Greater Cambridge Partnership

NEWMARKET ROAD SCHEME

Outline Business Case

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CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1 CAMBRIDGE EASTERN ACCESS

1.1.1. The Cambridge Eastern Access (CEA) study area covers eastern Cambridge, with the main access into the city provided by Newmarket Road, consisting of the A1134/A1303 between Elizabeth Way and the Quy Interchange and where it connects with the main Strategic Road Network at A14 Junction 35. Newmarket Road is an important multi-modal radial route, providing access to Newmarket Road Park & Ride, located approximately 500m west of the junction with Airport Way, direct access to key trip attractors including retail parks and Cambridge United's ground and onwards to the city centre. It also provides access to local services and amenities for the existing communities along the route including Barnwell, Abbey and Fen Ditton and directly serves the new community at Marleigh and the planned strategic mixed-use redevelopment of Cambridge Airport.

1.1.2. Promoted by the Greater Cambridge Partnership (GCP), the CEA programme includes a number of transformative schemes to improve the attractiveness of sustainable modes of travel as an alternative to using cars when travelling in and through the eastern side of Cambridge. This will lead to an increase in the mode share for sustainable transport due to increased capacity and connectivity, with associated benefits for the existing and emerging local communities and those living beyond it.

1.1.3. In light of the climate emergency declared by the UK government, the CEA programme focuses on schemes that will deliver a step-change in active travel and public transport infrastructure while also supporting placemaking and the regeneration of existing communities and the sustainable development of new communities in eastern Cambridge.

1.1.4. The CEA programme comprises:

- **Phase A**: improvements to walking, cycling and public transport on Newmarket Road as well as the relocation of the existing Park and Ride Site;
- **Phase B**: a high-quality public transport route through the Cambridge Airport site; and
- Longer-term upgrades to the Cambridge to Newmarket rail line.

1.1.5. The CEA programme is part of GCP's vision of -

"Creating better and greener transport networks, connecting people to homes, jobs, study and opportunity."

1.1.6. As one of four public transport corridor schemes, the proposals for CEA support GCP's aim to develop a sustainable transport network for Greater Cambridge that keeps people, business and ideas connected as the area continues to grow, and makes it easy to get into, out of, and around Cambridge by public transport, by bike and on foot. Alongside these public transport corridor schemes a number of active travel projects have been designed to create further safe and attractive routes for active travel journeys.

1.1.7. Central to the success of the schemes delivering improved facilities for sustainable transport users is the Making Connections and City Access Programme. This includes demand management and enhanced public transport measures to encourage residents and visitors away from cars to reduce levels of traffic in the city centre and around key employment hubs. In doing so, it will support the reallocation of road space to sustainable modes.

1.2 NEWMARKET ROAD SCHEME

1.2.1. The Newmarket Road scheme provides Phase A1 of the CEA programme. The scheme includes transformational and ambitious active travel and public transport measures along Newmarket Road aimed a enabling a modal shift from private car to sustainable and active modes and supporting sustainable growth. It provides improvements to walking, cycling and public transport through the extension and enhancement of current cycle lanes, bus lanes and footways, as well as the introduction of direct and controlled crossings at junctions.

1.2.2. A 'decide and provide' approach has been adopted for the development of the Preliminary Scheme Design, prioritising high quality and consistent infrastructure for pedestrians and cyclists along Newmarket Road over the provision of bus lanes and general vehicle capacity, consistent with the modal hierarchy (pedestrians, cyclists, public transport users then vehicles). The scheme has been designed to the latest guidance set out in Local Transport Note (LTN) 1/20 Cycle Infrastructure Design. LTN 01/20 sets out the design standards required for high-quality, safe cycle infrastructure that is required to encourage a step change in cycling.

1.2.3. The scheme is currently programmed to be completed in 2025 and cost £34.5m. Appendix A presents the Preliminary Scheme Design.

1.3 OUTLINE BUSINESS CASE

1.3.1. A Strategic Outline Business Case (SOBC) for the Cambridge Eastern Access programme was produced in April 2021. The SOBC set out the outline case for enhancing sustainable transport provision in the east of the city to make travel by walking, cycling and public transport more attractive and reduce reliance on the car. The schemes identified in the SOBC included a package of interventions along Newmarket Road comprising of junction improvements, segregated cycle tracks and additional bus lanes combined with the relocation of the existing Park and Ride to a location east of Airport Way.

1.3.2. The SOBC identified that 'doing nothing' is not an option along Newmarket Road, with a congested network undermining the ability to deliver housing and employment growth. Significant enhancements are required to increase public transport capacity, increase the attractiveness of walking and cycling and reduce community severance. The recommendations set out in the SOBC were for a package of interventions to complement the City Access Programme and for a phased approach to be taken.

1.3.3. This Outline Business Case (OBC) addresses the further development of the scheme design and presents the strategic and value for money case for the proposals, along with setting out the basis for the funding and delivery of the scheme. In doing so, it sets out the case to support the decision to proceed to the procurement stage of the project.

1.3.4. The OBC follows HM Treasury's Five Case Model addressing the five dimensions of:

- Strategic
- Economic
- Financial
- Commercial
- Management

2 STRATEGIC CASE

2.1 INTRODUCTION

2.1.1. This chapter sets out the Strategic Case for improvements to walking, cycling and public transport on Newmarket Road, as part of the CEA programme. Since the SOBC, significant work has been undertaken to assess the impact of the proposed options on the traffic flow and network performance; and the interaction with the various GCP schemes which are being developed in parallel.

2.1.2. Alongside the SOBC, this Strategic Case references the other work completed for the CEA programme to date:

- Stage 1 Baseline Report;
- Stage 2 Concept Design Report;
- Environmental Constraints Report; and
- Public Consultation Report.

2.2 SCHEME OBJECTIVES

CITY DEAL PROGRAMME

2.2.1. The Newmarket Road scheme forms one project within the wider programme of sustainable travel schemes being progressed by the GCP funded by the City Deal. The Greater Cambridge City Deal was signed between government and local representatives in 2014. The GCP was formed following the deal made with government and is the local delivery body, responsible for overseeing the delivery of the City Deal and the promotion of local economic growth and development. GCP aims to:

- Deliver up to £1 billion of investment, providing vital improvements to infrastructure, supporting and accelerating the creation of 44,000 new jobs and 33,500 new homes to Greater Cambridge by 2031; and
- Enable a new wave of innovation-led growth in the Greater Cambridge area by investing in infrastructure, housing and skills, thereby addressing housing shortages and transport congestion bottlenecks that will facilitate its continued growth and a continuation of the ‘Cambridge Phenomenon’.

2.2.2. This investment fund offers funding towards proposed infrastructure in the region to help achieve these aims. To ensure infrastructure investment aligns with this, the Greater Cambridge City Deal Assurance Framework has established key strategic objectives against which projects are prioritised, these are:

- To nurture the conditions necessary to enable the potential of Greater Cambridge to create and retain the international high-tech businesses of the future which bring investment into the UK.
- To better target investment to the needs of the Greater Cambridge economy by ensuring those decisions are informed by the needs of businesses and other key stakeholders such as the universities.
- To markedly improve connectivity and networks between clusters and labour markets so that the right conditions are in place to drive further growth.

- To attract and retain more skilled people by investing in transport and housing whilst maintaining a good quality of life, in turn allowing a long-term increase in jobs emerging from the internationally competitive clusters and more University of Cambridge spin-outs.

2.2.3. The Newmarket Road scheme effectively meets the strategic objectives of the City Deal:

- The scheme will improve active travel connectivity and networks in the east of Cambridge providing inclusive access between existing communities and key employment sites, levelling-up access to opportunities across the city.
- The scheme links effectively into strategic growth sites - it will support the building of sustainable new homes and community infrastructure at Marleigh development and support the allocated mixed-use development at Cambridge Airport (Marshalls).
- The scheme reflects the need to deliver substantial travel behaviour change, to accommodate additional travel demand by sustainable modes of travel. Designing for increasing car travel demand is unsustainable and therefore the scheme identifies enhancements to Newmarket Road that are focussed on reallocating road space to walking, cycling and public transport both holistically as well as addressing local community severance issues.
- The scheme will enhance the quality of life for existing residents by reducing community severance by improving inclusive access to local community facilities, support networks, friends, family and jobs,

SCHEME OBJECTIVES

2.2.4. The objectives for the Newmarket Road scheme have been identified in the context of the national, regional and local policies and plans set out in Section 2.5 and in order to address the problems, challenges and opportunities set out in Section 2.6.

2.2.5. In line with DfT advice in TAG: The Transport Analysis Process, they are presented as a hierarchy of objectives comprising:

- **High-level or strategic outcomes** – the desired end state, reflecting the aims and ambition for the area. The scheme will contribute to these, but not always in a direct manner
- **Specific or intermediate objectives** – representing the direct effects of the scheme
- **Operational objectives** – the outputs necessary for the specific objectives to be achieved

2.2.6. As far as possible, the specific and operational objectives are SMART (specific, measurable, achievable, realistic, and time-constrained, i.e., being deliverable within the timeframe of the project).

Strategic Objectives

2.2.7. Strategic objectives for the CEA programme have been established based upon the key objectives set out in the SOBC, as well as key themes from national and sub-national policy and strategy. The strategic objectives are:

- **Capacity** – Accommodate the projected increase in travel demand associated with housing and employment growth.
- **Connectivity** – Improve accessibility to jobs and opportunities by public transport and active travel modes through a reduction in journey times and increased ease of interchange.
- **Communities** – Creation of safe and attractive communities by reducing emissions and the dominance of traffic, particularly in residential areas.

Specific objectives

2.2.8. Specific objectives for the Newmarket Road scheme have been developed to both support strategic objectives and respond to the local challenges identified and need for intervention. They are as stated below:

- SO1 – Increase levels of walking and cycling by providing high quality and attractive infrastructure along Newmarket Road;
- SO2 – Increase patronage levels on bus services routing along Newmarket Road;
- SO3 – Ensure better reliable commuter times using buses for employment in the city centre;
- SO4 – Support the delivery of new housing and job creation through sustainable transport improvements that would serve current and future housing sites along Newmarket Road;
- SO5 – Support Cambridge in achieving continued economic growth;
- SO6 – Enhance levels of safety for cyclists and pedestrians;
- SO7 – Reduce severance for existing communities along Newmarket Road;
- SO8 – Contribute towards improving local air quality and reducing carbon emissions through modal shift to sustainable modes of travel.

2.2.9. Below in Table 2-1 there is a demonstration of how the eight specific Newmarket Road objectives link with the three strategic objectives, as well as stating performance measures for the stated objectives.

Table 2-1 - Links between strategic and specific objectives with performance indicators

Objectives		Performance Measures
Capacity – Accommodate the projected increase in travel demand associated with housing and employment growth		
SO1	Increase levels of walking and cycling by providing high quality and attractive infrastructure along Newmarket Road	Increase in uptake of active modes along Newmarket Road
SO2	Increase patronage levels on bus services routing along Newmarket Road	Increase in number of people using bus services routing along Newmarket Road
Connectivity – Improve accessibility to jobs and opportunities by public transport and active travel modes through a reduction in journey times and increased ease of interchange		
SO1	Increase levels of walking and cycling by providing high quality and attractive infrastructure along Newmarket Road	Increase in uptake of active modes along Newmarket Road
SO3	Ensure better reliable commuter times using buses for employment in the city centre	Increase in bus service reliability along Newmarket Road during the weekday peak periods

SO4	Support the delivery of new housing and job creation through sustainable transport improvements that would serve current and future housing sites along Newmarket Road	Walk, cycle and public transport mode share of Marleigh and Airport development
SO5	Support Cambridge in achieving continued economic growth	An increase in the number of the working population able to access key employment centres within 30 minutes using the core public transport network and active modes
Communities – Creation of safe and attractive communities by reducing emissions and the dominance of traffic, particularly in residential areas		
SO6	Enhance levels of safety for cyclists and pedestrians	Reduction in KSI along Newmarket Road
SO7	Reduce severance for existing communities along Newmarket Road	Increased number of people walking and cycling north-south across Newmarket Road and key locations
SO8	Contribute towards improving local air quality and reducing carbon emissions through modal shift to sustainable modes of travel	Reduction in measurable levels of NOx and PM10 pollution Reduction in cases of reported health problems associated with traffic congestion - including respiratory and heart related illnesses

2.3 SCOPE

2.3.1. The scope of the Newmarket Road scheme has been defined based on the objectives of the scheme which have in turn been developed based on the problems and opportunities identified. The scope of the scheme is as follows:

- Provision of LTN 01/20 compliant high-quality infrastructure for pedestrians and cyclists between Elizabeth Way and Airport Way that deliver on the DfT's Gear Change vision for cycling and walking, including:
    - Coherent, direct, safe, comfortable, attractive and segregated footways and cycle tracks
    - At-grade and direct pedestrian and cycle crossings
    - Infrastructure that supports east-west movements as well as connects and supports north-south movements across Newmarket Road
- Provision of new and improved junctions that deliver upon the objectives as set out in the Transport Investment Strategy, including:
    - Reconfiguration of traffic-signal controlled junctions to provide enhanced pedestrian crossing facilities and cycle infrastructure
    - Bus priority signal infrastructure
    - Continuous footways that prioritise pedestrian movements at lightly trafficked side roads

- Provision of new and improved facilities for buses and bus users, aligning with the National Bus Strategy, Bus Back Better:
    - Provision of bus lanes where road reallocation space allows
    - Bus priority at signals
    - Floating bus stops where road space allows

2.3.2. The scope of the scheme excludes:

- Revenue support for bus services
- The access works and new Park and Ride site east of Airport Way
- Access and off-site highway works delivered by new developments along Newmarket Road
- Walking and cycling improvements beyond those specified (i.e., area-wide improvements)

2.3.3. The area considered for improvements does not extend beyond Airport Way junction in the east and Elizabeth Way Roundabout in the west.

2.4 INTERDEPENDENCIES

2.4.1. This section summarises the other programmes and projects that the Newmarket Road scheme may interact with or depend upon. The Newmarket Road improvements are closely linked to a number of GCP schemes which are being developed in parallel with this scheme.

CITY ACCESS AND MAKING CONNECTIONS

2.4.2. The City Access programme aims to improve access to Greater Cambridge by introducing measures to reduce congestion, encourage active travel and improve air quality. The city access programme includes Making Connections, road hierarchy reclassification and the Cycling Plus schemes along key routes into the city. There are clear links between the City Access programme and the Newmarket Road scheme which will improve access by sustainable transport to the city centre and existing and future key employment sites and encourage modal shift.

2.4.3. The Making Connections programme proposes to transform the public transport system in Cambridge, reduce car use and congestion, and improve walking and cycling with revenue funding for the step-change in public transport raised from a road user charging zone or changes to parking charges. The demand management measures proposed by the Making Connections programme are interdependent with being able to deliver bold, transformational, and ambitious improvements to Newmarket Road that reduce car capacity in favour of delivering high quality active travel and bus priority infrastructure.

2.4.4. On the main radial roads into Cambridge, such as Newmarket Road, schemes will provide attractive high-quality infrastructure to encourage people to walk, cycle or use other forms of active travel to access local destinations as well as undertake longer trips across the city supporting the aims of City Access and Making Connections.

GCP CORRIDOR SCHEMES

2.4.5. As the delivery body for the Greater Cambridge City Deal, GCP is delivering a comprehensive package of sustainable transport initiatives, working with local authority partners to create a world-class network that can meet the needs of the area now and into the future.

2.4.6. Each of the four corridor schemes creates vital links with key employment hubs across the city: from Waterbeach to the north; improving access from the east; providing links to Babraham Research Campus and Granta Park to the southeast; and extending westward toward Cambourne via Bourn Airfield. The corridors are:

- Cambourne to Cambridge
- Waterbeach to Cambridge
- Cambridge South East
- Cambridge Eastern Access

2.4.7. The development of infrastructure is well underway, offering better public transport and active travel routes along the four corridors identified as essential to link growing communities to the north, southeast, east and west.

2.4.8. For the Newmarket Road scheme to succeed in preventing further growth in vehicular traffic, a city-wide approach to deterring cars will be required. Hence the extent of the scheme's success depends on the successful implementation of the three neighbouring corridor schemes.

MARLEIGH

2.4.9. The Phase 1 Marleigh access signalised junction has been completed along with a new section of off-road segregated footway and cycleway along the northern side of Newmarket Road between the Car centre access and the BP garage.

2.4.10. The Newmarket Road scheme seeks to integrate the planned Marleigh improvements to Newmarket Road junctions and walk and cycle infrastructure where possible, with changes proposed to ensure consistent end-to-end active travel infrastructure is delivered along Newmarket Road consistent with the LTN 01/20 principles. The proposed scheme will support the Marleigh development by providing direct and attractive active travel infrastructure to local destinations as well as the city centre, encouraging existing and future residents to travel by active modes of travel.

GREATER CAMBRIDGE GREENWAYS

2.4.11. The Greater Cambridge Greenways project aims to create a walking, cycling and equestrian travel network made up of 12 routes that will link local villages to Cambridge. The planned Bottisham Greenway includes a short section of Newmarket Road between the Airport Way roundabout and the Park and Ride site.

2.4.12. The consultation undertaken in Autumn 2019 showed two route options from the shared-use path on the northern side of Newmarket Road. Option A via the Marleigh access road adjacent to the Park and Ride and Option B direct from Airport Way roundabout (requiring third party land).

2.4.13. The proposals for the Bottisham Greenway are considered as part of the concept and detailed design stages for Newmarket Road enhancements. The Newmarket Road scheme will enable future users of the Bottisham Greenway to continue their journey by bicycle along a direct and attractive route along Newmarket Road.

CHISHOLM TRAIL

2.4.14. The Chisholm Trail is a new walking and cycling route, creating a mostly off-road and traffic-free route between Cambridge Station and Cambridge North Station. It will link to Addenbrooke's Hospital and the Biomedical Campus in the south and to the business and science parks in the north. In all, the full trail provides a 26km route from Trumpington and Addenbrooke's to St Ives. The central section from Cambridge Station to Cambridge North Station, which this project deals with, is a 3.5km route.

2.4.15. Phase 1 of the trail is complete and will result in an increase in the number of pedestrians and cyclists accessing Newmarket Road. The Newmarket Road scheme will enable cyclists to access the Chisholm Trail from high-quality segregated cycling infrastructure along Newmarket Road providing an inclusive and consistent high-quality network of routes through east Cambridge.

2.5 POLICY CONTEXT

2.5.1. This section provides the policy context within which the development of the Newmarket Road scheme has been considered. It demonstrates that the delivery of the Newmarket Road proposals, as part of the overall CEA programme, align with the strategic objectives of policies, strategies and studies at local, regional, and national levels, as summarised in Table 2-2**.**

Key:

- Scheme strongly aligns with strategy and would help to deliver its objectives
- Scheme would help to deliver the objectives of the strategy
- Scheme would have only a small positive or neutral impact on the strategic objectives
- Scheme would have a negative impact on the strategic objectives

Table 2-2 Policy Summary and Strategic Fit

Policy	Key Strategic Objectives	Newmarket Road scheme relevance	Fit
National Policy			
Net Zero Strategy (2021)	▪ Decarbonising all sectors of the UK economy to meet net zero target by 2050.	Provision of cycling and walking network encourages active travel, reducing reliance on the car and greenhouse gas emissions.	●
Decarbonising Transport (2021)	▪ The pathway to net zero transport in the UK requires the delivery of a world class cycling and walking network by 2040	The scheme will deliver high quality active transport infrastructure supporting local as well as cross-city journeys to be made on foot and by bicycle.	●

Policy	Key Strategic Objectives	Newmarket Road scheme relevance	Fit
National Planning Policy Framework (updated 2021)	▪ To provide strong, vibrant, healthy communities ▪ To contribute to protecting and enhancing our natural, built, and historic environment; including making effective use of land	The Newmarket Road scheme will support the delivery of sustainable developments at Marleigh and the allocated mixed-use redevelopment of Cambridge Airport as well as enhancing access for existing communities along Newmarket Road.	●
Environment Act (2020)	▪ Protection of the natural environment from the effects of human activity ▪ Protection of people from the effects of human activity on the natural environment ▪ Maintenance, restoration or enhancement of the natural environment ▪ Monitoring, assessing, considering, advising or reporting on environmental protection	The project has the potential to deliver positive gain for biodiversity. Considered design will protect several Sites of Special Scientific Interest (SSSI) as well as creating new habitat in other areas.	●
Ten Point Plan for a Green Industrial Revolution (2020)	UK to be the world's number one centre for green technology, laying the foundations for economic growth, delivering Net Zero emissions.	Provision of a cycle network encourages active travel, reducing reliance on the car and greenhouse gas emissions.	●
Gear Change (2020)	▪ Safer streets for cycling and walking ▪ Cycling and walking at the heart of transport decision making ▪ Empowering and encouraging local authorities ▪ Healthier, happier and greener communities	Delivery of the Newmarket Road scheme will provide a safe and attractive cycling environment supporting the government aspirations for half of all journeys in towns and cities to be cycled or walked by 2030	●
Cycling and Walking Investment Strategy (2020)	Cycling and walking to be the natural choice for short journeys, and to increase cycling and walking levels.	Delivery of the Newmarket Road scheme will provide existing and future communities in the east of Cambridge with access to a well-connected cycle network.	●

Policy	Key Strategic Objectives	Newmarket Road scheme relevance	Fit
Cycle Infrastructure Design LTN 1/20 (2020)	Guidance to support the delivery of high-quality cycle infrastructure to deliver the ambition of making cycling and walking the natural choices for short journeys or as part of a longer journey with supporting objectives to increase cycling and walking levels.	The Newmarket Road scheme has been developed in line with LTN 01/20 and prioritises walking, cycling and public transport infrastructure over vehicle capacity.	
Transport Investment Strategy (2017)	▪ To create a more reliable, less congested and better-connected transport network ▪ To support the creation of new housing	Providing an alternative mode of transport to the car (bus and cycle), the demands on the road network will be reduced, and the network will be better able to cope with increased demand from planned housing and population growth.	
Regional Policy			
Cambridgeshire & Peterborough Independent Commission on Climate (2020)	Better air quality and access to nature, to improve health and wellbeing.	Reducing the number of journeys made by car will reduce levels of greenhouse gas emissions and improve local air quality. An uptake of active travel will contribute to better health and wellbeing.	
England's Economic Heartland Transport Strategy (2020)	Improve local and rural connectivity to support a green recovery from COVID-19 and sustainable growth, whilst reaching Net Zero by 2050.	The scheme will enhance sustainable transport provision in the east of the city, providing surrounding communities with access to the city. Doing so through active travel will reduce greenhouse gas emissions.	
The Cambridgeshire & Peterborough Local Transport Plan (2019)	Aims to connect all new and existing communities sustainably and provide an integrated rural public transport network.	Providing a sustainable and active travel network will better connect communities in a sustainable way.	
Local Policy			

Policy	Key Strategic Objectives	Newmarket Road scheme relevance	Fit
Cambridge Local Plan (2018)	Identifies a need for: ▪ 14,000 new homes ▪ 22,000 new jobs ▪ Areas of Major Change	The scheme will provide connections for the strategic developments currently being built-out and allocated along Newmarket Road and provide active travel commuting opportunities to key employment sites.	●
South Cambridgeshire Local Plan (2018)	To promote and deliver sustainable transport and infrastructure.	The scheme will provide high quality sustainable transport infrastructure supporting short and longer distance journeys into the city through east Cambridge.	●
Emerging New Joint Greater Cambridge Local Plan	Aims to make Cambridge a place where a big decrease in climate impacts correlates with a big increase in quality of life.	Increasing active travel is proven to increase quality of life and will also contribute to a reduction in climate impacts.	●
Greater Cambridge City Deal	Aims to: ▪ Create an infrastructure investment fund with an innovative Gain Share mechanism ▪ Deliver over 400 apprenticeships for young people ▪ Provide £1 billion of local and national public sector investment, enabling an estimated £4 billion of private sector investment in the Greater Cambridge area ▪ Create 45,000 new jobs	The scheme will provide high quality active travel and public transport infrastructure to better connect existing and new communities to the full range of jobs opportunities across the city.	●

2.5.2. The assessment of a long list of potential scheme options against relevant policies and strategies is described in the Options Appraisal Report (OAR)[1].

[1] WYG (August 2020) Cambridge Eastern Access Transport Study: Options Appraisal Report

2.5.3. The scheme is judged to have a very good overall fit with national, regional and local policies and strategies. It will, provide a step-change in connectivity and encourage an increase in walking, cycling and public transport trips. It will support planned housing growth and development in east Cambridge and address local severance issues for existing local communities.

2.6 PROBLEMS IDENTIFIED

2.6.1. This section sets out what the strategic drivers are for the Newmarket Road scheme investment.

ECONOMIC CONTEXT

The Cambridge Economy

2.6.2. Cambridge is home to one of the fastest growing economies in Europe and is renowned for being a leading centre for research, innovation and technology. As such, the 'Cambridge Phenomenon' is a term that describes the thriving high-tech and biotech industries. The current vision of the GCP is to '*unleash a second wave of the Cambridge Phenomenon, with the aim of securing sustainable economic growth and quality of life for the people of Cambridge and South Cambridgeshire.'*

2.6.3. Rapid business creation and growth associated with the 'Cambridge Phenomenon' has created jobs and prosperity in Greater Cambridge, and for the region as a whole. The city embodies the key foundations of the National Industrial Strategy for the UK to become the world's most innovative economy and has built a reputation as an attractive location to invest and expand businesses, bringing businesses to Cambridge, with the birth of 5,130 new businesses in 2019.[2]

2.6.4. The Cambridgeshire and Peterborough Local Industrial Strategy[3] indicates that the growth felt in Cambridgeshire has not been felt in the same way across the whole region. The economy of Greater Cambridge has been performing most strongly, with benefits felt in the market towns of Ely and St Ives. The east of Cambridge is however not experiencing the same benefits, where wages are considerably lower, which is also reflected in the indices of multiple deprivation. The Newmarket Road scheme will improve inclusive transport connectivity for these communities to the key centres of employment and education, improving access to jobs and training. The scheme will improve safe, inclusive and sustainable access to the full range of community, education and employment opportunities the city has to offer.

Employment and Skills

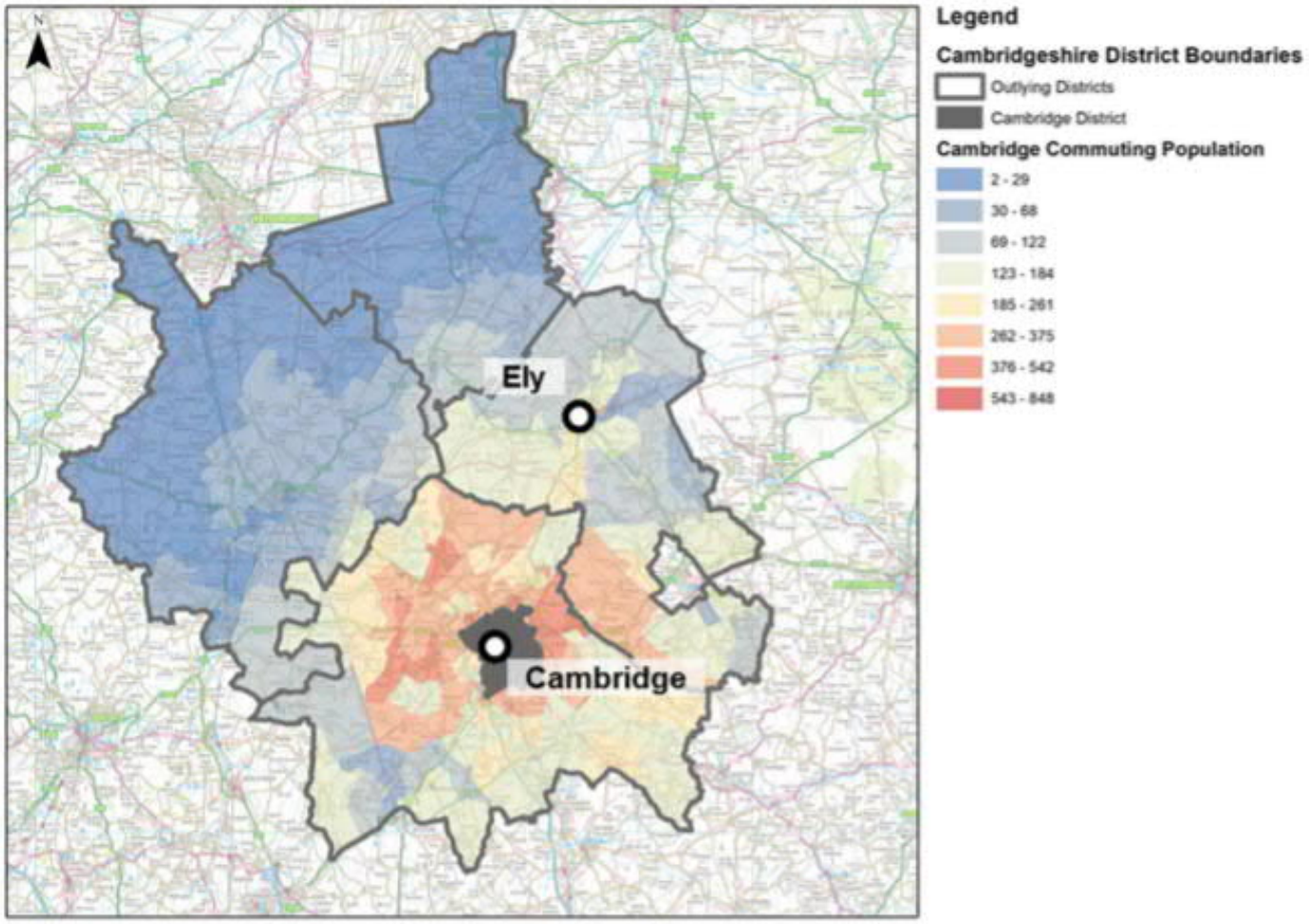
2.6.5. As previously outlined, Cambridge is a key economic centre for research, innovation and technology, and is strategically important for attracting international investors into the UK. This relies heavily on Cambridgeshire continuing to offer strong links between businesses, training campuses and housing developments.

[2] https://cambridgeshireinsight.org.uk/economy/
[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818886/Cambridge_SINGLE_PAGE.pdf

2.6.6. The centre of Cambridge is home to the largest share of jobs in Cambridgeshire, with a ratio of 1.2 jobs to every working age resident.[4] Many of those employed in and around Cambridge live in surrounding areas and commute into the city, as is presented in Figure 2-1.

2.6.7. Due to the effects of the COVID-19 pandemic, employment growth in the Greater Cambridge area has slowed from 4.7% in 2018-2019 to 2.3% in 2019-2020.[5] Whilst growth rates have slowed, they remain high and have varied across sectors. For example, sectors involved in supporting responses to COVID-19 such as Life Sciences and those which has benefitted as a consequence of the increase in remote communications such as Information and Technology. Other services such as the hospitality industry have however suffered as a result of multiple lockdowns.

Figure 2-1 - Population commuting into Cambridge



Source: Ordnance Survey/NOMIS

[4] NOMIS data, 2018
[5] https://www.greatercambridge.org.uk/asset-library/Future-Investments-Strategy/Research-and-Evidence/CBR-GC-Employment-Update-February-2021.pdf

2.6.8. The enhancement of Newmarket Road, a key radial route into the city from the east, will improve inclusive access to jobs and training. It will form a key cycle route from the east, connecting with the Chisholm Trail to provide direct access to the north and south as well as continuing west towards the city centre. Combined within completed improvements to Huntingdon Road, Hills Road, Histon Road and the construction of Milton Road, the Newmarket Road scheme will ensure there is consistent infrastructure provided along the main radial routes into the city and its economic activities.

SPATIAL DEVELOPMENT

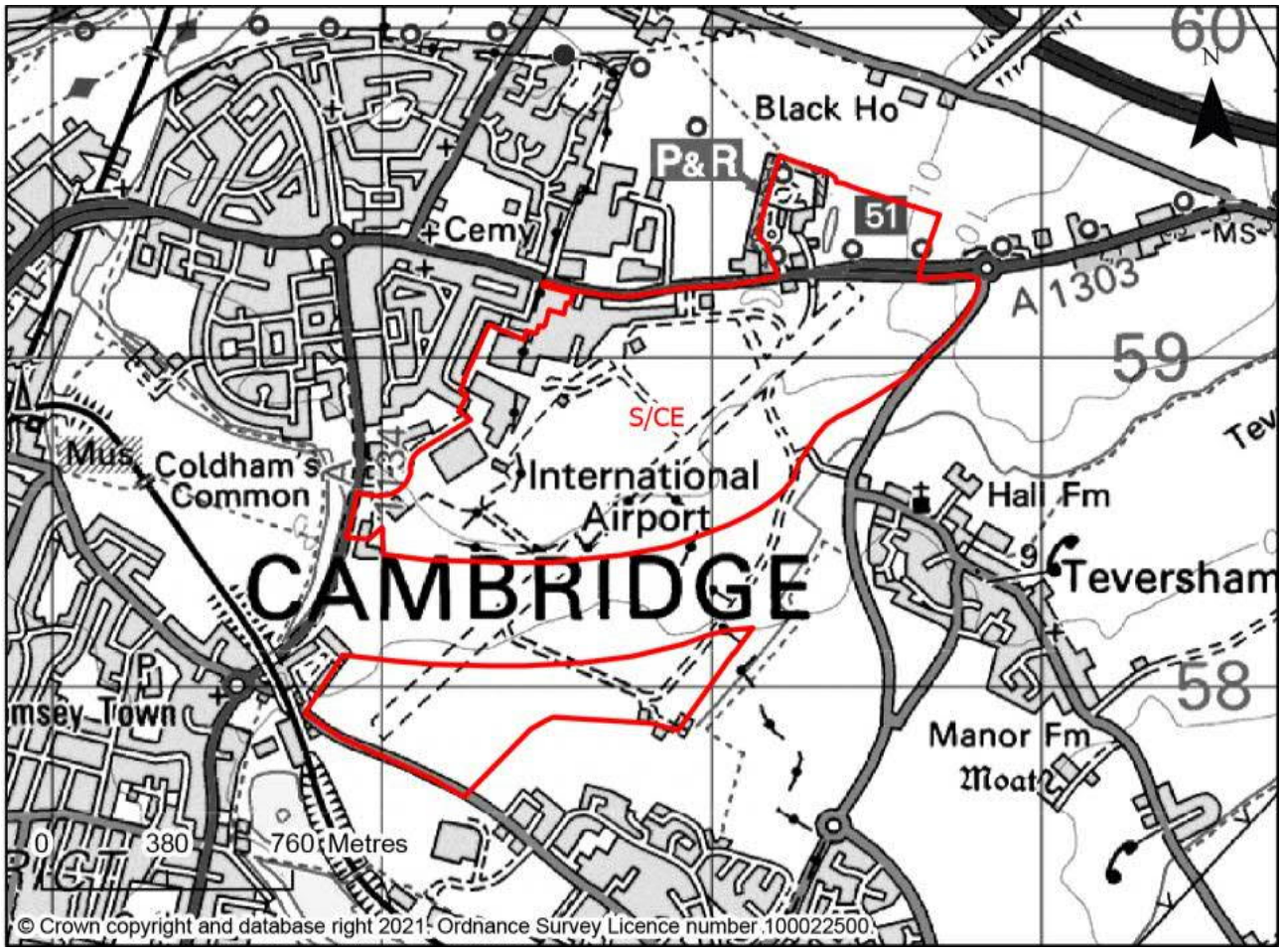
2.6.9. There is substantial residential and employment growth allocated and currently being built-out (Marleigh) along Newmarket Road. The Cambridge and South Cambridgeshire Local Plans cover the periods of 2018- 2031. The Cambridge Local Plan identifies the need for 14,000 additional homes and 22,000 jobs and the South Cambridgeshire Local Plan identifies 22,000 additional jobs and 19,500 new homes. Both Local Plans identify Cambridge East, a strategic development site that will redevelop the Airport site to provide new homes and jobs. The Cambridge East site also includes potential development land north of Newmarket Road covering the existing Park and Ride site.

2.6.10. The Joint Greater Cambridge Local Plan covering Cambridge and South Cambridgeshire is currently in development. This Local Plan is anticipated to allocate land[6] for a major new eastern quarter for Cambridge, enabling development of the airport site which was safeguarded for longer term development in the 2018 adopted Local Plans:

- For approximately 7,000 homes, including affordable homes, and 9,000 jobs on the 'safeguarded land' identified in the 2018 Local Plans at Cambridge Airport. It is anticipated that around 2,900 homes will be delivered by 2041.
- Delivery of the full development will require the CEA programme of schemes to be in place which will provide high quality public transport connections, with the amount of development that can come forward ahead of the scheme to be determined.
- Development is also reliant on the successful implementation of a Trip Budget approach, to ensure that the level of vehicle trips is limited to an appropriate level for the surrounding road network.

[6] Greater Cambridge Local Plan - First Proposals

Figure 2-2 Map showing boundary of proposed Cambridge East allocation



2.6.11. It is clear that substantial development is allocated along Newmarket Road, including an 'Eastern Quarter' at Cambridge East in combination with 1,300 dwellings being built-out and occupied at Marleigh. In order to deliver sustainable and well-connected new communities, high quality and attractive active travel and public transport infrastructure needs to be available from day one. The Newmarket Road scheme will ensure that attractive active travel infrastructure is available to support the sustainable delivery of these new communities as well as enable existing local residents to switch to sustainable modes of travel to local and city-wide destinations.

