# Greater Cambridge Partnership (GCP) Fulbourn Greenway

Outline Business Case

APRIL 2023

**CONFIDENTIAL**

**PROJECT NO. 10058827**

**DATE: APRIL 2023**

# Contacts


**ARCADIS CONSULTING (UK) LIMITED**

Arcadis

80 Fenchurch Street,

EC3M 4BY

London

United Kingdom

Send us an email

+44 (0) 20 7812 2000

+44 (0) 20 7812 2001

# Fulbourn Greenway

## Outline Business Case

# Version Control

| Version | Date | Author | Checker | Reviewer | Approver | Changes |
|---|---|---|---|---|---|---|
| 1.0 | 24/01/2023 | D.E/S.M/N.D. | KC | JB | OF | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

# Contents

1 Strategic Case ..... 8
1.1 Overview ..... 8
1.2 Approach ..... 9
1.3 Business Strategy ..... 9
1.4 Scheme Background ..... 10
1.5 Policy Context ..... 14
1.6 Strategic Problems and Issues ..... 18
1.7 Transport Context ..... 18
1.8 Economic Context ..... 25
1.9 Social Context ..... 30
1.10 Environmental Context ..... 34
1.11 Impact of Not Changing ..... 34
1.12 Strategic Need ..... 35
1.13 Strategic Objectives ..... 37
1.14 SMART Objectives and Measures of Success ..... 39
1.15 Scope ..... 40
1.16 Complementary Schemes ..... 40
1.17 Strategic Impacts ..... 44
1.18 Option Development ..... 45
2 Economic Case ..... 48
2.1 Introduction ..... 48
2.2 Approach to Economic Appraisal ..... 48
2.3 Summary AMAT Impacts ..... 62
2.4 Appraisal Results ..... 64
2.5 Sensitivity Tests ..... 65
2.6 Environmental Impacts ..... 66
2.7 Social Impacts ..... 69
2.8 Distributional Impacts ..... 70
2.9 Value for Money Statement ..... 74
3 Financial Case ..... 75
3.1 Introduction ..... 75
3.2 Scheme Costs ..... 75
3.3 Funding Cover ..... 76
4 Commercial Case ..... 77

4.1 Introduction ..... 77
4.2 Procurement Approach ..... 77
4.3 Payment Mechanism ..... 78
4.4 Risk Allocation ..... 79
4.5 Contract Management ..... 79
5 Management Case ..... 80
5.1 Introduction ..... 80
5.2 Complementary Schemes ..... 82
5.3 Programme Governance and Roles ..... 82
5.4 Project Assurance, Approvals Plan and Programme ..... 87
5.5 Stakeholder Engagement and Communications ..... 90
5.6 Risk and issues Management ..... 92
5.7 Monitoring and Evaluation ..... 94
Appendix A ..... 1
Scheme Design Drawings ..... 1
Appendix B ..... 2
AMCB – PA – TEE Tables ..... 2
Appendix C ..... 3
Appraisal Summary Table ..... 3
Appendix D ..... 4
TAG Environmental Worksheets ..... 4
Appendix E ..... 5
Fulbourn Greenway Cost Plan ..... 5
Appendix F ..... 6
Risk Register ..... 6

# Tables

Table 1: Policy Overview ..... 14
Table 2: ATC 2-way Traffic Count Data ..... 19
Table 3: Greenways SMART Objectives (Source: Greater Cambridge Greenways POC (Programme Outline Case)) ..... 39
Table 4: Scheme Benefits ..... 44
Table 5: Summary of Scheme Elements ..... 48
Table 6: Assumption Refined under AMAT ..... 49
Table 7: Summary of AMAT Sections ..... 50
Table 8: Data count for AMAT section ..... 52

Table 9: AMAT Demand (Daily Trips – 24 Hours) ..... 53
Table 10: AMAT Demand Forecasts (Daily Trips – 24 Hours) ..... 55
Table 11: Type of Infrastructure / AMAT classification ..... 56
Table 12: Accident Savings by Severity (2010 prices and values) ..... 59
Table 13: Cost Estimation and Spend Profile, £ 2010 prices and values ..... 60
Table 14: Main Economic Appraisal Assumptions ..... 61
Table 15: Monetised Benefits (2010 prices and values) from AMAT ..... 63
Table 16: AMAT Benefits by category (2010 prices and values) ..... 63
Table 17: Analysis of Monetised Costs and Benefits (2010 prices and values) ..... 64
Table 18: Cost Benefit Analysis, £,2010 prices and values ..... 64
Table 19: Sensitivity Analysis (2010 prices and values) ..... 65
Table 20: DI Assessment Screening Proforma ..... 71
Table 21: Fulbourn Greenway Scheme Costs, £, Q1, 2023 Prices ..... 75
Table 22: Programme Contractors and Consultants ..... 77
Table 23: Evidence of Similar Projects (Source: Greater Cambridge Greenways POC) ..... 80
Table 24: Structure of the Greenways Management Team ..... 89
Table 25: Fulbourn Greenway Outline Delivery Plan 2022-2025 ..... 90
Table 26: Communications Method for the Fulbourn Greenway ..... 91
Table 27: Risk Register ..... 93
Table 28: Outline Monitoring and Evaluation Plan ..... 95
Table 29: Benefits Realisation Plan ..... 97

# Figures

Figure 1: Proposed Fulbourn Greenway and Growth Areas ..... 9
Figure 2: Cambridgeshire Greenways Network ..... 11
Figure 3: Fulbourn Greenway High Level Route ..... 13
Figure 4: Automated Traffic Count Sites on Proposed Greenway ..... 18
Figure 5: Observed AM peak traffic conditions (Google Maps) ..... 19
Figure 6: Accident Data along the Proposed Fulbourn Greenway ..... 21
Figure 7: Location of Bus Stops and Railway Station ..... 22
Figure 8: Strava Heatmap (Strava Metro) ..... 24
Figure 9: Local population growth forecast with confirmed housing developments – Source Fulbourn's Neighbourhood Plan (2019-2031) draft ..... 26
Figure 10: Population Density per Square KM ..... 27

**Figure 11: Workplace Zone Centroids ..... 29**
**Figure 12: Percentage of the Population Below the Age of 16 ..... 31**
**Figure 13: Schools Located Near the Proposed Fulbourn Greenway ..... 31**
**Figure 14: Percentage of the Population 16-64 years ..... 32**
**Figure 15: Percentage of Households with at Least One Car or Van Available ..... 33**
**Figure 16: Logic Map ..... 38**
**Figure 17: Access Strategy Packages (Source: Greater Cambridge Greenways POC) ..... 41**
**Figure 18: Chisholm Trail plan ..... 43**
**Figure 19: AMAT Sections ..... 51**
**Figure 20: Fulbourn Count Locations ..... 53**
**Figure 21: AMAT Input ..... 55**
**Figure 22: AMAT Benefits ..... 57**
**Figure 23: Collision Locations on Fulbourn Greenway ..... 58**
**Figure 24: Overall Programme Governance Structure (Source: Greater Cambridge Greenways POC) 83**
**Figure 25: Structure of the Greenways Management Team (Source: Greater Cambridge Greenways POC) ..... 84**
**Figure 26: GCP Indicative Process for Business Case Development, Source: Greater Cambridge City Deal Assurance Framework (Source: Greater Cambridge Greenways POC) ..... 88**

# 1 Strategic Case

## 1.1 Overview

1.1.1 The Greater Cambridge Partnership (GCP) has been working on making active travel, such as walking and cycling, easier, safer and more pleasant by developing the Greenways – twelve sustainable travel corridors, covering 150km and connecting Cambridge city centre with surrounding Cambridgeshire villages. Fulbourn Greenway is one of the twelve sustainable travel corridor schemes proposed as part of the Greenways project. The Fulbourn Greenway route provides upgraded cycling and walking infrastructure from Fulbourn, through Cherry Hinton and into Cambridge.

1.1.2 Given that forecast population increases and residential development is set to exacerbate existing congestion issues on key routes into Cambridge at peak times[1], Greenways seek to provide a viable active travel option for many commuting journeys. Taking advantage of Cambridge's propensity for active travel uptake, Fulbourn Greenway offers an opportunity to mitigate congestion and the associated impacts, including air quality and public health through the creation of a more connected active travel network. Without intervention, forecasts demonstrate increases in congestion across significant parts of the road network up to 2041 with a decline in peak travel times[2], to the detriment of not only public health but risking economic activities and growth aspirations. Figure 1 shows the proposed route of the Fulbourn Greenway and key growth sites in close proximity.

1.1.3 A Programme Outline Case (POC) for the Greenways Project was prepared in January 2022 and focused on the strategic need for a network of walking and cycling Greenways connecting Cambridge city centre with surrounding villages.

1.1.4 The Strategic Case presented in this Chapter forms the first of the five cases for the Outline Business Case (OBC). The purpose of the Strategic Case is to establish the need for the scheme, to demonstrate the strategic fit and policy context for Fulbourn Greenway and to present the case for change.

