into which to commute with city centre car parking prices some of the highest in the country. This can dissuade those reliant on the car who may commute from the large surrounding rural hinterland from taking job opportunities. [Table 5.7](#) summarises the potential ability of the measures to address this issue.

Table 5.7: Affordability Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> The scheme seeks to address the negative impacts of the cost of transport by increasing travel choice and making the corridor accessible for all. The key area of investment in this regard will be measures to secure the reallocation of road space to pedestrians and cyclists, to make active travel options safer and more realistic. The provision of a modern, high quality transport interchange on the edge of the city, with fast and frequent connections to both the city centre and Addenbrookes Hospital will provide an attractive, affordable and realistic alternative. 	Major Positive



Legend

Authority Boundary

Index of Multiple Deprivation 2019

- 10% Most Deprived
- 2nd Decile
- 3rd Decile
- 4th Decile
- 5th Decile
- 6th Decile
- 7th Decile
- 8th Decile
- 9th Decile
- 10% Least Deprived

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Figure 5.5: Indices of Multiple Deprivation in Cambridge

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	29/03/21	BK	29/03/21	ASG	29/03/21
Project No.	Office	Type	Drawing No.	Revision		
A081175-146	35	18	056	-		

5.9 Severance

- 5.9.1 The actual and perceived severance of a community, often caused by the dominance of traffic and missing links in a network, can lead to social exclusion and prevent those most in need from accessing jobs and services. [Table 5.8](#) establishes the areas within which the measures of intervention which compromise the Cambridge Eastern Access scheme are anticipated to contribute towards the issue.

Table 5.8: Severance Impacts Summary Table

Perceived Impacts	Rating
<ul style="list-style-type: none"> Major junction improvement schemes, particularly at the Elizabeth Way and the Barnwell Road roundabouts will transform the legibility of the corridor. The replacement of the subways with surface level pedestrian crossings at Elizabeth Way will reduce journey times for those on foot, whilst reducing actual and perceived barriers to movement, increasing the attractiveness of walking into the city centre for local residents. The provision of crossing points on desire lines at Barnwell Road will also reduce journey times and the severing effect of Newmarket Road for residents of Barnwell, further encouraging localised trips on foot and reducing the dominance of the car on local communities. Severance will also be improved through the provision of continuous segregated cycle lanes into the city centre along Newmarket Road. At present the infrastructure is discontinuous with significant variability in terms of standards and safety. This dissuades many less confident cyclists and effectively severs the route into the city centre for many. The busway will be designed to avoid the future severance of any development which may occur on the airport site. 	Major Positive

5.10 Summary

- 5.10.1 The two packages of measures will together form the Cambridge Eastern Access scheme are predicted to provide significant benefits to the local population. It will rebalance the provision of road space and reduce the dominance of traffic in the corridor. Therefore, levels of active travel are anticipated to increase substantially within an environment more conducive to walking and cycling and using public transport.

6.0 Impact on Public Accounts

This section provides details of scheme costs.

6.1 Overview

6.1.1 The Cambridge Eastern Access scheme is formed of two distinct packages of intervention which will be delivered in the short and medium term respectively. This section details the capital and revenue costs associated with each package, both with and without Optimum Bias included, to highlight the Present Value Cost (PVC) of the overall scheme.

6.2 Short Term Costs

6.2.1 The measures to be taken forward in the short term are those contained within the 'A2 – Hybrid Package'. The costs of the individual schemes contained within the package are listed in [Table 6.1](#) and [Table 6.2](#), reflecting works to the west and east of the Newmarket Road Park and Ride respectively.

Table 6.1: Cost Estimates of Schemes in Package A2 Hybrid – West of Current Newmarket Road Park and Ride

Ref	Scheme	Capital Costs		Revenue Costs
		Without Optimum Bias	With Optimum Bias	
ITS.01	Reconfiguration of all signals to manage/control flow along Newmarket Road & wider network.	£850,000	£1,225,000	44%
JC.02	Reconfiguration of Elizabeth Way Roundabout, including the removal of Subway (lower capacity).	£1,750,000	£2,520,000	44%
JC.03	Reconfiguration of the Newmarket Road & Coldham's Lane junction.	£75,000	£105,000	44%
JC.05	Signalisation and reconfiguration of the Newmarket Road & Barnwell Road junction (lower capacity).	£2,020,000	£2,910,000	44%
JC.07	Reconfiguration of the Newmarket Road & Ditton Lane junction (lower capacity).	£35,000	£55,000	44%
BS.01	Increase the frequency of existing P&R services.			£3,000,000
BS.03	Provide new service from P&R to Addenbrookes hospital and the Biomedical Campus.			£3,000,000
BL.02	Remove inbound bus lanes.	£140,000	£200,000	44%
BL.05	New outbound bus lane between Elizabeth Way and the Leper Chapel.	£2,510,000	£3,610,000	44%
AT.01	Provision of continuous segregated inbound cycle lane along Newmarket Road.	£4,250,000	£6,120,000	44%
AT.02	Provision of continuous segregated outbound cycle lane along Newmarket Road.	£4,250,000	£6,120,000	44%
AT.03	Promotion of Park and Cycle from the P&R site.			£100,000
		£15,880,000	£22,865,000	£6,100,000