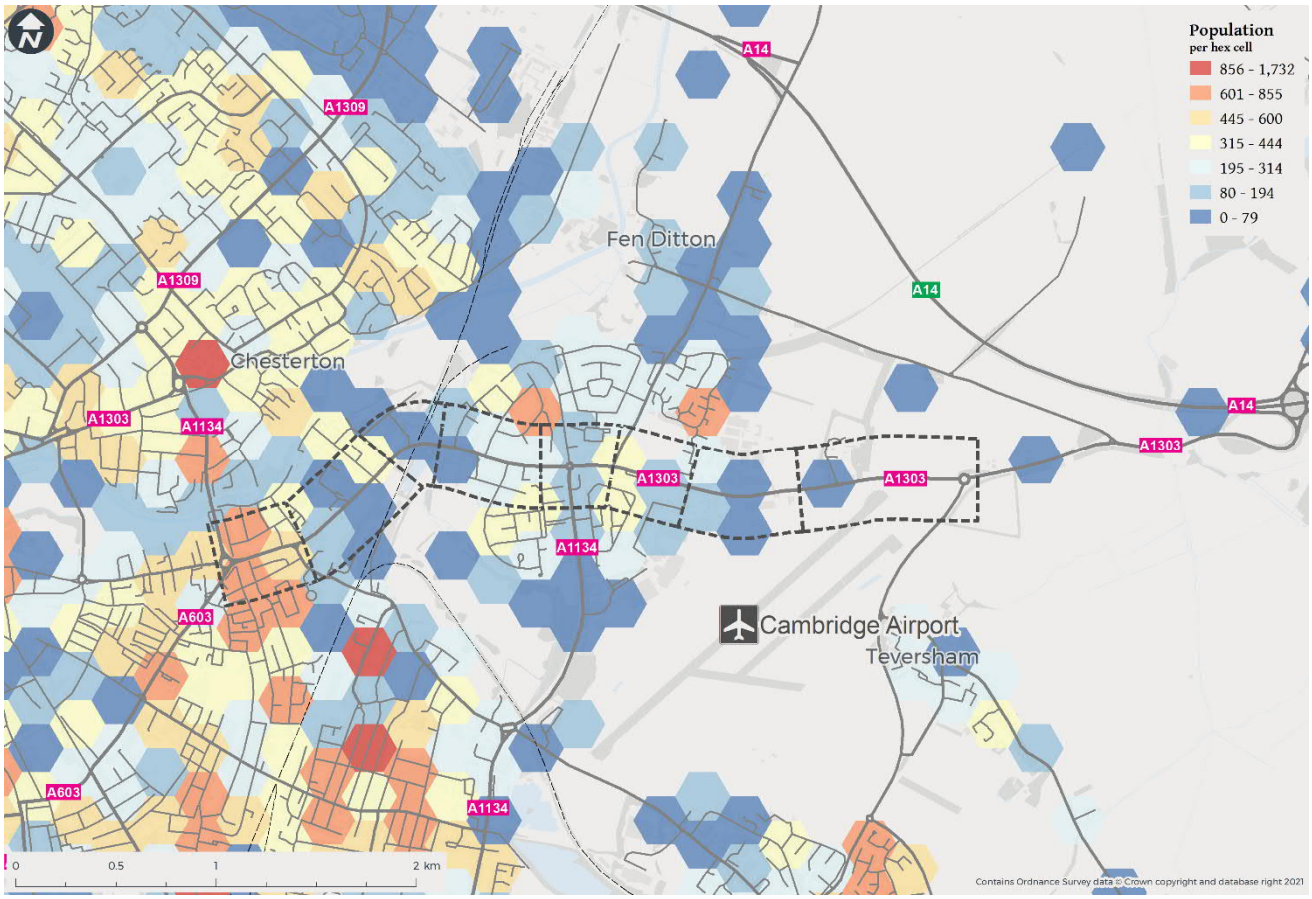
2.6.12. In addition to the allocated development at Cambridge East and Marleigh, masterplans are being development for the comprehensive redevelopment of The Beehive Centre shopping park and Grafton Centre at the western end of Newmarket Road. The Beehive Centre could potentially be redeveloped as a new life sciences or technology site with retail areas and landscaped gardens. The Grafton shopping centre site has also been identified as a major opportunity for redevelopment and repurposing. In addition, the East Barnwell masterplan is being progressed by Cambridge City Council which includes a new local centre surrounding the Newmarket Road Barnwell Road junction.

2.6.13. Both these major redevelopment opportunities at the Beehive Centre and Grafton Centre and the East Barnwell Masterplan will be directly supported by the Newmarket Road scheme, providing attractive infrastructure to enable future residents, workers and visitors to access these opportunity sites by active and sustainable modes of transport.

LOCAL POPULATION CHARACTERISTICS

2.6.14. Newmarket Road routes through a number of local communities including Barnwell and the new community at Marleigh. Figure 2-3 shows the resident population per hex-cell, with each hex-cell representing an area of 5 hectares to enable consistent comparison across the study area. In total there are 33,617 people living within 1 km of Newmarket Road highlighting the importance of the street to local residents for accessing local facilities and amenities.

Figure 2-3 Resident Population Density



2.6.15. The largest resident population per hexcell is located at the western end of the route, between Elizabeth Way and Coldhams Lane where a number of recent housing developments have been completed. Continuing east along Newmarket Road population density is lower into Barnwell and along Newmarket Road, with limited residential population at the eastern end of the road.

2.6.16. Analysis shows that there are at least 33,617 local residents who will directly benefit from improvements to Newmarket Road. This number will increase as Marleigh is occupied and Cambridge East comes forward for development. Currently, Newmarket Road acts as a barrier to north-south travel for local residents by active modes due to high traffic flows and a lack of direct and good quality crossing facilities. For example, school children living in Barnwell and Fen Ditton and accessing the Galfrid Primary School on Barnwell Road.

2.6.17. This highlights the importance of providing enhanced access for the existing communities to access local schools, shops, jobs and leisure facilities as well as enhancing connectivity into the city from locations to the east of Cambridge. The Newmarket Road scheme will enable easier access to local facilities for local residents as well as levelling-up access to the full range of opportunities available across the city.

SOCIAL CONTEXT

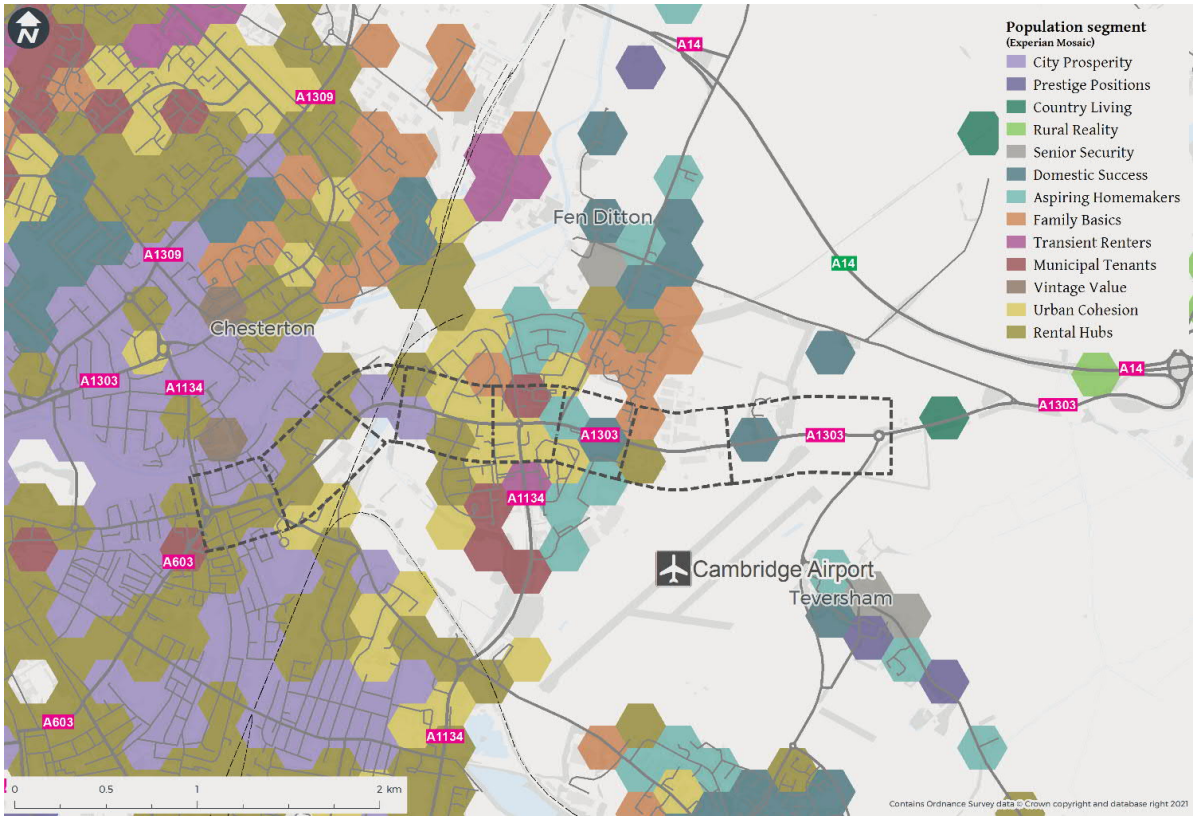
Community Characteristics

2.6.18. The Stage 1 Baseline Report presents analysis of Mosaic data (collected by Experian), a cross-channel consumer classification system which segments the population into 15 groups based on their consumer behaviour.

2.6.19. The western end of Newmarket Road is dominated by 'City Prosperity' and 'Rental Hubs'. 'City Prosperity' are high status positions who can afford expensive homes and like to enjoy their wealth. Rental Hubs are educated young people in their 20-30s who appreciate good access to jobs and entertainment.

2.6.20. Moving east along Newmarket Road, there is a mix of 'Urban Cohesion', 'Municipal Tenants', 'Family Basics' and 'Aspiring Homemakers' in and around Barnwell. 'Urban cohesion' are settled, older urban residents who have tended to buy their own homes and enjoy the local community. 'Municipal Tenants', 'Family Basics' (Fen Ditton) and Aspiring Homemakers are low-income households and younger households settling into homes that fit their budget. These are households who have lower disposable incomes who could be more reliant on public transport, walking and cycling to access jobs and local services.

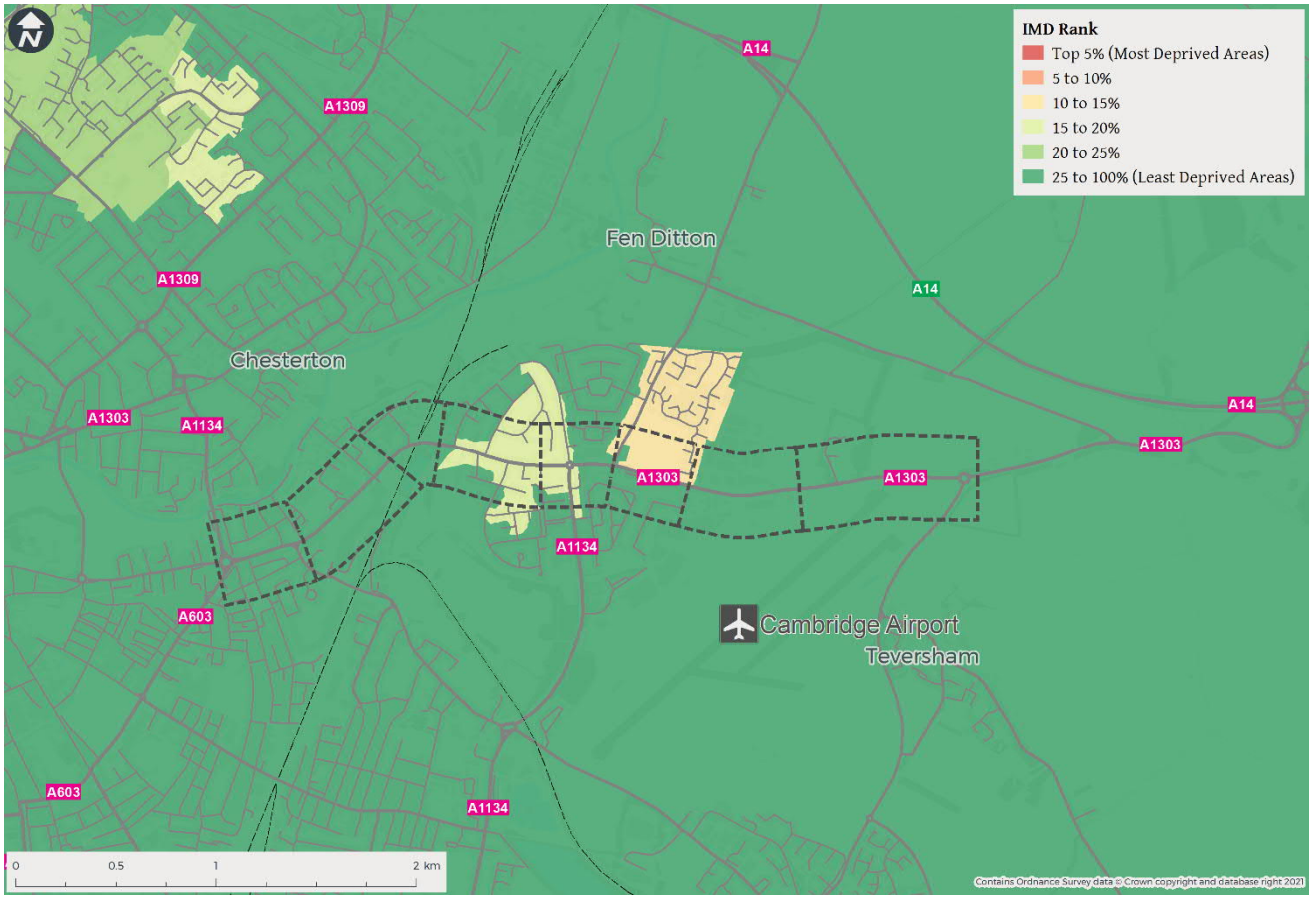
Figure 2-4 Mosaic Groups



Deprivation

2.6.21. Despite the success of the Cambridge economy, there are parts of the city which are more deprived than others. The Index of Multiple Deprivation provides an understanding of the comparative health of an area based on income, employment, health and barriers to housing provision. Whilst levels of deprivation are comparatively low some areas of Cambridge are more disadvantaged than others. Figure 2-5 demonstrates that the east of Cambridge is comparatively more deprived in terms of the indices of multiple deprivation than other areas of Cambridge.

Figure 2-5 - Indicies of Multiple Deprivation



2.6.22. The Newmarket Road scheme will deliver inclusive transport enhancements through the delivery of active and sustainable infrastructure enhancements along this key radial route to the city centre and key destinations across the city. It will provide access to key employment, education and community facilities, helping to overcome transport related barriers to the lower income communities and level-up access to the wide range of opportunities across the city.

TRANSPORT CONTEXT

2.6.23. The SOBC submitted in April 2021 identified that there is a need to address the inadequacies of the transport system into Cambridge from the east. Reliance on the car results in delays and congestion for commuters and has significant adverse impacts on local communities and the environment. The main points to note that relate to the Newmarket Road scheme include:

- Newmarket Road accommodates both east-west movements into the city centre and to key destinations along the route (retail parks and Cambridge United) and north-south orbital movements across the city via Ditton Lane and Barnwell Road, creating a complex pattern of local and strategic through movements. This makes for a busy artery which is heavily trafficked throughout the day. An increase in travel demand and rising car ownership has generated levels of congestion that are constraining economic growth in the region. Providing attractive alternatives that enable modal shift will support productivity and growth by allowing businesses to access wider labour markets.
- Traffic congestion has contributed towards Cambridge experiencing problems with poor air quality. Local residents suffer as a result of the impact on air quality and noise – the most heavily populated section of the corridor is also the point at which the carriageway is at its narrowest, bringing vehicles close to residential properties.
- Encouraging modal shift from car to active modes and bus is envisaged as a principal method for supporting sustainable growth, improving inclusive access to jobs and opportunities, and creating well connected communities that offer a good quality of life.

Newmarket Road

2.6.24. Newmarket Road is a busy radial route (accommodating 16,500-29,000 vehicle movements per weekday[7]) providing a range of local and regional functions. It provides vehicular access into Cambridge from Junction 35 of the A14 and from communities to the east including Bottisham, the Swaffhams and Burwell. It is also a destination in its own right with substantial retail parks, industrial estates, employment sites and Cambridge United's stadium. The street also accommodates trips made by local residents north and south of the road, including to local destinations as well as longer distance trips across the city.

2.6.25. From Junction 34 of the A14, Newmarket Road provides vehicle access to Airport Way, a key route around the east side of Cambridge. The road then continues west and forms a major junction with Barnwell Road a key route south towards the Biomedical Campus and southern Cambridge. Continuing west, Newmarket Road provides access to Cambridge United's Stadium, a series of retail parks, Coldhams Lane and then onwards to central Cambridge at the Elizabeth Way roundabout.

2.6.26. The multi-functional nature of Newmarket Road is both an existing issue and opportunity. It means there are substantial opportunities for modal shift to more sustainable modes for a range of journey types and purposes including:

- Commuting trips into the city from the east of Cambridge and by local residents
- Trips to the Newmarket Road retail parks by residents across the city and living locally
- Trips to local community facilities including shops, parks and schools by local residents
- Trips to Cambridge United home games
- Through trips to Cambridge city centre and destinations across the city
- Tourist trips from the hotels located along Newmarket Road

[7] Source WSP Newmarket Road Movement Survey Report 2022

2.6.27. Currently Newmarket Road provides a poor travel experience for local residents and users travelling by active modes. There is relatively poor integration with the local communities and north-south bisecting routes, resulting in a barrier to local travel by sustainable modes. The existing infrastructure is designed to maximise public transport reliability through the provision of bus lanes and car capacity through a series of signal-controlled junctions, with very limited provision for active modes.

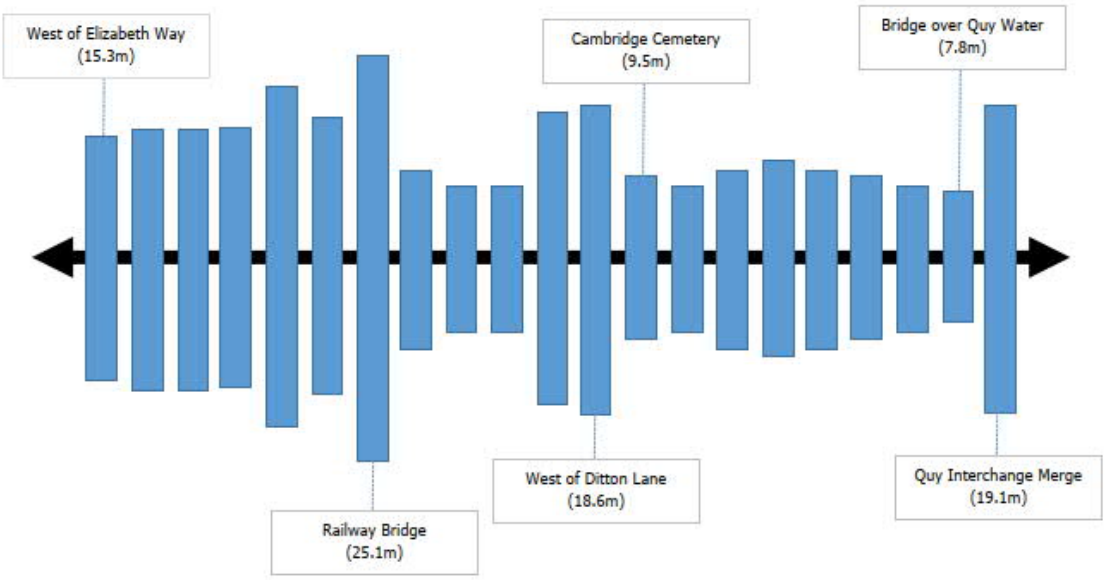
Carriageway Width

2.6.28. The characteristics of Newmarket Road change throughout its 5.5km length, both in terms of the capacity it provides and in terms of land uses it serves, including Cambridge Retail Park, Cambridge United Football Club, residential areas and employment provision both to the north and south of the corridor around the airport.

2.6.29. A distinguishing feature of Newmarket Road is the variable width of the carriageway, in part reflecting the move from the urban to rural context within which it is set. The detailed audit findings presented in the Stage 1 Baseline Report show that at the western end, Newmarket Road is an urban dual-carriageway standard route with a central median and sections of bus lane in both directions.

2.6.30. East of Swanns Road, Newmarket Road narrows to a single carriageway road with residential properties fronting the carriageway. East of Barnwell Road, Newmarket Road varies in width, including sections of four lanes, three lanes (including an inbound bus lane) and two general traffic lanes with wide grass verges towards the eastern end.

Figure 2-6 Conceptual Changes in Carriageway Width along Newmarket Road (not to scale)



2.6.31. The existing carriageway width and available public highway present a challenge in delivering infrastructure that accommodates the competing space demands for pedestrians, cyclists, bus users and vehicles. The overarching approach for the Newmarket Road scheme is to deliver consistent, coherent, direct, safe, comfortable and attractive pedestrian and cycling infrastructure as a minimum. The second priority has been to retain existing trees and provide bus priority with the final priority to retain vehicle access, consistent with the Manual for Streets hierarchy.

Vehicle Dominated Environment

2.6.32. Newmarket Road is a key trip attractor of vehicle movements, with large retail parks and supermarkets located towards its western end, served by large surface car parks. High destination vehicle flows occur along this western section of Newmarket Road, with a combination of movements accessing the retail parks, hotels, Beehive Centre on Coldhams Lane, as well as through movements towards central Cambridge.

2.6.33. To the north of Newmarket Road, west of the rail line there is a well-established Industrial Estate, along with the Marshalls Car Centre that generates a mix of car, light goods and heavy vehicle movements along Newmarket Road.

2.6.34. As expected for a busy radial route, peak period congestion occurs along the road on weekday morning and evening peaks, as well as weekend lunchtime periods due to the retail parks. Long, slow moving queues of traffic form along Newmarket Road and its main approach roads, particularly from Ditton Lane to Elizabeth Way during peak periods.

2.6.35. Trafficmaster data from 2016 indicates that eastbound journey times from Elizabeth Way to the A14 are approximately 4 minutes longer in the weekday PM peak compared to the AM peak. Westbound, journey times from the A14 to Elizabeth Way are approximately 5 minutes longer in the AM peak compared to the PM peak. This analysis also highlights the tidal nature of Newmarket Road, with higher inbound and outbound vehicle flows in the AM and PM peaks respectively, particularly at the eastern end of the route, east of Barnwell Road.

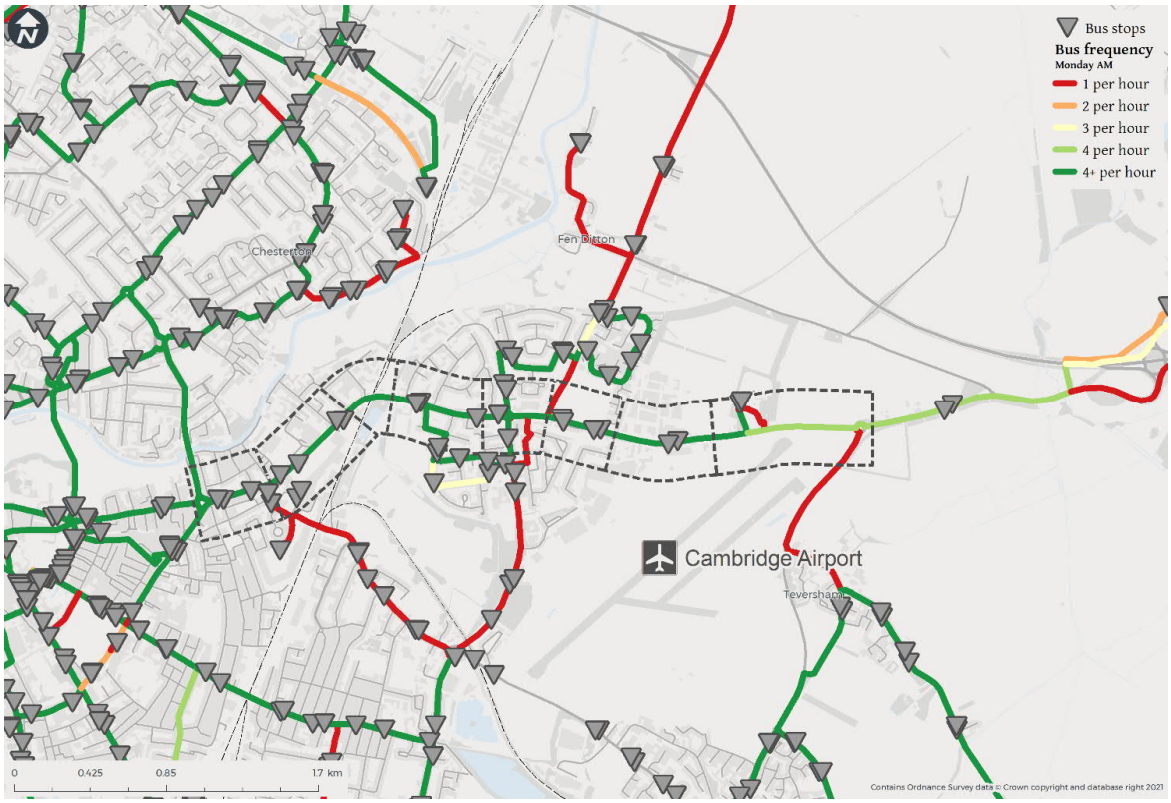
2.6.36. High traffic flows during peak periods result in a congested, vehicle dominated environment that discourages local movements by active modes, including by local residents, visitors to the main trip attractors and people travelling through or across Newmarket Road. High vehicle flows along Newmarket Road combined with a lack of segregated and safe cycle infrastructure are the biggest barriers to the uptake of cycling along this key radial route.

Bus Network

2.6.37. Newmarket Road is an important bus route accommodating several bus services, the majority of which are run by Stagecoach. These include the Citi 3 and dedicated Newmarket Road Park and Ride service, which both operate every 10 minutes during peak periods.

2.6.38. Together with other, less frequent services, sections of the corridor are served by buses every four minutes, representing excellent provision for both residents, employees along the corridor and those using the Park and Ride. Figure 2-7 illustrates the bus network.

Figure 2-7 - Bus Service Frequencies – Newmarket Road



2.6.39. For the latest available data, which covers September 2021, week on week passenger volumes were seen to recover, albeit slowly, post-COVID[8], with levels of ridership approximately 36% below September 2019 (pre-COVID).

2.6.40. The existing frequent bus services provide inclusive access for residents of Barnwell to city centre destinations and the Newmarket Road Park and Ride service is a key component of the city transport strategy, intercepting car trips from the east and providing an attractive public transport option for the 'last mile' journey into the city.

Journey Time

2.6.41. Two of the main factors users often cite in terms of their requirements from public transport provision are the speed of the journeys and the reliability of the journey times. For the SOBC journey time data provided by Stagecoach was analysed. It offers a detailed insight into where and when delays occur on the No.11 and No.12 services, between the city centre and Cambridge Airport, together with the Park and Ride service between the Newmarket Road site and the city centre.

- The most acute delays in journey time are on outbound bus services in the PM peak, with average journey times 7 minutes longer than those in off-peak conditions.

[8] Bus Service Improvement Plan for Cambridge and Peterborough October 2021- Page 30

- Journey times are consistently slower in the PM peak than the AM peak for inbound and outbound travel.
- Inter-peak services are also slower than those in the AM peak.

2.6.42. This evidence demonstrates that Newmarket Road is an important bus route, accommodating frequent city and Park and Ride services. The route will also be a key bus corridor into the city for the GCP Making Connections future bus network. The evidence shows a need to retain bus priority measures along Newmarket Road where space allows and provide good quality bus stop infrastructure to enable people to access the key trip attractors along the route.

Railway Network

2.6.43. Cambridge station is located around 1.5km to the south of the Elizabeth Way roundabout at the junction with Newmarket Road and provides services to destinations across the country including London and Birmingham. Cambridge North station is located approximately 1.15km north of Newmarket Road and provides access to a range of rail services and the Cambridgeshire Guided Busway.

2.6.44. Greater Anglia is the main train operating company serving Cambridge station, running an hourly service between Cambridge and Newmarket, providing an alternative to traffic travelling into the city from Newmarket Road. The journey takes around 25 minutes compared to between 30-60 minutes by car in the AM peak. The station is served by several local bus services operated by Stagecoach and Whippet which stop immediately south-west of the main station building. Located to the north of the main station entrance is Cycle Point, a 3-storey cycle parking facility with up to 2,850 spaces.

2.6.45. The Chisholm Trail that bisects Newmarket Road east of the railway bridge provides a direct off-road active travel route to both Cambridge North station and Cambridge station. Improvements to Newmarket Road will maximise the benefit of the investment in the Chisholm Trail by ensuring high-quality and attractive active travel infrastructure is provided on Newmarket Road, directly connecting into the Chisholm Trail. The creation of this network of high-quality routes will enable seamless travel east-west along Newmarket Road and north-south between Cambridge station and Cambridge North station.

Walking Context

2.6.46. Newmarket Road has segregated pedestrian facilities along both sides of the road from Elizabeth Way to Airport Way. In general, the width of the existing footways and shared-use paths is a minimum of 2.0m wide, but is substantially wider in some locations, including along the frontage of the Travelodge, east of Elizabeth Way. However, Newmarket Road has a tired and unattractive public realm, lacking in biodiverse green infrastructure.

Severance

2.6.47. There are a number of locations along Newmarket Road where crossing the carriageway to undertake local north-south movements is challenging:

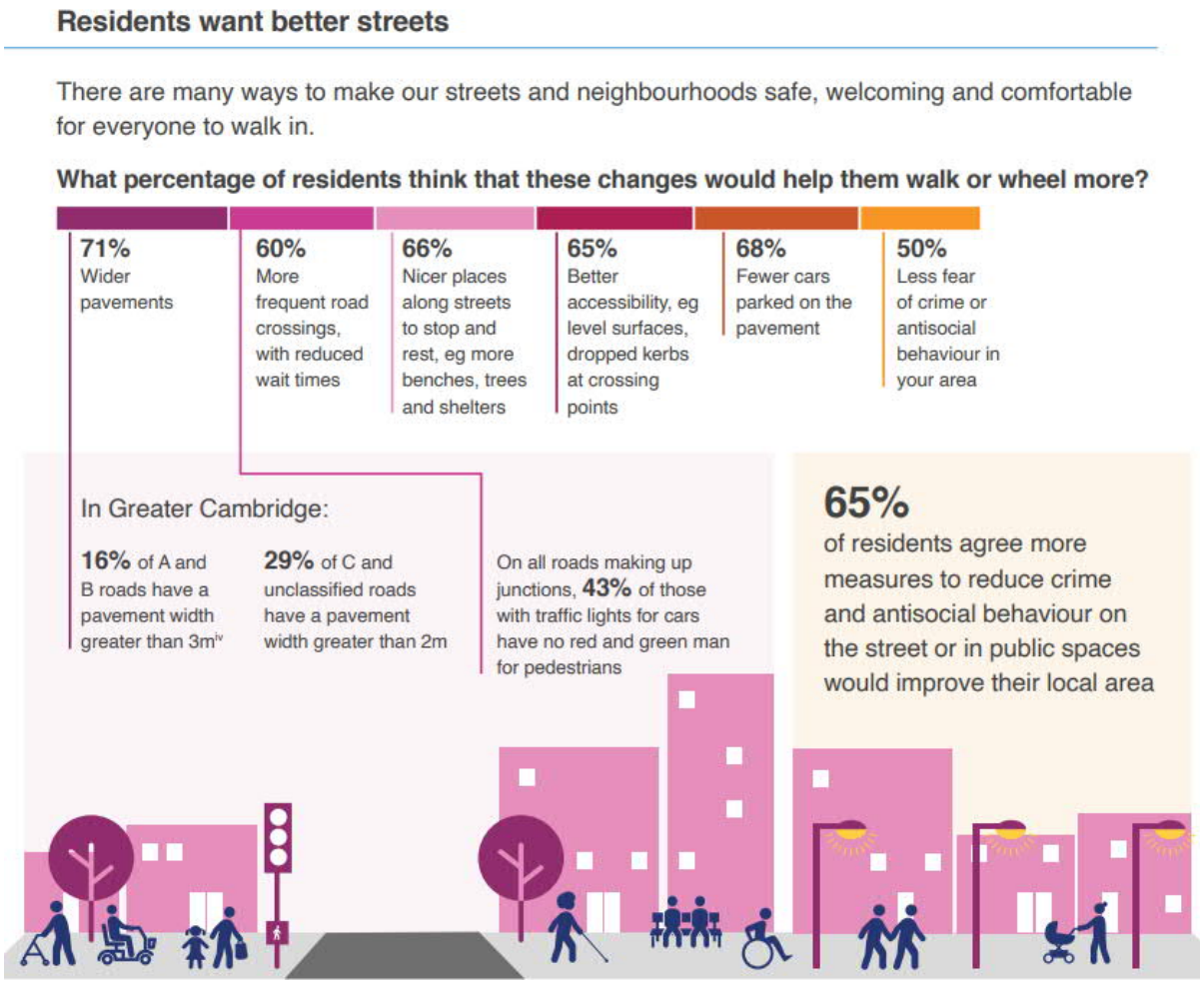
- Crossing from Occupation Street to Abbey Street or Elizabeth Way requires use of the existing underpasses, with pedestrian guard railing in place along Newmarket Road.
- At the junction of Newmarket Road/Coldhams Lane/River Lane no signal-controlled pedestrian crossing facilities are provided, including no provision for north-south movements towards the river side. The lack of formal and informal crossing provision from some of the side roads and

destinations along Newmarket Road including Aldi, Garlic Row and Ditton Walk can also make crossing movements difficult between destinations on the north and south sides of the road.

- At the Barnwell Road roundabout, wide entry and exit arms and a lack of controlled crossings means it is difficult to cross all arms of the junction. Similar issues exist at the Ditton Lane junction where there are no controlled crossings across Newmarket Road.

2.6.48. Walking should be the most attractive transport mode for the vast majority of short journeys along and across Newmarket Road. In order for this to be an attractive option the environment needs to be safe, comfortable, welcoming and attractive, where local facilities that people use on a regular basis are easy to access.

2.6.49. Sustrans's Walking and Cycling Index[9] report produced in collaboration with Cambridgeshire County Council and GCP, demonstrates that local residents want wider pavements, more frequent crossings with reduced wait times, more green infrastructure, better accessibility (level surfaces) and less fear of crime and antisocial behaviour (as illustrated in the extract below).



[9] Greater Cambridge Walking and Cycling Index

2.6.50. The evidence demonstrates that Newmarket Road's existing infrastructure creates severance for local north-south movements. With a lack of safe, direct and controlled crossings at key junctions, lack of green infrastructure and particularly at the Elizabeth Way junction a poor environment for pedestrians and cyclists using the underpasses which are unsafe for use by all members of society at all times of day.

2.6.51. The evidence shows that there is an opportunity to increase levels of walking for short trips along and across Newmarket Road if these key issues can be addressed through removing the unsafe and unattractive underpasses at Elizabeth Way, providing direct and safe crossings on key desire lines, providing continuous footways across side roads and providing public realm improvements.

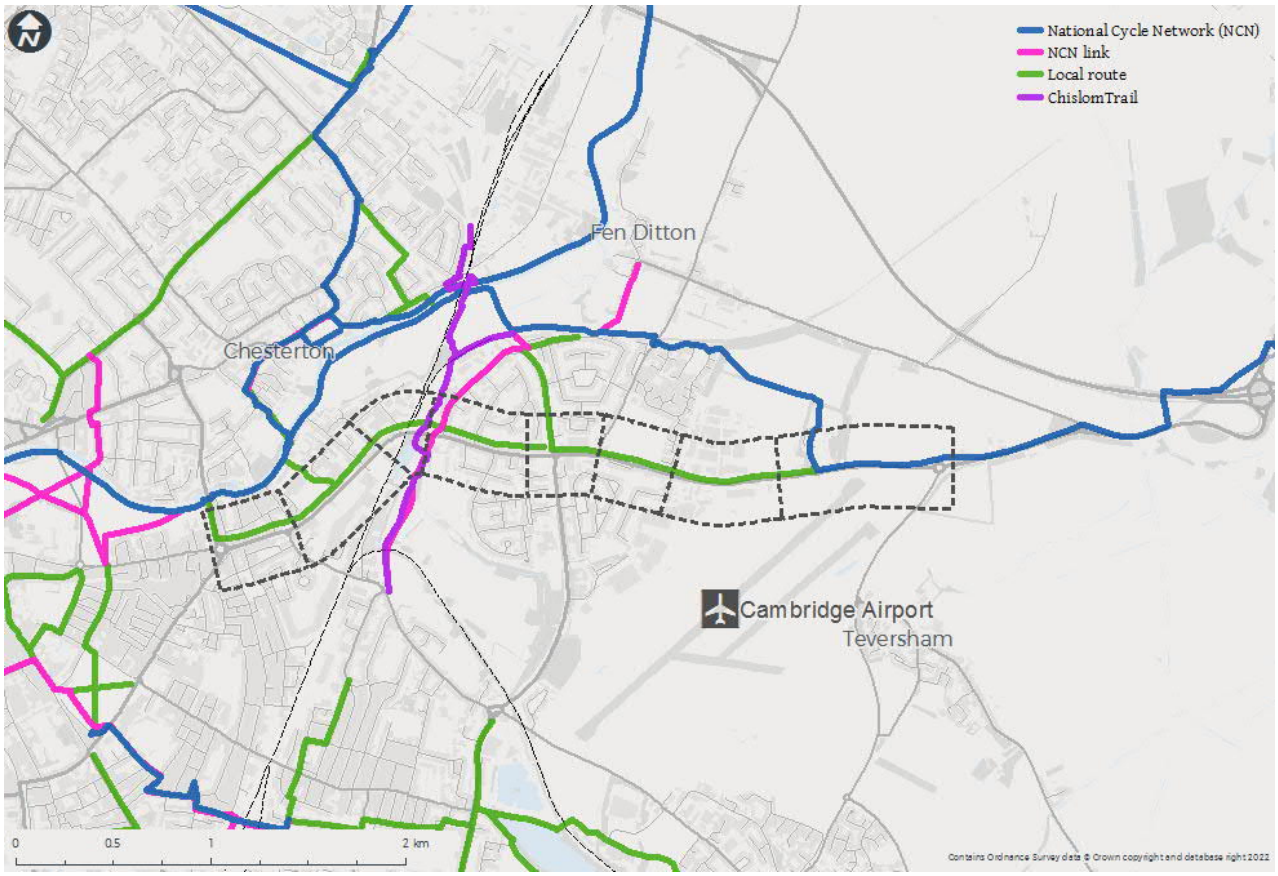
Cycling Context

2.6.52. Figure 2-8 shows the existing cycle routes within the study area. The National Cycle Route 51 currently routes along Newmarket Road, through the Park and Ride site, across Stourbridge Common and along Riverside, parallel to Newmarket Road. This provides an attractive, low-trafficked route into north Cambridge as well as towards Cambridge city centre.

2.6.53. In December 2021, Phase 1 of Chisholm Trail was opened. This section of the trail connects Cambridge North station to Coldhams Lane via the new Abbey Chesterton Bridge and Newmarket Road underpass. The new bridge connects East Chesterton to the Barnwell community on the south side of the river and the wider Abbey ward. The underpass gives people a safe, traffic-free route beneath one of the city's busiest access roads.

2.6.54. While Newmarket Road provides a more direct local route, its cycle infrastructure does not provide continuous good quality provision, with a combination of shared-use paths, mandatory cycle lanes and cycling in bus lanes along its length.