[1] https://www.scambs.gov.uk/media/17743/chapter-10-sustainable-transport-and-infrastructure.pdf
[2] https://yourltcp.co.uk/wp-content/uploads/2need022/05/Draft-LTCP.pdf

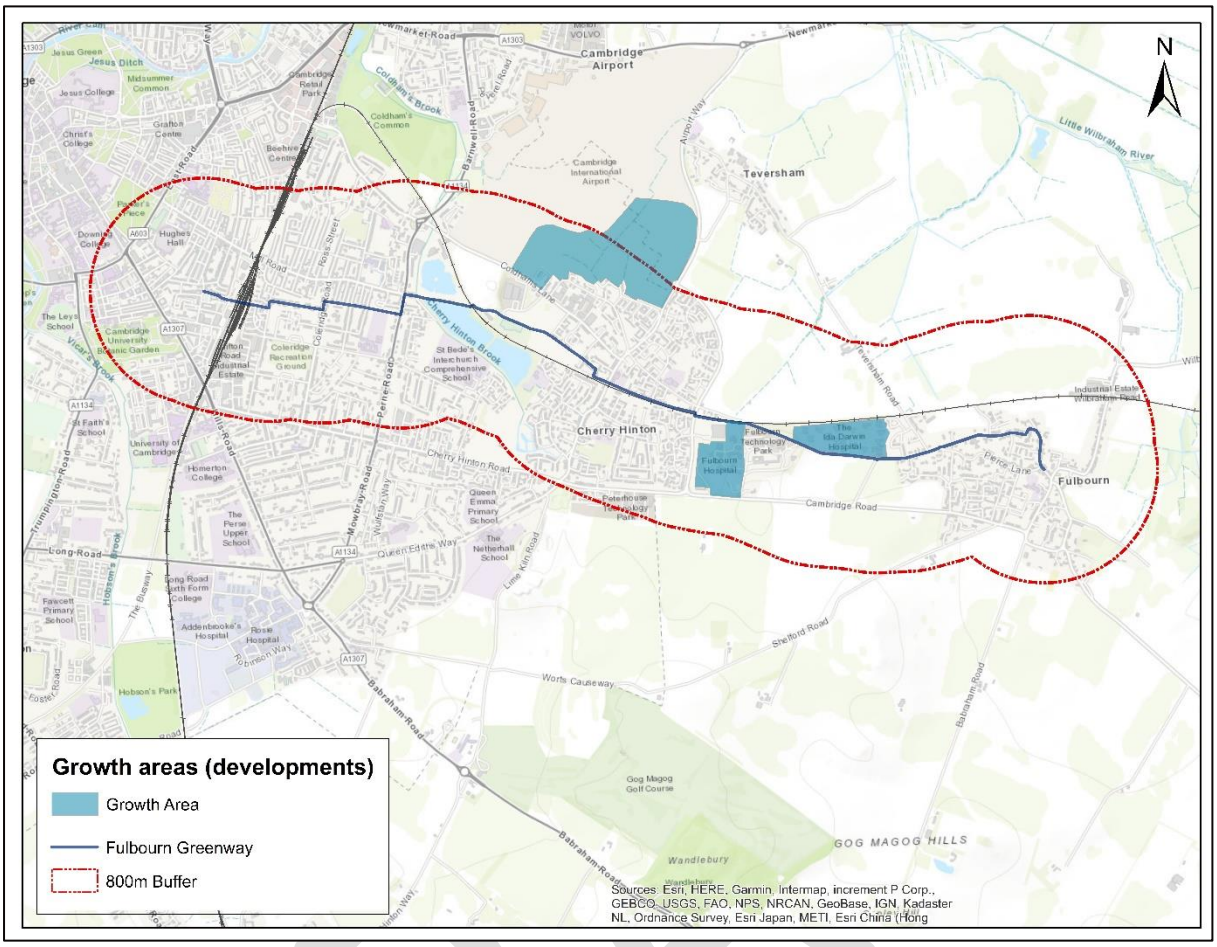


*Figure 1: Proposed Fulbourn Greenway and Growth Areas*

# 1.2 Approach

1.2.1 The strategic dimension of this business case has been structured to align with requirements stated in the Department for Transport's (DfT) Transport Analysis Guidance (TAG) and His Majesty's Treasury (HMT) Guidance on Developing the Project Business case.

# 1.3 Business Strategy

1.3.1 The Greater Cambridge Partnership (GCP) consists of the following partner organisations:

- Cambridge City Council
- Cambridgeshire County Council
- South Cambridgeshire District Council
- University of Cambridge

1.3.2 GCP is the local delivery board for a City Deal signed in 2014 with central Government, bringing powers and aiming to deliver investment worth up to £1 billion. GCP seeks to provide improvements in infrastructure, support and accelerate the creation of 44,000 new jobs, 33,500 new homes in Greater Cambridge by 2031, as well as 420 apprenticeships. GCP also plan to enable a new wave of innovation-led growth in the area by investing in infrastructure, housing and skills, thereby addressing shortages and transport congestion bottlenecks to facilitate continued growth and continuation of the 'Cambridge Phenomenon' (i.e. the thriving high-tech and biotech industries that have made Cambridge one of the fastest growing economies in Europe, making the area renowned for being a leading centre for research, technology and innovation). The network of Greenways will support the delivery of these objectives.

1.3.3 The Greater Cambridge City Deal Assurance Framework has established key strategic objectives against which projects will be prioritised. The objectives aim to create and retain high-tech businesses of the future, target investments to the needs of the Greater Cambridge economy, improve connectivity between clusters and labour markets, and attract and retain skilled people by investing in transport and housing.

1.3.4 Fulbourn Greenway is of strategic importance to creating a connected active travel network for the city and aligns to plans for active travel provision within forthcoming developments, such as Ida Darwin. The Fulbourn Greenway enables connectivity into future developments in the North of Cambridge, opened-up by the relocation of Cambridge Airport and meets multiple strategic objectives of the City Deal[3]. This includes objectives such as to 'markedly improve connectivity and networks between clusters and labour markets so that the right conditions are in place to drive further growth' and to 'attract and retain more skilled people by investing in transport and housing whilst maintaining a good quality of life'. The scheme further provides safe active travel connections between the places where people live, work and shop, thus encouraging more walking and cycling trips. Anticipated growth is likely to increase growth traffic routed through Fulbourn village from the A11 into major areas of employment and education in Cambridge. The scheme therefore aims to reduce such harmful effects of congestion on such routes into Cambridge and reduce severance by increasing active travel network connectivity.

1.3.5 Informed by the HM Treasury's Five Case Business Case model, this document provides the overarching narrative for the development and delivery of the proposed Fulbourn Greenway.

# 1.4 Scheme Background

## Programme Development

1.4.1 As outlined in the programme level OBC, the proposed Fulbourn Greenway is one of twelve Greenways identified for development to feed into Cambridge, as illustrated in Figure 2.

3 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321722/Greater_Cambridge_City_Deal_Document.pdf

- Waterbeach Greenway
- Horningsea Greenway
- Swaffham Greenway
- Bottisham Greenway
- Fulbourn Greenway
- Linton Greenway
- Sawston Greenway
- Melbourn Greenway
- Haslingfield Greenway
- Barton Greenway
- Comberton Greenway
- St Ives Greenway

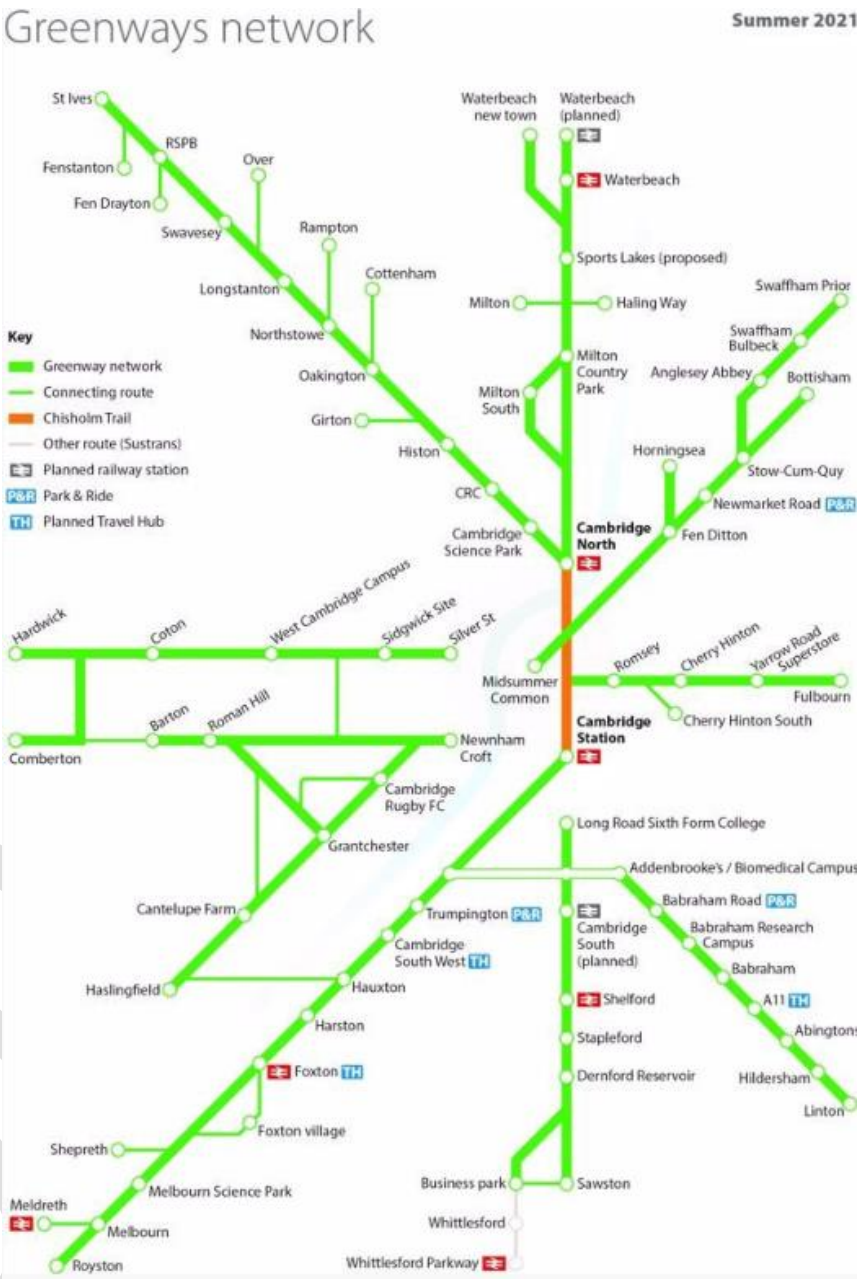


*Figure 2: Cambridgeshire Greenways Network*

1.4.2 Greenways are important active travel corridors which provide attractive linear corridors away from traffic and are suitable for cycling, walking, and horse riding where appropriate[4]. Greenways can also be important wildlife corridors that have the potential to support and achieve biodiversity net gain (BNG) targets, which are now mandatory requirements of all new development by local authorities under the Environment Act 2021.