Table 6.2: Cost Estimates of Schemes in Package A2 Hybrid – East of Current Newmarket Road Park and Ride

Ref	Scheme	Capital Costs		Revenue Costs
		Without Optimum Bias	With Optimum Bias	
HW.01	Additional lane(s) on Newmarket Road to east of Airport Way junction.	£15,000,000	£21,600,000	44%
JC.09	Signalisation of the junction of Newmarket Road and Airport Way.	£1,460,000	£2,100,000	44%
JC.10	Signalisation and Reconfiguration of Quay Interchange	£2,585,000	£3,722,000	44%
PR.02	Relocation of Park and Ride to south of Newmarket Road and east of Airport Way.	£5,985,000	£8,620,000	44%
		£25,030,000	£36,040,000	£0

6.2.2 The following table summarises the scheme costs calculations for the economic case from the WebTAG Unit A1.2 Scheme Costs. The headings in the table have the following definitions and assumptions:

- Capital and cost estimates are given for the year 2021.
- Optimism bias has been set individually per item at 44%.
- Revenue costs are service costs for five years. No optimism bias has been applied.
- Total cost is the capital costs with optimism bias plus revenue costs.
- Opening Year cost is the expected cost in the year of construction (assumed 2025) in 2025 prices, with an assumed construction cost yearly inflation of 4%.
- 2010 Deflated is the cost in 2010 prices. This uses the GDP deflator from the July 2020 version of the WebTAG data book.
- 2010 Discounted is the cost discounted back to 2010 using the Treasury Green Book discount rate of 3.5% per year.
- PVC stands for Present Value Costs and includes for VAT at the indirect tax correction factor of 1.19.
- All costs are given in millions of pounds.

Table 6.3: Cost Estimates of Schemes in Package A2 Hybrid (£m)

Package Section	Capital		Revenue	Total	Opening Year (2025)	2010 Deflated	2010 Discounted	PVC
	Without Optimism Bias	With Optimism Bias						
West of Current Newmarket Road Park and Ride	15.88	22.87	6.10	28.97	33.89	25.60	15.28	18.18
East of Current Newmarket Road Park and Ride	25.03	36.04	0	36.04	42.16	31.85	19.01	22.62
A2 Hybrid	40.91	58.91	6.10	65.01	76.05	57.45	34.29	40.80

6.3 Medium Term Costs

6.3.1 The recommended package of measures to be taken forward in the medium term are those identified within 'B1 – High Quality Public Transport Improvement scheme via Coldham's Lane and Mill Road'. The costs of the individual schemes contained within the package are listed in [Table 6.4](#) and [Table 6.5](#), reflecting works to the west and east of the Newmarket Road Park and Ride respectively.

Table 6.4: Cost Estimates of Schemes in Package B1 – West of Newmarket Road Park and Ride

Ref	Scheme	Capital Costs	Capital Costs		Revenue Costs
		Without Optimism Bias	With Optimism Bias	% Optimum Bias Applied	
BW.11	Offline (south) - between Coldham's Lane and P&R via Marshall's Airport (east of runway).	£23,750,000	£34,210,000	44%	
BG.02	Bus Gate on Mill Road (at bridge over rail line) [Note: This was introduced as part of Covid-19 measures during the production of the Business Case].	£0	£0	n/a	
BS.02	New bus service between the station, Mill Road, Cambridge East and the Park and Ride.				£3,000,000
AT.04	Provide a new shared use ped/cycle bridge over the rail line and Coldham's Lane to link the existing 'Tins' cycle path with the airport site.	£1,920,000	£2,760,000	44%	

Ref	Scheme	Capital Costs	Capital Costs		Revenue Costs
		Without Optimism Bias	With Optimism Bias	% Optimum Bias Applied	
AT.06	Provide new cycle lanes along Coldham's Lane between the airport site and the Sainsbury's roundabout and enhance existing cycle provision along Brooks Road.	£1,415,000	£2,040,000	44%	
AT.07	Provide a new off-carriageway ped-cycle link from the airport site to connect into the Chisholm Trial via Barnwell Road and Coldham's Common.	£2,410,000	£3,470,000	44%	
		£29,495,000	£42,480,000		£3,000,000