Figure 2-8 Existing Cycle Routes



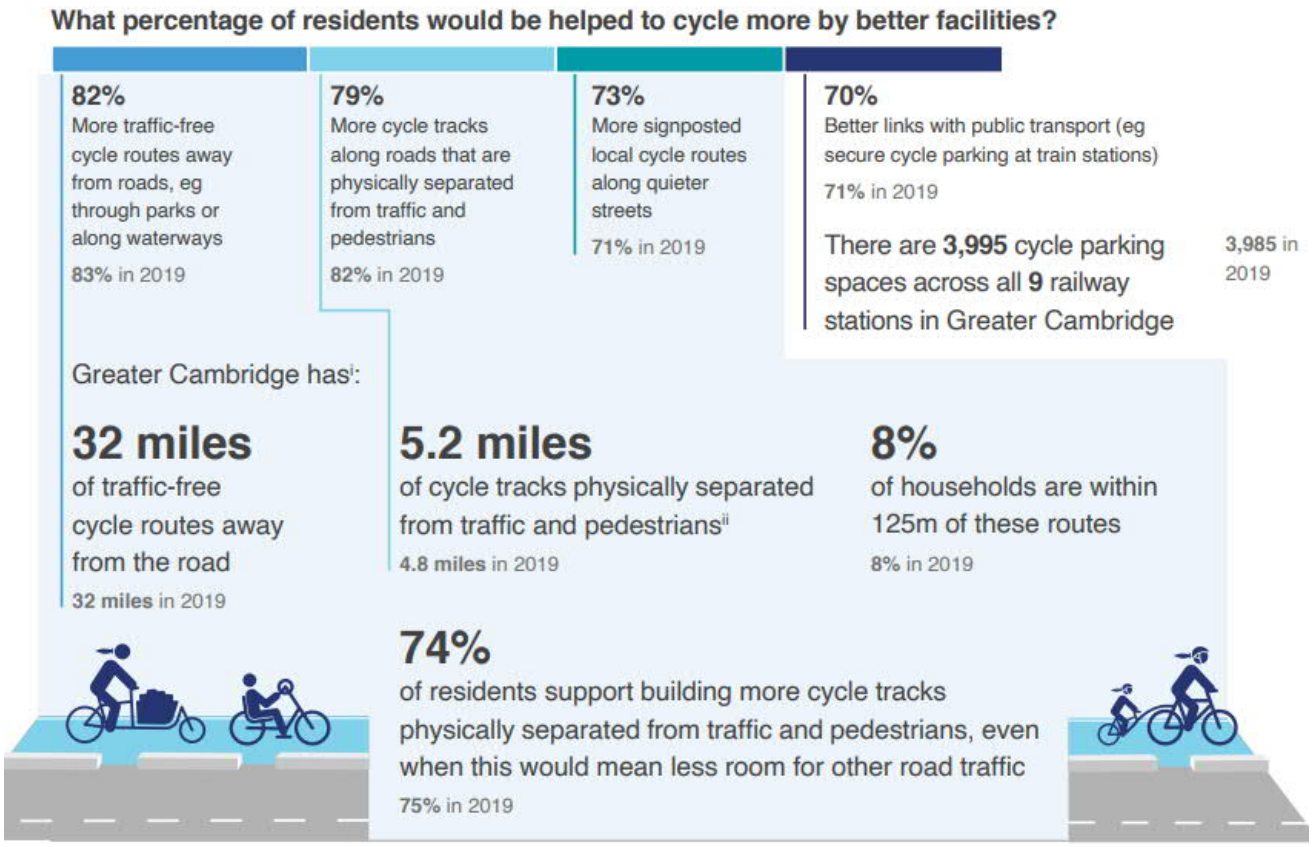
2.6.55. The Stage 1 Baseline Report sets out analysis of Strava data to provide indicative key existing active travel desire lines within the study area. The analysis concluded that Riverside is a popular parallel cycle route to Newmarket Road and there is an existing east-west movement demand along Newmarket Road (300-2,100 two-way movements per day), despite the relatively hostile environment. The highest cycling flows occur at the western end of Newmarket Road. There are also active travel desire lines via Occupation Street and Abbey Street into Elizabeth Way roundabout and Abbey Road on the northside of Newmarket Road.

2.6.56. The high vehicle flows along Newmarket Road combined with the lack of high-quality infrastructure result in the road being an unattractive route for east-west cycling as well as for north-south movements between the surrounding residential communities and longer-distance movements from Coldhams Lane and Barnwell Road.

2.6.57. The cycling infrastructure along Newmarket Road is unattractive consisting of inconsistent and incoherent sections of painted mandatory cycle lanes, shared-use paths and shared bus lanes. The existing infrastructure is sub-standard and does not meet the five core LTN 01/20 design principles of providing a coherent, direct, safe, comfortable, and attractive route.

2.6.58. Cycling should be the most attractive transport mode for the vast majority of short to medium length journeys along and across Newmarket Road, including Park and Pedal journeys from the Park and Ride. In order for this to be an attractive option the street environment along Newmarket Road needs to be transformed through the provision of attractive and transformational cycle infrastructure that meets the LTN 01/20 core design principles.

2.6.59. Sustrans's Walking and Cycling Index[10] report produced in collaboration with Cambridgeshire County Council and GCP, demonstrates that local residents want more cycle tracks along roads that are physically separated from traffic and pedestrians, even where this would mean less room for other road traffic (as illustrated in the extract below).



2.6.60. The evidence demonstrates that Newmarket Road's existing cycle infrastructure is not attractive or inclusive for all member of society, with a lack of safe, direct and continuous segregated facilities and intimidating junctions. The evidence shows that there is an opportunity to increase levels of cycling for short to medium trips along and across Newmarket Road if these key issues can be addressed through providing segregated cycle tracks and junction improvements.

ROAD SAFETY

2.6.61. Personal injury accident (PIA) data obtained from Cambridgeshire County Council has been analysed within the study area and is presented in Figure 2-9 below. Between 2016 and 2021, there have been 119 recorded traffic accidents on the stretch of Newmarket Road presented for intervention. One accident was classified fatal, 21 serious and 97 resulting in slight severity injuries.

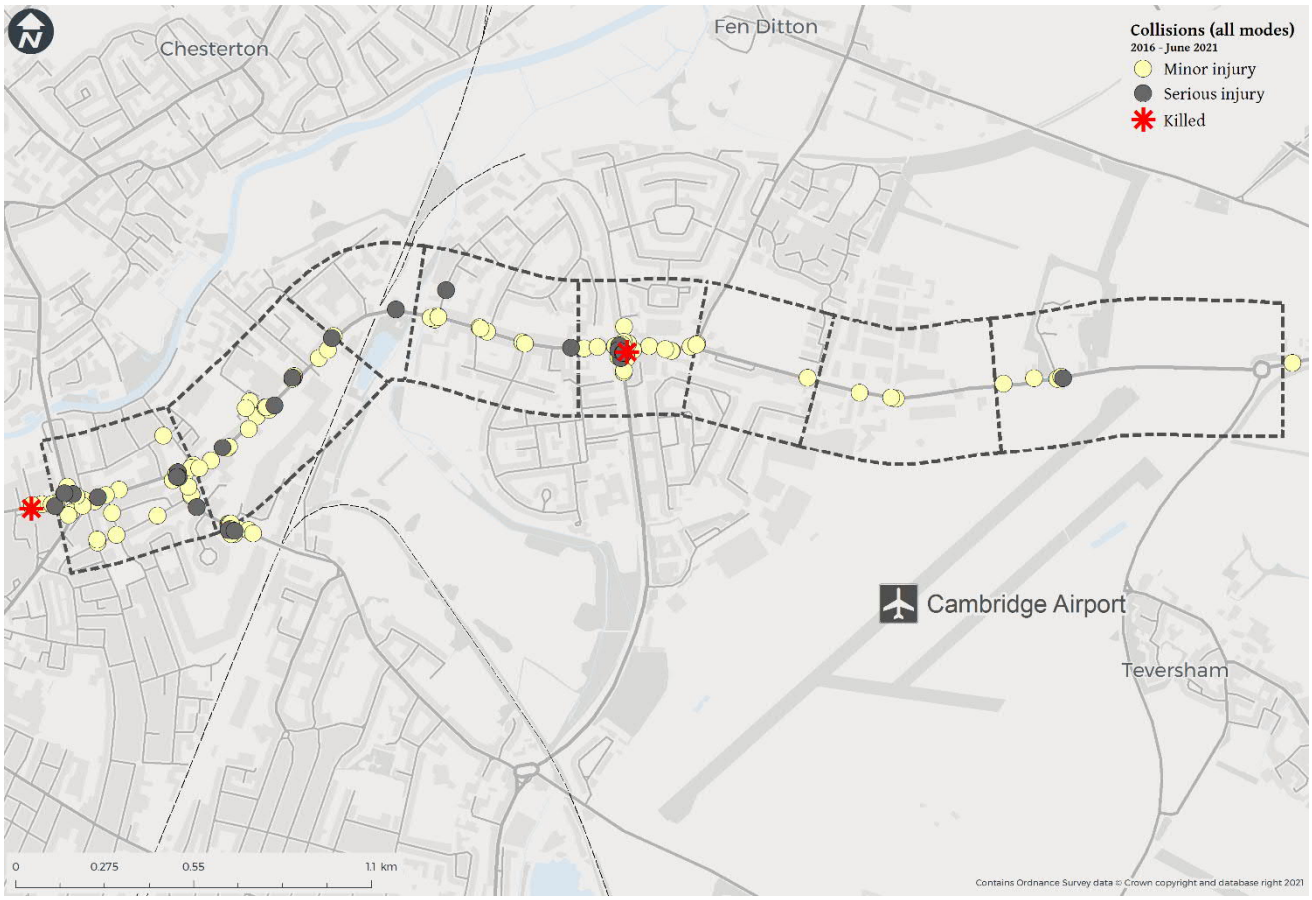
2.6.62. This analysis shows that the area around Barnwell roundabout has the highest recorded number of PIAs followed by the busy junctions of Elizabeth Way roundabout, Coldhams Lane and the retail

[10] Greater Cambridge Walking and Cycling Index

park access junctions. The Walking and Cycling Index (2021) report states that safety including road safety and personal safety is recognised as the single largest barrier to cycling.

2.6.63. Interventions at Newmarket Road will improve pedestrian and cycle safety by providing more controlled crossing points and physically separating cyclists from traffic movements at key junctions.

Figure 2-9 Personal Injury Accidents – 2016-2021



ENVIRONMENTAL CONTEXT

Climate Emergency

2.6.64. Cambridge City Council passed a motion to declare a climate emergency in 2019 and as a result committed to a carbon reduction target of making Cambridge carbon neutral by 2030. In order to keep to 1.5 degrees Celsius or less global warming, Cambridge was allocated a carbon budget of 4.6 million tonnes of carbon dioxide (MtCO2) from energy only for the period of 2018 to 2100. Limiting total carbon emissions in this period to this amount would enable Cambridge to achieve its share of the current national carbon budgets set by the Climate Change Act. 4.2 MtCO2 of this budget would be for the period from 2018 to 2032, during which time carbon emissions would need to fall rapidly.

2.6.65. The Newmarket Road scheme will support the decarbonisation of the city's transport network by providing the active travel infrastructure needed to encourage modal shift from car to sustainable modes of travel.

Air Quality

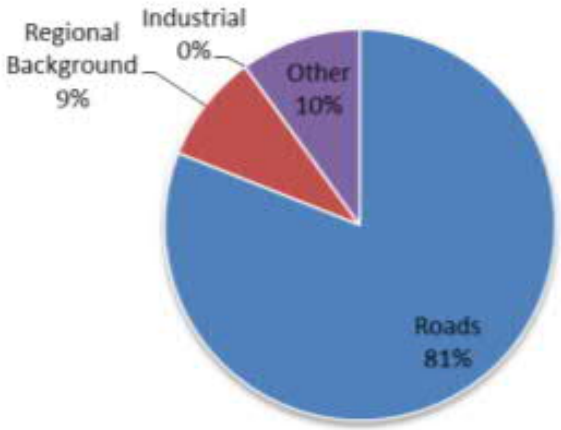
2.6.66. Transport-induced air pollution is estimated to cause 184,000 deaths each year through its effects on heart disease, strokes, respiratory infections and lung cancer. Although the different risk factors that affect more deprived communities are not always clear, these communities appear to be at greater risk from all forms of air pollution.[11]

2.6.67. Cambridge city centre has had an Air Quality Management Area (AQMA) since 2004 due to high levels of Nitrogen Dioxide from excessive traffic levels. The AQMA extends along Hills Road (A1307) to the main London-Kings Lynn railway line.

2.6.68. To improve air quality, a series of Air Quality Management Plans have been implemented and integrated into the local transport plans, with the latest being the Cambridge Air Quality Management Plan (2018-2023). DEFRA's modelling of air quality across the UK indicates air quality is good outside of the city; the delivery of the scheme will help to improve air quality within the city centre by encouraging active travel through the provision of walking, cycling and public transport enhancements on Newmarket Road, the main access into the city from the east.

2.6.69. Figure 2-10 demonstrates the importance of encouraging modal shift away from the car, as 81% of NOx emissions are from road traffic.[12]

Figure 2-10 - Source of NOx by source type (CERC 2017)



Noise

2.6.70. Noise has a large impact on both the physical and mental health of those living and working in Cambridge. Traffic noise can be a significant contributor to ambient noise levels; by delivering improvements to Newmarket Road and encouraging modal shift away from the car, noise levels in and around Cambridge can be expected to reduce.

[11] Poverty and sustainable transport: How transport affects poor people with policy implications for poverty reduction (UN Habitat, 2014).
[12] https://www.cambridge.gov.uk/media/3451/air-quality-action-plan-2018.pdf page 30

2.7 IMPACT OF NOT CHANGING

OVERVIEW

2.7.1. This section provides a summary of the future situation and the impact of not changing and implementing the proposals for Newmarket Road. It addresses the future population, housing, employment, productivity and transport related context and consequences.

Population

2.7.2. Cambridgeshire's population has grown steadily over previous decades. In South Cambridgeshire, the population size has increased by 8.9%, from around 148,800 to 162,000 in the 10 years leading up to Census 2021[13]. This is higher than the 6.6% increase for England.

2.7.3. The significantly faster rate of growth can be ascribed to people coming from elsewhere in the UK as well as overseas, attracted by the high skilled employment opportunities. Statistics[14] indicate significant growth over the next 15 years. By 2036 Cambridgeshire's population can be expected to reach 788,710, an increase of nearly 20% when compared to 2016.

2.7.4. With Cambridgeshire's population set to grow, overspill from central Cambridge is resulting in increasing populations in settlements in the hinterland of Cambridge, placing increased pressure on the city's radial routes. This necessitates improvements to the existing transport infrastructure and to the number of travel options to ensure that congestion and capacity issues do not constrain growth and force individuals to consider relocation.

Housing

2.7.5. Large population growth will require the delivery of significant additional housing, some of which is planned to be located to the east of Cambridge on land allocated or safeguarded for development along the Newmarket corridor. This increase in residential development will have associated impacts on the transport network, and if not appropriately managed, could result in negative externalities such as congestion, localised air pollution, noise pollution, and increased road traffic incidents.

Employment & Productivity

2.7.6. The East of England Forecasting Model (EEFM)[15] suggests that the East of England economy will employ a further 980,000 people over a twenty-year period by 2036, representing growth per annum of 0.7%. This is above the national average of 0.6%.

2.7.7. The total job growth forecast in Greater Cambridge over the planning period, 2011-31, was established as 44,100 jobs which informed the growth identified within the City Deal. Although this growth is ambitious when compared to the latest EEFM 2016 figures (36,000 jobs over 2011-2031), it is in line with recent actual employee growth recorded in the national data.

[13] ONS Census 2021
[14] https://cambridgeshireinsight.org.uk
[15] https://cambridgeshireinsight.org.uk/EEFM/

2.7.8. Cambridge and Peterborough Independent Economic Review 2018 (CPIER) articulates that if employment grows as anticipated at local land use plan levels, there will be an increased number of commuter trips and resultant issues across the transport network. If employment grows at higher rates there could be 82% more commuters travelling into Cambridge by 2031 when compared with 2011 levels[16], with a number of significant transport issues arising as a result if the transport network does not evolve to accommodate such growth.

Traffic Flows and Congestion

2.7.9. The scheme focuses on addressing the existing highway environment and associated challenges which are limiting economic performance, discouraging the use of bus, cycle and walking, generating highway congestion, worsening air quality, contributing to a continued decline in bus use, shrinking economic catchments and reducing economic productivity.

2.7.10. As the local population increases, these issues will be exacerbated. By investing in pedestrian and cycle facilities and bus infrastructure significant mode transfer is anticipated which can keep essential highway movements (particularly for goods) moving more effectively. The Newmarket corridor illustrates the effects of these issues, but also offers clear opportunities to address them. The corridor includes areas of high car ownership and high housing density with potential for mode transfer to bus and cycle.

Journey Times and Accidents

2.7.11. As stated earlier in this section, the population in Cambridge is set to grow. An associated challenge with population growth is the increase of private vehicles on the road network. This will cause an increase in traffic and congestion on roads. Currently, delays materialise as a result of demand (vehicle flow) outstripping supply (capacity) on sections of the network. The Options Appraisal Report (OAR)[17] identifies that in the morning peak period, inbound traffic on Newmarket Road can be delayed by around four minutes when compared to journey times outside of the peak periods. In the evening peak period, outbound traffic on Newmarket Road can be delayed by around two minutes when compared to journey times outside of the peak periods.

2.7.12. In terms of bus journey times, the inbound bus lanes in the morning peak appear to alleviate the problems of congestion with faster journey times than at other times of the day. However, outbound journeys in the evening peak are significantly impacted with services typically experiencing delays of five to seven minutes.

2.7.13. These journey times are set to increase with no intervention as traffic will increase as population grows overtime. This will cause greater delays for those who travel via Newmarket Road, impacting users accessing vital services like education and employment.

SUMMARY OF EVIDENCE AND INFORMATION

2.7.14. Table 2-3 below presents a summary of the need for intervention and the key supporting evidence.

[16] Cambridge & Peterborough Independent Economic Review (CPIER), Final Report, September 2018.
[17] Cambridge Eastern Access Options Appraisal Report, August 2020

Table 2-3 – The Need for Intervention

The Need for Intervention	
Strategies and Policies	National Policy: ▪ At national level, key transport policies reaffirm the focus on schemes that enhance connectivity and contribute to economic growth. Regional and sub-regional Policy: ▪ Delivery of the scheme will contribute to the region's policy recommendations for active travel which includes making walking and cycling more accessible. Local Policy: ▪ Delivery of the scheme will meet the local authorities' strategic objectives through improving connectedness of communities in and around Cambridge through sustainable travel modes.
Socio-economic context	Population and employment: *Current situation* ▪ The Index of Multiple Deprivation (IMD) data for east Cambridge shows varying levels of deprivation in multiple domains; including income, employment, education, health, crime, barriers to housing and services, and living environment. The residential areas west of Wadloes Road and east of Ditton Lane are both ranked second in the Indices of Deprivation deciles for England in 2019. Other areas in Barnwell are ranked 3rd-5th in the national deciles and the residential area around Stanley Road ranked fourth most deprived. ▪ Low-income groups are more dependent on walking, cycling and public transport to access jobs, education and local services. Improvements to sustainable travel infrastructure will help level-up access to the full range of opportunities the city has to offer. *Future situation* ▪ It is anticipated that the population of Cambridge will reach 788,710 by 2036, an increase of nearly 20% when compared to 2016, meaning there are associated challenges with an ageing and growing population in terms of housing and employment. This population growth could result in a greater number of cars on the roads around Cambridge, which would bring a myriad of social, environmental and economic disbenefits.
Wider Economic Context	*Current situation* ▪ Rapid business creation and growth associated with the 'Cambridge Phenomenon' has created jobs and prosperity in Greater Cambridge, and for the region as a whole. ▪ Between 2019 and 2021, the region of Cambridgeshire and Peterborough, showed an increase in the number of registered businesses. There was a rise of 4,440 businesses in 2020. *Future situation* ▪ Continued economic growth is forecast to create an additional 44,100 jobs by 2031 in Cambridge. The infrastructure of the area must support this potential pace of growth.

Sustainable Transport	*Current situation* ▪ High traffic flows during peak periods result in a congested, vehicle dominated environment that discourages movements by active modes. ▪ Inconsistent and unattractive cycling infrastructure including, narrow shared-use paths, short sections of mandatory cycle lanes, and shared-use bus lanes; lack of advanced green stages for cyclists at existing signal-controlled junctions; lack of pedestrian and cycling priority across side roads and private accesses; lack of direct crossing points for all north-south and east-west active travel desire lines. ▪ Bus speeds are low when running in general traffic and peak times, where no bus lanes are provided; lack of bus priority measures at the main junctions along Newmarket Road; and lack of high-quality waiting facilities at some stops. *Future situation* ▪ Highway network capacity constraints are limiting economic performance, discouraging the use of bus, cycle and walking, causing highway congestion, worsening air quality, not addressing declining bus use, shrinking economic catchments and reducing economic productivity. As the population increases, these issues will be exacerbated and if no future intervention is made these issues will remain. ▪ Trips by sustainable travel modes like public and active travel need to drastically increase to work towards Net Zero by 2050. This will reduce trips made by private vehicles that contribute to carbon emissions.
Environmental Context	*Current situation* ▪ Cambridge City Council passed a motion to declare a climate emergency in 2019 and as a result committed to a carbon reduction target of making Cambridge carbon neutral by 2030. In order to keep to 1.5 degrees Celsius or less global warming, Cambridge was allocated a carbon budget of 4.6 million tonnes of carbon dioxide (MtCO2) from energy only for the period of 2018 to 2100. ▪ The GCP's programme aims to support a reduction in carbon emissions by increasing uptake of public transport and active travel, decreasing car use and supporting the decarbonisation of public transport. Projects are shaped to support these objectives. *Future situation* ▪ Limiting total carbon emissions in this period to this amount would enable Cambridge to achieve its share of the current national carbon budgets set by the Climate Change Act. 4.2 MtCO2 of this budget would be for the period from 2018 to 2032, during which time carbon emissions would need to fall rapidly.
Development	▪ The Cambridge Local Plan covers the period of 2018-2031 and identifies the need for 14,000 additional homes and 22,000 jobs. This increase in residential development will have associated impacts on the transport network, and if not appropriately managed, could result in negative externalities such as congestion, localised air pollution, noise pollution, and increased road traffic incidents.

2.8 STAKEHOLDERS' VIEWS AND REQUIREMENTS

2.8.1. This section describes how stakeholders have contributed to the development of the proposed scheme as part of the overall CEA programme.

STAKEHOLDER IDENTIFICATION

2.8.2. The stakeholders for the scheme who have the potential to influence its outcome, programme, or costs, were identified at project inception and have been kept under review as the project has progressed towards OBC.

Table 2-4 –Stakeholders

Stakeholder Category	Key Stakeholders	Key Interest
General Public	The public	Interested in the scheme's impact on local residents, business, and users of the transport infrastructure
Statutory Bodies	Natural England	Interested in the scheme's impacts on the conservation, enhancement and management of the natural environment and sustainable development.
	National Highways	Interested in the scheme's impact on the strategic road network
Town & Parish Councils	East Cambridgeshire District Council	Interested in scheme's impact on the individual towns and parishes. Concerned to see commensurate investment in East Cambridgeshire
National and Local Government	Members of Parliament	Interested in scheme's impact locally and nationally
	Cambridge City Council	Interested in scheme's impact on the Council area
	Cambridgeshire and Peterborough Combined Authority	Interested in scheme's impact on the Authority area
Charities	Countryside Charity Cambridgeshire and Peterborough (CPRE)	Interested in the scheme's impact on the physical and natural environment
	The British Horse Society	Interested in the scheme's impact on the protection and promotion of the interests of all horses and their riders
Health Care	Cambridge Biomedical Campus	

	Cambridge University Hospitals	Interested in scheme's impact on access to their medical facilities.
PT Operator	Stagecoach	Interested in scheme's impact on their operations.
Voluntary Organisation	Cambridge Past Present and Future	Interested in scheme's impact on heritage and green spaces.

CAMBRIDGE EASTERN ACCESS CONSULTATION (2020)

2.8.3. The aim of the consultation was to involve as many residents and other interested parties as possible and give them the opportunity to provide their feedback to inform the development of the design of the CEA programme. Press and social media were used to raise awareness of the consultation. Emails and letters were sent to a wide range of local stakeholders.

2.8.4. Due to COVID-19 restrictions, it was decided to undertake the consultation online and all information was hosted on GCP's website. The information presented aimed to help consultees make an informed decision when providing their feedback through the questionnaire. All materials were written in plain English, accessible (in an easy read format) and were also available as a hard copy version on request.

2.8.5. Three online public sessions were held to present the proposed improvements on 19th November 2020, 26th November 2020 and 9th December 2020. These public sessions provided consultees with an opportunity to raise questions they had, to subject experts. There were also three pre-launch briefings for local district and county councillors and attendance at parish council and representative groups' meetings during the consultation on request. In addition, a social media campaign was undertaken across the GCP's Twitter, Facebook and LinkedIn channels.

2.8.6. The consultation closed on 18th December 2020. The consultation report can currently be viewed on:

https://consultcambs.uk.engagementhq.com/cea-consultation-2020

THE OPTIONS

2.8.7. GCP sought feedback on a range of five options that could be taken forward in order to improve access for all road users. The options were split into two phases, with Options A1 and A2 being more achievable in the shorter period and the remaining three options, B1, B2 and B3, needing longer timescales.

Short Term

- Option A1: Newmarket Road improvements – this could include bus lanes, cycle lanes and improved facilities for pedestrians.
- Option A2: Newmarket Road Improvements + Park & Ride Relocation - this could include bus lanes, cycle lanes and improved facilities for pedestrians, equestrians and people using scooters as well as relocating the Newmarket Road Park & Ride site further out of the city

Long Term

- Option B1: High Quality Public Transport Route via Coldhams Lane – this could include an off-road route for public transport vehicles connecting to the city via Coldhams Lane

- Option B2: High quality Public Transport Route via the Tins – this could include an off-road route for public transport vehicles connecting to the city via the Tins
- Option B3: Long Term Rail Opportunity – this could include new and reopened stations as well as a more frequent train service.

LEVEL OF RESPONSE

2.8.8. Quantitative data was recorded through a formal consultation questionnaire (online, with hard copies sent out on request). A total of 549 completed responses were received of which 538 were responses from individuals and 11 were from stakeholders. 194 additional written responses were received. The Consultation Report includes a detailed analysis of the geographical and demographic range of the responses received.

OUTCOMES OF CONSULTATION

2.8.9. The results of the consultation are set out in detail in the Consultation Report and summarised in the OAR. Relevant findings from the consultation have been used to inform the further development of short-listed options.

2.8.10. The key relevant findings from the consultation for the Newmarket Road scheme are:

- The majority of respondents supported the proposal to improve public transport and associated active travel routes into Cambridge from the east of the city.
- Two of the five proposed routing options were supported by the majority of respondents ('Option B3: Long term Rail Opportunity', 'Option A1: Newmarket Road Improvements')
- The majority of respondents indicated that access to 'Cambridge City Centre shops and businesses'; 'Cambridge Main Railway Station'; 'Addenbrooke's/Cambridge Biomedical Campus'; 'Beehive Centre and other shops on Newmarket Road' be given 'somewhat high' or 'very high' priority on the route.
- Two fifths of respondents indicated that 'access to Cambridge Science Park' was a 'somewhat high priority' or 'very high priority'.

2.8.11. Many detailed comments were received, from which the most common areas of discussion were:

- The need for improvements to cycling and walking infrastructure across the proposals and further east
- The importance of the improvements to the rail network
- Concerns about the proposals' impact on nearby areas, particularly Coldhams Lane and Mill Road
- The need for and location of a new Park & Ride site
- The need for general improvements to public transport, including reduced fares, increased regularity, and connections to rural locations

CONCEPT DESIGN CONSULTATION (2021)

2.8.12. Following the consultation in 2020, GCP identified three areas where improvements to walking, cycling and public transport could be introduced and help with the modal shift away from private cars in east Cambridge. These include – short-term improvements to Newmarket Road, longer-term improvements to public transport and upgrade to the Cambridge to Newmarket railway line.

2.8.13. Between 8th November and 22nd December 2021 GCP held a consultation on improvements that could be in place in the nearer term and focus on improvements to Newmarket Road including:

- Improvements at the Elizabeth Way roundabout
- Improvements at the Barnwell Road roundabout
- Improving facilities for cyclists and pedestrians along the whole of Newmarket Road from the Elizabeth Way roundabout to the Airport Way roundabout
- Connecting the cycling improvements with the Chisholm Trail and the planned Greater Cambridge Greenways network

2.8.14. While Newmarket Road Park & Ride relocation is a longer-term project, current ideas on this were included in the consultation.

THE OPTIONS

Newmarket Road

- **Option N1:** This option provides uni-directional cycleways on both sides of Newmarket Road, which would be segregated from general traffic. This option retains the existing bus lanes.
- **Option N2:** In addition to uni-directional cycleways on both sides of Newmarket Road, this solution would provide additional sections of inbound bus lane where the carriageway width allows.
- **Option N3:** In addition to the uni-directional cycleways on both sides of Newmarket Road, this alternative would provide additional sections of inbound and outbound bus lane where the carriageway width allows.

Elizabeth Way Roundabout

- **Option E1:** This option retains a signal-controlled roundabout, with segregated one-way cycle lanes and signal-controlled pedestrian and cycle crossings across all junction arms.
- **Option E2:** This alternative would provide a signal-controlled crossroads, with segregated one-way cycle lanes and signal-controlled pedestrian and cycle crossings across all junction arms.

Barnwell Road Roundabout

- **Option B1:** This option is a priority-controlled roundabout with parallel pedestrian and cycle crossings on Newmarket Road west, Wadloes Road and Barnwell Road and an upgraded signal-controlled crossing on Newmarket Road east.
- **Option B2:** This design provides a signal-controlled crossroads, with segregated one-way cycle lanes and signal-controlled pedestrian and cycle crossings across all junction arms.

Newmarket Road Park & Ride

- **Option P1:** This option provides a 2,000 space Park & Ride to the east of Airport Way, with bus access onto Airport Way and vehicle access from Newmarket Road.
- **Option P2:** This design provides a 2,000 space Park & Ride to the east of Airport Way, with bus access onto Airport Way, south of the roundabout, and vehicle access from Newmarket Road.
- **Option P3:** This solution provides a 2,000 space Park & Ride to the south of Newmarket Road accessed from a new junction with Newmarket Road.

LEVEL OF RESPONSE

2.8.15. Quantitative data was recorded through a formal consultation questionnaire (online via ConsultCambs and GCP social media channels, with hard copies sent out on request). A total of 556 completed responses were received of which 543 were responses from individuals and 13 were

from stakeholder groups. 134 additional written responses were received. The Consultation Report includes a detailed analysis of the geographical and demographic range of the responses received.

OUTCOMES OF CONSULTATION

2.8.16. The key relevant findings from the consultation for the Newmarket Road scheme are:

Travel in the Newmarket Road area

2.8.17. 533 respondents answered the question on what their usual main mode of transport was when travelling in the Newmarket Road area.

- Under half of respondents indicated they travelled by 'bicycle' (45%) and just under two fifths indicated they travelled as a 'car driver' (38%)

2.8.18. 538 respondents answered the question on what their usual purpose for travelling in the Newmarket Road area is. Respondents could choose multiple answers to this question.

- The majority of respondents indicated it was for 'leisure' (63%) or 'shopping' (54%)
- Just under half of respondents indicated it was for 'work' (48%)

Proposed Scheme Options

2.8.19. For each of the options for improvements, the respondents indicated how much they supported the proposals. Table 2-5 summarises the response to the scheme options.

Table 2-5 Consultation Response to Scheme Options

Scheme Option	Number of respondents	Strongly support	Support	No Opinion	Oppose	Strongly Oppose
Newmarket Road Improvements						
Option N1	529	26%	42%	15%	8%	9%
Option N2	526	19%	41%	17%	10%	13%
Option N3	510	44%	20%	14%	9%	14%
Elizabeth Way Roundabout						
Option E1	535	25%	27%	16%	17%	16%
Option E2	536	37%	17%	11%	13%	22%
Barnwell Road Roundabout						
Option B1	535	21%	30%	19%	15%	15%
Option B2	532	41%	17%	15%	11%	17%
Relocation of the Newmarket Road Park and Ride site						
Option P1	533	9%	22%	42%	12%	14%
Option P2	531	9%	22%	44%	12%	12%
Option P3	531	14%	14%	42%	12%	17%

2.8.20. It can be seen that the respondents were generally supportive of all three of the options for the Newmarket Road improvement proposals and both of the options for the Elizabeth Way Roundabout

proposals and for the Barnwell Road proposals. There was no clear level of opposition to or support for any of the options in the proposals for the relocation of the Newmarket Road Park and Ride.

2.8.21. A significant number of detailed comments were received. From these it was clear that:

- There were concerns about the relocation of the Newmarket Road Park and Ride in areas in/near the Green Belt;
- Suggestions to retain the underpass on the Elizabeth Way roundabout;
- Concerns about the need to address congestion issues around Barnwell Road roundabout due to the McDonald's restaurant and football match days;
- Comments on the need for further improvements to public transport, in terms of cost, reliability, hours of operation and servicing more areas outside Cambridge.

2.8.22. As described in the Communications Plan (described in section 6.7 of the Management Case), stakeholders will be kept informed about the scheme as it is developed. Their views will be taken into consideration as the designs are developed in more detail.

2.9 OPTION DEVELOPMENT

2.9.1. The identification of the Preliminary Scheme Design for the Newmarket Road scheme has emerged from an extensive process of developing and assessing a long list of options, high-level concept designs and junction options. Full details of the approaches and results are set out in the OAR, SOBC and Concept Design Report.

2.9.2. Appendix A provides the Preliminary Scheme Design, which has been assessed in the Economic and Financial Cases.

GENERATING & SIFTING THE LONG LIST

2.9.3. Following the assessment of current and future problems, determination of the need for intervention and the setting of objectives, consideration was given to a range of potential interventions that were capable of addressing these issues. As presented in the OAR, 42 options were identified for the Newmarket Road corridor (overall 59 options were identified that would improve sustainable transport capacity and connectivity in eastern Cambridge). These encompassed:

- Busways: Options included Newmarket Road, High Ditch Road, Coldhams Lane and though the Airport;
- Bus lanes: Various options along Newmarket Road and the Newmarket rail line;
- Bus gates: On Newmarket Road and Mill Road;
- Junctions: Reconfiguration of the main junctions along Newmarket Road;
- Highways: including capacity enhancements east of Airport Way, priority lanes for Ultra Low Emission Vehicles (ULEV) and removing general traffic lanes at the western end of Newmarket Road;
- ITS: Reconfiguration of the signals along Newmarket Road to improve traffic management;
- Rail: New and improved rail lines and new Stations on the Newmarket rail line; and
- Active Travel: Continuous segregated cycle lanes on Newmarket Road and improvements to Mill Road.

2.9.4. The level of detail for each option was commensurate with the early stage of scheme development and reflected the outcomes of extensive engagement activities[18] with elected members, the public, transport providers and transport specialists.

2.9.5. Following the identification of the long list, a sifting process was undertaken to filter out those options which would not meet the overarching objectives of the study or were considered unfeasible from a deliverability perspective. This produced a shorter-list of options to be taken forward for further assessment, including options which were deemed not to deliver the desired outcomes on their own, but which could in combination with other options. The sifting process also determined which of the options being progressed were considered to be short-term (i.e., in the next five years) or medium-term (i.e., in 5-10 years).

PACKAGING OF OPTIONS

2.9.6. A package approach was developed in recognition that the introduction of individual options in isolation would not address the challenges and opportunities for the corridor. Packages were created for the short-term (Phase 1) and for the medium-term (Phase 2), building on Phase 1 and opening up growth opportunities to the east of Cambridge.

2.9.7. The Newmarket Road options are part of Phase 1. Two packages were developed:

- 1.1 – a 'light touch' approach to maximise the efficiency with which buses can operate along Newmarket Road based upon the management of traffic flow via sensors
- 1.2 – building on 1.1 with a greater degree of physical intervention to support the technology and management of traffic flow along Newmarket Road

2.9.8. In assessing the performance of each of these packages it became clear that neither met the requirements for the corridor given the impact of reducing highway capacity. Therefore, a hybrid approach was developed which drew on elements of both the packages to provide a balance between managing demand and meeting the future needs of Newmarket Road users. Table 2-6 below sets out the hybrid package component options.

[18] Eastern Access Study – Engagement Summary Report; WYG, August 2020.

Table 2-6 Hybrid Package Component Options

Ref	Schemes
ITS.01	Reconfiguration of all signals to manage/control flow along Newmarket Road & wider network.
JC.02	Reconfiguration of Elizabeth Way Roundabout, including the removal of Subway.
JC.03	Reconfiguration of the Newmarket Road & Coldham's Lane junction.
JC.05	Signalisation and reconfiguration of the Newmarket Road & Barnwell Road junction.
JC.07	Reconfiguration of the Newmarket Road & Ditton Lane junction.
BS.01	Increase the frequency of existing P&R services.
BS.03	Provide new service from P&R to Addenbrookes hospital and the Biomedical Campus.
BL.02	Remove inbound bus lanes.
BL.05	New outbound bus lane between Elizabeth Way and the Leper Chapel.
AT.01	Provision of continuous segregated inbound cycle lane along Newmarket Road.
AT.02	Provision of continuous segregated outbound cycle lane along Newmarket Road.
AT.03	Promotion of Park and Cycle from the P&R site.
HW.01	Additional lane(s) on Newmarket Road to east of Airport Way junction.
JC.09	Signalisation of the junction of Newmarket Road and Airport Way.
JC.10	Signalisation and Reconfiguration of Quy Interchange
PR.02	Relocation of Park and Ride to south of Newmarket Road and east of Airport Way.

CONCEPT DESIGNS

2.9.9. Following the assessment of the hybrid package in the SOBC, further design development work was undertaken to produce three high-level concept designs for Newmarket Road. The purpose of the exercise was to identify the feasibility of providing continuous, coherent, direct, safe, comfortable and attractive end-to-end uni-directional segregated cycle infrastructure along Newmarket Road, from Elizabeth Way to Airport Way and the options for improving the key junctions at Elizabeth Way and Barnwell Road to provide improved active travel facilities. In addition, building on cross-section analysis the opportunities to introduce additional inbound and outbound bus lanes were identified through the reallocation of general traffic lanes or carriageway widening along Newmarket Road.