1.4.3 The creation of a network of active travel Greenways is part of a strategy to encourage commuting by sustainable transport modes into Cambridge from surrounding villages, in a bid to reduce traffic congestion in the area as well as contributing to improved air quality and better public health. The Greenways will also provide the opportunity for countryside access and leisure.

1.4.4 There is a need to make it easier to travel in a pleasant and sustainable way into and out of Cambridge and to facilitate the enjoyment of the surrounding countryside. The delivery of the Greenways will encourage a modal shift towards cycle use in and around Cambridge, and enable walkers, cyclists, horse riders and other non-motorised vehicle users to travel safely and sustainably.

1.4.5 The twelve Greenways provide access into Cambridge from rural settlements to the north, south, east and west, meeting centrally at Cambridge Station. Five of the planned Greenways are directly connected to the city centre, two more indirectly connected, and a further five serve the surrounding network, and are connected to the centre via existing routes. In addition, Madingley Road is a planned high-quality cycling and pedestrian route connecting the Madingley Road Park & Ride site with the city centre.

1.4.6 Whilst the Greenways will differ across different routes, they share the following commonalities:

- Integrated green links that offer a wide variety of social, economic and environmental benefits.
- An all-weather, surface of width of at least two metres generally 3m, and wider where appropriate.
- Where the routes are on road these should preferably have less than 2,000 motor vehicle movements per day, and preferably should be subject to 20mph speed limits.
- Where busy roads are crossed, there should be a suitably safe means of crossing the road.



[4] Greenways-Review-Nigel-Brigham-2016.pdf (greatercambridge.org.uk)

## Scheme Details

1.4.7 Fulbourn is located 5.5km east of Cambridge Station across flat terrain via Cherry Hinton, and for cyclists it is served by relatively narrow and in places poorly surfaced shared use paths. The Fulbourn Greenway route is shown in Figure 3 and described further in section 1.15.


*Figure 3: Fulbourn Greenway High Level Route*

1.4.8 An initial Fulbourn Greenway Review was completed by Nigel Brigham Associates in October 2016. The report was based on fieldwork carried out in 2016 to review the Greenway network around Cambridge. The report identified a number of measures to improve overall cohesion of the active travel network along the route.

1.4.9 A public consultation took place late in 2018 with a Consultation Report published in March 2019[5]. A report was presented to the Greater Cambridge Partnership Executive Board and approval was given in February 2020. Following the Board's approval, the preliminary design was undertaken in 2022 on which this OBC is based.

[5] https://www.greatercambridge.org.uk/asset-library/Sustainable-Transport/Active-Travel-Projects/Greater-Cambridge-Greenways/Fulbourn-Greenway/fulbourn-greenway-consultation-report-march-20193.pdf

# 1.5 Policy Context

1.5.1 To determine how well the proposed scheme meets both local and national policy objectives, an overview of the policies impacted by the scheme are provided in Table 1. The Greenways Programme Outline Case (POC) further details programme alignment as a whole with national, regional and local policies.

*Table 1: Policy Overview*

| | Policy | Overview of Scheme Impact |
|---|---|---|
| *National Policies* | **Net Zero Strategy: Build Back Greener (2021)** | Fulbourn Greenway contributes to the Net Zero Strategy objective of decarbonising all sectors of the UK economy to achieve net zero targets by 2050. Provision of walking and cycling infrastructure encourages and enables active travel, reducing reliance on the car and the associated greenhouse gas emissions. |
| | **The Environment Act (2021)** | Fulbourn Greenway aligns with biodiversity net gain ambitions and goals of the Environment Act to protect natural environments from human activity. Fulbourn Greenway further contributes to air quality improvement objectives contained within The Environment Act through facilitating more travel through sustainable modes (walking and cycling). |
| | **Ten Point Plan for a Green Industrial Revolution (2020)** | Fulbourn Greenway will contribute to objectives for a Green Industrial Revolution. This aims to make the UK the world's number one centre for green technology, laying the foundations for economic growth, delivering Net Zero emissions. The Fulbourn Greenway will promote modal shift to active travel (walking and cycling), reducing reliance on cars, greenhouse emissions and in so doing, protect our natural environment/air quality. |
| | **Gear Change (2020)** | By providing cycling infrastructure to enable local communities to safely travel by bike and protecting them whilst they do, Fulbourn Greenway will directly contribute to the strategic goals of Gear Change. Greenways also encourage walking, provide more attractive ('better') streets for cycling and people, and create a more attractive active travel environment in and around Cambridge. |
| | **Cycling and Walking Investment Strategy (CWIS) LTN 1/20 (2020)** | Aiming to make cycling and walking the natural choice for short journeys, Fulbourn Greenway will align with the CWIS by providing infrastructure in line with LTN 1/20. The routes are designed to be inclusive of different stakeholder groups as outlined in both the CWIS and LTN 1/20.<br>Delivery of the Greenway will provide communities such as Fulbourn and Cherry Hinton access to a well-connected cycle network for both commuting and recreational purposes. |
| | **National Planning Policy Framework (updated 2021)** | Fulbourn Greenway supports the underlying principles and sustainable development goals of the NPFF. In particular, the scheme will contribute to:<br>(1) creating a well-designed and safe environment for pedestrians and cyclists,<br>(2) minimising the effects of car travel on air quality by encouraging the use of sustainable active travel modes,<br>(3) improving the health of communities by promoting active travel through infrastructure provision, and |

| | Policy | Overview of Scheme Impact |
|---|---|---|
| | | (4) contribute to protecting and enhancing our natural, built, and historic environment; including making effective use of land.<br>The scheme further contributes to ambitions of providing strong, vibrant and healthy communities. |
| | **Transport Investment Strategy (2017)** | Providing active travel infrastructure that offers a viable alternative to car travel, Fulbourn Greenway will help to achieve the objectives of the Transport Investment Strategy (TIS). Modal shift will create a reliable and less congested transport network. Enhanced active infrastructure will also create a better connected transport network for users. This will help support the creation of new housing. |
| *Regional Policies* | **Cambridgeshire and Peterborough Independent Commission on Climate (2021)** | By reducing the number of journeys made by car through provision of active travel infrastructure as an alternative transport mode, Fulbourn Greenway will contribute to the key objectives of the Cambridge and Peterborough Independent Commission on Climate. In particular, Fulbourn Greenway will contribute to: improving air quality through reduced car travel, improving access to nature, and improving health and wellbeing through active travel uptake. |
| | **England's Economic Heartland Transport Strategy (2020)** | Aiming to improve local and rural connectivity to support a Green recovery from Covid-19 and sustainable growth, delivery of Fulbourn Greenway will directly contribute to these strategic goals. As one of 12 radial routes that comprise the Cambridge Greenways Programme, Fulbourn Greenway will link the economic centre to surrounding communities and reduce greenhouse gas emissions through increased active travel. |
| | **The Cambridgeshire and Peterborough Local Transport Plan (2019)** | The Local Transport Plan aims to connect new and existing communities sustainably and provide an integrated rural public transport network. Fulbourn Greenway will provide alignment to strategic goals in creating sustainable and active travel networks to connect communities. The Greenway will also help resolve challenges identified in the Local Transport Plan of making sustainable modes of transport a viable and attractive alternative to the private car, including for school, workplace and residential travel options. New developments will benefit from connectivity into the active travel network and Fulbourn Greenway shall help contribute to improvements in air quality. The Greenway will also assist initiatives supported by this policy, such as new bike sharing schemes. |
| | **The Cambridgeshire and Peterborough Local Transport and Connectivity Plan (Draft, 2022)** | Fulbourn Greenway will directly contribute to the draft Local Transport and Connectivity Plan in aiming to reduce private car use and encourage more cycling and walking to support both healthier lives and a greener region. The plan identifies six key areas for improvement: productivity, connectivity, climate, environment, health and safety. Fulbourn Greenway will also help delivery of an integrated transport system which addresses forecast increased congestion across parts of the road network up to 2041. In particular, the Greenway offers an alternative for anticipated growth traffic that is likely to be routed through Fulbourn village from the A11 into major areas of employment and education trip attractors in Cambridge. |
| *Local Governme nt Policies* | **Fulbourn Local Plan (Draft, 2022)** | Fulbourn Greenway directly supports the vision in Fulbourn's Local Plan for the area to be a vibrant, sustainable and thriving local community. The Greenway will help improve air quality and will link into new developments in Fulbourn, supporting aspirations to coincide development with the protection of natural assets. The Greenway will support objectives |