Table 6.5: Cost Estimates of Schemes in Package B1 – East of Newmarket Road Park and Ride

Ref	Scheme	Capital Costs	Capital Costs		Revenue Costs
		Without Optimism Bias	With Optimism Bias	% Optimum Bias Applied	
BW.04	Online - between Park and Ride and A14.	£4,885,000	£7,035,000	44%	
		£4,885,000	£7,035,000		

Table 6.6: Cost Estimates of Schemes in Package B1 (£m)

Package Section	Capital		Revenue	Total	Opening Year (2030)	2010 Deflated	2010 Discounted	PVC
	Without Optimism Bias	With Optimism Bias						
West of Current Newmarket Road Park and Ride	29.50	42.48	3.00	45.48	64.73	43.64	21.93	26.10
East of Current Newmarket Road Park and Ride	4.89	7.04	0	7.04	10.01	6.75	3.39	4.04
Package B1	34.39	49.52	3.00	52.52	74.74	50.39	25.32	30.14

6.4 Summary

6.4.1 Scheme costs have been broken down by package and east/west of the existing park and ride location. The following table summarises the present value costs (PVCs) from the tables above and presents the total for the whole scheme.

Table 6.7: PVC Estimates of Full Scheme (£m)

Package Section	PVC
Package A2 Hybrid	40.80
Package B1	30.14
Combined Packages	70.94

7.0 Value for Money

This section demonstrates the value for money of the Cambridge Eastern Access scheme.

BUS
AND

7.1 Overview

7.1.1 This chapter demonstrates the value for money which will be achieved through the implementation of the Cambridge Eastern Access scheme. Whilst the limitations of the Cambridge Paramics Model have not enabled a BCR to be generated, the many areas within which value for money will be secured are established in relation to the overarching objectives for the corridor, and the typical impacts of transport proposals to be taken into account in the evaluation of transport proposals¹.

7.2 Capacity

7.2.1 The objectives investment in the corridor must seek to achieve are detailed within the Strategic Case. The first relates to capacity, and specifically the need to: "Provide the public transport capacity to accommodate the projected increase in travel demand associated with housing and employment growth in the period up until 2026".

7.2.2 The Cambridge Eastern Access scheme will deliver the increase in capacity required within the corridor in several ways, specially through:

- The relocation of the existing Park and Ride facility on Newmarket Road to create a new multi-modal transport interchange to the east of Airport Way, benefiting from additional parking and ability to accommodate more services to more destinations.
- The reallocation of road space with the provision of both inbound and outbound bus lanes on Newmarket Road between the Elizabeth Way roundabout and the Leper Chapel.
- The creation of a fully segregated busway between Coldham's Lane and the new transport interchange.
- The introduction of a comprehensive intelligent traffic management system, enabling the flow of general traffic to be regulated to smooth the flow of buses along Newmarket Road.

7.2.3 Because of these enhancements, journey time savings on bus services into the city centre will be secured despite, significant increases in overall travel demand by 2026. The reduced journey times and improvements in reliability secured on the back of more dedicated road space for buses, will in turn see benefits in relation to vehicle operating costs, and the scope for further investment in fleet improvements, transforming the overall quality of the journey experience.

7.2.4 Where additional capacity has been provided for general traffic, this is associated with the need to accommodate more queuing vehicles outside of the urban area. The widening of Newmarket Road to the east of Airport Way does just this and enables the reprioritisation of road users within the city itself.

7.2.5 The package of measures will see an overall reduction in highway capacity. In particular, the reconfiguration of major intersections at Elizabeth Way and Barnwell Road roundabouts, and the introduction of a permanent bus gate on Mill Road will reduce ability of the corridor to accommodate increasing volumes of traffic. In conventional transport economic terms, this will lead to disbenefit to road users, but in due course this will help to deliver the reduction in demand for road space which is needed to address policy concerns over air quality and the climate crisis.

7.2.6 However, such measures and the others which form part of the overarching scheme, herald a step-change in the quality and capacity of sustainable transport movements within the corridor. The reference case highlights that the corridor will be operating over capacity without intervention by 2026, and without major changes in the current offer the corridor will remain unattractive to pedestrians, cyclists and bus users.

7.2.7 With little scope or desire to increase highway capacity, the interventions to reallocate road space will provide a more attractive and resilient network, and one which is able to accommodate the movement of larger numbers of people sustainably.