2.9.10. The three concept designs were presented for public consultation, with full details of them set out in the Stage 2: Newmarket Road – Stage 2: Concept Design Report. In overview the concepts were:

- Concept 1: End-to-End Uni-Directional Segregated Cycle Lanes – providing cycle lanes and retaining existing sections of bus lanes, with no additional bus priority measures provided;
- Concept 2: Inbound Bus Lanes – as per Concept 1, but with additional inbound bus lane from Airport Way to Barnwell Road and a short extension of the existing inbound bus lane from the western retail access signalised T-junction towards the junction with Coldhams Lane; and
- Concept 3: Inbound and Outbound Bus Lanes – as for Concept 2, but with extensions and additional sections of outbound bus lane where sufficient space is provided by the existing cross-section and public highway boundary along Newmarket Road.

2.9.11. The concept design consultation also included two broad concepts for the Elizabeth Way and Barnwell Road roundabout junctions:

- Option E1: Retaining a signalised roundabout at Elizabeth Way, infilling the underpass and providing segregated cycle and pedestrian crossings across all approach arms;

- Option E2: Replacing the signalised roundabout with a Cycle Optimised Protected Signals (CYCLOPS) junction, signalised four-arm crossroads with fully segregated pedestrian and cycling facilities on all arms,
- Option B1: Retaining a priority-controlled roundabout at Barnwell Road, with controlled pedestrian and cycle crossings across all junction arms;
- Option B2: Replacing the priority-controlled roundabout with a CYCLOPS junction, a signalised crossroads with fully segregated pedestrian and cycle crossings and facilities.

2.10 PRELIMINARY SCHEME DESIGN

2.10.1. Following the public consultation on the concept design scheme options, scheme traffic modelling, obtaining a topographical survey, a more detailed understanding of the location and quality of existing trees, reviewing additional observed movement data and a design workshop with Cambridgeshire County Council traffic signals, road safety, cycling and highway design officers, a Preliminary Scheme Design was established. This provides the 'preferred option' for the purposes of the OBC appraisal.

2.10.2. The Preliminary Scheme Design applies the modal hierarchy (pedestrians, cyclists, public transport users then vehicles) identified in the Manual for Streets and reinforced by the recent changes to the Highway Code. The preferred option provides good quality continuous pedestrian footways on both sides of Newmarket Road along with the introduction of direct and controlled crossings at the key junctions along the street, addressing existing movement barriers.

2.10.3. The preferred option has also applied the cycle design guidance provided by LTN 01/20 by providing direct, continuous high quality, stepped, uni-directional cycle tracks end-to-end from Elizabeth Way to Airport Way. In combination with the end-to-end cycle tracks, junction improvements are proposed along the road that will provide enhanced cycle and pedestrian crossings at the existing signal and priority-controlled junctions. As advocated by LTN 01/20, the Preliminary Scheme Design treats cycles as 'vehicles' and not as pedestrians, minimising the locations where pedestrians and cyclists share space, with cyclists kept on the carriageway on approach and through the junctions along Newmarket Road. This approach has resulted in a CYCLOPS junction being proposed at Elizabeth Way and Barnwell Road and continuous footway junctions across the side roads with less than 2,000 vehicles per day.

2.10.4. A 'decide and provide' approach has been adopted to the development of the Preliminary Scheme Design, prioritising high quality and consistent infrastructure for pedestrians and cyclists along Newmarket Road over the provision of bus lanes and general vehicle capacity, consistent with the modal hierarchy. This has resulted in some sections of existing bus lane being removed to accommodate segregated pedestrian and cycle infrastructure and floating bus stops. Where space allows, new sections of bus lane inbound and outbound have been introduced. The Preliminary Scheme Design has also sought to retain as many existing trees within the street as possible, particularly Category A and TPO trees.

2.10.5. The scheme retains vehicle access along Newmarket Road. The ambitious and transformational changes proposed to Newmarket Road that prioritise walking, cycling and public transport will reduce vehicle capacity along the route and at the key junctions, supporting the city-wide City Access and Making Connections demand management programmes.

2.11 STRATEGIC CASE – CONCLUSIONS

2.11.1. This Strategic Case demonstrates that the scheme has an excellent fit both with GCP's overall strategic priorities, responsibilities and demand management programmes, and with the relevant national, regional, and local policies. It demonstrates how the Newmarket Road scheme is needed to:

- Reduce community severance caused by Newmarket Road
- Provide the transformational active travel infrastructure needed to deliver modal shift from car to walking and cycling
- Enable the delivery of planned growth, including major housing development north of Newmarket Road (Marleigh) and the Marshall's site
- Provide bus priority measures and improved bus stop provision
- Improve accessibility by sustainable modes of transport between new and existing residential areas and key employment and retail areas along Newmarket Road

2.11.2. Clear objectives were developed, based on the policy background and problems identified and a long list of strategic options drawn up and sifted to identify a strategy for improvement consistent with relevant policies, issues, and objectives. The resulting strategy comprised:

- At-grade improvements to junctions on Newmarket Road
- A package of measures to encourage walking and cycling
- A package of measures to encourage bus use

2.11.3. Concept design options were developed in 2021 and presented to the public and stakeholders. Further scheme development was undertaken in light of this public and stakeholder consultation, and in collaboration with GCP. This has resulted in the Preliminary Scheme Design, which proposes:

- An extensive package of new and improved LTN 01/20 compliant facilities for pedestrians and cyclists
- Bus priority measures to facilitate the efficient movement of bus services
- A package of junction improvements to provide safe facilities for pedestrians and cyclists

2.11.4. The Strategic Case demonstrates that the scheme will achieve the objectives established for it. The scheme will deliver high quality active travel infrastructure that supports behaviour change, existing and future local communities and the decarbonisation of the transport network.

2.11.5. It will improve place making along Newmarket Road including supporting the regeneration of deprived communities such as East Barnwell. It will integrate with planned Marleigh improvements to Newmarket Road junctions and walk and cycle infrastructure to enable sustainable development at Marleigh and Marshall's site as well as other planned growth sites. In doing so it will improve connectivity between communities and places of employment for all modes of transport and will create the conditions in which bus services can operate more efficiently.

3 ECONOMIC CASE

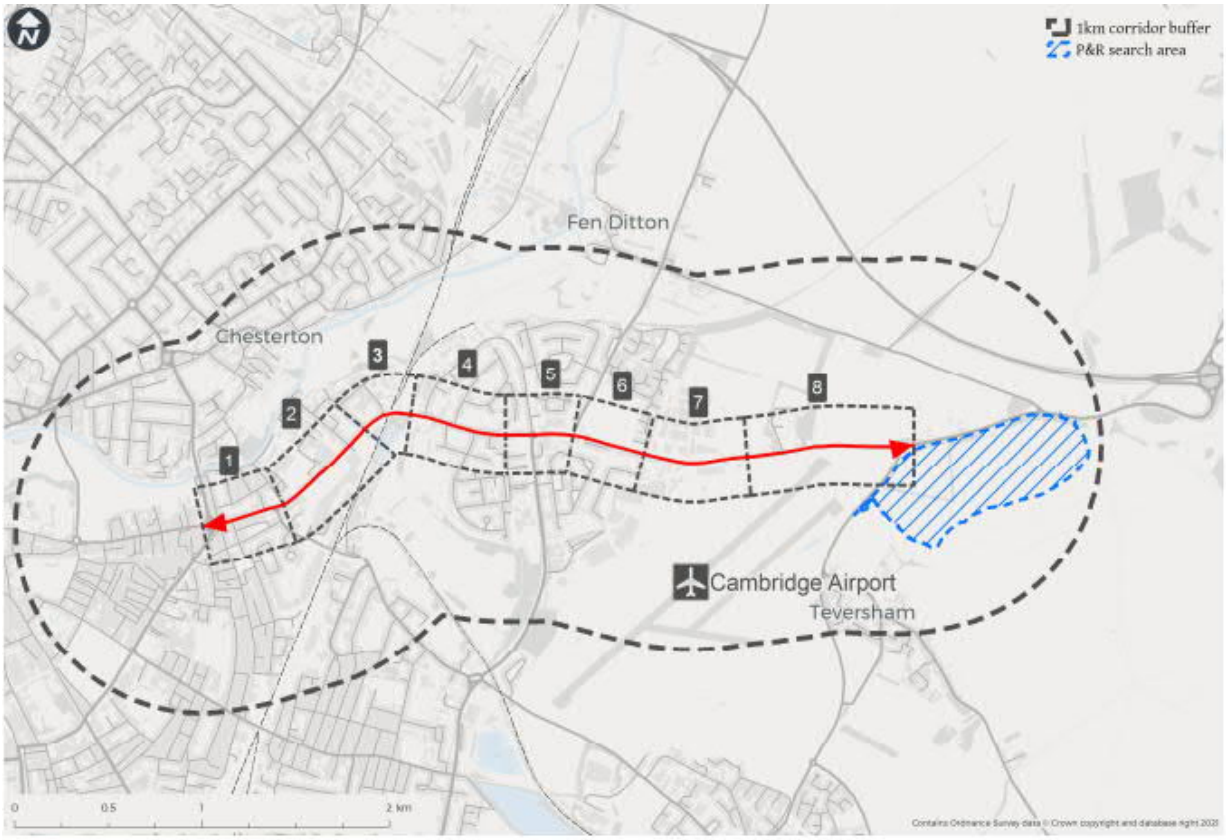
3.1 INTRODUCTION

3.1.1. The Economic Case identifies the impacts of the scheme to inform the assessment of the Value for Money (VfM) of the Newmarket Road phase of the CEA programme. It considers the economic, environmental, and social impacts that can be quantified and those which can be assessed qualitatively. To assess the VfM, these impacts have been compared to the scheme costs.

3.2 OPTIONS APPRAISED

3.2.1. The Newmarket Road scheme will improve the existing cycle and pedestrian infrastructure along Newmarket Road, as well as deliver improvements for public transport and public realm enhancements. As shown in Figure 3-1, the study area considers a 3.85km section of Newmarket Road from Elizabeth Way to Airport Way. As part of the CEA programme relocation of the existing Park and Ride site is proposed to the east of Airport Way and south of Newmarket Road.

Figure 3-1 – Newmarket Road Scheme



3.2.2. Table 3-1 provides a summary of the scheme interventions by mode.

Table 3-1 – Cambridge Eastern Access

Element	Infrastructure
Cycling	▪ 'Cambridge Kerb' cycle lanes for the duration of corridor which is 30mph ▪ Fully kerbed segregated cycle lane for the section of corridor that is 40mph further to the east ▪ Localised improvements at key junctions to enhance walk and cycle crossing facilities ▪ Bus stop improvements including consideration of floating bus stops ▪ Continuous 'Copenhagen' crossings across side roads and private accesses ▪ Tightening junction radii at existing side roads
Walking	▪ Localised improvements at key junctions to enhance walk and cycle crossing facilities ▪ Continuous 'Copenhagen' crossings across side roads and private accesses ▪ Tightening junction radii at existing side roads
Public Transport	▪ Bus Lanes proposed along certain sections of corridor ▪ Bus stop improvements including consideration of floating bus stops
Public Realm	▪ Public realm enhancements, including more biodiverse planting, additional street trees, SuDs, rain gardens and improved green infrastructure maintenance ▪ Provision of 'Pocket Parks'

3.2.3. Detailed drawings of the scheme measures are included within Appendix A.

3.2.4. The appraisal considers the incremental benefits of the intervention, comparing the benefits (and costs) of the scheme to the without scheme case.

3.3 APPRAISAL APPROACH AND ASSUMPTIONS

3.3.1. The appraisal has been undertaken in alignment with the principles of the HM Treasury Green Book and the Department for Transport (DfT) Transport Analysis Guidance (TAG) for schemes of this nature. However, recognising the context for the scheme, as described in the previous chapters, and the 'decide and provide' approach to the development of the Preliminary Scheme Design, the focus of the appraisal captures the benefits of the active travel aspects of the Newmarket Road scheme, assessed quantitatively and qualitatively.

3.3.2. This approach aligns with the overarching strategy for GCP centred upon the Making Connections and City Access Programme which includes demand management and enhanced public transport measures to encourage residents and visitors away from cars to reduce levels of traffic in the city centre and around key employment hubs. This manifests itself in the scheme prioritising high quality and consistent LTN 01/20 compliant infrastructure for pedestrians and cyclists along Newmarket Road over the provision of bus lanes and general vehicle capacity, consistent with the modal hierarchy (pedestrians, cyclists, public transport users then vehicles).

3.3.3. The result of this prioritisation and the proposals to reconfigure high capacity roundabouts to signal-controlled junctions that better serve the needs of pedestrians and cyclists and the introduction of consistent end-to-end segregated uni-directional cycle tracks and bus lanes along Newmarket Road, as well as other measures, adversely impacts highway capacity. Junction modelling[19] has identified resulting journey time disbenefits for vehicular traffic and substantial increased queueing on the main approaches to Newmarket Road. Based on demand levels derived from the CSRM2 F series 2041 forecast model and the Preliminary Scheme Design, it is forecast that vehicle journey times along Newmarket Road could increase by 2-4 minutes. If monetised for inclusion in the economic appraisal this would more than offset all the other benefits valued.

3.3.4. The modelling is unable to represent the impact of modal shift and peak spreading, which would be anticipated to reduce the impact and support GCP's policy ambitions. This modal shift is only achievable through investment in high quality public transport, cycling and pedestrian infrastructure that the Newmarket Road scheme will deliver, ensuring these modes are a more attractive option compared to the private car. Given this, the limitations of the currently available highway modelling, the role of the Newmarket Road scheme as part of the wider CEA programme and city-wide initiatives to deliver modal shift to active and sustainable modes of transport, for the purposes of this appraisal highway disbenefits have not been included.

3.3.5. For the active travel elements of the scheme a number of appraisal techniques have been used to assess the impacts which can be quantified. All benefits and costs have then been consolidated in an economic appraisal model. In line with TAG, all costs and benefits in the appraisal have been presented in 2010 Present Values (PV), market prices. Costs and benefits have been deflated to 2010 prices using the GDP Deflator forecasts within the May 2022 TAG Data Book and discounted to 2010 values using the social discount rates also within the TAG Data Book. The market price adjustment factor of 1.19 from the TAG Data Book has been used to convert from factor prices to market prices.

3.3.6. It has been assumed that the scheme opening year is 2025. TAG Unit A1-1 Cost Benefit Analysis states that the appraisal period should "cover the period of usefulness of the assets encompassed by the options under consideration". Table 2 in TAG Unit A1-1 outlines that footways and cycleways have an asset life of 20 years. Therefore, the impacts have been considered over this time period.

3.3.7. The following sections set out the approach employed to appraise the various elements of the scheme.

ACTIVE MODE APPRAISAL TOOLKIT

3.3.8. In line with TAG Unit A5-1, the DfT's Active Mode Appraisal Toolkit (AMAT) (November 2021 update) has been used to estimate the benefits associated with improved cycling infrastructure on Newmarket Road between Elizabeth Way and Airport Way. The tool considers the benefits in terms of physical activity, absenteeism, journey quality, environment, indirect tax and congestion.

[19] Preliminary Design Modelling Report (August 2022)

3.3.9. The current and anticipated scheme demand is input into the AMAT, as well as the change in infrastructure provision. Combining this with a number of assumptions from the National Travel Survey (NTS) regarding journey length, journey speed, purpose split and cycling diversion factors, the tool outputs the benefits associated with the intervention. The scheme costs can also be input to the tool such that the Benefit to Cost Ratio (BCR) can be calculated, however for the Newmarket Road analysis the benefits and costs have been brought together in the economic appraisal model.

3.3.10. Two assumptions in the AMAT were refined in order to more accurately represent the local conditions in Cambridge, as outlined below.

Table 3-2 – Refined Assumptions

	Default Assumption	Altered Assumptions	Rationale
Cycling – Average Length of Trip	4.84	5.14	National Travel Survey updated from 2012-14 to 2019 values
Number of days for which intervention data is applicable per year	253 days	305 days	Count data demonstrates that levels of demand in the corridor on Saturdays are broadly equivalent to weekday levels

3.3.11. In line with DfT guidance and to ensure the scheme benefits were not double-counted, the AMATs were split into sections depending on the type of existing and proposed infrastructure present along the corridor. For example, route section 7 has been split into eastbound and westbound directions because the scheme proposals were different on each side of the road – an off-road segregated cycle facility is proposed in a westbound direction and a shared use facility is proposed eastbound.

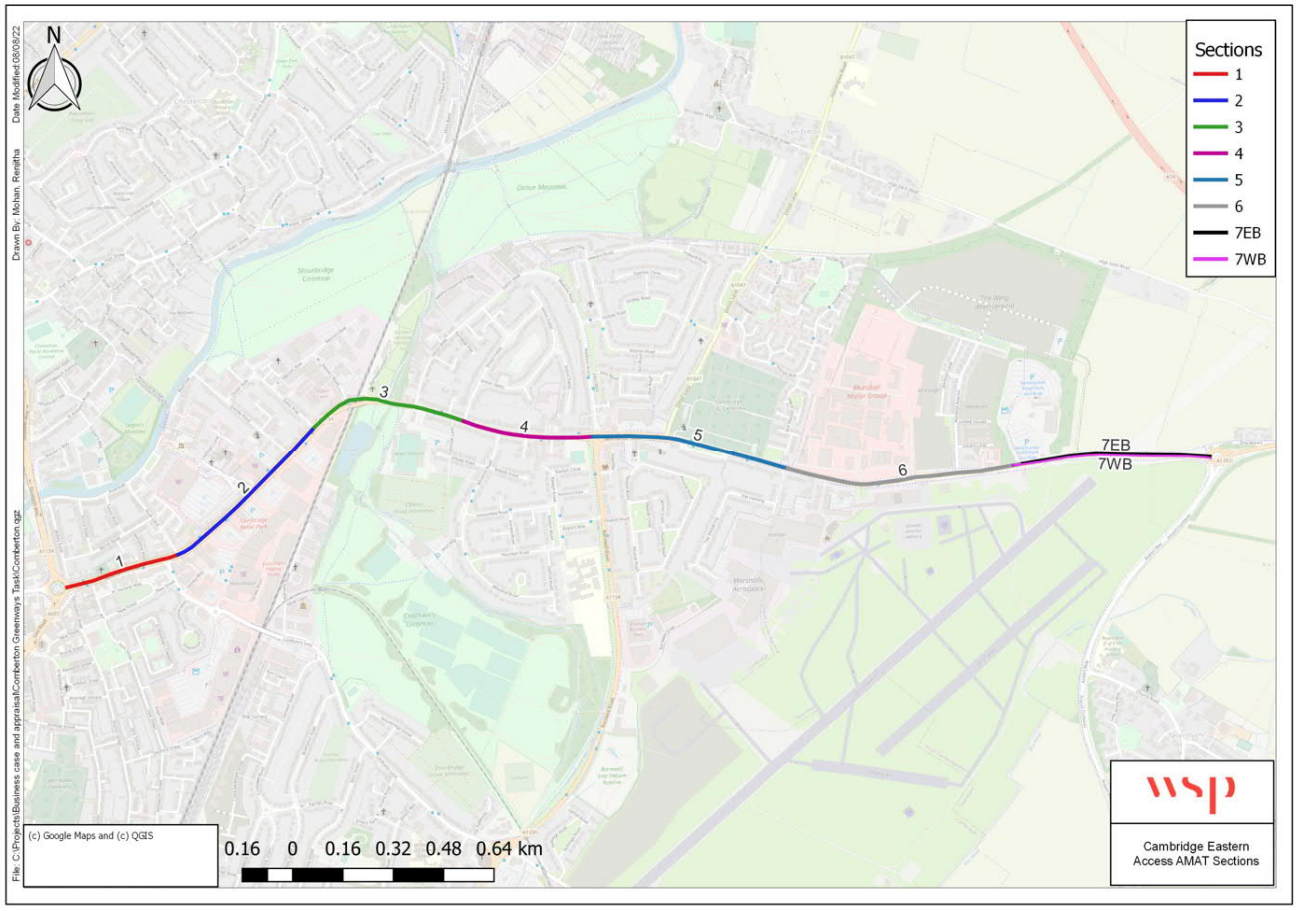
3.3.12. The sections are described in Table 3-3 below and illustrated in Figure 3-2.

Table 3-3 – Summary of AMAT Sections

Section	Description	Length of Route	Existing Infrastructure	Proposed Infrastructure
1	Elizabeth Way to River Lane	0.37km	On-road non-segregated cycle lane	On road segregated cycle lanes
2	Coldham's Lane to Garlic Row	0.6km	Shared bus lane	On road segregated cycle lanes
3	Garlic Row to Ditton Fields	0.25km	Shared bus lane	On road segregated cycle lanes
4	Ditton Fields to Barnwell Road	0.55km	Shared bus lane	On road segregated cycle lanes
5	Barnwell Road to Meadowlands Road	0.93km	Shared bus lane	On road segregated cycle lanes

Section	Description	Length of Route	Existing Infrastructure	Proposed Infrastructure
6	Meadowlands Road to Park & Ride	0.75km	Shared bus lane	On road segregated cycle lanes
7 EB	Park & Ride to Airport Way	0.3km	Shared bus lane	Shared Bus Lane
7 WB	Park & Ride to Airport Way	0.3km	Shared bus lane	Off road segregated cycle lanes

Figure 3-2 – AMAT Sections



3.3.13. The following sections discuss the approach applied with the AMAT benefit estimations.

Existing Demand

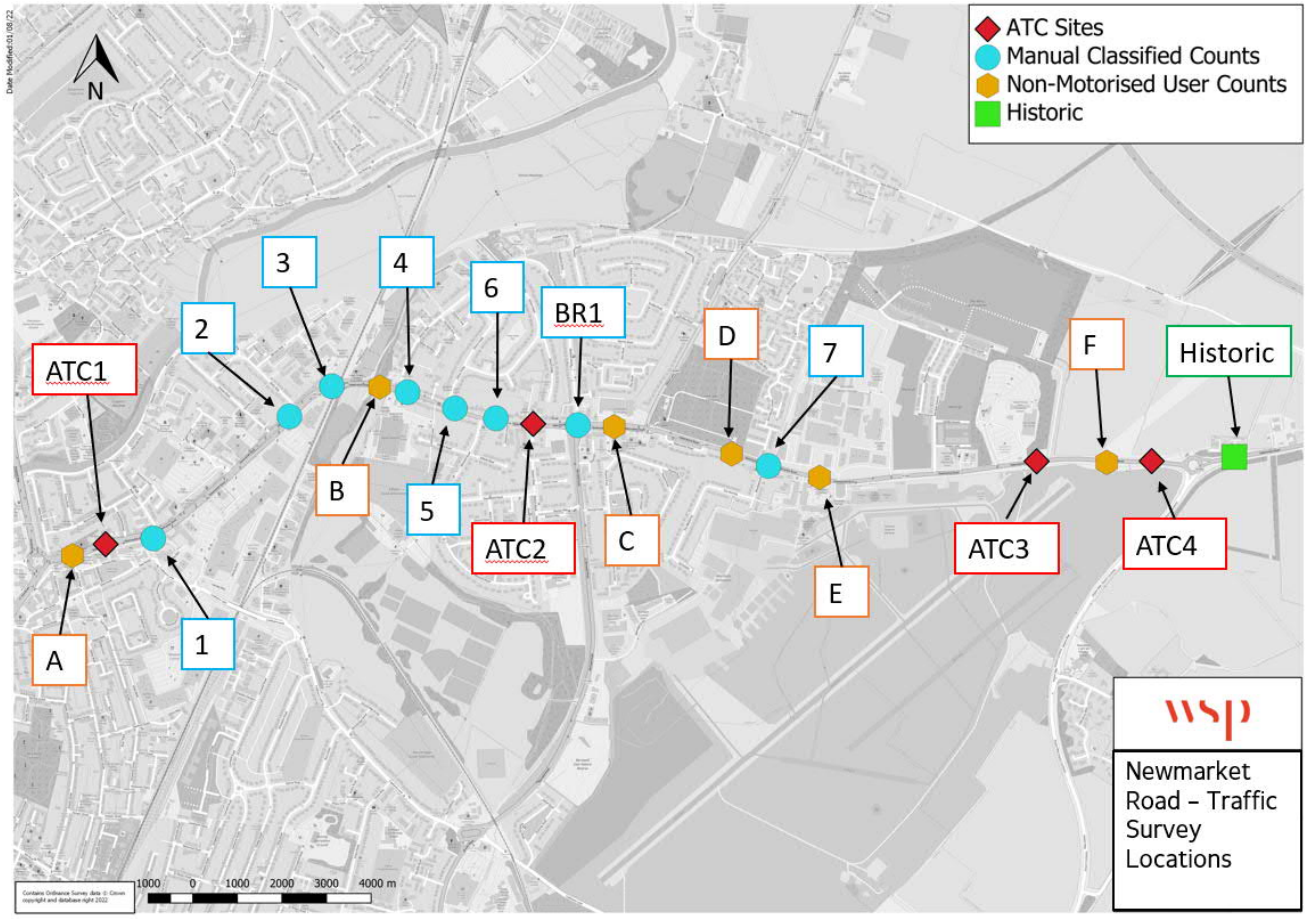
3.3.14. The AMAT requires the existing and scheme induced demand to be included as an input. A comprehensive data set was available east to west along the corridor. Where several sources of count data were available along the route, an average was taken where appropriate. To establish the existing cycling demand along the Newmarket Road corridor, count data from the following sources has been used, as shown in Table 3-4.

3.3.15. A full breakdown of the available surveys across the route can be found in Appendix B.

Table 3-4 – AMAT Demand (Daily Trips)

Section	Description	Source	Cycle Demand	Pedestrian Demand
1	Elizabeth Way to River Lane	Site A – Abbey Street ATC 1 – W of Godesdone Road CJC Site 1 – Godesdone Road Road	1,547	2,051
2	Coldham's Lane to Garlic Row	CJC 3 – Garlic Row	1,824	1,047
3	Garlic Row to Ditton Fields	CJC Site 4 – Swanns Road Site B – 50m west of Ditton Walk Site 5 – Ditton Walk / Abbey Stadium	1,736	886
4	Ditton Fields to Barnwell Road	Site 6 – Ditton Fields ATC 2 – E of Whitehill Road Site 7 – Whitwell Road	1,046	665
5	Barnwell Road to Meadowlands Road	Site C – E of Barnwell Road	1,095	743
6	Meadowlands Road to Park & Ride	Site D – E of Meadowlands Road Site 8 – Meadowland Road Site E – E of Meadowlands Road	473	313
7 EB	Park & Ride to Airport Way	Site F1 and F2 – E of Park & Ride	25	155
7 WB	Park & Ride to Airport Way	Site F1 and F2 – E of Park & Ride	42	203

Figure 3-3 - Count Locations



3.3.16. The average annual daily flow (24 hour) has been used within the appraisal. This demand has been annualised within the AMAT.

Scheme Induced Demand

3.3.17. To estimate the scheme induced cycling demand, an uplift percentage of 27% was used, which was derived from pre- and post-implementation traffic surveys from several comparable schemes outlined in the GCP Impact Evaluation Evidence Paper (2019)[20], Outcomes of the Cycling City and Town Programme (2017)[21] and Hills Road Scheme.

3.3.18. A walking demand uplift of 10% was used, which was derived from an average of case studies outlined in Making the Case for Investment in the Walking Environment (2011).[22]

[20] GCP Impact Evaluation Evidence Paper (2019)
[21] https://www.sustrans.org.uk/media/2970/2970.pdf
[22] https://www.livingstreets.org.uk/media/1394/2011-making-the-case-full-report.pdf

Intervention

3.3.19. The AMAT allows the existing infrastructure for the route to be selected, and the proposed new infrastructure. Within the tool, the options that can be selected to capture this before and after state are:

- No provision
- Shared bus lane
- Wider lane
- On-road non-segregated cycle lane
- On-road segregated cycle lane
- Off-road segregated cycle track

3.3.20. The most appropriate current and proposed infrastructure was selected in the AMAT. The current infrastructure for the route includes several sections of shared use footways, which is not specifically a selection in the AMAT Toolkit and has therefore been categorised as 'shared bus lane'.

3.3.21. The AMAT requires the average proportion of a trip which uses the scheme infrastructure to be input. This has been calculated by comparing the length of infrastructure delivered as part of the scheme (3.85km split into separate sections) to the average length of a cycle journey applied within the AMAT (5.14km).

Outputs

3.3.22. The outputs of the AMAT tool are the monetised impacts of the infrastructure under the following headings in 2010 PV:

- Congestion benefit
- Infrastructure
- Accident
- Local air quality
- Noise
- Greenhouse gases
- Reduced risk of premature death
- Absenteeism
- Journey ambience
- Indirect Tax

3.3.23. These values from each AMAT were incorporated into the economic appraisal model.

Accident Reduction

3.3.24. Accident data was obtained along Newmarket Road for the period between 2016 to 2021. During this period, 170 accidents occurred along the corridor in total, with 139 being slight, 29 serious and 2 fatal.

3.3.25. The scheme proposals include improved cycle facilities along the corridor, such as the provision of segregated cycle lanes, junction improvements including protection for cyclists and reduced kerb radii and 'continuous crossings' to slow vehicle speeds and emphasise right of way for pedestrians and cyclists at junctions (as shown in Figure 3-4**).** Due to greater separation between cyclists and vehicles, the scheme proposals are expected to lead to a reduction in road collisions involving cyclists.

Figure 3-4 - Example of Continuous Crossing[23]

Table 3-5 – Accident Savings by Severity

	Accident Savings by Severity			
	Fatal	**Serious**	**Slight**	**Total**
Cost of a casualty (£, 2010, TAG Databook v1.17)	£1,839,223	£211,234	£21,514	
Number of collisions involving a cyclist (5 years)	2	19	59	80
Number of cycle accidents that may have been prevented by the scheme (5 years)	1	12	37	50
Collision avoided on route (50% accident reduction assumption)	0.5	6	18.5	25
Number of prevented cycle accidents per annum	0.1	1.2	3.7	5
Accident savings per annum, **halved to prevent an over-optimistic assessment** (£, 2010)	£183,922	£253,480	£79,601	£517,004

3.3.26. Accident data was analysed to determine the accidents involving cyclists over the five-year period. Of these accidents, 59 were slight, 19 serious and 2 fatal. The cause of these accidents was then assessed to see which accidents could be reasonably expected to be avoided as a result of the proposed scheme interventions. To prevent overestimation, a total reduction estimate of 50% was

[23] Continuous footways research report (2018)

then applied, which was then factored to determine a yearly average before applying TAG values for accidents by severity, as shown in Table 3-5**.**

3.3.27. This annual value of accident saving was then projected and discounted in the appraisal model for a 20-year period. The results are presented in the appraisal results section below.

Journey Time Saving

3.3.28. Due to the varied and non-continuous existing cycle provision along Newmarket Road, existing average cycle speed is assumed to be approximately 15kph at present (the default cycling speed in the AMAT Toolkit). With the introduction of continuous, segregated cycle facilities and greater priority, the estimated speed is assumed to increase this average speed to 20kph. On this basis the existing cycle travel time along Newmarket Road is approximately 15.4 minutes and the travel time anticipated as a result of the scheme is 11.6 minutes. This means a 3.9-minute travel time saving for existing cyclists.

3.3.29. This time saving was valued using the Value of Time values for commuter and other users, assuming an equal split. This was multiplied by the daily demand, taking an average from the demand figures across the route and annualised prior to incorporation into the economic appraisal model.

Table 3-6 – Journey Time Assumptions

Criteria	Assumption
Time Saving	3.9 minutes
2022 VOT (£/hr)	Commuter – 10.2 Other – 4.57
Weighting Factor	Commuter – 50% Other – 50%
Number of people using the route (daily)	1,025
2010 Monetised Benefit £ (daily)	£1,925
2010 Monetised Benefit £ (annual)	£292,854

3.3.30. This annual value of journey time saving was then projected and discounted in the appraisal model for a 20-year period. The results are presented in the appraisal results section below.

SCHEME COSTS

3.3.31. It is estimated that the Newmarket Road scheme will cost in the region of £34.5m, based on construction works, fees, risk and inflation. Further detail on the estimation of the scheme costs is presented in the Financial Case. The cost spend profile of the scheme is outlined in Table 3-7 below.

Table 3-7 – Cost Spend Profile

	2022-23	2023-24	2024-25	2025-26	2026-27	**Total**
Outturn Cost excluding Optimism Bias	£428,600	£437,700	£14,992,500	£12,449,000	£6,181,500	**£34,500,000**

3.3.32. The following investment costs have been considered:

- Construction costs
- Professional Fees
- Land Take

3.3.33. For the economic appraisal optimism bias has been applied to the scheme costs to reflect the systematic tendency to underestimate scheme costs. In July 2021, DfT adjusted the methodology for how optimism bias should be applied within the economic appraisal, and the uplifts themselves to reflect this. The revised guidance states that optimism bias should be applied to the base cost estimate, as opposed to the risk-adjusted cost. Therefore, this approach has been adopted for the appraisal of this scheme.

3.3.34. TAG Unit A1-2 provides guidance for the recommended level of optimism bias to be applied for different types of projects at different stages of the scheme development. For a scheme of this nature, at the OBC stage, a 23% optimism bias has been applied to the base scheme costs within the economic appraisal.

3.3.35. Following the application of optimism bias, the scheme costs have been adjusted to produce costs consistent with the benefits, namely 2010 prices and values, with the market factor adjustment applied.

3.4 SUMMARY

3.4.1. The main appraisal assumptions are set out in Table 3-8.

Table 3-8 – Economic Appraisal Assumptions

Criteria	Assumption	Source
Opening year	2025	Project Programme
Base year	2010	DfT Base Year
Appraisal period	20 years	DfT guidance on asset life
Discount rate	3.5% 0-30 years	May 2022 TAG Data Book (A1 1.1)
GDP Deflator	-	May 2022 TAG Data Book (Annual Parameters)
Existing cycle demand	See Table 3-4 or Appendix B for a breakdown of demands used	Vivacity Sensor, DfT Road Traffic Stats, Automatic Cycle Counter Counts, Automatic Traffic Count
Scheme induced cycle demand	27%	Pre & Post Implementation Traffic Counts of Hills Road Scheme and Schemes outlined in GCP Impact Evaluation Evidence Paper
Existing path pedestrian demand	See Table 3-4 or Appendix B for a breakdown of demands used	Vivacity Sensor, DfT Road Traffic Stats, Automatic Cycle Counter Counts, Automatic Traffic Count
Journey purpose split (for cycle journey times)	Commuting: 50% Other: 50%	May 2022 TAG Data Book
Values of time (2022)	Commuter – 10.2 Other – 4.57	May 2022 TAG Databook (A1.3.2)
Market price adjustment factor	1.19	May 2022 TAG Databook (A1.3.1)
Optimism bias on capital costs	23%	TAG Unit A1-2
Cost spend profile	2022/23 – 2026/27 See Table 3-7	Project Programme

3.5 APPRAISAL RESULTS

3.5.1. The results of the economic appraisal are set out below.

IMPROVED CYCLE JOURNEYS

3.5.2. Table 3-9 presents the benefits of improved infrastructure for cyclists and pedestrians such as continuous segregated cycle facilities, greater separation between modes, continuous footways and improvements to the footway surfacing.

Table 3-9 – Cycling and Pedestrian Benefits

Impact	£, 2010 PV over appraisal period
Congestion	656,808
Infrastructure	3,604
Accidents	110,732
Local air quality	14,651
Noise	7,382
Greenhouse gases	46,312
Reduced risk of premature death	13,363,393
Absenteeism	1,769,608
Journey ambience	1,731,496
Indirect taxation	-53,420

3.5.3. The greatest benefit associated with the increased number of cyclists as a result of the scheme is the health benefit through increased physical activity including reduced risk of premature death and absenteeism. There are decongestion benefits as a result of modal shift from private car to cycling, and associated impacts on accidents, air quality, noise and greenhouse gases. The reduction in private car use has a negative impact on indirect tax revenues to central government due to the reduction in fuel consumption.

ACCIDENTS

3.5.4. Table 3-10 below sets out the benefits of the scheme induced accident reduction.

Table 3-10 – Accident Benefits

Impact	£, 2010 PV over appraisal period
Total Accident Savings (£, 2010 PV)	9,736,369

3.5.5. The scheme proposals, which include greater priority and separation for active modes, is estimated to result in a total saving of nearly £4.7m over the 20-year appraisal period.

CYCLE JOURNEY TIME SAVINGS

3.5.6. Table 3-11 below presents the benefits of the scheme induced journey time saving for cyclists.

Table 3-11 – Cycle Journey Time Savings Benefit

Impact	£, 2010 PV over appraisal period
Total Journey Time Savings (£, 2010 PV)	3,376,275

3.5.7. The scheme proposals, which will provide a continuous segregated cycle facility and greater priority for cyclists along Newmarket Road are anticipated to result in a journey time saving of around £2.6m over the 20-year appraisal period.

3.6 BENEFIT TO COST RATIO

3.6.1. In line with DfT guidance for the treatment of benefits and costs, and as described above, the economic appraisal of the Newmarket Road scheme has produced a benefit to cost ratio (BCR) of 1.7:1, as presented below.

Table 3-12 – Benefit to Cost Ratio

	£, 2010 PV over appraisal period
Noise	7,382
Local air quality	14,651
Greenhouse gases	46,312
Journey quality	1,731,496
Physical activity	15,133,001
Accidents	9,847,101
Economic efficiency: commuters	1,027,976
Economic efficiency: other	2,518,748
Economic efficiency: business users and providers	486,359
Wider public finances (indirect tax)	53,420
Present Value of Benefits (PVB)	**30,759,606**
Present Value of Costs (PVC)	**18,384,991**
Net Present Value (NPV)	**12,374,615**
Benefit-Cost Ratio (BCR)	**1.7:1**

3.6.2. Appendix C provides the disaggregation of results in the Transport Economic Efficiency (TEE), Public Accounts (PA) and Analysis of Monetised Costs and Benefits (AMCB) tables.

3.7 SENSITIVITY ANALYSIS

3.7.1. Sensitivity testing has been undertaken to explore the sensitivity of the expected outcomes of the appraisal to changes in inputs. The following sensitivity tests have been carried out, drawing on the key assumptions made in the core scenario:

- Test 1: Cycle demand uplift halved to 13.5%
- Test 2: No cycle demand uplift
- Test 3: 50% cycle demand uplift
- Test 4: No pedestrian benefits
- Test 5: 46% optimism bias
- Test 6: 30-year appraisal period

3.7.2. The table below sets out the impact on PVB, PVC, NPV and BCR of each of these tests compared to the BCR for the core scenario.