| Policy | Overview of Scheme Impact |
|---|---|
| | identified in the plan to improve the environment and quality of life within the village by providing residents with healthier active travel alternatives. |
| **Cambridge Local Plan (2018)** | Fulbourn Greenway supports Cambridge's Local Plan by offering residents of identified new developments the opportunity for active commuting and associated connectivity. The plan identifies a series of 'Areas of Major Change' (AOMC) through which a number of the Greenways will run, including Station areas West and Clifton Road. The plan covers the period of 2018-2031 and identifies the need for 14,000 additional homes and 22,000 jobs. |
| **South Cambridgeshire Local Plan (2018)** | By providing infrastructure and options for active travel, Fulbourn Greenway supports South Cambridge Local Plan. This states that 'the transport system needs to be balanced in favour of sustainable modes; walking, cycling and public transport, in order to provide people with a real choice about how they travel'. Fulbourn Greenway redresses this balance by providing connectivity to economic areas and further active travel networks. Fulbourn Greenway supports aspirations to address air quality issues directly linked to traffic volumes and help unlock benefits from enabling travel by alternative methods than car. These include improved health through walking and cycling, reductions in carbon emissions, enabling social inclusion and reducing the impact of congestion. This is particularly important in light of highway capacity issues on radial routes and projected future growth. Fulbourn Greenway will enable active travel journeys to integrate with the wider transport network e.g. rail and bus. |
| **First Proposals: Emerging Greater Cambridge Local Plan (2021)** | Fulbourn Greenway aligns with the aims of the emerging Joint Local Plan as active travel is proven to improve quality of life through better health and access to greenspace. It will also contribute to a reduction in greenhouse gas emissions through reducing the demand on the road network and thereby levels of car use. The plan outlines that new developments must reduce carbon emissions and reliance on the private car and contribute towards creating thriving neighbourhoods. The Fulbourn Greenway will provide such opportunity through increasing active travel provision in the area and linking to active travel provision provided in new developments. |
| **Cambridgeshire's Active Travel Strategy (2023)** | Fulbourn Greenway is a part of the adopted Active Travel Strategy and aligns with aspirations to create quality provision of active travel infrastructure and initiatives in Cambridgeshire to contribute to the County Council's target to achieve Net Zero Carbon by 2045. The scheme will support ambitions to decrease car use and increase active travel. The Greenway will also assist aspirations for sustainable growth in Cambridgeshire through well connected and integrated sustainable transport networks and supporting infrastructure. The scheme supports multiple sub-policies within this strategy, such as policy AT16 establishing the vision for a connected travel network aligned with strategy objectives and Policy AT18 that establishes design and safety improvements for cycling coherent with Greenway principles.<br><br>Without such changes and provision, there will be continued increases in air pollution and journey times due to significant congestion on the roads across the county. |

## SUMMARY OF POLICY CONTEXT

1.5.2 Fulbourn Greenway contributes to several key strategic policies at local, regional and national levels. Enabling modal shift away from the private car in favour of active and sustainable modes through enhanced infrastructure provision, Fulbourn Greenway offers an opportunity to promote sustainable travel behaviours. This is vital given forecast increases in network congestion into the economic centre of Cambridge. Fulbourn Greenway will deliver benefits environmental, social and economic benefits, and contribute to the reduction in greenhouse gas emissions required to meet Cambridgeshire's Net Zero targets by 2045.

# 1.6 Strategic Problems and Issues

# 1.7 Transport Context

## Road Network

1.7.1 Fulbourn and Cherry Hinton are currently accessible from Cambridge via Cherry Hinton Road, which leads to Fulbourn Road and Cambridge Road. Existing conditions show high levels of congestion along this route during peak times. Automated Traffic Count (ATC) data[6] over a 7-day period (15th September 2022 – 21st September 2022) at four locations along the proposed Greenway corridor (Figure 4) shows high levels of average two-way traffic within the local area (Table 2).Traffic levels in the Cambridgeshire area have grown by 8% from 2009 to 2019, which has led to an increase in congestion and journey time[7].

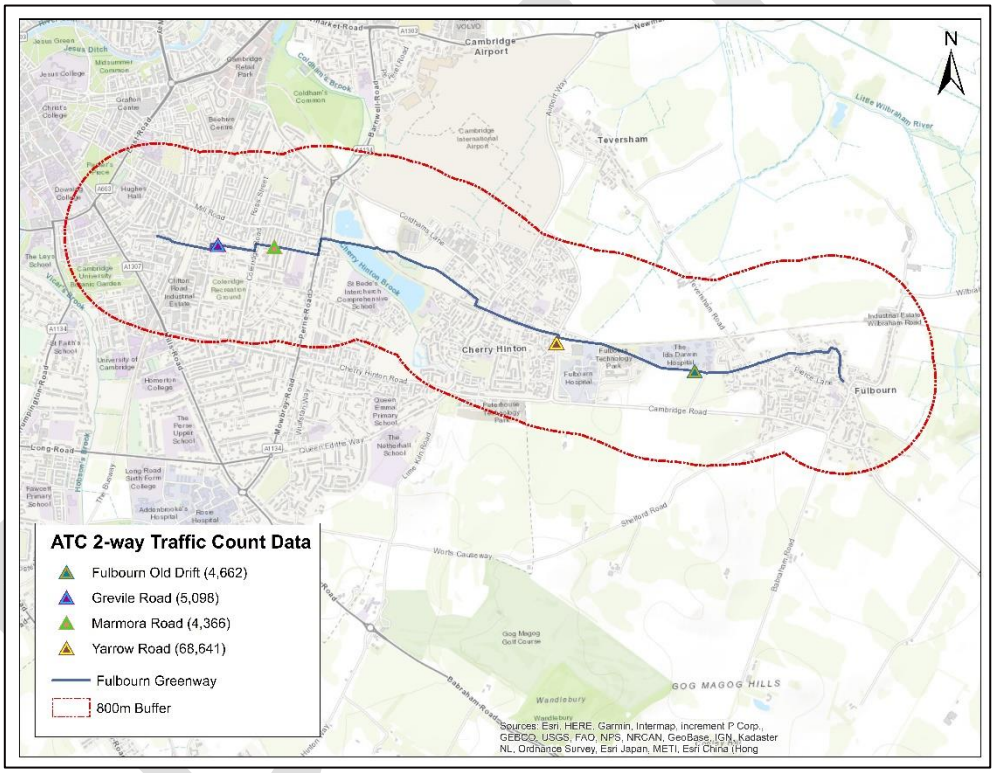


*Figure 4: Automated Traffic Count Sites on Proposed Greenway*

[6] ATC data obtained by Severnside Transportation Data Collection
[7] https://cambridgeshireinsight.org.uk/wp-content/uploads/2022/09/Traffic-Monitoring-Report-2019.pdf

*Table 2: ATC 2-way Traffic Count Data*

| Location | 2-way Traffic Counts |
|---|---|
| Yarrow Road | 68,641 |
| Marmora Road | 4,366 |
| Greville Road | 5,098 |
| Fulbourn Old Drift | 4,662 |

1.7.2 Figure 5 highlights the existing traffic conditions during a typical weekday morning at 8.30am[8]. The route from Fulbourn into Cambridge via Cambridge Road experiences slow moving traffic, with particular hotspots through places such as Cherry Hinton. Typically, this route takes on average between 12-28 minutes during the AM peak compared to off peak times such as 11:30am where typically this route would take approximately 12-20 minutes. Alternative routes into the city centre are available via the A11 and A14, however, such routes into Cambridge experience similar network capacity issues and congestion that are set to worsen without intervention[9]. Consistent with policy goals in the area (as discussed in Section 1.5), addressing congestion is a key priority through reducing reliance on car travel and encouraging sustainable alternatives such as active travel. The existing situation provides opportunities for active travel interventions, including the need for suitable walking and cycling infrastructure as an alternative for residents to commute. Such provision would further contribute to a reduction in greenhouse gas emissions through reducing the demand on the road network and thereby levels of car use.

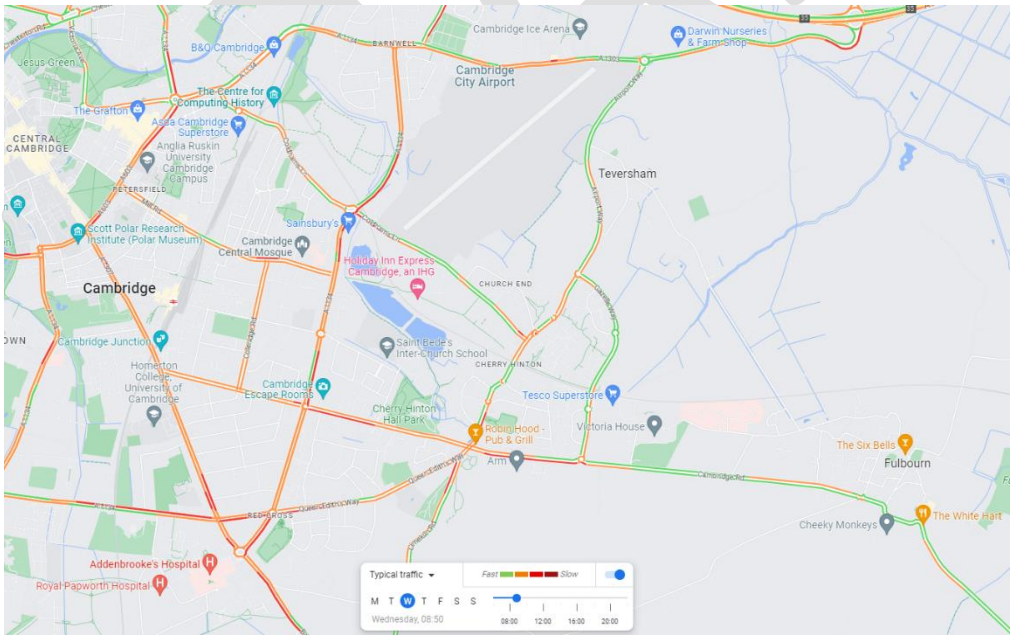


*Figure 5: Observed AM peak traffic conditions (Google Maps)*

[8] Google Maps- https://www.google.com/maps/@52.1926368,0.1472894,3646m/data=!3m1!1e3!5m1!1e1

[9] https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/the-adopted-development-plan/south-cambridgeshire-local-plan-2018/#:~:text=What%20is%20the%20South%20Cambridgeshire%20Local%20Plan%3F%20The,employment%2C%20services%20and%20facilities%2C%20and%20the%20natural%20environment.