7.2.8 The pertinence of such an approach will increase further still if the site of Cambridge Airport is allocated in the new Greater Cambridge Local Plan, with the thousands of additional homes and jobs which could

¹ [Value for money framework \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/414811/value-for-money-framework.pdf)

potentially be served. If the site is developed then the CEA scheme could unlock very substantial land value uplift and associated Wider Economic Impacts.

7.3 Connectivity

- 7.3.1 The second objective of the corridor focuses on the importance of connectivity and the need to “Improve accessibility to jobs and opportunities by public transport and active travel modes through a reduction in journey times and increased ease of interchange”.
- 7.3.2 At the heart of this objective is the need to provide realistic and attractive alternatives to the car, and open up development opportunities in the east of the city, most notably on land anticipated to be developed for housing and employment provision within the current site of Cambridge Airport.
- 7.3.3 The outputs of the Cambridge Eastern Access scheme will enhance connectivity across the east of the city through:
- The provision of a new multi-modal transport interchange, serving fast and frequent routes to the city centre, Addenbrookes Hospital and Cambridge Station.
 - A dedicated busway between Coldham’s Lane and the A14, opening up the potential development of safeguarded land on the Airport site and accommodating services that will offer more direct connections to Cambridge Station.
 - The reconfiguration of major junctions on Newmarket Road with Elizabeth Way and Barnwell Road to provide direct surface level crossings for pedestrians and cyclists.
 - Continuous, safe and segregated cycle lanes along the length of Newmarket Road, together with other ‘missing links’ in the network in the east of the city.
- 7.3.4 Such interventions will generate social, economic and environmental benefits to local communities and the whole city. At a macro-level will improve access to jobs not just within the city centre, but in and around Addenbrookes Hospital in the south of the city, together with those generated as part of the redevelopment of the airport site.
- 7.3.5 In turn the size of the labour market will increase for those businesses, with recruitment and retention improved as a result of easier to reach employment. The Cambridge economy relies on a large proportion of the workforce commuting into the city from surrounding towns and villages. The Cambridge Eastern Access scheme will enable those travelling into the city from the east to access many of the major employment centres sustainably from the new transport interchange.

7.4 Communities

- 7.4.1 The third objective for the scheme focuses on the desire to create communities where people want to live, and businesses want to invest. The objective requires investment in the corridor to: “Contribute towards the creation of safe and attractive communities, by reducing emissions, severance and the dominance of traffic, improving personal security and safety”.
- 7.4.2 In some form, each of the individual measures which comprise the overarching Cambridge Eastern Access scheme, contribute towards this goal.
- 7.4.3 The reallocation of road space to sustainable travel modes, the greater control of general traffic through the introduction of an intelligent traffic management system, and the provision of additional queuing capacity outside of the urban area will address concerns associated with noise, air quality, and the emission of greenhouse gases.
- 7.4.4 Severance, safety and personal security issues will also be alleviated by the proposed investment in the corridor. The severing effects of the Elizabeth Way roundabout and the dominance of traffic on Newmarket Road generally will be reduced through the reconfiguration of several major junctions and provision of direct, surface level crossings.

- 7.4.5 The replacement of the subways at Elizabeth Way will not only reduce the fear of crime but transform the gateway into the city and access to the social, economic and cultural opportunities which lay beyond, whilst the emphasis placed on active travel will generate more vibrant communities and 'eyes on the street', thereby introducing more natural surveillance and designing out crime concerns.

7.5 Conclusion

- 7.5.1 Without investment to transform the sustainable transport offer in the east of the city, Cambridge will not be able to maximise opportunities for housing and economic growth. Queuing and delays on the network will increase in their impact and frequency, which investment in additional highway capacity would not be able to mitigate. Nor would it support wider social and environmental priorities.
- 7.5.2 The importance of the success of the Cambridge economy goes beyond the city limits. It's role as a vitally important economic powerhouse will help drive the nation's recovery from COVID-19 but it will require the support of a transport network with the capacity and connectivity to facilitate its growth. It is only through investing in high quality, safe, attractive and comprehensive infrastructure to support pedestrians, cyclists and public transport users that this can be achieved.
- 7.5.3 With a prize so great, and the implications of the success of the Cambridge economy felt so wide, it is imperative that confidence can be placed in the nature of the interventions contained within the Cambridge Eastern Access scheme. This Business Case seeks to provide that confidence and demonstrate the immensely positive impacts and benefits the investment will have at both a strategic and local level.
- 7.5.4 It is therefore considered that a **high value for money** is likely to be achievable for the scheme.

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