Table 3-13: Sensitivity Analysis

Test	PVB (£m)	PVC (£m)	NPV (£m)	BCR
Core Scenario	**30.8**	**18.4**	**12.4**	**1.7**
Test 1: 13.5% cycle demand uplift	23.5	18.4	5.1	1.3
Test 2: No cycle demand uplift	16.3	18.4	-2.1	0.9
Test 3: 50% cycle demand uplift	43.1	18.4	24.7	2.3
Test 4: No pedestrian benefits	28.8	18.4	10.5	1.6
Test 5: 46% optimism bias	30.8	21.8	8.9	1.4
Test 6: 30-year appraisal period	39.1	18.4	20.7	2.1

3.7.3. The scheme benefits are most sensitive to the assumption of cycle demand uplift. Under test 2, where the level of cycle demand uplift was removed entirely, the BCR decreases from 1.7:1 to 0.9:1. Likewise, under test 1, where the cycle demand uplift is reduced by half – the BCR falls from 1.7:1 to 1.3:1. Under test 3, where the level of cycle demand uplift is increased to 50% - the BCR increases to 2.3:1. This change in BCR is a reflection of the high levels of cycle demand along Newmarket Road, and therefore the benefits account for a significant proportion of the PVB in the core scenario.

3.7.4. The scheme benefits are less sensitive to a change to pedestrian uplift, with the removal of pedestrian benefits resulting in the BCR reducing from 1.7:1 to 1.6:1. This reflects the modest pedestrian uplift of 10% assumed in the core scenario.

3.7.5. As expected, increasing the optimism bias to 46% (from 23%) increases the PVC, and reduces the BCR to 1.4:1. Extending the length of the appraisal period increases the BCR to 2.1:1.

3.8 ENVIRONMENTAL IMPACTS

3.8.1. The section below sets out the appraisal of the active travel elements of the scheme considering the environmental impacts set out in TAG Unit A3.

NOISE

3.8.2. The scheme is within a Noise Important Area (NIA). There are five NIAs declared within 500m of the scheme, three of which are located within the scheme boundary. These are all designated as road sources and include NIA 11417 between Elizabeth Way and the point where Ditton Walk Road meets the scheme, NIA 5034 within the scheme boundary near the junction where Meadowsland Road meets the scheme along the A1303 and NIA 5035 near Cambridge City Airport.

3.8.3. There are sensitive receptors adjacent to the scheme which comprise residential properties situated amongst commercial buildings in close proximity to the existing A1134 near the Elizabeth Way roundabout. The existing noise environment is expected to be dominated by road noise; however, the noise environment is also likely to be influenced by noise associated with commercial operations.

3.8.4. Once operational, the scheme is likely to decrease noise levels along the existing A1134 and A1303 and also the adjoining roads. This is because the scheme proposals may encourage greater use of bicycles and buses during operation, reducing the noise pollution from the road, assuming a modal shift from car use. Construction activities could result in occasional noise impacts, though these are expected to be localised and infrequent, especially given the ambient noise levels in this busy urban setting.

3.8.5. Based on the outputs of the AMAT, the monetised impact on noise of modal shift from private car is estimated to be £10,234 (2010 PV).

3.8.6. Overall, the scheme is considered to have a **Slight Beneficial** effect on noise.

AIR QUALITY

3.8.7. The scheme is within areas already impacted by poor air quality, as indicated by the designation of the Cambridge Air Quality Management Area (AQMA) with Ref ID:311. The AQMA is declared exceeding the annual mean of 35µg/m3 nitrogen dioxide (NO2).

3.8.8. Defra Pollution Climate Mapping (PCM) link is declared within the part of the scheme coinciding with the boundary of AQMA. The PCM link in exceedance of the annual NO2 objective within the scheme is between Elizabeth Way and the Cambridge Retail Park.

3.8.9. There are sensitive receptors adjacent to the scheme which comprise residential properties situated amongst commercial buildings in close proximity to the existing A1134 highway in the areas of Barnwell, Chesterton and Fen Ditton.

3.8.10. The air quality levels may be increased during construction, although once in operation, the proposed scheme is likely to improve air quality due to expected greater use of bicycles and buses , reducing the pollution from the road, assuming a modal shift from car use.

3.8.11. Based on the outputs of the AMAT, the monetised impact on air quality of modal shift from private car is estimated to be £19,965 (2010 PV).

3.8.12. Overall, the scheme is considered to have a **Slight Beneficial** effect on air quality.

GREENHOUSE GASES

3.8.13. In line with the assessment of the air quality impacts of the scheme, the net reduction in highway-kilometres as a result of modal shift to active modes, will lead to a net decrease in greenhouse gas emissions.

3.8.14. Based on the outputs of the AMAT, the monetised impact on greenhouse gases of modal shift from private car is estimated to be £63,919 (2010 PV).

LANDSCAPE

3.8.15. The scheme will fit within the existing highway corridor, so it is anticipated no mature trees will need to be cut down. Additionally, it is anticipated that the proposed scheme design will incorporate or enhance existing footways and provide new crossings to ensure severance impacts are reduced. However, the scheme may adversely affect visual amenity for receptors and the culture of Bedfordshire and Cambridgeshire national landscape area.

3.8.16. Overall, the impact of the scheme on the landscape is anticipated to be **Neutral**.

TOWNSCAPE

3.8.17. The scheme is intended to enhance the strategic highway network in order to provide high quality and attractive infrastructure for walking, cycling and public transport. This will benefit human interaction within the townscape. It is anticipated that the scheme design would incorporate or enhance existing footways and introduce new and improved crossings to ensure existing severance impacts are reduced.

3.8.18. Overall, the scheme is considered to have a **Slight Beneficial** effect on the townscape.

HISTORIC ENVIRONMENT

3.8.19. There are a number of designated heritage assets within 2km of the scheme: 5 Scheduled Monuments, 10 Registered Parks & Gardens, 64 Grade I listed buildings, 614 Grade II listed buildings and 45 Grade II* listed buildings and 10 Registered Parks and Gardens. Of these, the Grade II listed Globe Public House and 247 Newmarket Road are within 20m and will potentially be impacted indirectly. However, these assets are currently affected by the presence of the existing highway, so any impact is considered Slight Adverse.

3.8.20. The presence of non-designated heritage assets and buried archaeological remains is not known at this stage. It is considered there is the potential for archaeological remains to be present within the proposed scheme boundary, though it is more likely that the construction of the existing highway would have already depleted most, if not all archaeological resources. Further, it is not expected that the new road scheme would impact on virgin ground and therefore the risks to features of medium to high value would be extremely low.

3.8.21. Overall, the scheme is anticipated to have a **Neutral** impact on historic environment.

BIODIVERSITY

3.8.22. There are a number of nationally designated sites within 2km of the scheme. The nationally designated sites include ancient woodlands and a few other priority habitats such as coastal and floodplain grazing marsh (closest within 10m from the scheme over the Coldham's brook), lowland calcareous grassland (closest within 10m from the scheme over the Coldham's brook), lowland fens, deciduous woodland, traditional orchard and wood-pasture and parkland.

3.8.23. Coldham's Common Local Nature Reserve is immediately adjacent south of the scheme. The scheme could have an indirect impact on the Coldham's Common LNR during construction, which is potentially connected to the scheme by surface water run-off. Measures to ensure best practice is employed in managing drainage issues during construction will mitigate this issue.

3.8.24. Wilbraham Fens Site of Special Scientific Interest (SSSI) is noted at the east of the 2km buffer. Considering the distance and evidence of habitats, currently there will be no impact on the SSSI.

3.8.25. The presence of protected species within and surrounding the scheme is largely unknown. There are some priority species (listed by Cambridgeshire Biodiversity Action Plan (BAP)) noted through desk study within 500m, and the scheme has the potential to impact on a number of protected and important trees (as identified GCSP Search-by-Map and CEA Phase A – Newmarket Road Arboricultural Survey).

3.8.26. Overall, the impact on biodiversity is anticipated to be **Neutral**.

WATER ENVIRONMENT

3.8.27. There are two water courses within 2km of the scheme. Coldham's Brook passes underneath the scheme and the River Cam is within 300m north of the scheme.

3.8.28. The scheme is predominantly located within areas classified as Flood Zone 1, with only small areas within Flood Zones 2 and 3, so it is therefore anticipated that there will be a limited increase in flood risk as a result of the scheme.

3.8.29. Runoff generated through the construction and operation phases of the scheme has the potential to change the chemical composition of groundwater bodies and nearby watercourses (primarily Coldham's Brook). However, good practice measures will mitigate this risk and minimise the likelihood of chemical contamination which could impact the features of this waterbody (e.g., water supply, dilution of waste products). Construction impacts on water quality can be appropriately managed by the implementation of a CEMP that manages pollution risks.

3.8.30. The impact of the scheme on the water environment is considered **Neutral**.

SUMMARY

3.8.31. The table below summarises the environmental impacts of the scheme arising from the active travel elements.

Table 3-14 – Summary of Environmental Impacts

Environmental Impact	Assessment
Noise	£10,234 (2010 PV)
Air Quality	£19,969 (2010 PV)
Greenhouse Gases	£63,919 (2010 PV)
Landscape	Neutral
Townscape	Slight Beneficial
Historic Environment	Neutral
Biodiversity	Neutral
Water Environment	Neutral

3.9 SOCIAL IMPACTS

3.9.1. The section below sets out the appraisal of the active travel elements of the scheme considering the social impacts set out in TAG Unit A4-1, as well as reliability (TAG A1.3), which is presented in the Appraisal Summary Table (AST, see Appendix D) under both Economy and Social impacts.

RELIABILITY IMPACT

3.9.2. The proposals will improve reliability for cyclists and pedestrians by upgrading the existing variable infrastructure along Newmarket Road to provide a continuous segregated cycle link and a direct pedestrian link free of guardrailing and other street clutter. Increased provision of bus lanes may improve the reliability of bus services as buses will be able to bypass general traffic, once modal shift has occurred.

3.9.3. The impact of the scheme on reliability is anticipated to be **Slight Beneficial**.

PHYSICAL ACTIVITY

3.9.4. The appraisal of physical activity captures the health benefits of a change in the number of people travelling by active modes (i.e., cycling and walking).

3.9.5. The health benefits of the scheme associated with the increase in physical activity have been captured and quantified within the AMAT. These benefits are as a result of new cyclists and are therefore linked directly to the scheme induced demand.

3.9.6. Over the 20-year appraisal period the health benefits associated with increased uptake in active modes is £22,325,355 (2010 PV).

JOURNEY QUALITY

3.9.7. Journey quality measures the real and perceived physical and social environment while travelling. This includes:

- Traveller care: Aspects such as cleanliness, level of facilities, information and the general transport environment

- Travellers' views: The view and pleasantness of the external surroundings during the journey
- Traveller stress: Frustration, fear of accidents and route uncertainty

3.9.8. The benefits associated with journey quality as a result of improved cycling and pedestrian infrastructure delivered through the scheme have been captured within the AMAT tool. Over the 20-year appraisal period the journey quality benefits associated with the scheme amount to £2,433,311 (2010 PV).

ACCIDENTS

3.9.9. The impact of the scheme on accident reduction has been assessed by estimating the scheme induced accident reduction following analysis of collisions over a 5-year period.

3.9.10. The AMAT tool also captures the potential accident impacts of modal shift from private car to cycling.

3.9.11. Over the 20-year appraisal period the overall accident impacts of the scheme are estimated to be £9,889,883 (2010 PV).

SECURITY

3.9.12. The scheme proposals will increase the sense of security along the corridor as the existing pedestrian subways are being replaced by street level pedestrian and cycle crossings.

3.9.13. The impact of the scheme on security is estimated to be **Moderate Beneficial**.

ACCESS TO SERVICES

3.9.14. The improvement of existing cycling and pedestrian infrastructure along Newmarket Road will improve accessibility to key destinations such as Cambridge City Centre, Coldham's Common, and Cambridge Airport, as well as the Park & Ride site in its current location and once it is relocated as part of the CEA programme. In addition, the improved paving infrastructure in terms of pavement evenness and level access will encourage more leisure users to access the route. Bus stop improvements including floating bus stops will reduce the conflict between cyclists and bus users and make the alighting process easier.

3.9.15. The impact of the scheme on access to services is estimated to be **Slight Beneficial**.

AFFORDABILITY

3.9.16. The scheme is not anticipated to have any negative impact on affordability as no changes are proposed for the cost of using active modes and bus services. As a result of improved infrastructure, for those current highway users who switch to cycling there will be a saving in vehicle operating costs.

3.9.17. The impact of the scheme on affordability is estimated to be **Slight Beneficial**.

SEVERANCE

3.9.18. The lack of provision for cyclists at the major junctions and volume of general traffic makes it an unattractive route for many, with alternative parallel routes more attractive options. The scheme proposals include a high quality, direct route for cyclists along the corridor, which will reduce severance.

3.9.19. The impact of the scheme on severance is estimated to be **Slight Beneficial**.

OPTION VALUES

3.9.20. The proposed scheme does not introduce new public transport options and therefore the impact is considered to be **Neutral**.

SUMMARY

3.9.21. The table below summaries the social impacts of the scheme.

Table 3-15 – Summary of Social Impacts

Social Impact	Assessment
Reliability	Slight Beneficial
Physical Activity	£22,325,355
Journey Quality	£2,433,311
Accidents	£9,889,883
Security	Moderate Beneficial
Access to Services	Slight Beneficial
Affordability	Slight Beneficial
Severance	Slight Beneficial
Option and Non-Use Values	Neutral

3.10 DISTRIBUTIONAL IMPACTS

3.10.1. Distributional Impacts (DIs) consider the variance of transport intervention impacts across different social groups. The analysis of DIs is a constituent of the AST. Both beneficial and/or adverse DIs of transport interventions need to be considered, along with the identification of social groups likely to be affected.

3.10.2. In terms of distributional analysis, the categories that need to be considered include user benefits, accidents and affordability, together with the effects of the scheme on local noise and air quality. The effect of these impacts is assessed for the following social groups:

- Income distribution
- Children
- Young adults
- Older people
- Disabled
- Black and minority ethnic groups
- Those without access to a car
- Carers

3.10.3. Based on the proportionate approach set out in TAG Unit A4.2, the DI assessment for the active travel elements of the Newmarket Road scheme has identified the likelihood of impacts for each indicator. Where it is anticipated there will be impacts a qualitative commentary identifying the social groups most likely to be affected has been provided.

3.10.4. The findings of this DI assessment are set out in Table 3-16 below.

Table 3-16 – Distribution Impact Assessment

Indicator	Appraisal output criteria	Potential impact	Qualitative Comments	Assessment
User benefits	The TUBA user benefit analysis software or an equivalent process has been used in the appraisal; and/or the value of user benefits Transport Economic Efficiency (TEE) table is non-zero.	Yes, positive	AMAT has been used to appraise user benefits for the scheme. This analysis does not produce spatial distribution of the benefits, but an overall benefit.	User benefits for walkers and cyclists are forecast providing benefits for those who do not have access to a car including due to age, affordability and physical ability.
Noise	Any change in alignment of transport corridor or any links with significant changes (>25% or <-20%) in vehicle flow as an indicator of significant change.	Yes, positive	There are no significant changes (>25% or <-20%) in vehicle flow, speed, %HGV content expected as a result of the scheme.	No further assessment.
Air quality	Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %HGV content: ▪ Change in 24-hour AADT of 1000 vehicles or more ▪ Change in 24-hour AADT of HGV of 200 HGV vehicles or more ▪ Change in daily average speed of 10kph or more ▪ Change in peak hour speed of 20kph or more ▪ Change in road alignment of 5m or more	Yes, positive	There are no significant changes in vehicle flow, speed, %HGV content expected as a result of the scheme.	No further assessment.
Accidents	Any change in alignment of transport corridor (or road layout) that may have positive or negative safety impacts, or any links with significant changes in vehicle flow, speed, %HGV content or any significant change (>10%) in the	Yes, positive	The scheme is expected to reduce the number of collisions that occur along Newmarket Road as a result of the scheme proposals such as greater separation between active modes and vehicles as well as	Through benefitting those who walk and cycle the scheme will benefit those who do not have access to a car, including due to age, affordability and physical ability.

Indicator	Appraisal output criteria	Potential impact	Qualitative Comments	Assessment
	number of pedestrians, cyclists or motorcyclists using road network.		improved protection at junctions. It is anticipated that there will also be an overall reduction in highway-kilometres travelled as a result of the scheme, which will reduce the number of highway accidents.	
Security	Any change in public transport waiting/ interchange facilities including pedestrian access expected to affect user perceptions of personal security.	Yes, positive	The replacement of existing subways with road level pedestrian and cycle crossings will improve the security of users along the corridor.	This may provide a particular benefit to socially vulnerable groups such as the disabled, elderly and ethnic minorities.
Severance	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content.	Yes, positive	The segregated pedestrian and cycle infrastructure alongside improvements to crossings at junctions will provide improved continuity for these modes along the corridor.	This may provide a particular benefit to the economically disadvantaged along the Newmarket Road corridor who are most reliant on walking and cycling.
Accessibility	Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. demolition & re-location of a school).	Yes, positive	Bus stop improvements including consideration of floating bus stops will reduce conflict between cyclists and bus users, making alighting buses easier.	No further assessment.
Affordability	In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in	Yes, positive	The scheme will encourage modal shift to active modes, which may reduce the cost of travel for users	No further assessment.

Indicator	Appraisal output criteria	Potential impact	Qualitative Comments	Assessment
	journey speeds and congestion occur resulting in changes in costs); Road user charges (including discounts and exemptions for different groups of travellers); Public transport fare changes (where, for example premium fares are set on new or existing modes or where multi-modal discounted travel tickets become available due to new ticketing technologies); or Public transport concession availability (where, for example concession arrangements vary as a result of a move in service provision from bus to light rail or heavy rail, where such concession entitlement is not maintained by the local authority).			

3.11 VALUE FOR MONEY STATEMENT

3.11.1. In recognition of the role of the Newmarket Road scheme as part of the wider CEA programme and city-wide initiatives to deliver modal shift to active and sustainable modes of transport and the limitations of the currently available highway modelling, the appraisal has focused upon the active travel aspects of the Newmarket Road scheme, assessed quantitatively and qualitatively.

3.11.2. The economic appraisal produces a BCR of 1.7:1. The main source of benefits is associated with increased physical activity as a result of users switching to active modes. Secondly, are benefits associated with the scheme's induced accident reduction. Other scheme benefits include improved journey times, associated with improved cycle journey times as a result of the scheme interventions, as well as fewer vehicles being on the network as a result of modal shift. Overall, the benefits amount to £30.8m (£2010 PV). The cost of the scheme is £18.4m (£2010 PV), which includes 23% optimism bias.

3.11.3. Sensitivity tests on the economic appraisal demonstrate that the scheme can withstand an increase in costs as well as lower demand uplifts and still deliver low value for money (i.e., a BCR between 1-1.5:1). If appraised over a 30-year period or if cycle demand uplift is increased to 50%, the scheme has the potential to deliver high value for money (i.e., a BCR greater than 2:1).

3.11.4. There are also other impacts not captured or monetised in the appraisal that positively impact on the case for the scheme, strengthening the value for money implied by the BCR. These include benefits in terms of townscape, severance, security, affordability and access to services, along with supporting GCP's policy ambitions to promote sustainable modes and deliver mode shift from private vehicles in order to ensure the ongoing economic growth of the region.

4 FINANCIAL CASE

4.1 INTRODUCTION

4.1.1. This chapter presents the Financial Case for the Newmarket Road phase of the CEA programme. It sets out the estimated cost for the delivery of the scheme and how it will be funded. The scheme description is provided in the Strategic Case and the value for money case is set out in the Economic Case.

4.1.2. The outturn cost estimate is based on the Preliminary Scheme Design (Appendix A) and assumes an opening year of 2025.

4.2 CAPITAL COSTS

4.2.1. The capital costs have been estimated by WSP. It is estimated that the Newmarket Road scheme will cost £34.5m, including risk and an allowance for inflation. Table 4-1 sets out a summary of the scheme costs. (Further details are provided in Appendix E.)

Table 4-1 – Summary of Scheme Costs

Cost item	Cost estimate
Construction Costs	£16,472,000
Professional Fees	£3,296,000
STATS	£4,960,000
Risk/Contingency	£5,933,000
Future Inflation	£2,445,000
Inflation Contingency (3% per annum)	£1,384,000
TOTAL CONSTRUCTION BUDGET	**£34,500,000**

4.3 BUDGET AND FUNDING

4.3.1. The Greater Cambridge City Deal is one of a number of 'City Deals' agreed by central government in 2013 and is worth up to £500 million in funding to 2030. City Deals provide a funding framework for central government and local partners to agree investment programmes, centred on the promotion of local economic growth and development.

4.3.2. Funding for the CEA programme is currently available from the GCP, who are responsible for allocating the funds awarded as part of the Greater Cambridge City Deal. This will cover the requirement for the Newmarket Road scheme. The funding profile for the scheme is outlined below.

Table 4-2 – Funding Profile

	2022-23	2023-24	2024-25	2025-26	2026-27	**Total**
Funding requirement	£428,600	£437,700	£14,992,500	£12,449,000	£6,181,500	**£34,500,000**

4.3.3. The GCP will also seek to generate local funding, for example through Section 106 agreements with developers, and explore private funding opportunities in order to leverage the maximum benefit from the City Deal funding.

5 COMMERCIAL CASE

5.1 INTRODUCTION

5.1.1. This chapter presents the Commercial Case for the Newmarket Road scheme, part of the Cambridge Eastern Access programme of sustainable transport improvements. It describes the proposed procurement approach for the preferred contractor to undertake the delivery of the scheme. WSP has been procured through the Joint Professional Services Framework to develop the concept, preliminary and detailed design for the scheme.

5.2 OUTPUT BASED SPECIFICATION

5.2.1. As set out in the Strategic Case, objectives have been established for the scheme. The proposed scheme has been developed to achieve these objectives, focused on increasing travel by active modes. The objectives include improving connectivity for the existing communities through enhancing the Newmarket Road corridor to improve the attractiveness of sustainable means of travel, e.g., additional segregated cycleways, improved pedestrian crossing facilities, greater bus priority and enhanced public realm.

5.2.2. Detailed design will be undertaken as part of the ongoing scheme development, and the output specification will be confirmed during the procurement and contract management process.

5.3 PROCUREMENT APPROACH

5.3.1. It is proposed that the procurement approach will be consistent with the approach employed for the delivery of similar schemes, e.g., Milton Road and Histon Road. GCP intends to appoint Milestone (formerly Skanska) as the delivery contractor via the Cambridgeshire County Council's Highways Framework Contract. This is based upon GCP's satisfaction that Milestone has:

- An appropriate recent history of carrying out highways / pavement works.
- A proven capability to administer and successfully complete works of similar value to the scheme.
- Site Management / Supervision capability with suitable experience of working adjacent to live carriageways and public interfaces.
- Health and Safety Management systems compliant with the type and locations for these works.
- The capability in resources either through direct labour force or subcontractor labour.
- An appropriate supply chain for the procurement of materials and plant to suit the programme requirements.

5.3.2. Using the Highways Framework Contract, and consistent with the approach on other similar schemes, GCP will be able to procure Milestone in a timely and economical manner, enabling early contractor involvement in the delivery of the scheme. GCP's wish to achieve early contractor engagement informed their choice of procurement approach and ruled out alternative options such as Single Stage Open Tender. As part of the framework agreement Milestone will develop a target cost for the scheme, which will provide the basis for the construction budget and allow construction risk to be shared between the contractor and client.

5.3.3. Early contractor involvement has been incorporated with the traditional approach of separate contracts for the design and construction works. This allows close control of the design process by the client, but also enables the delivery contractor to influence the design to reduce risks and cost by using their experience of the buildability and risks of designs.

5.3.4. Specific factors pertaining to the scheme, including construction risks, the stage that the project is at in its development and importantly, the level of risk in the project and the appetite to accept or transfer it to a contractor were considered in making an informed decision. The approach has been to ensure that the contractual arrangements for the delivery of the scheme places risks with the party best positioned to deal with them.

5.4 RISK ALLOCATION AND TRANSFER

5.4.1. A risk register has been produced for the Cambridge Eastern Access scheme and is updated through the course of the project. At this 'Preliminary Design' stage of the project, the highest rated residual risk for the commercial delivery of the Newmarket Road scheme relates to scheme cost escalation due to uncertainties over the scope of the work required, e.g. unknown utility diversions, and the effects of inflation, which are currently highly uncertain.

5.4.2. Based on the experience of the delivery of the schemes for Milton Road and Histon Road, which utilised the Highways Framework Contract described above, construction risk will be shared between GCP and Milestone on an agreed basis with the party best placed to manage the risk bearing it and with the scheme budget being closely monitored.

5.5 TIMESCALES

5.5.1. An indicative timeline for delivery of the Newmarket Road scheme has been provided in the Management Case. As shown, the key procurement stages are:

Table 5-1 – Key Procurement Stages

Stage	Programme
Tender process	Sept - Oct 2023
Award of Tender	Nov 2023
Contractor mobilisation	Dec 2023
Construction Phase 1: East of Elizabeth Way Roundabout to west of Coldhams Lane & Ditton Lane to Ditton Fields (inc Barnwell Rd roundabout)	Jan – Sept 2024
Construction Phase 2: Coldhams Lane to Ditton Fields	Sept 2024 – April 2025
Construction Phase 3: Elizabeth Way Roundabout & Airport Way to Ditton Lane (inc access works to P+R site)	April – Dec 2025

5.6 CONTRACT MANAGEMENT

5.6.1. Management of the contracts for the design and delivery of the scheme is undertaken by the Project Manager, who is employed by Cambridgeshire County Council (CCC) and has day to day responsibility for delivery of the scheme.

6 MANAGEMENT CASE

6.1 INTRODUCTION

6.1.1. This chapter forms the Management Case for the Newmarket Road element of the Cambridge Eastern Access scheme. It describes how the scheme will be delivered through project management best practice, describes the engagement undertaken with stakeholders, presents the key risks and demonstrates that an appropriate governance structure is in place to oversee the project.

6.2 EVIDENCE OF SIMILAR PROJECTS

6.2.1. Cambridgeshire County Council and the Greater Cambridge Partnership have experience of delivering public transport and active travel corridor infrastructure improvements, of a similar scale, such as the cycleway improvements on Hills Road, Histon Road, Huntingdon Road and Milton Road. There have been important lessons learnt in the delivery of these projects, which will be carried forward in the delivery of the Newmarket Road scheme. These include engagement with stakeholders, collaborative working with the delivery contractor and applying a flexible yet consistent approach for similar schemes.

6.3 PROGRAMME / PROJECT DEPENDENCIES

6.3.1. The overall Cambridge Eastern Access proposals form part of GCP's wider strategy working with partners to create better sustainable transport networks. The scheme also forms part of GCP's four public transport corridor schemes, which are:

- Cambourne to Cambridge
- Cambridge Eastern Access
- Cambridge Southeast Transport
- Waterbeach to Cambridge

6.3.2. The GCP's four corridor projects aim to provide better public transport and active travel routes for walking and cycling, offering better connectivity and alternatives to car use for growing communities to the north, southeast, east and west of the city. These corridors will be served by modern, electric vehicles to limit air pollution and noise and complemented by travel hubs to encourage park and ride journeys and end-to-end space for active travel options such as walking and cycling. The scheme for Newmarket Road provides the first phase for the Cambridge Eastern Access programme of schemes.

6.4 GOVERNANCE, ORGANISATIONAL STRUCTURE & ROLES

6.4.1. To date, the development of the Newmarket Road scheme within the Cambridge Eastern Access programme has been overseen by the following structure.

- The overall scope of the project is set by the GCP Executive Board;
- The Project Manager has full day to day responsibility for delivery of technical work streams and is employed by Cambridgeshire County Council (CCC).

6.4.2. The overall project management structure is set out hierarchically in the table below:

Table 6-1 – Overall Project Management Structure

Body	Function
GCP Executive Board	Overall Strategic Direction of the Greater Cambridge Partnership (GCP)
GCP Assembly	Strategic and local advisory body for Greater Cambridge Partnership (GCP)
Infrastructure Steering Group	GCP officer level programme board
Programme Manager	Technical and procedural oversight of projects
Project Manager	Day to day management of each project.

6.4.3. At the City Deal level, the GCP Executive Board consists of the Leader or equivalent of each of the partner organisations, as the key decision-making group. There is also a 15-person Assembly with appropriate representation from the Local Authorities and other stakeholders, which plays an advisory and scrutiny role.

6.4.4. A key role of the Executive Board is to agree and oversee the delivery of a programme of major schemes that will help to achieve the GCP aims and support the sustainable growth and continued prosperity of the Greater Cambridge city-region, in line with national and local policy objectives and the LEP's overarching economic strategy for the area. In particular the Executive Board:

- Takes responsibility for ensuring Value for Money is achieved;
- Identifies a prioritised list of investments within the available budget;
- Makes decisions on individual scheme approval, investment decision making and release of funding, including scrutiny of individual scheme Business Cases;
- Monitors the progress of scheme delivery and spend; and
- Actively manages the budget and programme to respond to changed circumstances (scheme slippage, scheme alteration, cost increases, etc.).

6.4.5. CCC, Cambridge City Council (CaCC) and South Cambridgeshire District Council (SCDC) have three representatives on the Assembly, with political balance in each Authority's membership reflecting the balance of the political parties on the relevant Council. The other three places on the Assembly are filled by members representing various stakeholder groups.

6.4.6. The GCP is focused on both programme and project level governance with the principle that issues of key importance at both the programme and project level are addressed at the highest levels of governance but that for other issues of a more technical nature, officer level structures at the project and programme level are empowered to guide development.

6.4.7. At the programme level an officer technical group made up of key officers and stakeholders develops the overall scheme prioritisation and seeks to manage programme level risks and capture shared benefits. The Project Manager in consultation with the Programme Manager raise programme level issues with the GCP Executive Board and Joint Assembly as required.

6.4.8. At the project level, a Project Team works up scheme details and reports to a Project Manager who guides the overall development of the project at the technical level, in combination with key officers. At the project gateways, reports are made to the City Deal Executive Board on progress and seek decisions on key matters which are project related.

6.5 PROGRAMME / PROJECT PLAN

6.5.1. This section sets out the project plan with key milestones. A full project programme is provided in Appendix F, which sets out the critical path, including project dependencies as well as decision and reporting milestones.

6.5.2. The project has been governed using the PRINCE 2 project method. It will pass through a number of gateways to ensure that progress is approved, which are as a minimum, the GCP key decision points. The Executive Board may at its discretion create additional gateways if it considers this necessary for the effective governance and delivery of the project.

6.5.3. The overall scheme programme including indicative timescales is set out below:

Table 6-2 - Key Project Milestones

Stage	Programme
Stakeholder consultation	Oct - Dec 2022
Detailed Design	Jan - Sept 2023
Applications and Consents for TROs/Side Roads/PROWs	Jan - Sept 2023
Tender process	Sept – Oct 2023
Full Business Case	Oct-Dec 2023
Award of Tender	Nov 2023
Contractor mobilisation	Dec 2024
Construction Phase 1: East of Elizabeth Way Roundabout to west of Coldhams Lane & Ditton Lane to Ditton Fields (inc Barnwell Rd roundabout)	Jan – Sept 2024
Construction Phase 2: Elizabeth Way Roundabout & Airport Way to Ditton Lane (inc access works to P+R site)	Sept 2024 – April 2025
Construction Phase 3: Coldhams Lane to Ditton Fields	April - Dec 2025

6.6 ASSURANCE AND APPROVALS PLAN

6.6.1. There are a number of key milestones in the Project Plan where internal and/or external approvals will be required in order for the project to progress. As noted above, the project will pass through a number of gateways to ensure that progress is approved.

6.6.2. GCP have developed an assurance framework for the Greater Cambridge City Deal that outlines the proposed membership, responsibilities, processes and principles that will be in place for agreeing and overseeing the delivery of a robust transport infrastructure programme as part of the overall City Deal goals of integrating transport and strategic spatial planning. Local partners are committed to ensuring that robust systems and processes will be in place in line with DfT guidance to develop and agree a deliverable programme that offers value for money.

6.6.3. The framework ensures compliance with DfT's minimum requirements for Assurance Frameworks.

6.7 COMMUNICATION AND STAKEHOLDER MANAGEMENT

6.7.1. This section sets out the strategy for developing communications and stakeholder management on the project. Effective communication is critical to the success of the project. All communication activities are signed off by the Project Manager. The Communications Plan is guided by the principle of the City Deal wide communication strategy. The strategy outlines how the project will ensure that all internal and external stakeholders are informed of relevant project information. The purpose of the strategy is to ensure that accurate and timely messages about the project are disseminated to a range of identified stakeholder groups. Project communication is governed through the Communications Plan as follows:

Table 6-3 – Communication Methods

Audience	Tyoe of Communication	Frequency	Responsibility
General Public	Formal Consultation Regular website updates on project progress	At least 2 formal consultations As Required	CCC Communications Team
Technical officers CCC	Project Team Meetings Ad Hoc technical meetings	Regular Meetings As Required	Project Manager
Other Key Stakeholders	Ad Hoc Meetings	As Required	Project Manager
Members	Reports Briefing Sessions	As per Programme milestones	Project Manager
General Correspondence	Letters, Emails, Social Media	As Required	Project Manager / CCC Communications Team

6.7.2. Key stakeholders have been identified and involved in the delivery of the project in a number of ways. Public and stakeholder engagement is an important means of solving problems and making decisions that directly impact upon living, working, using services and doing business in the local area. Such engagement may include informing, consulting with, involving, collaborating with and empowering stakeholders to understand the issues to enable them to make informed choices.

6.7.3. The key objectives of the scheme's stakeholder management are to:

- Keep stakeholders aware of the scheme's progression and give an opportunity for feedback to help gain scheme approval;
- Give an opportunity for stakeholders to provide views and recommendations for improvements so that the scheme meets stakeholder requirements as far as is practical;
- Meet statutory requirements;
- Increase public and stakeholder awareness of the scheme;
- Provide consistent, clear and regular information to those affected by the scheme, including the nature of any scheme-related impacts and when and how it will affect people or groups both during delivery and once operational; and
- Address perceptions of the scheme where these are inconsistent with the scheme objectives and forecast outcomes.

6.8 PROGRAMME / PROJECT REPORTING

6.8.1. The fundamental process of regular project reporting is through the Project Manager's Report. The Project Manager's Report is presented at relevant meetings of the GCP Executive Board and GCP Assembly, as identified with the project programme. The Project Manager's Report summarises progress and change on the project.

6.8.2. The following is the typical format of the Project Manager's Report:

- Activity Report – progress of work streams;
- Key activities in the forthcoming period;
- Budget update;
- Review of strategic risks/ issues;
- Identification of key decisions required from the GCP Executive Board.

6.9 RISK MANAGEMENT STRATEGY

6.9.1. This section sets out the arrangements for risk management and the effectiveness of the strategy so far. Risks are events that have not happened but may happen, whereas issues are known to have happened. Broadly speaking there are two types of risks in the context of this project, which are as follows:

- Strategic Risks – these are presented in the Project Manager's report and are those risks which impact the overall delivery of the project scope; and
- Technical Risks – these are associated with specific work streams and are managed by the Project Manager.

6.9.2. The risk register sets out the following:

- Details of the risk;
- The likelihood of the risk;

- The impact of the risk;
- The mitigation strategy, including risk owners; and
- An overall assessment of the current status of the risk or issue which will be one of the following categories:
  - Red – significant and live risk with high potential to occur and to impact project delivery either at the strategic or technical level;
  - Amber – risk and issue that has lower potential to occur and lower impact; and
  - Green – risk is unlikely to occur and or has no major impact.

6.9.3. Risk management processes have been employed and recorded throughout the project lifecycle. The risk register is monitored and, if necessary, updated at regular workshops and meetings. The Project Manager has responsibility for overseeing the Risk Management process. DfT Major Scheme guidance has been followed in order to identify, assess and mitigate risks.

6.9.4. The current project risk register is provided in Appendix G. At this 'Preliminary Design' stage of the project, the highest rated residual risks identified for the Newmarket Road element are:

- The likely delay to the programme of CSRM runs which affect the estimation of the highway disbenefits, with implications for the value for money of the scheme
- Negative impact on Newmarket Road bus and car users, as well as operators resulting from increased journey times, leading to objections to the scheme design
- Technical challenge of reconfiguring the existing Elizabeth Way Roundabout with potential substantial disruption during construction
- Feasibility of Newmarket Road scheme is dependent on other GCP schemes to substantially reduce vehicular demand entering the city
- Potential for scheme cost escalation due to currently unknown utility diversions and construction cost inflation

6.9.5. For these, and each risk identified on the risk register, a risk mitigation owner has been recorded, based upon the party best placed to manage the risk.

6.10 SUMMARY OF MANAGEMENT CASE

6.10.1. An appropriate governance structure is in place for the delivery of the scheme. GCP has an Executive Project Board and Assembly aligned with best practice guidance on scheme management. The Board's primary function is decision-making and review. A Project Manager, reporting to the Programme Manager and ultimately the Board, is in place to deal with the day-to-day planning and delivery of the project.

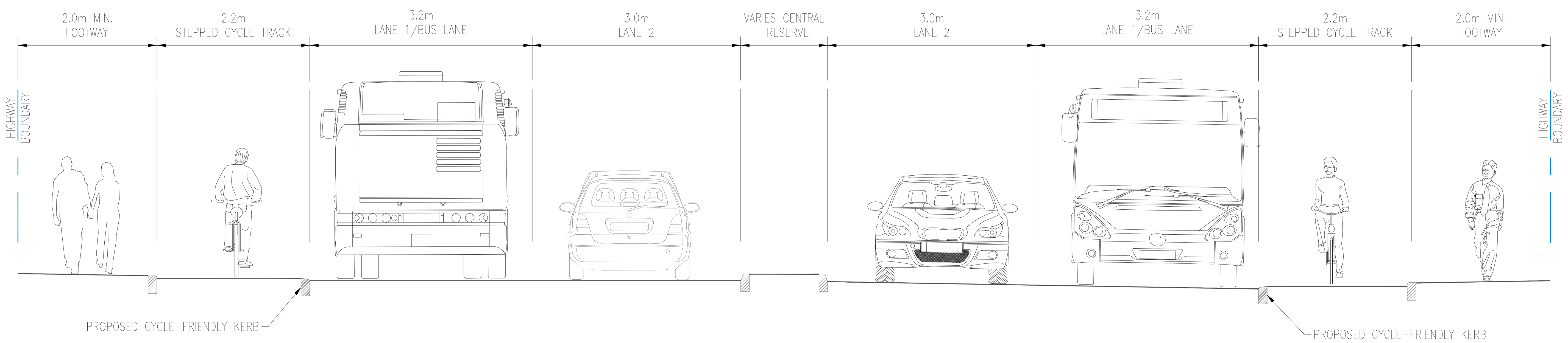
6.10.2. A project programme has been developed setting out the key project tasks and their duration and interdependencies, key milestones and gateways. It acts as a live document, with progress being monitored on a weekly basis by the Project Manager.