1.7.3 More broadly, the current South Cambridgeshire Local Transport Plan (2018)[10] highlights high levels of congestion on radial routes into Cambridge at peak times. The draft Cambridgeshire and Peterborough Local Transport and Connectivity Plan[11] forecasts significant increases in congestion across significant parts of the road network up to 2041 with a decline in peak travel times. Anticipated growth is likely to increase such issues as growth traffic is routed through Fulbourn village from the A11 into major areas of employment and education in Cambridge.

1.7.4 The Cambridgeshire and Peterborough Independent Commission on Climate further outlines that regional emissions were approximately 25% higher per person than the UK average. Transport emissions were 2449kt$CO_2$ in 2018, 44% of all CO2 emissions for the area[12]. Without intervention, the number of daily journeys in the region is projected to increase by around 20% from 2015 to 2031. Aside from carbon emissions, this has implications for a number of other concerns, including air quality and congestion.

1.7.5 Given existing congestion and forecast population/traffic growth in Fulbourn (see section 1.9), congestion and delay during peak periods on these corridors is only set to increase. This congestion could have an adverse impact on employment and education accessibility for the population too. Congestion along the corridor further creates an environment inconducive to cycling or walking, further discouraging active travel uptake.

1.7.6 Active travel provision, such as walking and cycling routes provided by greenways, offer the opportunity to help mitigate potential future traffic issues and reduce the environmental impacts. Such initiatives are also crucial to realising broader ambitions, such as plans to achieve a 15% reduction in driven car miles by 2030[13].

1.7.7 The Fulbourn Greenway will provide residents of Fulbourn and Cherry Hinton a new and improved direct cycle connection between the towns and the centre of Cambridge reducing journey times. There have been small changes that have already been implemented to encourage more sustainable travel, including the widening of the footpath along Yarrow Road. This has now become a 3.5m wide shared cycle and pedestrian footway. Side corner roads and crossings have become safer with better visibility for users. The pelican crossing in Fulbourn to the west of the Tesco roundabout has been upgraded to a toucan crossing for pedestrians and cyclists. Local residents have also requested two new bus stops to make it easier to use the No 1 bus service, and these have been put into place. Fulbourn Greenway will complement such sustainable travel provision and enhance the attractiveness of active travel in the area.



[10] https://www.scambs.gov.uk/media/17743/chapter-10-sustainable-transport-and-infrastructure.pdf
[11] https://yourltcp.co.uk/wp-content/uploads/2022/05/Draft-LTCP.pdf
[12] https://yourltcp.co.uk/wp-content/uploads/2022/05/Draft-LTCP.pdf
[13] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf

## Accident Data

1.7.8 Figure 6 shows the accident data over a five-year period (2017 to 2021) along the proposed Fulbourn Greenway route obtained from Greater Cambridge Partnership (GCP). A total of 24 collisions have occurred, comprising of 15 ‘slight’ collisions and 9 ‘serious’. The data shows a hotspot at the A1134 and Brookfields junction located in section 2 of the Greenway. The collisions were all classified as slight and occurred throughout the five-year period. The collision data highlights that out of the 24 collisions that occurred, 16 of the collisions involved a cyclist, 7 of which were classified as ‘serious’. As two-thirds of these incidents involved cyclists, there is a requirement for active travel infrastructure safety improvements. Safety features of Greenway design, such as including reduced speed limits and safer crossings, may have mitigated some of these accidents and may also prevent further incidences in the future.

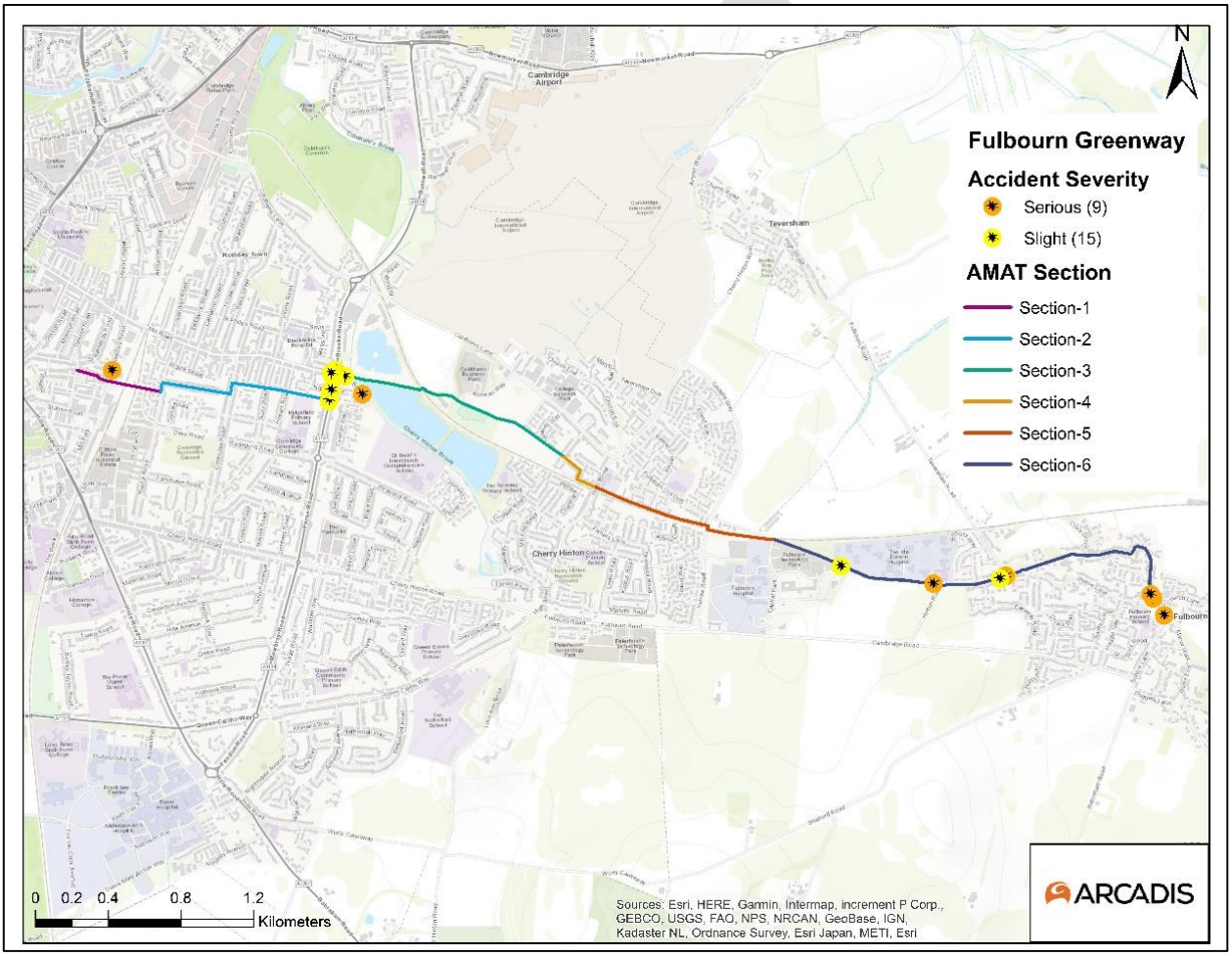


*Figure 6: Accident Data along the Proposed Fulbourn Greenway*

1.7.9 The provision of more cycle and pedestrian infrastructure may also reduce the number of vehicles on the carriageway and hence reduce the number of collisions.

## Public Transport Network

# Bus Network

1.7.10 Fulbourn is connected to Cambridge by the Number 1 and 3 bus services. Figure 7 shows the bus stops along the proposed Greenway corridor, including those located in Fulbourn and Cherry Hinton. The number 1 bus service travels from Arbury to Fulbourn through Cambridge. This service runs from 05:26 to 23:29 Monday to Saturday with services every 30 minutes and Sunday 07:37 to 23:37 every 30 minutes. This service is provided by Stagecoach East. The number 3 bus service also runs along the proposed Greenway from Cherry Hinton to Fison Road, Cambridge. The service runs from 06:20 to 23:30 Monday to Saturday every 15 minutes. On Sunday the service runs from 08:10 to 23:40 every 30 minutes.

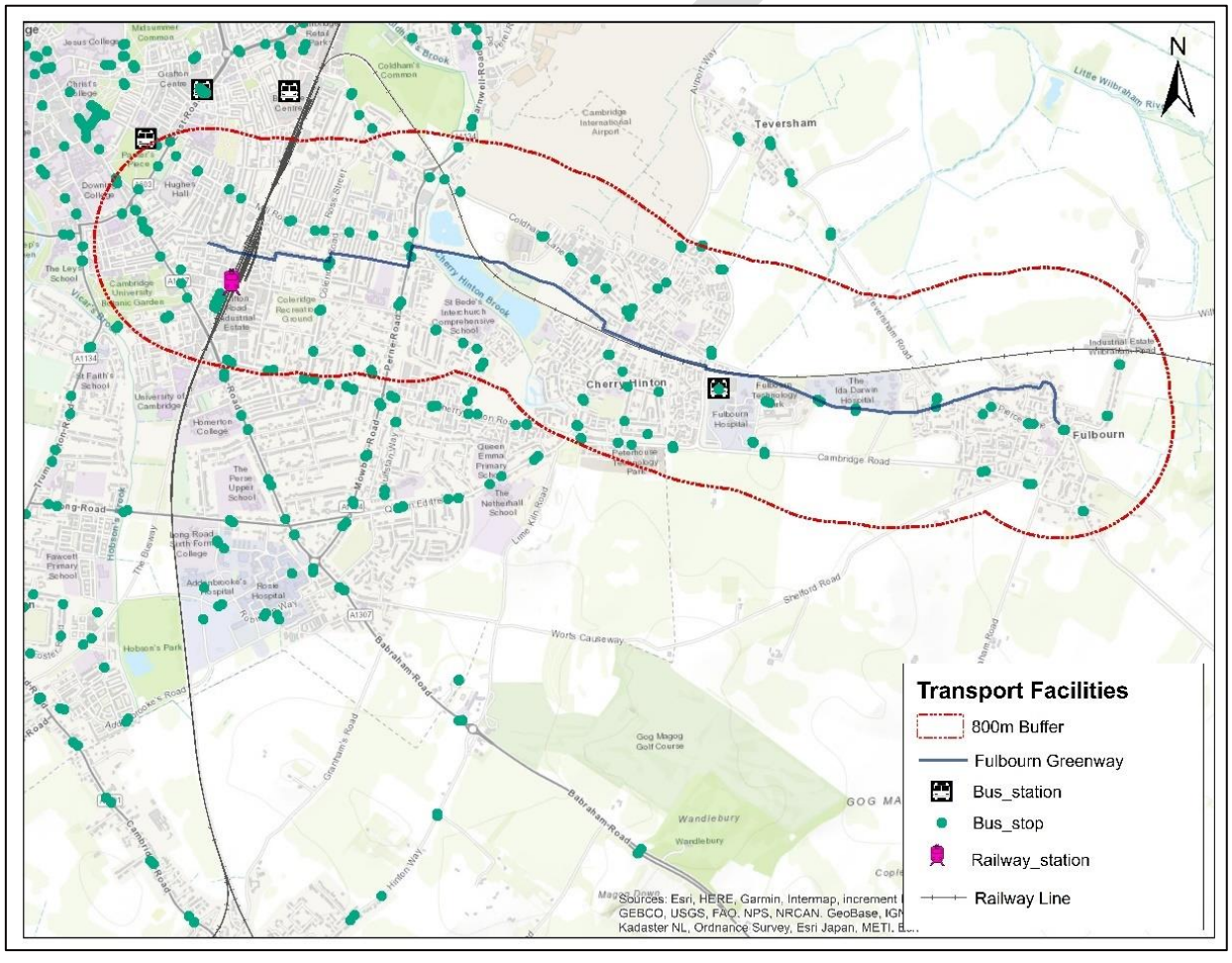


*Figure 7: Location of Bus Stops and Railway Station*

1.7.11 2021 method of travel to work data shows 5.8% of the population of Fulbourn and Cherry Hinton use the bus as their method of travel compared to 32.6% of the population who still use their car[14]. Given the variability in bus frequencies along routes, availability dependent on the day of travel and potential congestion due to lack of segregated bus lanes, further travel alternatives are required to enable shift to sustainable modes. The Fulbourn Greenway will be able to provide residents a more sustainable alternative travel method, providing reliable journey times during AM and PM peak periods in particular, as well as enhancing connectivity during weekends and off-peak hours.

## Rail

1.7.12 Fulbourn is approximately 4 miles from Cambridge Railway Station, providing connections to London, the Midlands and the North. The station provides a total of 2,850 cycle storage spaces located in the station car park all covered by CCTV. The proximity of the rail station and cycle storage available presents opportunities for the proposed Fulbourn Greenway to be a convenient active travel route used to access rail links for longer distance trips. The Greenway would thus contribute to broader policy goals (see section 1.5) of alleviating the reliance on car travel and associated road network congestion issues even for longer trips in the region and nationally.

## Active Travel Network

1.7.13 Increased active travel provision is a key part of the Active Travel Strategy for Cambridgeshire (2023)[15]. Given the growth forecasts for housing and employment in Cambridgeshire, there is a need to enable modal shift from private car to more sustainable modes of travel. Without this change, environmental conditions, including air quality, are likely to worsen and journey times to increase because of significant congestion on the road network.

1.7.14 2021 method of travel to work data demonstrates a 5% increase in cycling as a method of commuting (12.2% of trips) amongst residents from Fulbourn and Cherry Hinton, compared to 2011 (7%)[16].. These users benefit from some current dedicated cycling infrastructure provision along the proposed Fulbourn Greenway route, however, safety for users and the attractiveness of cycling would benefit from further off-street provision in certain sections (e.g. between Cherry Hinton High Street and Yarrow Road). Table 11 in the Economic Case provides a table documenting the existing infrastructure and proposed scheme changes.



[14] https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=2078
[15] https://ehq-production-europe.s3.eu-west-1.amazonaws.com/0ea0cd0cb45337477b87e4d1ef174e6c71c33d91/original/1662714750/c40dd7fa32af973bbf380c5b8b9254bf_Active_Travel_Strategy_Draft_%28web%29_22.09.05.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA4KKNQAKICO37GBEP%2F20230206%2Feu-west-1%2Fs3%2Faws4_request&X-Amz-Date=20230206T160002Z&X-Amz-Expires=300&X-Amz-SignedHeaders=host&X-Amz-Signature=bd48281c15b328f1d4d9f7333fbc5ad950849f7b3fd4b11808f560480892d084
[16] https://www.nomisweb.co.uk/query/construct/submit.asp?forward=yes&menuopt=201&subcomp=

1.7.15 The heatmap[17] in Figure 8 shows high levels of cycle activity along Cambridge Road and Cherry Hinton Road. There is currently a shared cycle and pedestrian footway along one side of Cambridge Road that is approximately 2m in width. LTN1/20 recommends of a 3m desirable minimum width. There are dropped kerbs and tactile paving along the entirety of Cambridge Road to facilitate crossing of the road for cyclists and pedestrians. A dedicated cycle lane is adopted from the beginning of Fulbourn Road along to Cherry Hinton Road. As shown in the heatmap, there further opportunities to improve cycling provision and uptake off main roads, providing greater linkages for residents to cycle on the active travel network.

1.7.16 Existing on-street provision is a potential safety concern for cyclists. The proposed greenway will allow cyclists to travel safely on a partially off-road route, reducing potential interactions between cyclists and motor vehicles and hence the likelihood of incidences.

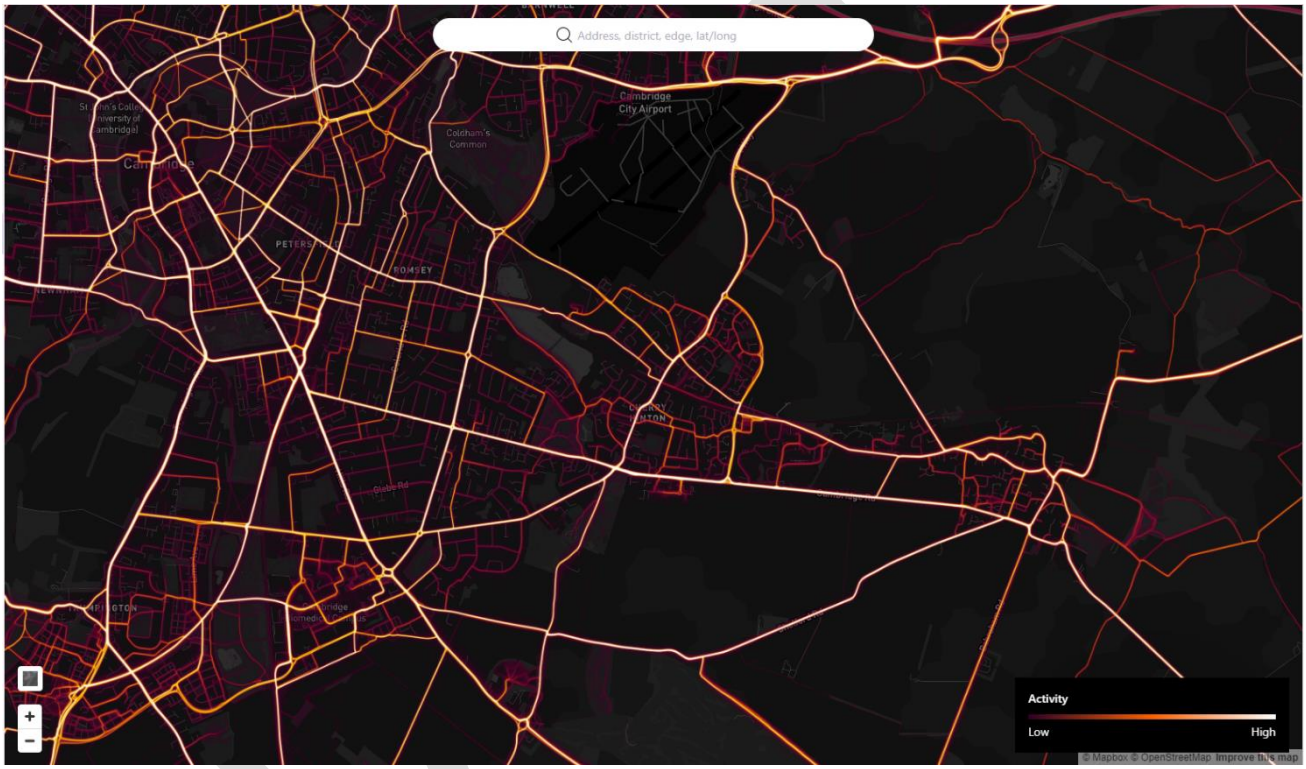


*Figure 8: Strava Heatmap (Strava Metro)*

[17] https://metroview.strava.com/l

1.7.17 Increases in the number of residents commuting by bicycle from Cherry Hinton and Fulbourn demonstrates potential demand for improved active travel infrastructure provision More broadly, active travel infrastructure improvements may encourage modal shift amongst further residents in the area. The Walking and Cycling Index produced by Sustrans in collaboration with Cambridgeshire County Council and GCP highlights that 74% of Cambridgeshire residents agree that on-street cycle routes, separated from pedestrians and traffic support more liveable neighbourhoods[18]. Therefore, the proposed Greenway, which includes improved links into other active travel routes, as well as public transport, may help to realise this unmet demand for active travel in the area.