6.10.3. Key stakeholders have been identified and a stakeholder management plan has been adopted, consistent with other GCP projects.

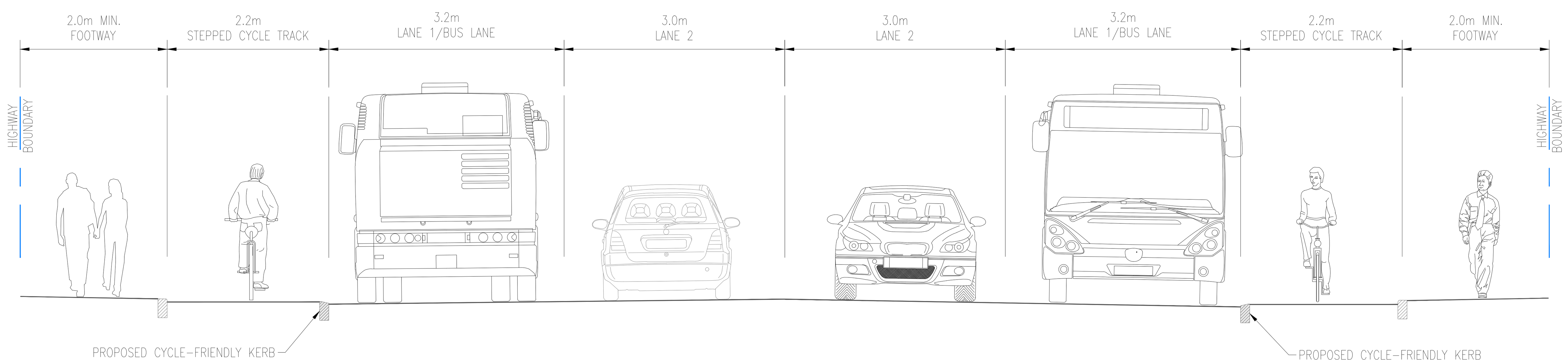
Appendix A

SCHEME DRAWINGS

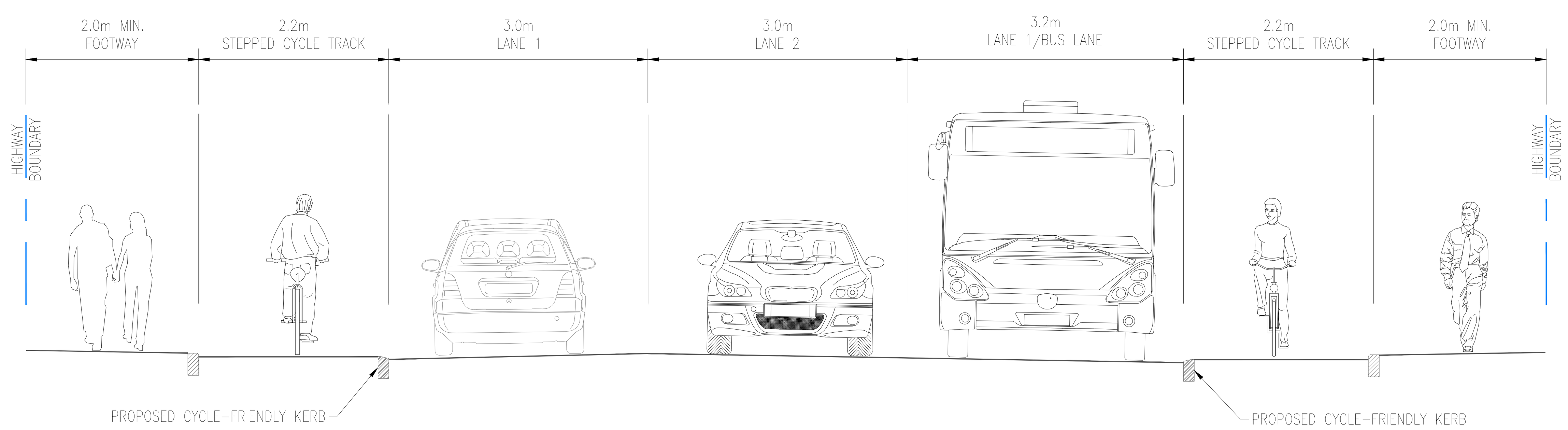
TYPICAL CROSS SECTION A



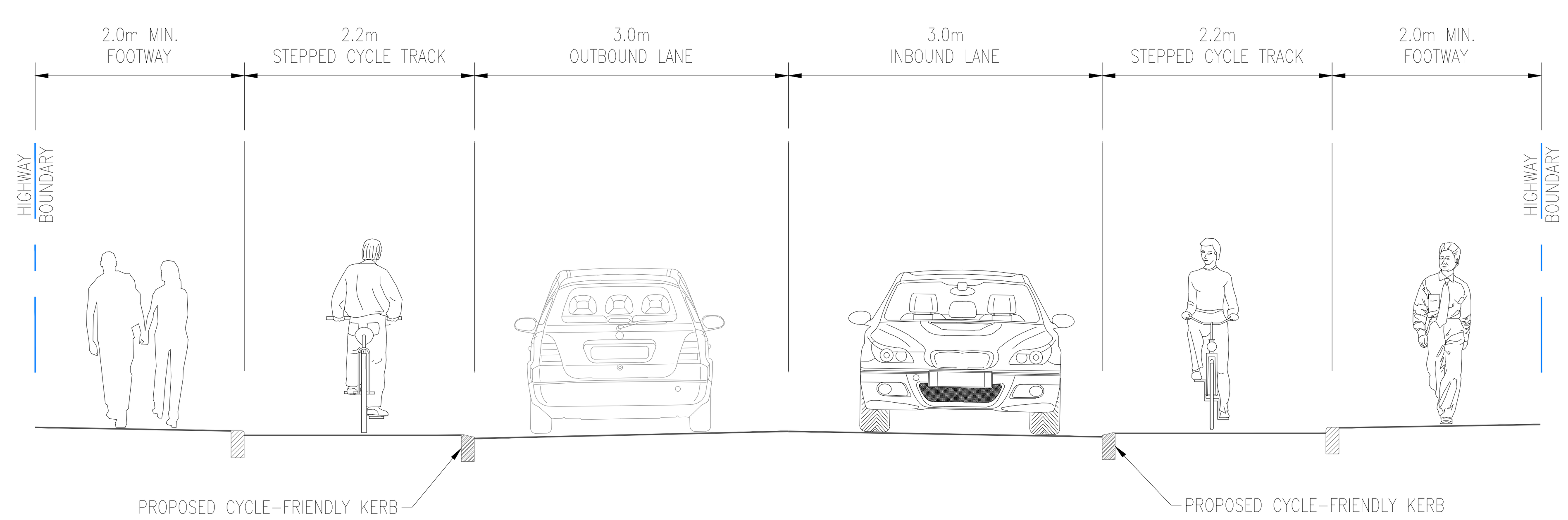
TYPICAL CROSS SECTION B



TYPICAL CROSS SECTION C



TYPICAL CROSS SECTION D



0 1:50 2.5m

DO NOT SCALE

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWING NO'S 6306-WSP-00-XX-DR-CV-002001 TO 2007 P01.
2. THE STEPPED CYCLE TRACK WIDTH OF 2.2M IS THE DESIRABLE MINIMUM WIDTH QUOTED IN LTN 1/20 TABLE 5-2 FOR PEAK HOUR CYCLE FLOWS OF BETWEEN 200 AND 800. ABSOLUTE MINIMUM WIDTH OF 2.0M TO BE PROVIDED WHERE DESIRABLE MINIMUM WIDTH CANNOT BE ACHIEVED DUE TO SITE CONSTRAINTS. REDUCTIONS IN WIDTH BELOW 2.0M MAY BE REQUIRED ADJACENT TO PROPOSED FLOATING BUS STOPS.
3. ABSOLUTE MINIMUM BUS LANE WIDTH OF 3.0M, AS RECOMMENDED IN TSM CHAPTER 3, TO BE PROVIDED WHERE DESIRABLE MINIMUM WIDTH (3.2M) CANNOT BE ACHIEVED DUE TO SITE CONSTRAINTS.
4. ANY TRAFFIC ISLAND CONTAINING TRAFFIC SIGNALS TO BE A MINIMUM OF 2.0M WIDE.
5. WIDTH OF FLOATING BUS STOP ISLAND TO BE AT LEAST 2.5M, AS RECOMMENDED IN LTN 1/20 FIGURE 6.30.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
P03	11/08/2022	LMM	FLOATING BUS STOP CROSS SECTION AND NOTES ADDED.	AG	LM
P02	29/04/2022	LMM	MINOR AMENDMENTS	AG	LM
P01	20/09/2021	LMM	FIRST ISSUE	AG	LM

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

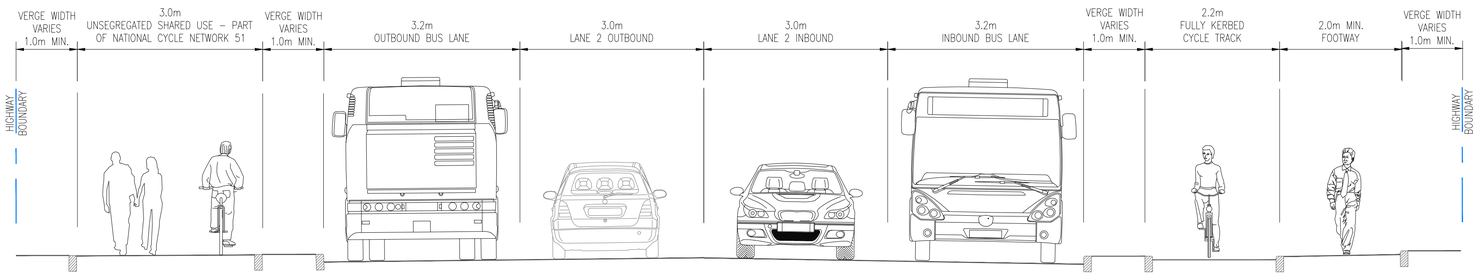
ARCHITECT:

SITE/PROJECT: CAMBRIDGE EASTERN ACCESS
NEWMARKET ROAD

TITLE: PROPOSED TYPICAL CROSS SECTIONS WITHIN 30MPH SPEED LIMIT

SCALE @ A1: 1:50	CHECKED: AG		APPROVED: LM
PROJECT NO: 70086306	DESIGNED: LMM	DRAWN: LMM	DATE: May 22
DRAWING No: 6306-WSP-00-XX-DR-CV-000701			REV: P03

TYPICAL CROSS SECTION 40MPH LIMIT



0 1:50 2.5m

DO NOT SCALE

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWING NO'S 6306-WSP-00-XX-DR-CV-002001 TO 2007 P01.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	17/08/2022	LMM	FIRST ISSUE	AG	LM

DRAWING STATUS: S3 - FOR REVIEW

62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

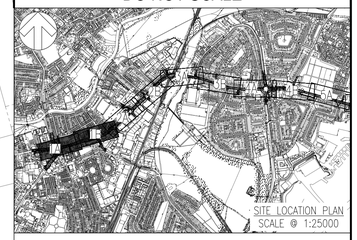
SITE/PROJECT: CAMBRIDGE EASTERN ACCESS
NEWMARKET ROAD

TITLE: PROPOSED TYPICAL CROSS SECTION
WITHIN 40MPH SPEED LIMIT

SCALE @ A1:	CHECKED:		APPROVED:
1:50	AG		LM
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	LMM	LMM	August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-000702 REV: P01

DO NOT SCALE



EXISTING UN-SEGREGATED SHARED USE FACILITY.

PROPOSED DROP KERB ALLOWING CYCLISTS TO JOIN CARRIAGEWAY, REPLICATING EXISTING ARRANGEMENT.

ELIZABETH WAY

EXISTING UN-SEGREGATED SHARED USE FACILITY.

PROPOSED DROP KERB ALLOWING CYCLISTS TO JOIN OFF ROAD CYCLE FACILITY, REPLICATING EXISTING ARRANGEMENT.

ABBEY ROAD

PROPOSED CYCLOPS JUNCTION LAYOUT WITH SIGNALISED CROSSINGS.

PROPOSED ON CARRIAGEWAY ADVISORY CYCLE LANE.

NEWMARKET ROAD

EXISTING BUS STOP AT APPROX. CHAINAGE 330 TO BE RELOCATED TO APPROX. CHAINAGE 400.

PROPOSED FLOATING BUS STOP.

FOR CONTINUATION SEE BELOW

EXISTING BUS STOP AT APPROX. CHAINAGE 335 TO BE REMOVED, PREVIOUS BUS STOP LOCATED AT APPROX. CHAINAGE 495.

EXISTING TOUCAN CROSSING TO BE REMOVED AND IMPROVED PEDESTRIAN / CYCLE FACILITIES TO BE PROVIDED AT ELIZABETH WAY JUNCTION.

ABBEY STREET

OCCUPATION ROAD

EAST ROAD

EXISTING SEGREGATED SHARED USE FACILITY.

EXISTING CARRIAGEWAY TO BE REMOVED, ADDITIONAL PARKING AND TURNING HEAD PROVIDED AS SHOWN. NEW BOLLARDS TO BE INSTALLED TO RESTRICT VEHICULAR ACCESS ONTO PUBLIC REALM AREAS.

EXISTING BOLLARDS TO BE REMOVED.

EXISTING LAY-BY TO BE REMOVED.

RIVER LANE

EARLY CYCLE RELEASE SIGNAL PROVIDED ON RIVER LANE

PROPOSED PUFFIN CROSSING

PROPOSED TOUCAN CROSSING

GODESDONE ROAD

FOR CONTINUATION SEE BELOW

FOR CONTINUATION SEE ABOVE

OPPORTUNITY TO INCREASE INBOUND BUS LANE LENGTH SUBJECT TO CONFIRMATION OF HIGHWAY BOUNDARY

PROPOSED FLOATING BUS STOP.

EXISTING BUS STOP AT APPROX. CHAINAGE 530 TO BE RELOCATED TO APPROX. CHAINAGE 495.

PROPOSED TOUCAN CROSSING

PROPOSED PUFFIN CROSSING

PROPOSED TOUCAN CROSSING

COLDHAMS LANE

0 25 metres

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
- PROPOSED UN-SEGREGATED SHARED USE FACILITY
- PROPOSED CYCLE FACILITY
- EXISTING AND PROPOSED CARRIAGEWAY
- PROPOSED BUS LANE
- EXISTING & PROPOSED CENTRAL RESERVATION/TRAFFIC ISLAND
- PROPOSED FLOATING BUS STOP TAPER OVERRUN AREA
- PROPOSED CORDUROY/LADDER & TRAMLINE TACTILE PAVING
- PROPOSED BLISTER TACTILE PAVING (CROSSINGS-RED/BUFF)
- EXISTING TREE

NOTES:

1. THIS GENERAL ARRANGEMENT IS A COMPOSITE PLAN ILLUSTRATING THE SPATIAL RELATIONSHIP BETWEEN THE PROPOSED AND EXISTING FEATURES. IT SHOULD BE READ IN CONJUNCTION WITH THE PROPOSED TYPICAL CROSS SECTION DRAWINGS (DRG.NO. 6306-WSP-00-XX-DR-CV-000701/702).
2. THE EXISTING HIGHWAY BOUNDARY SHOWN IS BASED ON INFORMATION PROVIDED BY CAMBRIDGESHIRE COUNTY COUNCIL.
3. THE LAYOUT SHOWN IS SUBJECT TO REVISION DUE TO ARBORICULTURAL CONSTRAINTS AND PENDING RECEIPT OF MORE DETAILED INFORMATION REGARDING THE PRECISE LOCATION OF EXISTING UTILITIES APPARATUS.
4. EXISTING AND PROPOSED STREET FURNITURE/LIGHTING COLUMNS/TRAFFIC SIGNALS AND TRAFFIC SIGNS OMITTED FOR CLARITY.

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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN SHEET 01 OF 07

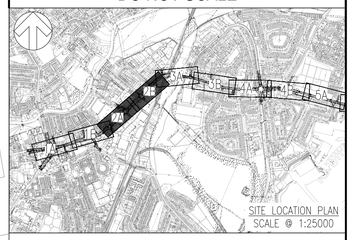
SCALE @ A1:	CHECKED:	APPROVED:
1:500	LMM	AG

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	NM	YJ	August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002001 REV: P01

File name:C:\USERS\UKCLM011\WSP O365\UK CRC DEVELOPMENT INFRASTRUCTURE - 70086306 - CAMKS JPSF - CAMBRIDGE EASTERN ACCESS\S3 WIP\CIV CIVIL ENGINEER\ING\02 CAD BIM MODEL\6306-WSP-00-XX-DR-CV-002001.DWG, printed on 18 August 2022 14:58:49, by Moughton, Casey

DO NOT SCALE



SITE LOCATION PLAN
SCALE @ 1:25000

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
- PROPOSED UN-SEGREGATED SHARED USE FACILITY
- PROPOSED CYCLE FACILITY
- EXISTING AND PROPOSED CARRIAGEWAY
- PROPOSED BUS LANE
- EXISTING & PROPOSED CENTRAL RESERVATION/TRAFFIC ISLAND
- PROPOSED FLOATING BUS STOP TAPER OVERRUN AREA
- PROPOSED CORDUROY/LADDER & TRAMLINE TACTILE PAVING
- PROPOSED BLISTER TACTILE PAVING (CROSSINGS-RED/BUFF)
- EXISTING TREE

NOTES:

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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp

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wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

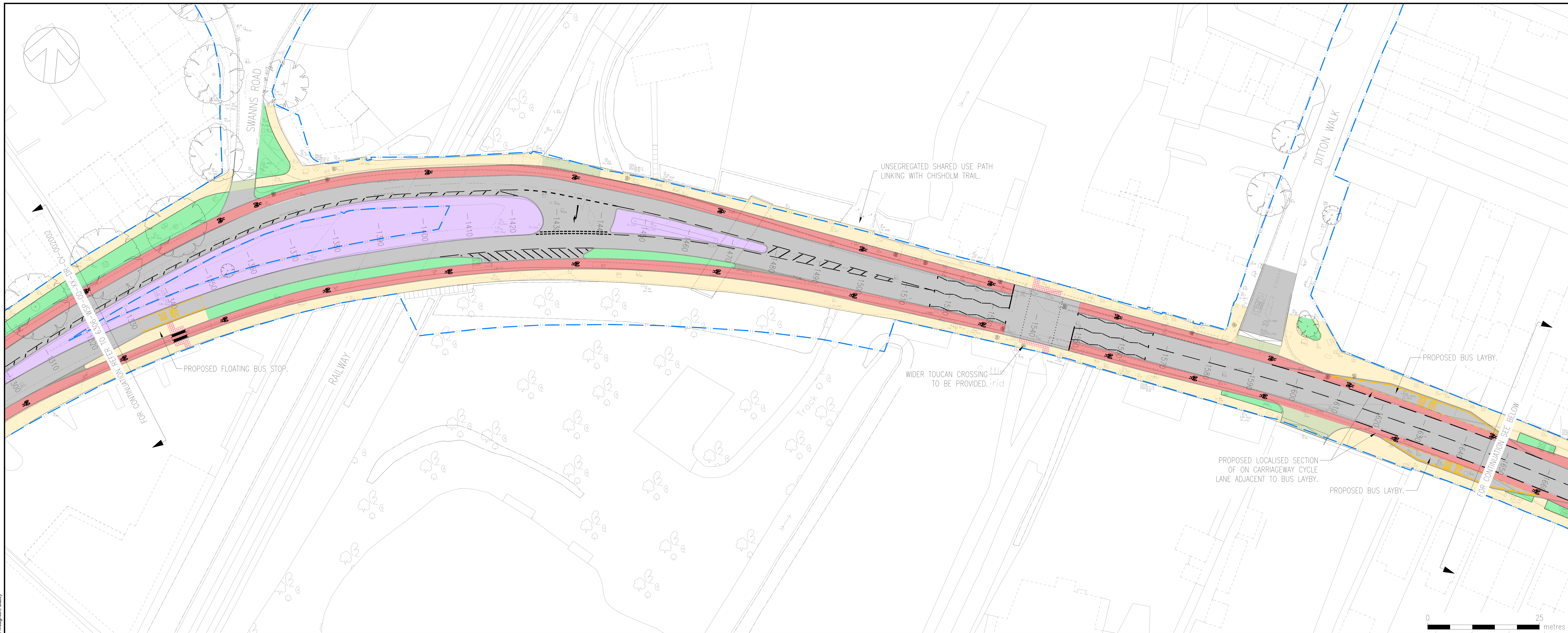
SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN SHEET 02 OF 07

SCALE @ A1:	CHECKED:		APPROVED:
1:500	LMM		AG
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	NM	YJ	August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002002 REV: P01

File name:C:\USERS\UKCMA011\WSP O365\UK CRC DEVELOPMENT INFRASTRUCTURE - 70086306 - CAMBS JPSF - CAMBRIDGE EASTERN ACCESS\03 WIP\CV CIVIL ENGINEERING\02 CAD BIM MODELS\6306-WSP-00-XX-DR-CV-002001-2007.DWG, printed on 18 August 2022 14:59:50, by Moughton, Casey



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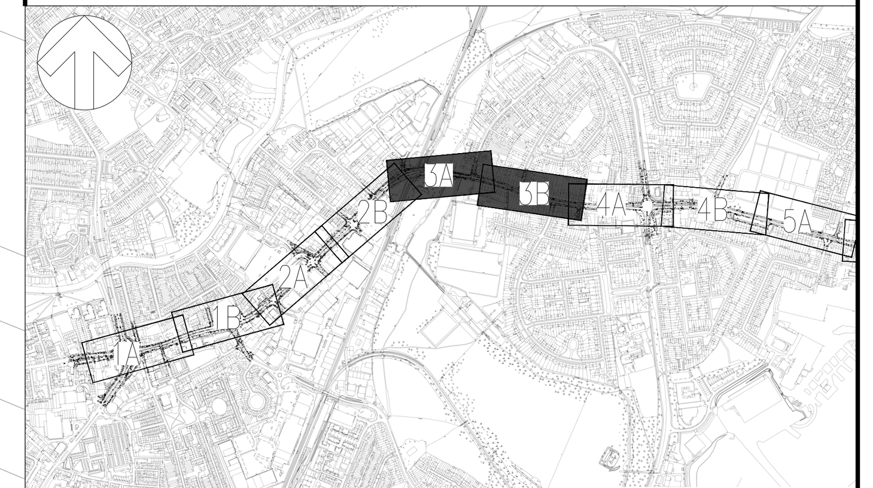

SITE LOCATION PLAN
SCALE @ 1:25000

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
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- PROPOSED BLISTER TACTILE PAVING (CROSSINGS-RED/BUFF)
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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

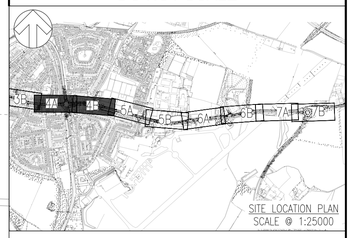
SITE/PROJECT: CAMBRIDGE EASTERN ACCESS
NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN
SHEET 03 OF 07

SCALE @ A1: 1:500	CHECKED: LMM		APPROVED: AG
PROJECT NO: 70086306	DESIGNED: NM	DRAWN: YJ	DATE: August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002003 REV: P01

DO NOT SCALE



SITE LOCATION PLAN
SCALE @ 1:25000

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
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NOTES:

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REV	DATE	BY	DESCRIPTION	CHK	APP.
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

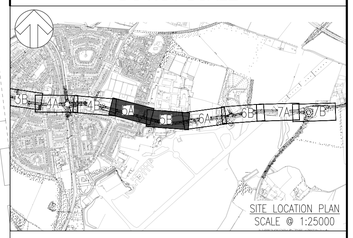
TITLE: PRELIMINARY DESIGN SHEET 04 OF 07

SCALE @ A1:	CHECKED:		APPROVED:
1:500	LMM		AG
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	NM	YJ	August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002004 REV: P01

File name C:\USERS\MCOM01\WSP O365\UK CORC DEVELOPMENT INFRASTRUCTURE - 70086306 - CAMBS JPSF - CAMBRIDGE EASTERN ACCESS\03 WIP\CV CIVIL ENGINEERING\02 CAD BIM MODELS\6306-WSP-00-XX-DR-CV-002001-2007.DWG, printed on 18 August 2022 15:01:47, by Moughton, Casey

DO NOT SCALE



SITE LOCATION PLAN
SCALE @ 1:25000

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
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- EXISTING AND PROPOSED CARRIAGEWAY
- PROPOSED BUS LANE
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- EXISTING TREE

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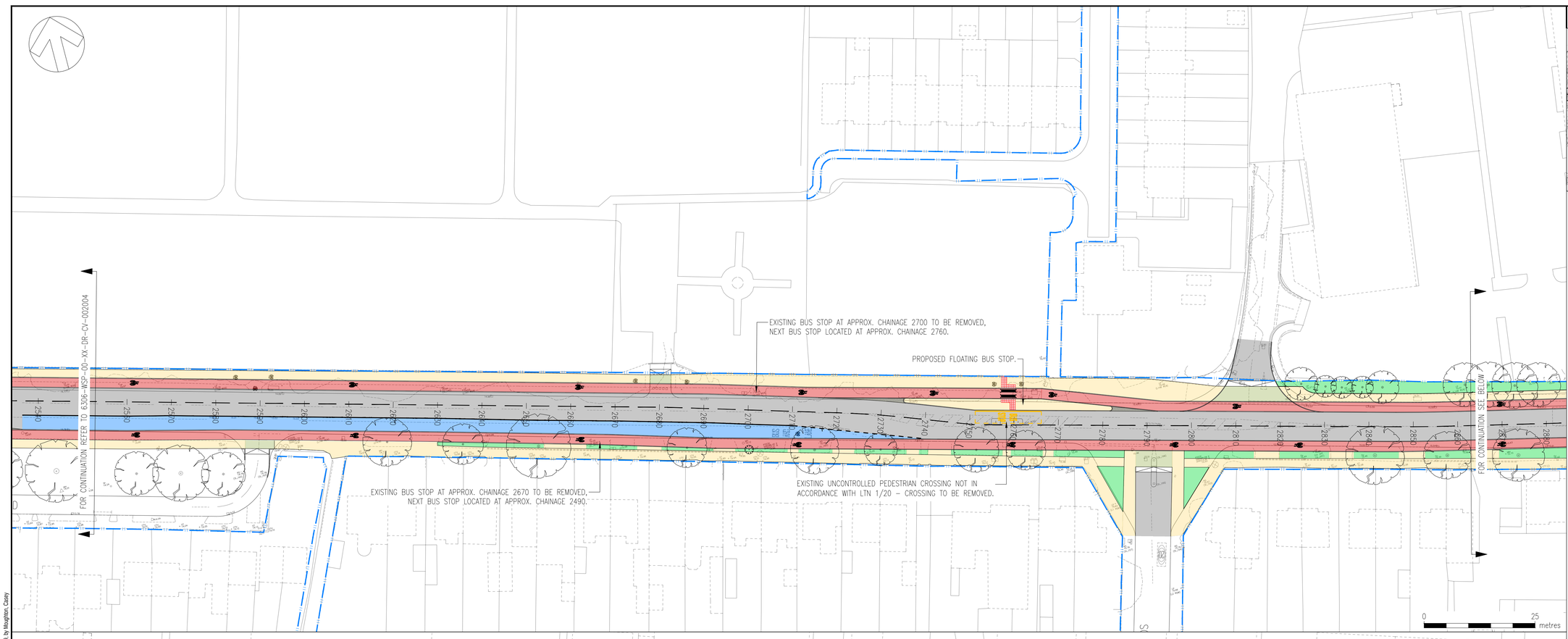

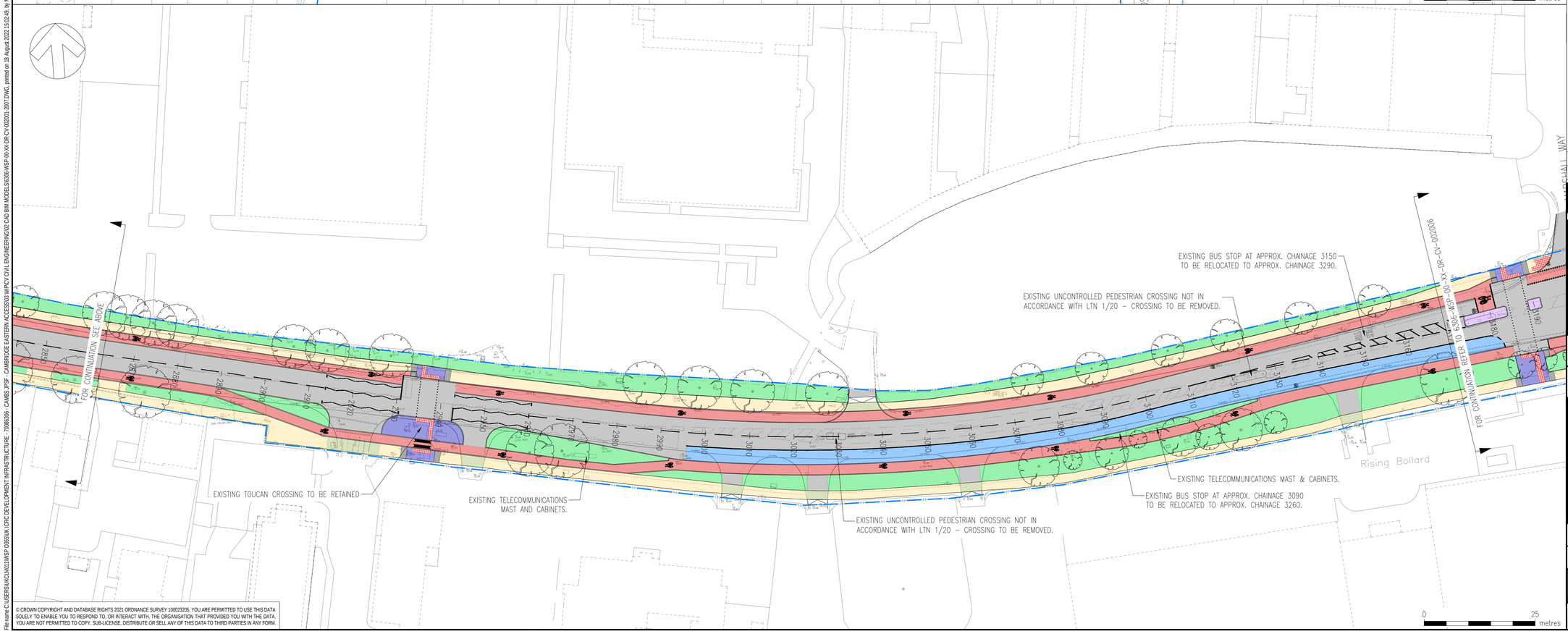

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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN SHEET 05 OF 07

SCALE @ A1:	CHECKED:	APPROVED:
1:500	LMM	AG

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	NM	YJ	August 22

DRAWING No:	REV:
6306-WSP-00-XX-DR-CV-002005	P01

File name C:\USERS\UKCLM01\WSP OS65\UK (CRC DEVELOPMENT INFRASTRUCTURE - 70086306 - CAMBS JPSF - CAMBRIDGE EASTERN ACCESS\03 WIP\CV (CIVIL ENGINEERING)\02 CAD BIM MODELS\6306-WSP-00-XX-DR-CV-002001-S3P07.DWG, printed on 18 August 2022 15:02:48, by Moughton, Casey

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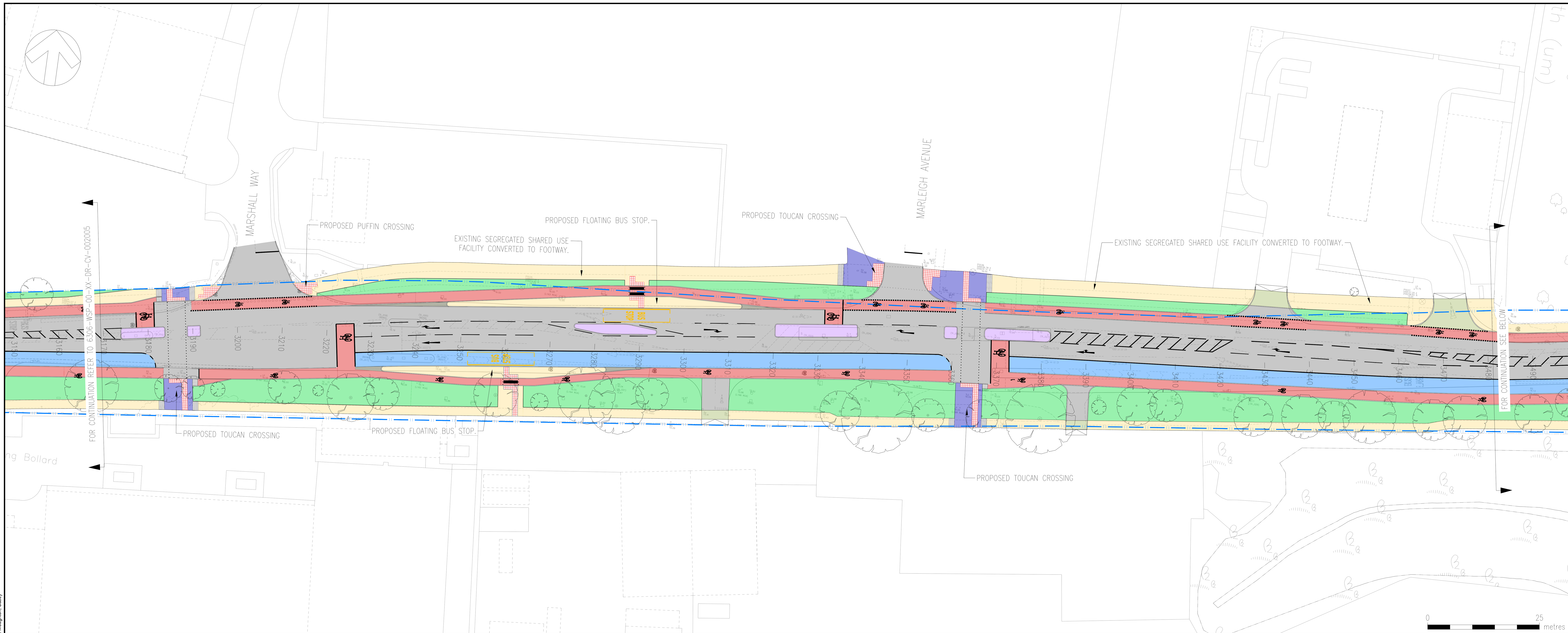
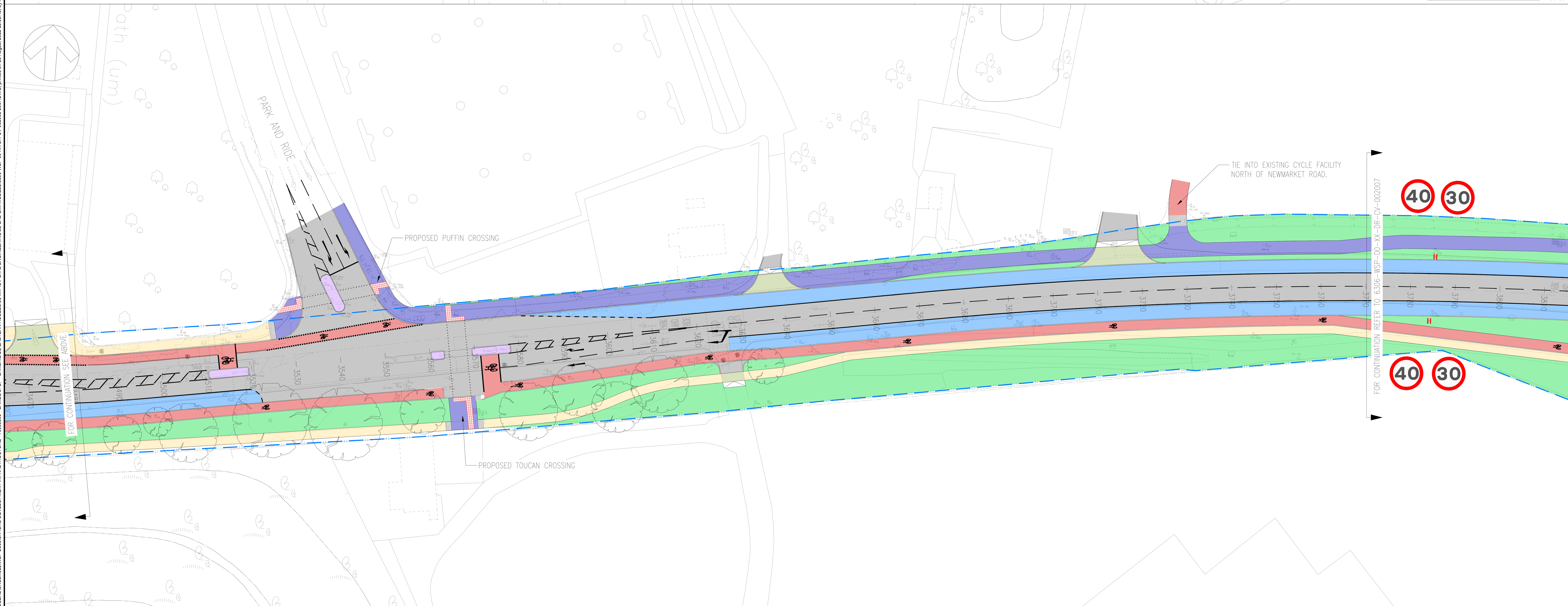
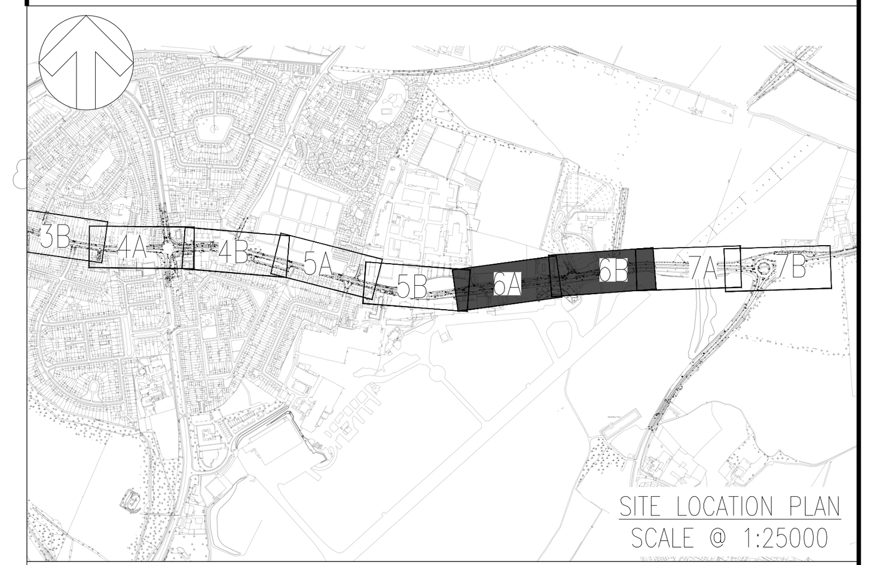






KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
- PROPOSED UN-SEGREGATED SHARED USE FACILITY
- PROPOSED CYCLE FACILITY
- EXISTING AND PROPOSED CARRIAGEWAY
- PROPOSED BUS LANE
- EXISTING & PROPOSED CENTRAL RESERVATION/TRAFFIC ISLAND
- PROPOSED FLOATING BUS STOP TAPER OVERRUN AREA
- PROPOSED CORDUROY/LADDER & TRAMLINE TACTILE PAVING
- PROPOSED BLISTER TACTILE PAVING (CROSSINGS-RED/BUFF)
- EXISTING TREE

NOTES:

1. THIS GENERAL ARRANGEMENT IS A COMPOSITE PLAN ILLUSTRATING THE SPATIAL RELATIONSHIP BETWEEN THE PROPOSED AND EXISTING FEATURES. IT SHOULD BE READ IN CONJUNCTION WITH THE PROPOSED TYPICAL CROSS SECTION DRAWINGS (DRG.NO. 6306-WSP-00-XX-DR-CV-000701/702).
2. THE EXISTING HIGHWAY BOUNDARY SHOWN IS BASED ON INFORMATION PROVIDED BY CAMBRIDGESHIRE COUNTY COUNCIL.
3. THE LAYOUT SHOWN IS SUBJECT TO REVISION DUE TO ARBORICULTURAL CONSTRAINTS AND PENDING RECEIPT OF MORE DETAILED INFORMATION REGARDING THE PRECISE LOCATION OF EXISTING UTILITIES APPARATUS.
4. EXISTING AND PROPOSED STREET FURNITURE/LIGHTING COLUMNS/TRAFFIC SIGNALS AND TRAFFIC SIGNS OMITTED FOR CLARITY.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp

62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

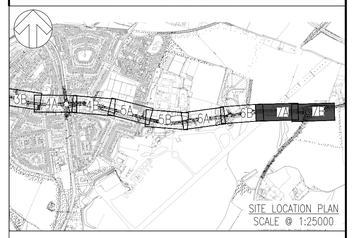
SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN SHEET 06 OF 07

SCALE @ A1: 1:500	CHECKED: LMM		APPROVED: AG
PROJECT NO: 70086306	DESIGNED: NM	DRAWN: YJ	DATE: August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002006 — REV: P01

DO NOT SCALE



SITE LOCATION PLAN
SCALE @ 1:25000

KEY:

- EXISTING HIGHWAY BOUNDARY
- EXISTING AND PROPOSED VERGE
- EXISTING AND PROPOSED FOOTWAY/PUBLIC REALM
- PROPOSED CONTINUOUS FOOTWAY TREATMENT
- PROPOSED UN-SEGREGATED SHARED USE FACILITY
- PROPOSED CYCLE FACILITY
- EXISTING AND PROPOSED CARRIAGEWAY
- PROPOSED BUS LANE
- EXISTING & PROPOSED CENTRAL RESERVATION/TRAFFIC ISLAND
- PROPOSED FLOATING BUS STOP TAPER OVERRUN AREA
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- PROPOSED BLISTER TACTILE PAVING (CROSSINGS-RED/BUFF)
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REV	DATE	BY	DESCRIPTION	CHK	APP
P01	18/08/2022	YJ	FIRST ISSUE	LMM	AG

DRAWING STATUS: S3 - FOR REVIEW

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT: CAMBRIDGE EASTERN ACCESS NEWMARKET ROAD

TITLE: PRELIMINARY DESIGN SHEET 07 OF 07

SCALE @ A1:	CHECKED:	APPROVED:
1:500	LMM	AG

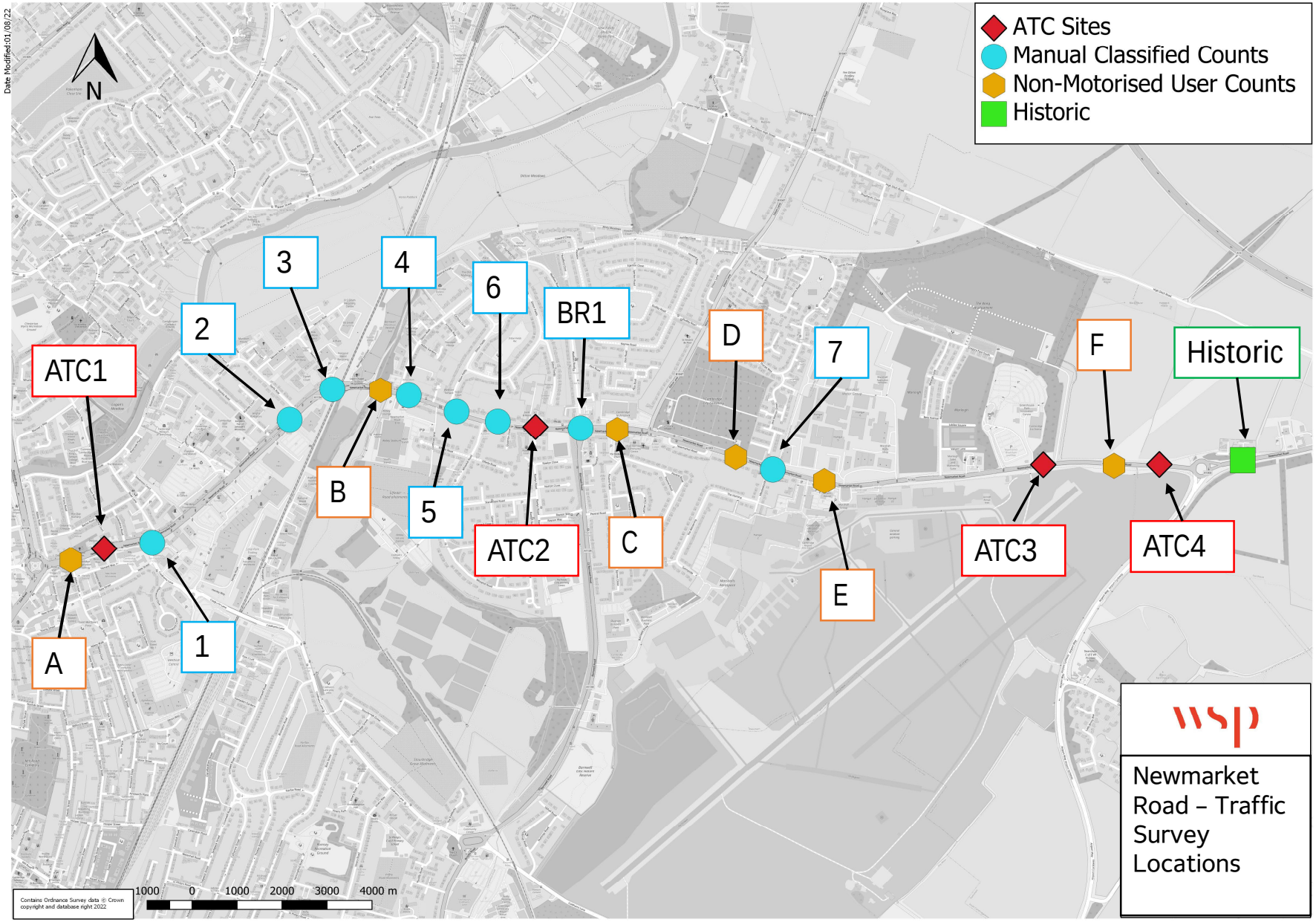
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70086306	NM	YJ	August 22

DRAWING No: 6306-WSP-00-XX-DR-CV-002007 REV: P01

File name:C:\USERS\UKCLM01\WSP OSBS\UK CRC DEVELOPMENT INFRASTRUCTURE - 70086306 - CAMBS JPSF - CAMBRIDGE EASTERN ACCESS\S3\WIP\CV CIVIL ENGINEERING\02 CAD BIM MODELS\6306-WSP-00-XX-DR-CV-002001-2007.DWG, printed on 18 August 2022 15:07:27, by Moughton, Casey

Appendix B

COUNT SURVEY LOCATIONS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ATC Sites
Manual Classified Counts
Non-Motorised User Counts
Historic
ATC1
2
3
4
6
BR1
D
7
F
Historic
B
5
ATC2
C
E
ATC3
ATC4
A
1
Contains Ordnance Survey data © Crown copyright and database right 2022
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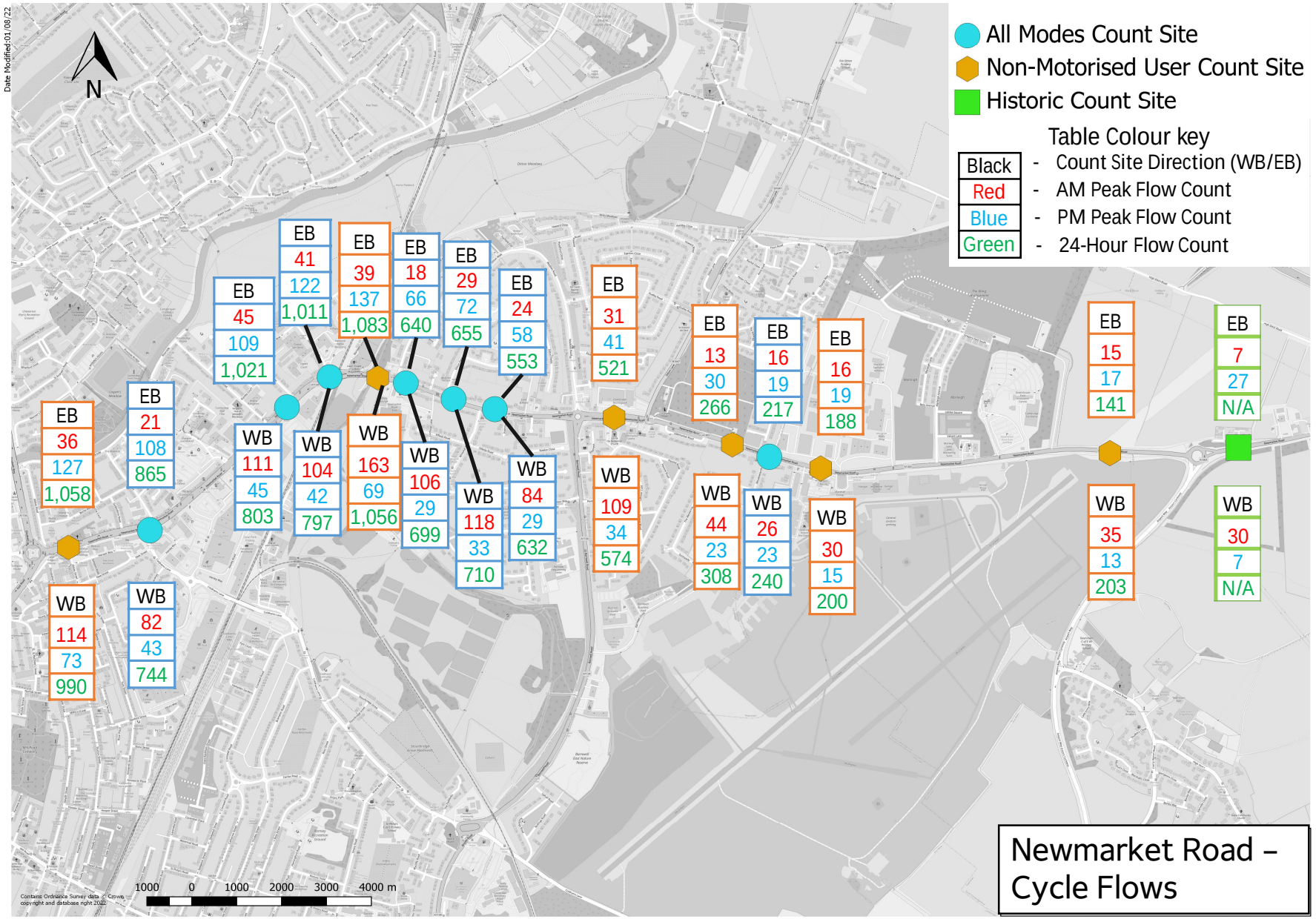
wsp
Newmarket Road – Traffic Survey Locations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All Modes Count Site
Non-Motorised User Count Site
Historic Count Site
Table Colour key
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Red - AM Peak Flow Count
Blue - PM Peak Flow Count
Green - 24-Hour Flow Count
EB 36 127 1,058
WB 114 73 990
EB 21 108 865
WB 82 43 744
EB 45 109 1,021
WB 111 45 803
EB 41 122 1,011
WB 104 42 797
EB 39 137 1,083
WB 163 69 1,056
EB 18 66 640
WB 106 29 699
EB 29 72 655
WB 118 33 710
EB 24 58 553
WB 84 29 632
EB 31 41 521
WB 109 34 574
EB 13 30 266
WB 44 23 308
EB 16 19 217
WB 26 23 240
EB 16 19 188
WB 30 15 200
EB 15 17 141
WB 35 13 203
EB 7 27 N/A
WB 30 7 N/A
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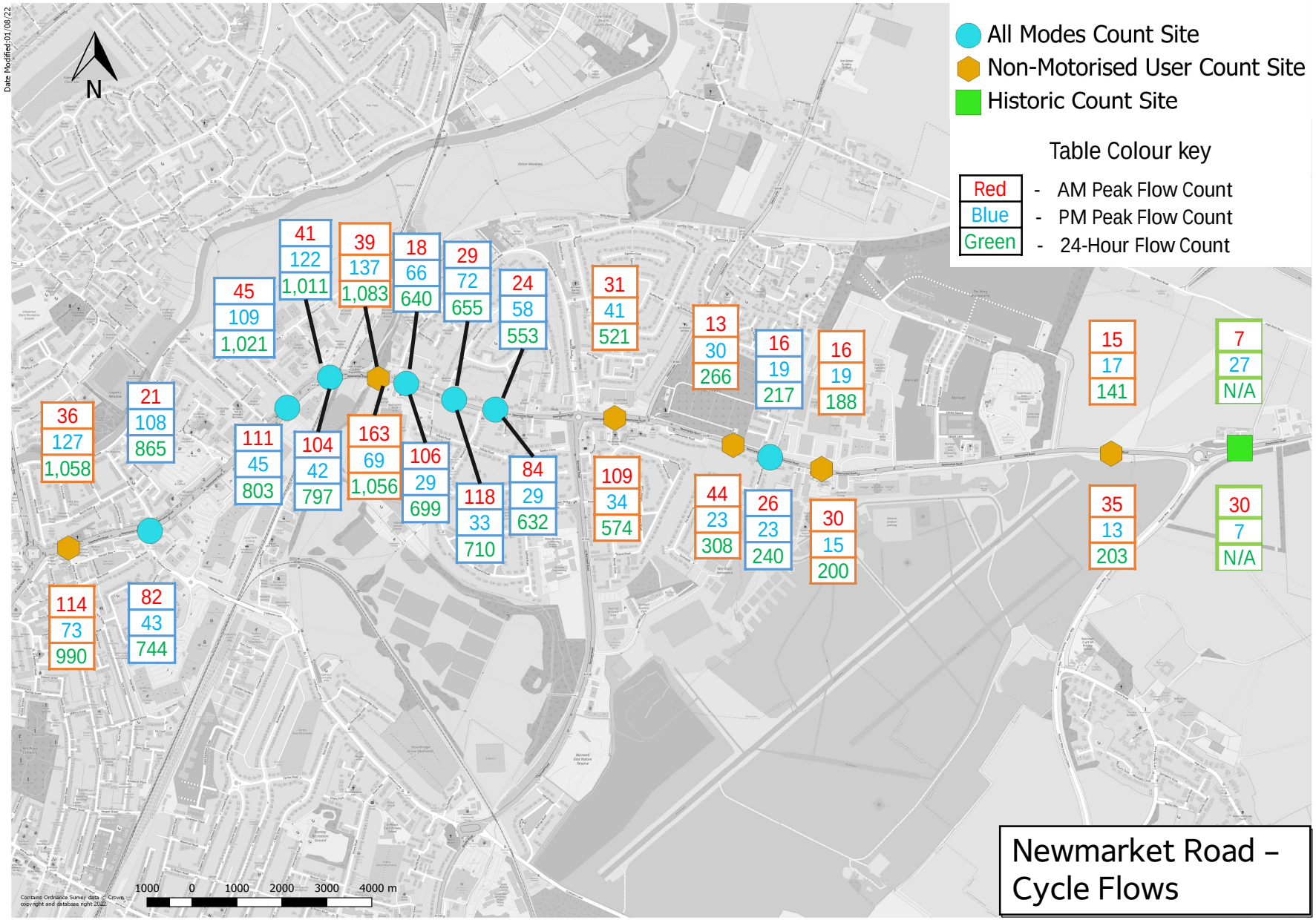
Newmarket Road – Cycle Flows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N
All Modes Count Site
Non-Motorised User Count Site
Historic Count Site
Table Colour key
Red - AM Peak Flow Count
Blue - PM Peak Flow Count
Green - 24-Hour Flow Count
41 122 1,011
39 137 1,083
18 66 640
29 72 655
24 58 553
45 109 1,021
31 41 521
13 30 266
16 19 217
16 19 188
15 17 141
7 27 N/A
36 127 1,058
21 108 865
111 45 803
104 42 797
163 69 1,056
106 29 699
118 33 710
84 29 632
109 34 574
44 23 308
26 23 240
30 15 200
35 13 203
30 7 N/A
114 73 990
82 43 744
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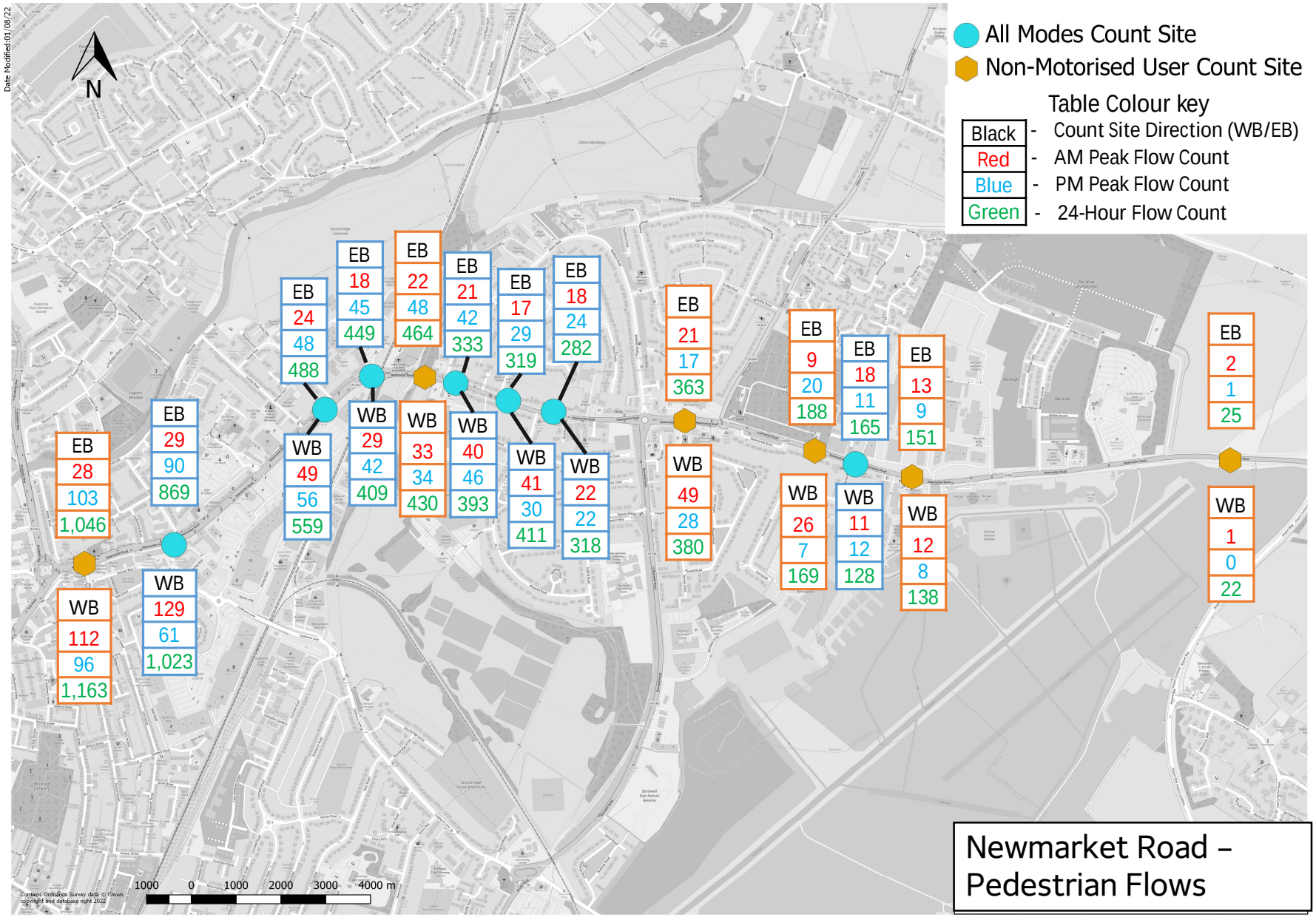
Contains Ordnance Survey data © Crown copyright and database right 2022
Newmarket Road – Cycle Flows


Date Modified:01/08/22
N
All Modes Count Site
Non-Motorised User Count Site
Table Colour key
Black - Count Site Direction (WB/EB)
Red - AM Peak Flow Count
Blue - PM Peak Flow Count
Green - 24-Hour Flow Count
EB 28 103 1,046
WB 112 96 1,163
EB 29 90 869
WB 129 61 1,023
EB 24 48 488
WB 49 56 559
EB 18 45 449
WB 29 42 409
EB 22 48 464
WB 33 34 430
EB 21 42 333
WB 40 46 393
EB 17 29 319
WB 41 30 411
EB 18 24 282
WB 22 22 318
EB 21 17 363
WB 49 28 380
EB 9 20 188
WB 26 7 169
EB 18 11 165
WB 11 12 128
EB 13 9 151
WB 12 8 138
EB 2 1 25
WB 1 0 22
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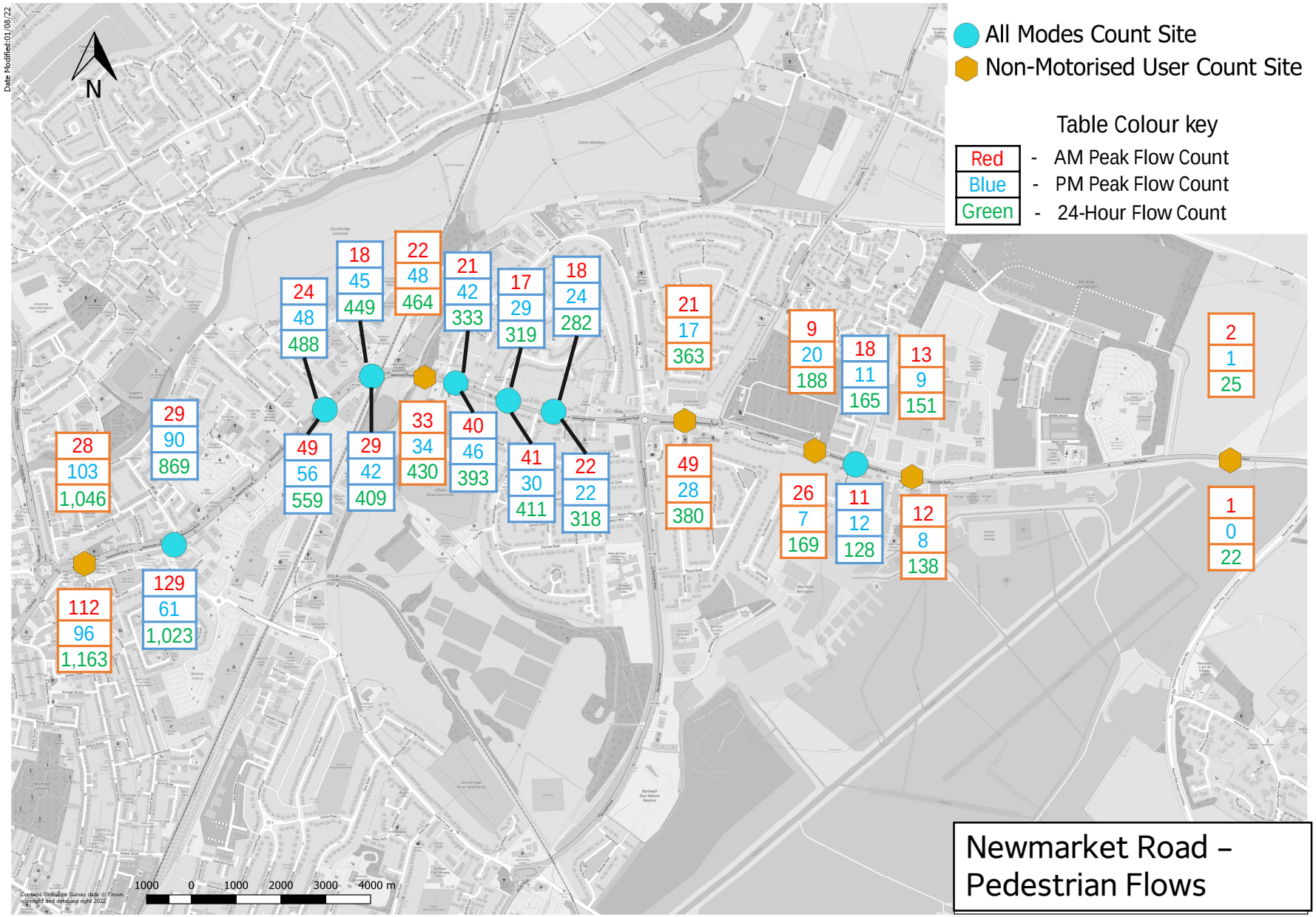
Newmarket Road – Pedestrian Flows


Date Modified:01/08/22
N
All Modes Count Site
Non-Motorised User Count Site
Table Colour key
Red - AM Peak Flow Count
Blue - PM Peak Flow Count
Green - 24-Hour Flow Count
24 48 488
18 45 449
22 48 464
21 42 333
17 29 319
18 24 282
21 17 363
9 20 188
18 11 165
13 9 151
2 1 25
29 90 869
28 103 1,046
49 56 559
29 42 409
33 34 430
40 46 393
41 30 411
22 22 318
49 28 380
26 7 169
11 12 128
12 8 138
1 0 22
129 61 1,023
112 96 1,163
1000 0 1000 2000 3000 4000 m
Contains Ordnance Survey data © Crown copyright and database right 2022
Newmarket Road – Pedestrian Flows

Appendix C

TEE TABLES

Economic Efficiency of the Transport System (TEE) - Southampton Central

Non-business: Commuting	MODES	ROAD	COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	1,027,976	167,411			860,565	
Vehicle operating costs	0					
User charges	0					
During Construction & Maintenance	0					
NET NON-BUSINESS BENEFITS: COMMUTING	1,027,976	167,411	0	0	860,565	*(1a)*

Non-business: Other	MODES	ROAD	COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	2,518,748	410,191			2,108,557	
Vehicle operating costs	0					
User charges	0					
During Construction & Maintenance	0					
NET NON-BUSINESS BENEFITS: OTHER	2,518,748	410,191	0	0	2,108,557	*(1b)*

Business								
			Business Cars					
User benefits		Goods Vehicles	& LGVs	Passengers	Freight	Passengers		
Travel time	486,359		79,206				407,153	
Vehicle operating costs	0							
User charges	0							
During Construction & Maintenance	0							
Subtotal	486,359	0	79,206	0	0	0	407,153	*(2)*
					Freight	Passengers		
Private sector provider impacts								
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0			0	0	0	0	*(3)*
Other business impacts								
Developer contributions								*(4)*
NET BUSINESS IMPACT	486,359							*(5) = (2) + (3) + (4)*

TOTAL		
Present Value of Transport Economic Efficiency Benefits (TEE)	4,033,083	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table - Southampton Central

Local Government Funding	ALL MODES TOTAL	ROAD INFRASTRUCTURE	BUS and COACH	RAIL	OTHER	
Revenue	0					
Operating Costs	-3,604	-3,604				
Investment Costs	0					
Contributions	0					
Grant/Subsidy Payments	0					
NET IMPACT	-3,604					*(7)*

Central Government Funding: Transport						
Revenue	0					
Operating costs	0					
Investment Costs	18,388,595				18,388,595	
Developer and Other	0					
Grant/Subsidy Payments	0					
NET IMPACT	18,388,595					*(8)*

Central Government Funding: Non-Transport						
Indirect Tax Revenues	53,420				53,420	*(9)*

TOTALS		
Broad Transport	18,384,991	*(10) = (7) + (8)*
Wider Public Finances	53,420	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

Analysis of Monetised Costs and Benefits

Noise	7,382	*(12)*
Local Air Quality	14,651	*(13)*
Greenhouse Gases	46,312	*(14)*
Journey Quality	1,731,496	*(15)*
Physical Activity	15,133,001	*(16)*
Accidents	9,847,101	*(17)*
Economic Efficiency: Consumer Users (Commuting)	1,027,976	*(1a)*
Economic Efficiency: Consumer Users (Other)	2,518,748	*(1b)*
Economic Efficiency: Business Users and Providers	486,359	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	- 53,420	*- (11) - sign changed from PA*
Present Value of Benefits (see notes) (PVB)	30,759,606	*(16) + (17) + (1a) + (1b) + (5) -*
Broad Transport Budget	18,384,991	*(10)*
Present Value of Costs (see notes) (PVC)	18,384,991	*(PVC) = (10)*

OVERALL IMPACTS		
Net Present Value (NPV)	12,374,615	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.7	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Appendix D

AST TABLES

Appraisal Summary Table

Date produced:	19	8	2022

Contact:	
Name	Joe Cowley
Organisation	WSP
Role	Promoter/Official

Name of scheme:	Cambridge Eastern Access
Description of scheme:	The Cambridge Eastern Access scheme seeks to enhance sustainable transport provision in the east of the city. In the short term it will address congestion issues on Newmarket Road by reducing journey times for public transport and making walking and cycling more attractive options, whilst in the longer term, the scheme will look to increase the capacity and connectivity of sustainable transport, opening up locations for growth and reducing reliance on the car.

Impacts		Summary of key impacts	Assessment: Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	The scheme will result in decongestion benefits to road users as a result of modal shift to active modes. This impact has been estimated using the DfT's AMAT and applying the journey purpose split from the November 2021 TAG Databook to assign these impacts to business, commuting and other users.	Value of journey time changes(£): 486,359 Net journey time changes (£): 0 to 2min / 2 to 5min / > 5min	-	486,359	
	Reliability impact on Business users	Through providing continuity of cycling and walking infrastructure, the scheme will improve reliability for those travelling by active modes. For example, continuous segregated cycle facilities, straight across crossings and priority for active modes at junctions will provide more relaible journey times.	-	Slight Beneficial	-	
	Regeneration	Regeneration impacts have not been considered given there is no specific guidance in relation to assessing this within TAG	-	Not Assessed	-	
	Wider Impacts	Not Assessed	-	Not Assessed	-	
Environmental	Noise	The Scheme is within a Noise Important Area (NIA). There are five NIAs declared within 500m of the Scheme, three of which are located within the Scheme boundary. These are all designated as road sources and include NIA 11417 between Elizabeth Way and the point where Ditton Walk Road meets the Scheme, NIA 5034 within the Scheme boundary near the junction where Meadowsland Road meets the Scheme along the A1303 and NIA 5035 near Cambridge City Airport. There are sensitive receptors adjacent to the Scheme which comprise residential properties situated amongst commercial buildings in close proximity to the existing A1134 near the Elizabeth Way roundabout. The existing noise environment is expected to be dominated by road noise; however, the noise environment is also likely to be influenced by noise associated with commercial operations. Once operational, the Scheme is likely to decrease noise levels along the existing A1134 and A1303 and also the adjoining roads. This is because the road improvements may encourage greater use of bicycles and buses during operation, reducing the noise pollution from the road, assuming a modal shift from car use. However, it is anticipated that the Proposed Scheme may raise noise levels during construction. Overall, is it anticipated that the Scheme may have a Slight Beneficial effect on noise.	-	-	7,382	
	Air Quality	The Scheme is within areas already impacted by poor air quality, as indicated by the designation of the Cambridge Air Quality Management Area (AQMA) with Ref ID:311. The AQMA is declared exceeding the annual mean of 35µg/m3 nitrogen dioxide (NO2). Defra Pollution Climate Mapping (PCM) link is declared within the part of the Scheme coinciding with the boundary of AQMA. The PCM link in exceedance of the annual NO2 objective within the Scheme is between Elizabeth Way and the Cambridge Retail Park. There are sensitive receptors adjacent to the Scheme which comprise residential properties situated amongst commercial buildings in close proximity to the existing A1134 highway in the areas of Barnwell, Chesterton and Fen Ditton. The air quality levels may be increased during construction however, once operational the Proposed Scheme is likely to reduce levels of air quality because it is anticipated the road improvements may encourage greater use of bicycles and buses during operation, reducing the noise pollution from the road, assuming a modal shift from car use. Overall, is it anticipated that the Scheme may have a Slight Beneficial effect on air quality.	-	-	14,651	
	Greenhouse gases		Change in non-traded carbon over 60y (CO2e) Change in traded carbon over 60y (CO2e)	-	46,312	
	Landscape	The Scheme will fit within the existing highway corridor, so it is anticipated no mature trees will need to be cut down. Additionally, it is anticipated that the Proposed Scheme design will incorporate or enhance existing footways and provide new crossings to ensure severance impacts are reduced. However, the Scheme may adversely affect visual amenity for receptors and the culture of Bedfordshire and Cambridgeshire national landscape area. Overall, the impact of the Scheme on the landscape is anticipated to be Neutral.	-	Neutral	-	
	Townscape	The scheme is intended to enhance the strategic highway network in order to provide high quality and attractive infrastructure for walking, cycling and public transport. This will benefit human interaction within the townscape. It is anticipated that the Scheme design would incorporate or enhance existing footways and introduce new and improved crossings to ensure existing severance impacts are reduced. Overall, the Scheme is considered to have a Slight Beneficial effect on the townscape.	-	Neutral	-	

	Historic Environment	There are a number of designated heritage assets within 2km of the Scheme: 5 Scheduled Monuments, 10 Registered Parks & Gardens, 64 Grade I listed buildings, 614 Grade II listed buildings and 45 Grade II* listed buildings and 10 Registered Parks and Gardens. Of these, the Grade II listed Globe Public House and 247 Newmarket Road are within 20m and will potentially be impacted indirectly. However, these assets are currently affected by the presence of the existing highway, so any impact is considered Slight Adverse. The presence of non-designated heritage assets and buried archaeological remains is not known at this stage. It is considered there is the potential for archaeological remains to be present within the Proposed Scheme boundary, though it is more likely that the construction of the existing highway would have already depleted most, if not all archaeological resources. Further, we do not expect the new road scheme to impact on virgin ground and therefore the risks to features of medium to high value would be extremely low. Overall, the Proposed Scheme is anticipated to have a Neutral impact on historic environment.	-	Neutral	-	
	Biodiversity	There are a number of Nationally designated sites within 2km of the Scheme. The nationally designated sites include Ancient woodlands and a few other priority habitats such as Coastal and floodplain grazing marsh (closest within 10m from the Scheme over the Coldham's brook), Lowland calcareous grassland (closest within 10m from the Scheme over the Coldham's brook), Lowland fens, Deciduous woodland, traditional orchard and Wood-pasture and Parkland. Coldham's Common LNR is immediately adjacent south of the Scheme. The Scheme could have an indirect impact on the Coldham's Common LNR, Coastal and floodplain grazing marsh and Lowland calcareous grassland since they are adjacent to the Scheme. The impact is due to limited potential changes in surface water quality and noise, air quality, vibration or lighting arising from the Scheme. Wilbraham Fens SSSI is noted at the east of the 2km buffer. Considering the distance and evidence of habitats, currently there will be no impact on the SSSI. The presence of protected species within and surrounding the Proposed Scheme is largely unknown. There are some priority species (listed by Cambridgeshire Biodiversity Action Plan (BAP)) noted through desk study within 500m, and the scheme has the potential to impact on a number protected and important trees (as identified GCSP Search-by-Map and CEA Phase A – Newmarket Road Arboricultural Survey). Overall, the impact on biodiversity is anticipated to be Neutral.	-	Neutral	-	
	Water Environment	There are two water courses within 2km of the Scheme. Coldham's Brook passes underneath the Scheme and the River Cam is within 300m north of the Scheme. The Scheme is predominantly located within areas classified as Flood Zone 1, with only small areas within Flood Zones 2 and 3, so it is therefore anticipated that there will be a limited increase in flood risk as a result of the Scheme. Runoff generated through the construction and operation phases of the Scheme has the potential to change the chemical composition of groundwater bodies and nearby watercourses (primarily Coldham's Brook). However, mitigation will be implemented to minimise the likelihood of chemical contamination which could impact the features of this waterbody (e.g. water supply, dilution of waste products). Construction impacts on water quality can be appropriately managed by the implementation of a CEMP that manages pollution risks. The impact of the Scheme on the water environment is considered Neutral.	-	Neutral	-	
Social	Commuting and Other users	Journey time savings to commuting and other users through mode shift from private car to using active modes, and journey time savings for pedestrians and cyclist using the new facilities	**Value of journey time changes(£)** 3,546,724 **Net journey time changes (£)** 0 to 2min / 2 to 5min / > 5min	-	3,546,724	
	Reliability impact on Commuting and Other users	The proposals will improve reliability for cyclists and pedestrians by upgrading the existing variable infrastructure to provide a continuous segregated cycle link and a direct pedestrian link free of guardrailing and other street clutter.	-	Slight Beneficial	-	
	Physical activity	The improvement to cycle facilities will encourage active travel and therefore physical activity. Greater levels of cycling will result in health benefits through reduced health problems including diabetes and high blood pressure. In addition, an increase in walking trips to access the station will result in further health benefits which have not been fully quantified within the appraisal.	-	-	15,133,001	
	Journey quality	Improvements to the pedestrian environment along the corridor will result in a more pleasant journey for cyclists and pedestrians.	-	-	1,731,496	
	Accidents	The scheme proposals will create a safer environment for pedestrians and cyclists, giving these user's greater protection from vehicles as well as better priority at junctions. The overall reduction in highway-kilometres travelled as a result of the scheme will also reduce the number of highway accidents.	-	-	9,847,101	
	Security	The scheme proposals will increase the sense of security along the corridor as existing pedestrian subways are being replaced by street level crossings.	-	Slight Beneficial	-	
	Access to services	The improvement of existing cycling and pedestrian infrastructure along the corridor will improve accessibility to key destinations such as Cambridge City Centre, Coldham's Common, Cambridge Airport and the relocated Newmarket Road Park & Ride site. In addition, the improved paving infrastructure in terms of pavement evenness and level access will encourage more leisure users to access the route.	-	Slight Beneficial	-	
	Affordability	The scheme is not anticipated to have any negative impact on affordability as these modes are free to use. As a result of improved infrastructure, current highway users are forecast to switch to cycling in the AMAT model. This may result in a reduction in cost to the user in terms of reduction in fuel costs and car maintenance.	-	Neutral	-	
	Severance	The lack of provision for cyclists at the major junctions and volume of general traffic makes it an unattractive route for many, with alternative parallel routes more attractive options. The scheme proposals include a high quality, direct route for cyclists along the corridor, which will reduce severance.	-	Slight Beneficial	-	
	Option and non-use values	The proposed scheme does not introduce new travel options and therefore the impact is considered to be Neutral.	-	Neutral	-	