# 1.8 Economic Context

## Population growth

1.8.1 The transport network in Cambridge is required to accommodate anticipated population growth in coming years. In South Cambridgeshire, the population size has increased by 8.9%, from around 148,800 in 2011 to 162,000 in 2021. This is higher than the overall increase for England (6.6%), where the population grew by nearly 3.5 million to 56,489,800[19], as well as for the East of England region (8.3%).

1.8.2 South Cambridgeshire has witnessed increased growth as development had to 'leapfrog' the protected Green Belt zone around Cambridge and instead spread into physically separate urban areas[20]. Cambridge ranks in the bottom 10 cities on the basis of absolute and relative growth for the 25-year period from 2015 to 2036.[21] Fulbourn's Neighbourhood Plan (2019-2031) draft, and approved at local referendum in February 2023)[22] evidences local population growth, forecast to continue with confirmed housing developments, as seen in Figure 9 [23] below. Cherry Hinton has similarly experienced population growth, rising from 8,303 in 2001, to 9,331 in 2021.



[18] https://www.sustrans.org.uk/media/10484/greater-cambridge-walking-and-cycling-index-2021.pdf
[19] https://www.ons.gov.uk/visualisations/censuspopulationchange/E07000012/
[20] Ibid.
[21] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/458318/gs-15-31-people-in-cities-numbers-addendum.pdf
[22] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf
[23] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf

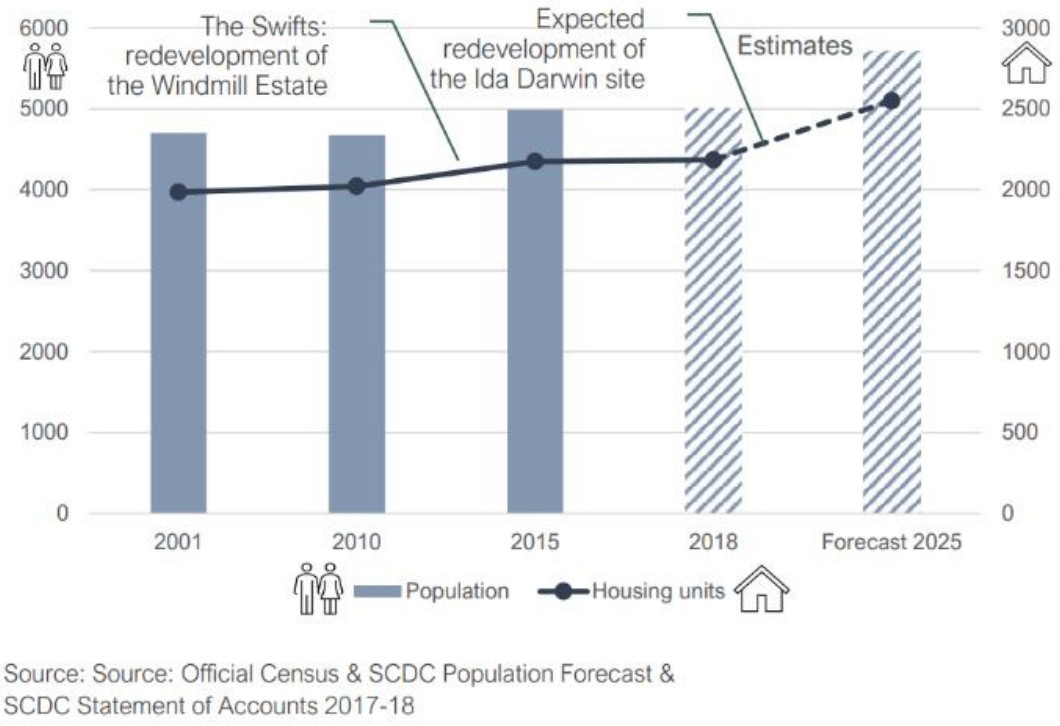


*Figure 9: Local population growth forecast with confirmed housing developments – Source Fulbourn's Neighbourhood Plan (2019-2031) draft*

1.8.3 Figure 10 shows the population density within Fulbourn, Cherry Hinton and the outskirts of the centre of Cambridge, and the proposed Fulbourn Greenway route. Fulbourn and Cherry Hinton have high population densities, indicating demand for a sustainable travel links between these settlements and Cambridge, which is the major employment centre for the South Cambridgeshire urban fringe. According to the 2011 Census Travel to Work patterns, nearly 3,200 people commuted to work from Fulbourn, mainly within the Cambridge area, and just over 1,100 worked within the village or had no fixed workplace. Around 2,800 commuted in, many from places along the A11 or A14 corridors[24].

[24] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf

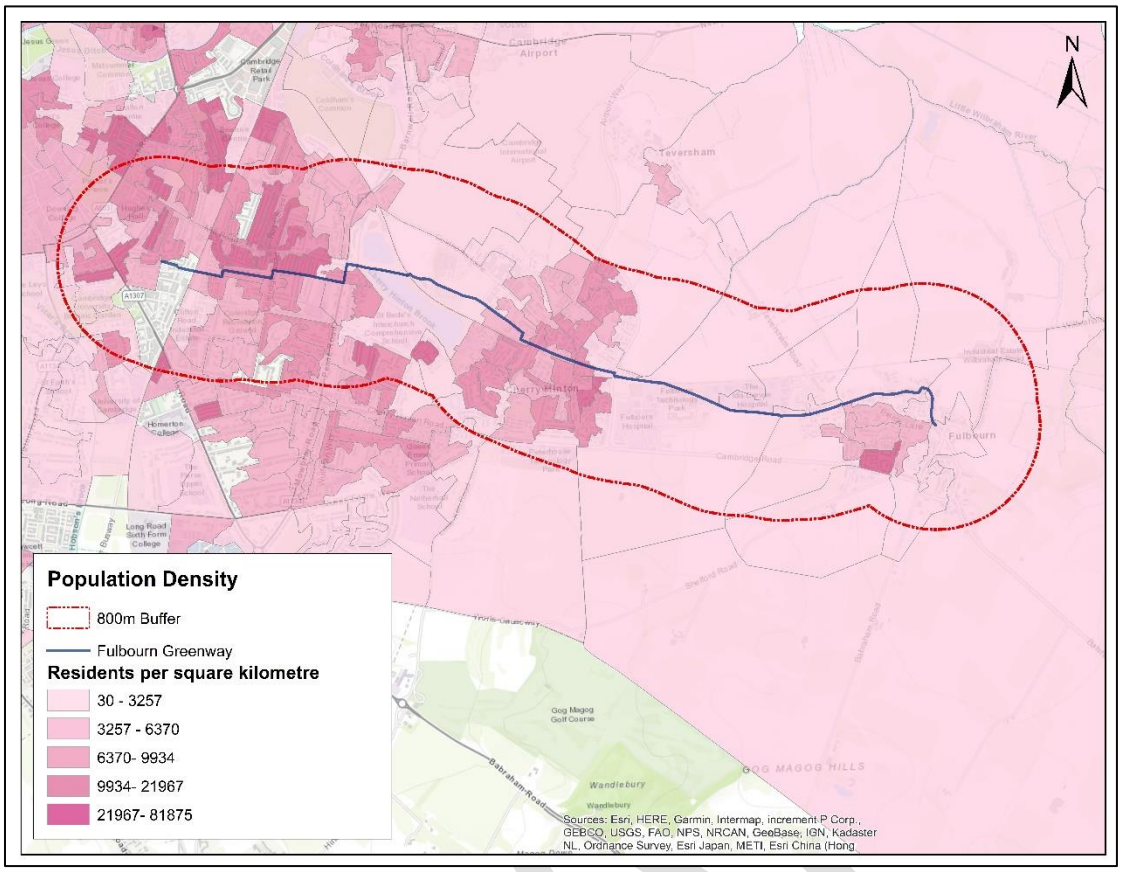


*Figure 10: Population Density per Square KM*

## Spatial Development

1.8.4 Planned development over the coming decade accounts for growth forecasts of around 20% in Fulbourn; driven by the growth of Cambridge, the ease of access to a vast pool of employment opportunities from the area and development opportunity (two large developments with planning permission: Ida Darwin and Teversham Road with around 300 proposed dwellings in total) [25]. Similarly, a mixed-usage development including 780 dwellings is proposed under the Greater Cambridge Local Plan First Proposals (November 2021) for an area north of Cherry Hinton.[26]

1.8.5 Whilst growth in Fulbourn has been fastest in the post-war period, relative growth has still been accelerating. There has been an increase in number of properties of 8% between 2010 and 2018, coupled with only a slight reduction in occupancy rates from 2.37 people per unit in 2001 to 2.28 in 2018[27].

[25] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf

[26] https://maps.3csharedservices.org/portal/apps/webappviewer/index.html?id=ee39c55cf37845b1aeb3d5374e4c5214
[27] https://www.scambs.gov.uk/media/18882/1-fulbourn-np-submission-draft-v032.pdf

1.8.6 The updated Greater Cambridge housing trajectory (April 2021) confirms further development potential, identifying that Cambridge City and South Cambridgeshire jointly have 6.1 years of housing land supply for the 2021-2026 five-year period[28]. As stated, due to the presence of the greenbelt around Cambridge, it is likely that areas in South Cambridgeshire, such as Fulbourn and Cherry Hinton, will witness substantial growth and associated transport issues. Fulbourn Neighbourhood plan outlines potential development schemes in the area including growth aspirations.

## Employment and Skills

1.8.7 As stated in the POC, Cambridge is a key national economic centre for research, innovation, and technology attracting international investment. A resilient, connected transport system with links between businesses, training campuses and housing developments is fundamental to this ongoing economic success. Congestion was identified in the City Deal as a threat to the economic success of the area and a key barrier to growth[29]. Cambridge is currently the 16th most congested city in the UK[30]. Without intervention, forecast growth in Greater Cambridge is expected to create 26,000 more daily car journeys up to 2031. GCP aims to reduce city traffic flows by 10-15% on 2011 levels. Enabling modal shift to active travel through infrastructure provision presents a key means to achieve such aims. Active travel routes that service key areas of demand, link housing developments with employment zones and are well-connected to broader active travel networks are therefore required.