Public Accounts	Cost to Broad Transport Budget	The scheme requires funding from Greater Cambridge City Deal.	-	-	18,384,991	
	Indirect Tax Revenues	The scheme will have a negative impact indirect tax revenues.	-	-	-53,420	

Appendix E

RISK REGISTER

4.1 Cost Profile

Item Description	Cambridge Eastern Access
Construction costs incl Prelims, TM, OH & P @ 3Q'22	£16,472,000
Professional Fees	£3,296,000
STATS Diversions	£4,960,000
Risk / Contingency @ 40%	£5,931,000
Future Inflation	£3,829,000

Construction of Cambridge Eastern Access works - Q1 2024 to Q2 2026

	Years					
	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Construction costs incl Prelims, TM, OH & P			40%	40%	20%	100%
Professional Fees	10%	10%	30%	30%	20%	100%
STATS			80%	20%		100%
Land take						
Future Inflation	0%	2.12%	5.63%	9.34%	12.56%	
Inflation Contingency (3% per annum)		3%	6%	9%	12%	
Construction costs incl Prelims, TM, OH & P	£0	£0	£6,588,800	£6,588,800	£3,294,400	£16,472,000
Professional Fees	£329,600	£329,600	£988,800	£988,800	£659,200	£3,296,000
STATS	£0	£0	£3,968,000	£992,000	£0	£4,960,000
Risk/Contingency	£99,000	£99,000	£2,274,000	£2,274,000	£1,187,000	£5,933,000
Future Inflation	£0	£9,100	£777,600	£1,012,400	£645,600	£2,445,000
Inflation Contingency (3% per annum)	£0	£0	£395,300	£593,000	£395,300	£1,384,000
Outturn Cost excl OB	£428,600	£437,700	£14,992,500	£12,449,000	£6,181,500	£34,500,000

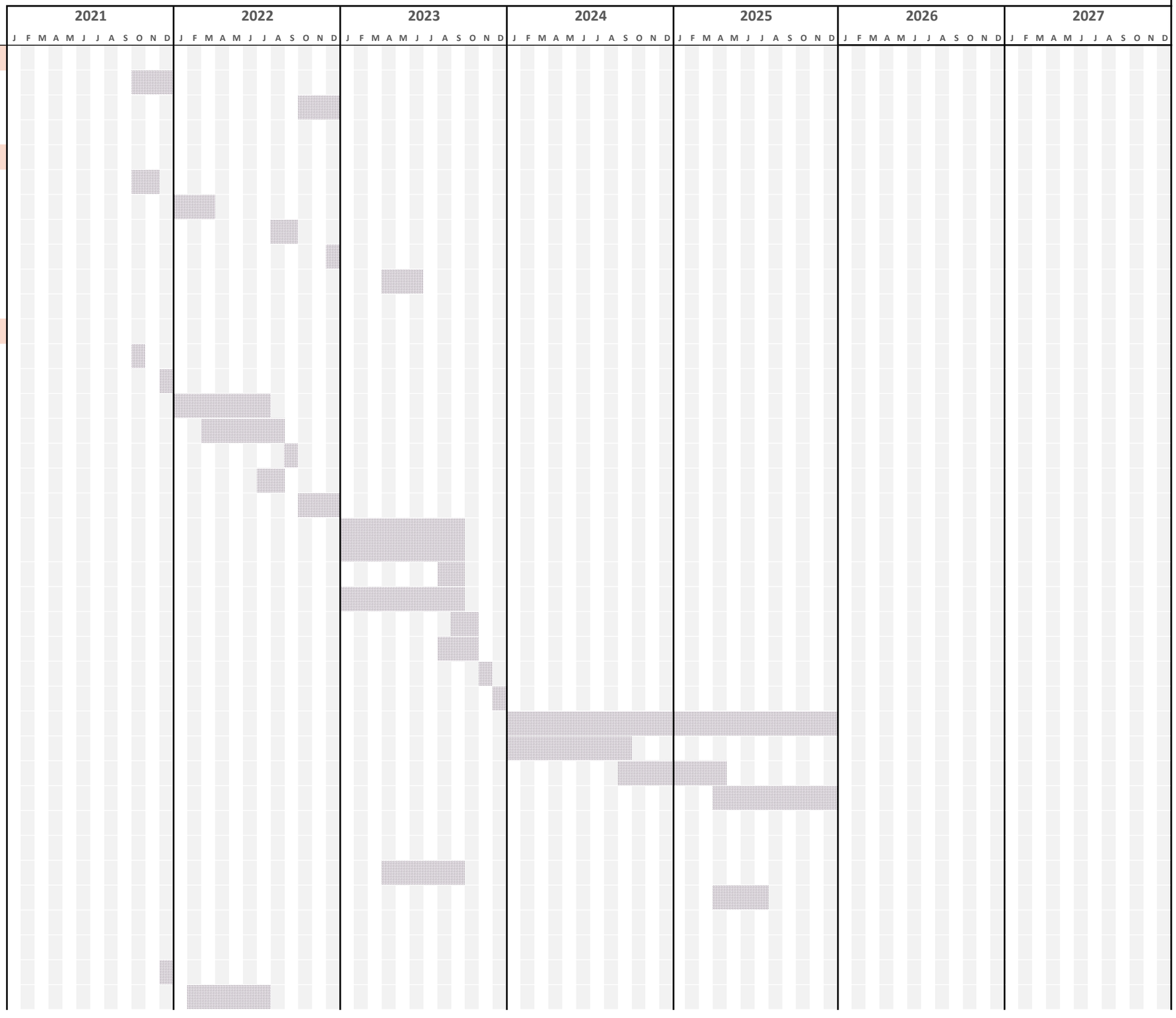
Appendix F

PROGRAMME

Cambridge Eastern Access

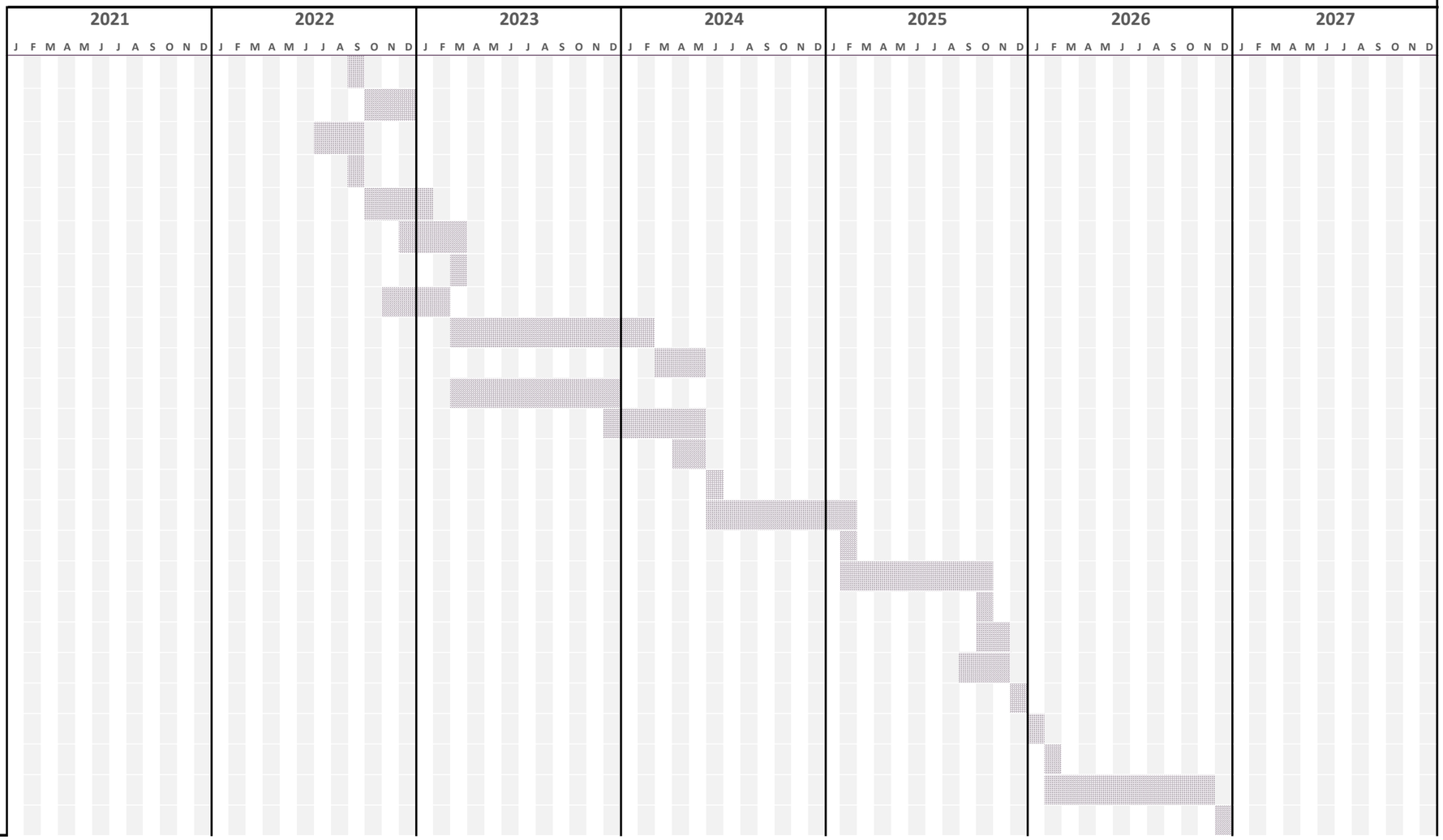
Phase A Programme v3.1 (August 2022)

ACTIVITY	PLAN START	PLAN DURATION
Stakeholder & Public Engagement		
Initial Stakeholder Engagement (to present Newmarket Road and P+R concept designs)	10	3
Second Stakeholder Engagement - Newmarket Road preliminary & P+R Site Selection	22	3
Topographic/ Utilities/ GI Surveys		
Commission Topographic Survey & C2 Utilities Enquiries	10	2
Topographic Survey (by 3rd Party Survey Company)	13	3
Commission C3 Utilities Enquiries	20	2
Commission Drainage Survey	24	1
Environmental Ground Investigation for ES (P+R site)	28	3
Newmarket Road (Permitted Development)		
Environmental appraisal of Newmarket Road	10	1
Feedback from initial engagement events	12	1
Preliminary design of Newmarket Road (inc traffic modelling and environmental + landscape design input and coordination with OBC)	13	7
Outline Business Case	15	6
Presentation to GCP Board: Preliminary Design & OBC	21	1
Stage 1 RSA + Designer's response	19	2
Stakeholder consultation	22	3
Detailed Design of Newmarket Road t/w design approval process with Cambridgeshire CC (inc P+R accesses) and coordination with CCC Streetworks	25	9
Stage 2 RSA + Designer's Response	32	2
TRO's/Side Road Orders/PROWs - Applications and Consents	25	9
Tender process	33	2
Full Business Case	32	3
GCP Board/ GCP award of Tender	35	1
Contractor mobilisation	36	1
Construction of Newmarket Road works Q1 2024 to Q4 2025	37	24
Construction Phase 1: East of Elizabeth Way R'bt to west of Coldhams Lane & Ditton Lane to Ditton Fields (inc Barnwell Rd roundabout)	37	9
Construction Phase 2: Coldhams Lane to Ditton Fields	45	8
Construction Phase 3: Elizabeth Way Roundabout & Airport Way to Ditton Lane (inc access works to P+R site)	52	9
Highways Accesses for Park and Ride site		
Detailed design of P+R accesses (as part of detailed design of Newmarket Road scheme)	28	6
Construction of P+R access junctions (include with Newmarket Road Phase 3 works)	52	4
Park & Ride (Planning Application: TCPA)		
Feedback from initial engagement events	12	1
Site Selection Appraisal + Green Belt Option Assessment	14	6



Phase A Programme v3.1 (August 2022)

ACTIVITY	PLAN START	PLAN DURATION
Preliminary Presentation to GCP Board: Site Selection	21	1
Stakeholder Engagement - Site Selection	22	3
Preliminary design of P+R scheme access arrangements	19	3
Highways Stage 1 Safety Audit + Designer's Response	21	1
Schematic design of P+R (general arrangement)	22	4
Outline Business Case	24	4
Secondary Presentation to GCP Board: OBC	27	1
EIA Screening and Scoping process with planning authority (inc consultation process)	23	4
Ecological surveys	27	12
Preparation of Environmental Impact Assessment	39	3
Development of P+R design for submission with planning application t/w liaison with key stakeholders	27	10
Preparation of documents to support planning application (inc Transport Assessment & FRA & design drawings)	36	6
Preparation of Outline Planning Application (all Matters Reserved except Access)	40	2
Submit Outline Planning Application (June 2024)	42	1
PLANNING APPLICATION DETERMINATION (assume 9 months)	42	9
Anticipated Outline Planning Consent (assumes no public inquiry)	50	1
Detailed Design of P+R scheme & Reserved Matters/ Planning Conditions Submissions	50	9
Anticipated Reserved Matters Consent(s)	58	1
Tender Process	58	2
Full Business Case	57	3
GCP Board/ GCP award of Tender	60	1
Contractor Mobilisation	61	1
Start of P+R Construction Q1 2026	62	1
Construction of on-site P+R scheme	62	10
Opening of P+R Q4 2026	72	1



Appendix G

SCHEME COST DETAILS

Cambridge Eastern Access

Updated: 11/08/2022

	Select from Dropdown menu	Select from Dropdown menu	Select from Dropdown menu	Sequential Reference Number. E.g 1.01	Select from Dropdown menu	Select from Dropdown menu	Select from Dropdown menu	A clear description of the Risk. The drafter should describe the risk e.g. 'The Risk is that…' It is important that the description is carefully-worded, to define the scope of that risk.			Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation	Brief description of what measures could be taken to reduce or minimise the risk. Could be used to help evaluate.	Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation
											Inherent Risk/Opp Rating					Residual Risk Rating			
Project Name	**Risk/Opportunity**	**Current Status**	**Impact Trend**	**Ref No.**	**Classification**	**Risk Category**	**Project Stage**	**Project Risk Description (If)**	**Potential Impact (Then)**	**Primary impact (time/cost):**	**Likelihood**	**Impact**	**Score**	**GCP Lead Officer**	**Risk Mitigation / Realisation Measures**	**Likelihood**	**Impact**	**Score**	**Risk/Opp Action Owner**
Cambridge Eastern Access	Risk	CLOSED		1	Technical	Design	DS3 - Preliminary Design	Discrepancies between topographical surveys	Could impact design work and lead to a proposed plan which is laid out on topographical information which is true to the physical site.	Completion of works date	4	3	12	Jo Baker	Undertake sense checks on the topographical information received	3	3	9	Service Provider
Cambridge Eastern Access	Risk	LIVE		2	Project	Consultation/Comms	DS2 - Feasibility	Public/stakeholder opposition to the concept scheme designs	Delay's to identification and development of preferred option and preliminary design.	Cost increase	3	2	6	Jo Baker	Review public consultation responses before progressing with preliminary scheme design.	2	2	4	GCP PM
Cambridge Eastern Access	Risk	LIVE		3	Project	Statutory Process	DS1 - Project Sep Up / Initial Options	Consenting risk with programme and construction of Newmarket Road and P&R triggering need for a single planning application.	Cumulative impact of Newmarket Road construction and Park and Ride could trigger need for a full planning application for both schemes.	Start of works date	3	4	12	Jo Baker	Discuss consenting approach with WSP planners, develop construction programme and early engagement with CCC planners - EIA screening	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		4	Technical	Design	DS3 - Preliminary Design	Potential for scheme cost escalation due to currently unknown utility diversions and construction cost inflation	Cost could increase to level where scheme is no longer viable or has a substantial shortfall in funding	Cost increase	3	5	15	Jo Baker	Early identification utility constraints and potential diversion requirements during preliminary design phase. Include a substantial construction cost risk contingency in project budget	2	3	6	Service Provider
Cambridge Eastern Access	Risk	LIVE		5	Technical	Design	DS3 - Preliminary Design	Technical limitations involving reconfiguring existing Elizabeth Way roundabout relating to infilling subway structure and retaining walls. Potential for substantial disruption to traffic flow on ring road and diversion of utilities	Cost and maintainability implications of repurposing/reconfiguring current structures below junction. During construction prolonged periods of disruption for all modes accessing the city, and impacts to nearby residents	Cost increase	4	4	16	Jo Baker	Early assessment of infilling options and costs. Prepare appraisal of carbon costs relating to infilling and construction to identify best methods and materials Early Contractor Involvement to identify construct traffic management opportunity and key buildability risks and opportunities	4	3	12	Service Provider
Cambridge Eastern Access	Opportunity	LIVE		6	Communications	External Stakeholder	DS3 - Preliminary Design	Committed Newmarket Road improvements impact on preliminary designs including Marleigh, Ditton Lane, Chisholm Trail and Bottisham Greenways	Impacts construction programme and scheme design quality.	Completion of works date	3	4	12	Jo Baker	Obtain committed development scheme plans (Chisholm Trail, Marleigh) and early engagement with Greenways and Stantec (Phase B).	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		7	Technical	External Stakeholder	DS2 - Feasibility	Phase B busway undeliverable due to airport operational constraints.	Alternative scheme or programme needs to be developed.	Start of works date	4	4	16	Jo Baker	There is a high level of uncertainty around the Cambridge East buildout and whether the Phase B busway is deliverable. Study required into bus strategy options for services from relocated P&R and integrating bus routes through Cambridge East	4	3	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		9	Technical	Design	DS3 - Preliminary Design	Highway boundary disputes along Newmarket Road - fences/plantings	Delay and cost implications if any fences/boundary markers are revealed to be incorrectly located within the road reserve	Completion of works date	3	4	12	Jo Baker	Detailed survey and early consultation with GCP and landowners is any issues flagged	2	2	4	GCP PM
Cambridge Eastern Access	Opportunity	LIVE		10	Governance	Statutory process	DS3 - Preliminary Design	Speed limit changes to provide a safer environment for Newmarket Road users and LTN 01/20 guidance compliance	Delays in getting approval in any proposed speed limit changes along route	Completion of works date	3	2	6	Jo Baker	At the preliminary design stage identify TRO requirements	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		11	Environmental	Environmental	DS4 - Detailed Design	20% Biodiversity Net Gain requirements not achieved within scheme boundary and therefore would require off-site compensation requiring additional land.	Additional land needs to be obtained.	Cost increase	3	3	9	Jo Baker	BNG strategy developed during preliminary design once scheme requirements confirmed by GCP.	3	2	6	Service Provider
Cambridge Eastern Access	Risk	LIVE		12	Environmental	Environmental	DS3 - Preliminary Design	Impact on air quality	Decrease in air quality along the route / at the Park and Ride site during construction and operation	Start of works date	3	3	9	Jo Baker	Ensure that air quality modelling is undertaken using traffic data and those outputs are considered during design	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		13	Environmental	Environmental	DS4 - Detailed Design	Impact on noise and vibration	Noise and vibration resulting from construction and operational activities	Start of works date	3	3	9	Jo Baker	Ensure that noise and vibration is considered throughout the design process and any reduction possible is embedded within design. This should be considered for the Park and Ride site as a priority due to the nearby NIAs and SSSI.	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		14	Environmental	Environmental	DS4 - Detailed Design	Impact on the water environment	Impacts on the water environment resulting from construction and operational activities	Cost increase	3	3	9	Jo Baker	Drainage to be considered throughout design, including flood storage, river/brook crossings (Coldhams Brook) and aquifer and groundwater resources. This should be considered for the Park and Ride site as a priority due to the land being undeveloped. The CEA route and the Park and Ride site both have small elements which sit within Flood Zone 3 (1% - 0.1% chance of annual flooding)	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		15	Environmental	Environmental	DS4 - Detailed Design	Impact on biodiversity	Impact on biodiversity during construction	Completion of works date	3	3	9	Jo Baker	Consideration of biodiversity when designing CEA route improvements. Biodiversity on the Park and Ride site is of paramount importance due to Wilbraham Fens SSSI being located within 0.4km of the current search area	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		16	Environmental	Environmental	DS3 - Preliminary Design	Impact on biodiversity	Impact upon trees during construction	Cost increase	2	3	6	Jo Baker	Ensure that a topographical and tree survey is undertaken so exact location of trees & their Root Protection Areas are known and avoided where possible.	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		17	Environmental	Environmental	DS3 - Preliminary Design	Impact on the historic environment	Impact on heritage assets / heritage setting	Cost increase	2	2	4	Jo Baker	Ensure that the one listed building that borders the Park and Ride site and the multiple that run along the CEA route are considered during design	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		18	Technical	Design	DS3 - Preliminary Design	Newmarket Road and P&R relocation impact on bus journey times	Increased bus journey times during construction and operation.	Cost increase	3	3	9	Jo Baker	Concept scheme modelling to assess scheme impacts on bus journey times, early engagement with stagecoach on bus impacts.	3	2	6	Service Provider
Cambridge Eastern Access	Risk	LIVE		19	Technical	Design	DS3 - Preliminary Design	Impact on Sustrans (long distance traffic free route on the National Cycle Network)	Impact on the Sustrans	Completion of works date	2	2	4	Jo Baker	Consider impact on Sustrans route 51 during design and liaise with Greenway team. This runs alongside part of the CEA Route and the northern boundary of the CEA Park and Ride site	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		20	Technical	Design	DS3 - Preliminary Design	Impact on Public Rights of Way (PRoW)	Impact on the PRoWs which will be impacted by the CEA scheme	Start of works date	2	2	4	Jo Baker	Consideration of the 3 PRoWs which will be intersected or affected by the CEA route and CEA Park and Ride site: 229/3 Path Number 3, 85/9 Path Number 9 and 39/12 Path Number 12	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		21	Environmental	Environmental	DS3 - Preliminary Design	Impact on the landscape and visual environment	Impact on landscape character, visual receptors and amenity values	Cost increase	3	3	9	Jo Baker	Ensure that strategic landscape issues and impacts are considered during design an planning stages	3	3	9	Service Provider

Cambridge Eastern Access	Risk	LIVE		22	Environmental	Design	DS3 - Preliminary Design	Poor ground conditions may require increased highway/earthwork/structural foundations, which would increase the current construction cost estimate for the P&R	Increased scheme costs	Cost increase	3	3	9	Jo Baker	A preliminary GI will need to be undertaken for the P&R site once a preferred location has been established,	2	2	4	Service Provider
Cambridge Eastern Access	Risk	LIVE		23	Environmental	Statutory Process	DS3 - Preliminary Design	Potential for archaeological remains to be identified which could require extensive intrusive investigation (land access required). This could result in significant programme and cost impacts for the P&R scheme.	Increased scheme costs	Completion of works date	3	3	9	Jo Baker	Desktop study will be required to inform the planning submission.	3	3	9	Service Provider
Cambridge Eastern Access	Risk	LIVE		24	Technical	Scheme Development	DS3 - Preliminary Design	Scheme modelling results in unacceptable increases to general traffic and bus delays.	Alternative scheme options need to be developed	Cost increase	3	3	9	Jo Baker	Model concept scheme options with the PARAMICS model - need to agree assumptions regarding city access and bus gate proposals	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		25	Procurement	External Stakeholders	DS5 - Delivery	Phase A Park and Ride relocation may require the acquisition of third party land which is not achieved by agreement and will require a CPO process.	P&R relocation delayed until land purchase concluded	Start of works date	4	4	16	Jo Baker	Once preferred site established GCP to appoint a consultant to negotiate with land owners to acquire land by agreement.	4	3	12	GCP PM
Cambridge Eastern Access	Opportunity	LIVE		26	Environmental	Scheme Development	DS3 - Preliminary Design	Opportunity to substantially improve the public realm and landscaping along Newmarket Road	Positive health and wellbeing benefits	Cost increase	2	2	4	Jo Baker	Landscape and public realm strategy to be developed and costed	2	2	4	GCP PM
Cambridge Eastern Access	Risk	LIVE		27	Project	Statutory Process	DS3 - Preliminary Design	P&R planning application refused (greenbelt impacts/environmental impacts)	Public inquiry triggered, P&R relocation undeliverable.	Completion of works date	3	3	9	Jo Baker	Consult with planners/stakeholders - robust EIA appraisal to be undertaken.	3	3	9	Service Provider
Cambridge Eastern Access	Risk	LIVE		28	Project	Project Funding	DS3 - Preliminary Design	Potential for scheme costs to be significantly higher than available GCP budget.	Scheme undeliverable, value engineering or additional funding required.	Cost increase	3	3	9	Jo Baker	Undertake cost estimating once preliminary design has been developed	3	4	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		29	Political	Project Funding	DS3 - Preliminary Design	Proposed scheme does not attain funding approval from GCP board	Scheme undeliverable, requires redesigning.	Cost increase	2	2	4	Jo Baker	Produce robust OBC demonstrating a strong strategic case for the scheme	2	3	6	Service Provider
Cambridge Eastern Access	Risk	LIVE		30	Project	External Stakeholders	DS3 - Preliminary Design	Development of Cambridge East does not progress as proposed significantly reducing the strategic case for the Phase B busway.	Phase B busway not required.	Start of works date	3	3	9	Jo Baker	Liaise with Marshalls/Stantec - gain understanding of scheme phasing/transport strategy. Early engagement with bus operators.	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		31	Financial	External Stakeholders	DS3 - Preliminary Design	Negative impact on Newmarket Road users, including existing Commercial operators, Bus operators, existing road users and customer access by altering car/attractiveness due to increased journey times/congestion.	Potential objections to scheme design, that could lead to changes to scheme design. And financial impact on retail occupiers if footfall reduces as a result of the scheme	Start of works date	4	4	16	Jo Baker	Early engagement with wider community, including retail operators. Recognising potential change in land use around some of the retail park area	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		32	Technical	Scheme Development	DS3 - Preliminary Design	Lack of empirical traffic and movement data to inform the preliminary design.	Delays to preliminary design.	Start of works date	2	2	4	Jo Baker	Produce a survey specification and obtain traffic and movement empirical evidence.	2	2	4	
Cambridge Eastern Access	Risk	LIVE		33	Technical	Scheme Development	DS3 - Preliminary Design	CCC don't have an established ITS technology preference for bus priority technology which could impact the detailed design and specifications.	Delays to the detailed design/cost impacts	Cost increase	3	4	12	Jo Baker	WSP would have to specify the technology to be implemented. Liaise with CCC signal team at regular intervals when detailed design begins	3	2	6	
Cambridge Eastern Access	Risk	LIVE		34	Technical	Scheme Development	DS3 - Preliminary Design	Areas of structural failure in the existing Newmarket Rd carriageway construction are visible at a number of locations along the site, strongly indicating that maintenance works are required.	If maintenance works are not undertaken to the carriageway, either in advance of or as part of the CEA scheme, it would have a negative impact on the finished product/appearance of the CEA scheme and could therefore result in reputational issues for GCP. If CCC have no available maintenance funding, this would increase the CEA scheme costs and would need to be factored into the OBC.	Cost increase	4	3	12	Jo Baker	1. CCC to confirm structural maintenance proposals, funding & programme for Newmarket Rd. 2. Carry out a pavement investigation to identify appropriate remedial works if no such proposals exist.	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		35	Technical	Scheme Development	DS3 - Preliminary Design	As part of the planned reconfiguration of the two signalised junctions into the retail park, and the Stanley Rd/B&Q signalised junction, it's very likely that works will be required on 3rd party land within the retail park to appropriately tie in the revised junction layout to the existing access roads.	Works on 3rd party land would require prior consultation & formal agreement with affected landowners which could result in cost & time impacts.	Start of works date	4	3	12	Jo Baker	1. Prelim design to identify likely extent/nature of 3rd party works. 2. Engage with landowner and obtain agreement to works (outside of current prelim design scope).	2	3	6	GCP PM
Cambridge Eastern Access	Risk	LIVE		36	Technical	Scheme Development	DS3 - Preliminary Design	NR highway boundary information received from CCC is not accurate with physical layout on site or with deeds held by adjacent 3rd party landowners	Additional costs and delay with completion of design/start of works	Cost increase	3	3	9	Jo Baker	Highlight areas in question to CCC and request that they investigate & confirm	2	3	6	GCP PM
Cambridge Eastern Access	Risk	LIVE	▲	37	Technical	CCC Resources	DS3 - Preliminary Design	The programme of CSRM runs for CEA is likely to be delayed. The delay could significantly affect the option tests and the scale of highway disbenefits reported in the OBC and FBC.	Scale of highway disbenefits reported in the OBC and FBC undermine the Value for Money case.	Completion of works date	5	4	20	Jo Baker	Focusing on a robust Active Travel appraisal benefits analysis to demonstrate overall benefit of the scheme. Reappraise the scheme design once updated CSRM flows become available.	4	3	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		38	Technical	Scheme Development	DS3 - Preliminary Design	Due to programme constraints, the assessment of options on existing trees undertaken in Feb 2022 has been carried out without a detailed topographical and arboriculturally survey.	The topo and arb survey (including root protection areas) may mean that the impact on Category A and or TPO trees is more significant than reported to GCP in February 2022.	Start of works date	4	3	12	Jo Baker	Review impact on trees as soon as topo and arb survey data becomes available	4	3	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		39	Technical	Scheme Development	DS3 - Preliminary Design	Bus stop layouts not in accordance with LTN 1/20 advice.	Not feasible to achieve "floating" bus stop layout as per LTN 1/20 (Fig. 6.30) within existing highway boundary, whilst still providing other cross-sectional elements e.g. traffic lanes, cycle tracks etc	Start of works date	4	3	12	Jo Baker	Liaise with CCC to confirm extent of highway boundary where bus stops are present. Early engagement with bus operators. Can any existing bus stops be removed?	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		40	Technical	Scheme Development	DS3 - Preliminary Design	Statutory undertaker's apparatus	Significant cost increases and potential impact on start of works date	Cost increase	4	3	12	Jo Baker	Arrange for trial holes to be undertaken at selected locations. Meet Openreach on site regarding potential presence of fibre optic cables. Request C3 estimates	3	3	9	GCP PM
Cambridge Eastern Access	Risk	CLOSED		41	Technical	Scheme Development	DS4 - Detailed Design	Construction timeline significantly longer than preliminary estimate	Extended construction timelines may cause overlap in proposed construction of Park and Ride affecting development approval routes.	Completion of works date	4	3	12	Jo Baker	Seek advice on constructability at key points of design to inform project timeline. Seek Early Contractor Involvement as appropriate	3	4	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		42	Environmental	Scheme Development	DS4 - Detailed Design	Foul sewer availability - risk of discharges to the environment from toilets and welfare facilities (construction and long-term) potential permitting (EPR) requirements	Increase in time and costs	Cost increase	4	3	12	Jo Baker	Early consultation with the water company and/or Environment Agency - Foul sewer assessment or EPR pre-application discussions	3	3	9	GCP PM

Cambridge Eastern Access	Risk	LIVE		43	Environmental	Scheme Development	DS4 - Detailed Design	Consideration of the impact of upstream pollutants (i.e. permitted discharges) and potential controls required for temporary / permanent discharges from the site. The Quy water is known to be failing for phosphate and PFAS (potentially linked to Agriculture and Aviation respectively)	Increase in time and costs	Cost increase	2	4	8	Jo Baker	Early consultation with the Environment Agency - EPR pre-application discussions - consultation with other relevant stakeholder (i.e. landowners / airport operators)	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		44	Environmental	Scheme Development	DS4 - Detailed Design	Potential in-combination impact on watercourses from proposed developments (i.e. the newly proposed waste water treatment plant) - potential impact on water quality and flood risk	Increase in time and costs	Cost increase	2	4	8	Jo Baker	Early consultation with the Environment Agency - EPR pre-application discussions / flood risk assessment	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		45	Procurement	Project Management	DS5 - Delivery	Procurement supply chain - Cost/lead-in times/availability of materials and labour	Increase in time and costs	Cost increase	3	2	6	Jo Baker	In detailed design is undertaken keep a close eye on current market issues and plan for appropriate alternatives	2	3	6	GCP PM
Cambridge Eastern Access	Risk	LIVE		46	Technical	Design	DS5 - Delivery	It has been identified from dialogue with CCC that Newmarket Road and Elizabeth Way are abnormal load routes.	Any reduction in existing available carriageway widths may result in abnormal loads that have previously used the route being unable to pass.	Completion of works date	3	2	6	Jo Baker	It is anticipated that there would be no reduction in available widths compared to what's currently available. Once a more developed set of proposals are available, they will be shared with CCC Abnormal Loads and feedback requested.	2	3	6	GCP PM
Cambridge Eastern Access	Risk	LIVE		47	Technical	Design	DS4 - Detailed Design	At a meeting on 26/05/22, GCP decided that they did not wish to instruct a drainage survey to be undertaken to better understand the extent of the existing highway drainage network & outfall points, to enable an outline drainage design to be prepared as part of the preliminary design scope. It was confirmed that GCP board approval to the prelim design proposals is required before a drainage survey would be instructed.	Risk of abortive preliminary design work by not carrying out the drainage survey until the beginning of the detailed design stage, which could delay the scheme programme overall. Also, the scope of the drainage strategy to be undertaken during the preliminary design stage will be limited in the absence of outputs from a drainage survey.	Start of works date	4	3	12	Jo Baker	Foul and surface water sewer records obtained from drainage authority. Highway drainage records requested from CCC, to be validated by the proposed drainage survey. Undertake high level assessment of impermeable areas to determine additional flows into the public sewer system, for assessment by Anglian Water (drainage authority).	3	4	12	GCP PM
Cambridge Eastern Access	Risk	LIVE		48	Technical	Scheme Development	DS4 - Detailed Design	The risk is that the proposals will give significant improvements to pedestrians / cyclist at the cost of buses and general traffic. Once the magnitude of the disbenefit to buses / general traffic are quantified the client may decide to amend the proposals, diluting the pedestrian / cycle improvements but also incurring significant re-designs.	Increased time / cost and loss of reputation	Cost increase	3	2	6	Jo Baker	Early engagement with client to make them aware of potential disbenefit to buses / general traffic Political engagement and support	2	2	4	GCP PM
Cambridge Eastern Access	Risk	LIVE		49	Technical	Scheme Development	DS4 - Detailed Design	Proposals will give significant improvements to pedestrians / cyclist at the cost of buses and general traffic through engineering measures, many of which will be at the traffic signals junctions. The layouts may not be considered suitable by CCC Traffic Signals and also (as above) the increased congestion caused may be an issue for them as they have to manage the traffic and congestion	Increased time / cost and loss of reputation	Cost increase	4	3	12	Jo Baker	Early engagement with client and CCC TS to make them aware of potential disbenefit to buses / general traffic and also the 'innovative' designs being proposed	3	2	6	GCP PM
Cambridge Eastern Access	Opportunity	LIVE		50	Technical		SS0 - Policy & Strategy	Proposed changes in land use to the Beehive centre from a retail park to a Science and Technology Park have a potential to change the nature of traffic using Newmarket Road. Planning application submission planned for late 2022/2023. Similar redevelopment of the Grafton Centre on East Road is possible in the future with the sale of the Grafton Shopping Centre Site	Traffic characteristics on Newmarket Road may change if either of the retail sites change land use resulting in less vehicle traffic due to changes in land use to office/retail. Change in land use to be less vehicle intensive would provide a greater opportunity to deliver a morep edestrian, cyclist and public transport friendly scheme		3	2	6	Jo Baker	Ensure that design seek to maximise opportunity of potential land use changes	3	3	9	GCP PM
Cambridge Eastern Access	Risk	LIVE		51	Political	Scheme Development	SS0 - Policy & Strategy	Feasibility of the Newmarket Road Scheme is dependent on other proposed GCP road network and public transport schemes (Road Hierarchy Review and Making Connections). That should substantially reduce vehicular transport demand across the wider Cambridge City	If other schemes are delayed, reduced in scope or not progressed, traffic levels along the Newmarket Road Corridor may be higher than anticipated resulting in unacceptable delays to corridor users	Start of works date	3	5	15	Jo Baker	Ensure that a robust Business Case is produced that shows clear benefits of project in line with the other GCP road network projects. Making sure that regular communication with wider GCP project team to understand programme and components of the Making Connections project, and the commitment for its delivery	2	2	4	GCP PM
Cambridge Eastern Access	Risk	LIVE		52	Technical	Scheme Development	DS3 - Preliminary Design	Following on from risk no. 38, now that both the topo and arb survey are available, the arborist has raised concerns in relation to the proposed extent of carriageway widening into the existing central reserve on either side of the Stanley Road junction, where a number of existing trees are present (incl. 2 no. A category trees) He has also rasied concerns regarding the extent of proposed footway construction at the Ditton Lane junction and on either side of Meadowlands Rd.	Scheme re-design and reduced level/benefits of active travel & public transport infrastructure	Start of works date	4	4	16	Jo Baker	Carry out trial holes to better understand root architecture of specific trees. Liaise with arborist regarding options for potential tree pollarding or other measures to mitigate scheme impact whilst enabling existing trees to remain.	4	3	12	Service Provider

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