1.8.8 Job density in South Cambridgeshire has grown from 81 jobs per 100 residents in 2005 to 86 jobs in 2010 and 102 jobs in 2017. As shown in Figure 11, workplace zone centroids are concentrated in the west of the corridor towards Cambridge City Centre. There are also several workplace centroids situated locally in Fulbourn. The former Fulbourn Hospital site, for example, still hosts some National Health Service (NHS) activity. Fulbourn also includes the Tesco supermarket, Capital Park (a business park), a nursing college and offices for the Regional Health Authority.



[28] https://greatercambridgeplanning.org/about-us/news/2021-housing-trajectory-published/

[29] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321722/Greater_Cambridge_City_Deal_Document.pdf

[30] https://www.greatercambridge.org.uk/sustainable-transport-programme/sustainable-travel

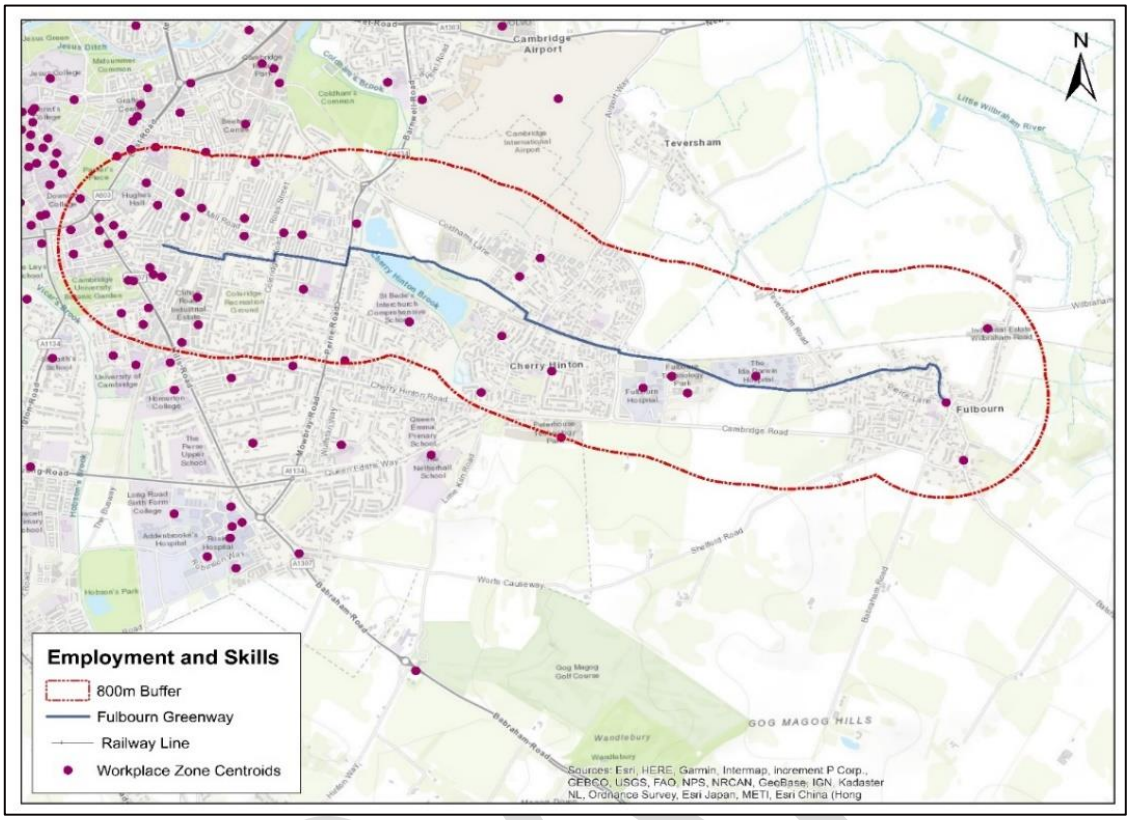


*Figure 11: Workplace Zone Centroids*

1.8.9 Potential labour markets for employers suffer in the absence of affordable and alternative active travel options that curtail job accessibility. To increase accessibility and reduce reliance on car travel, there is a requirement for walking and cycling infrastructure routes servicing workplace concentrations in Fulbourn and Cherry Hinton and offer connectivity into Cambridge City Centre. 2021 Method of Travel to work census data shows that of the 9,444 residents aged 16 and over in employment in Fulbourn and Cherry Hinton, 32.6% of residents drive to their place of work and 3.2% are a passenger in a car or van.

1.8.10 Cambridge has experienced increases in traffic levels by 10% during AM and PM peaks and during 2019, an average of 71 hours driving time was spent by people in congestion[31]. Absence of attractive sustainable travel options linking housing, education and employment further adds to reliance on car use.

[31] https://www.greatercambridge.org.uk/sustainable-transport-programme/sustainable-travel

# 1.9 Social Context

## Age Demographics

1.9.1 The population of South Cambridgeshire has experienced an increase of 28.7% in people aged 65 years and over, an increase of 4.1% in people aged 15 to 64 years, and an increase of 8.5% in children aged under 15 years over the past decade[32]. In South Cambridgeshire, as of the 2021 Census 19% of the population are under 16, 61% are between the ages of 16-64 and 19% of the population are over the age of 64. There is a slightly higher proportion of under 16 and over 64, than in England and Cambridgeshire. Safe and convenient walking and cycling infrastructure that connects into broader active travel networks would service a range of age demographics in Cambridge and the surrounding areas, including schoolchildren, commuters and older age groups.

1.9.2 Safe cycling infrastructure is a key enabler to cycling for all age groups and particularly for children[33] . Figure 12 illustrates the percentage of residents under the age of 16 in the area between Fulbourn, Cherry Hinton and into Cambridge City Centre. In this area, 10-22% of residents are under the age of 16 and there are a total of 12 schools including pre-school, primary and secondary (see Figure 13), this suggests a high level of those under the age of 16. Currently, there is only a section of Fulbourn Road, south of Cherry Hinton that has segregated cycle lanes suitable for most users, as per LTN1/20[34]. Other sections of the route are mixed traffic or on-road cycle lane, which is unsuitable for potentially vulnerable user groups such as children. There is no active travel infrastructure in place connecting the schools to surrounding villages and, hence, servicing potential demand. With provision of dedicated active travel infrastructure in this area, parents, pupils and staff could be encouraged to shift modes, enabling a more active and healthier lifestyle and potentially reducing their journey times by walking or cycling to school safely.



[32] https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=145
[33] https://www.sustrans.org.uk/our-blog/get-active/2019/everyday-walking-and-cycling/cycling-safety-for-children/
[34] Figure 4.1 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf

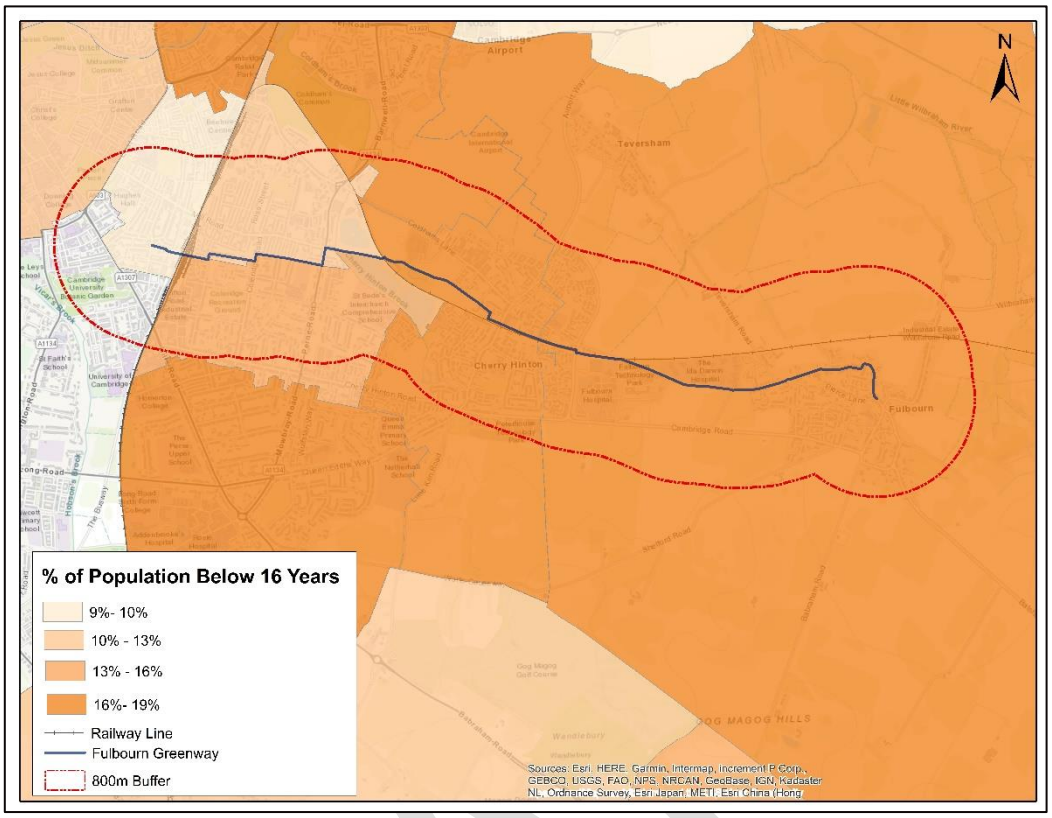


*Figure 12: Percentage of the Population Below the Age of 16*

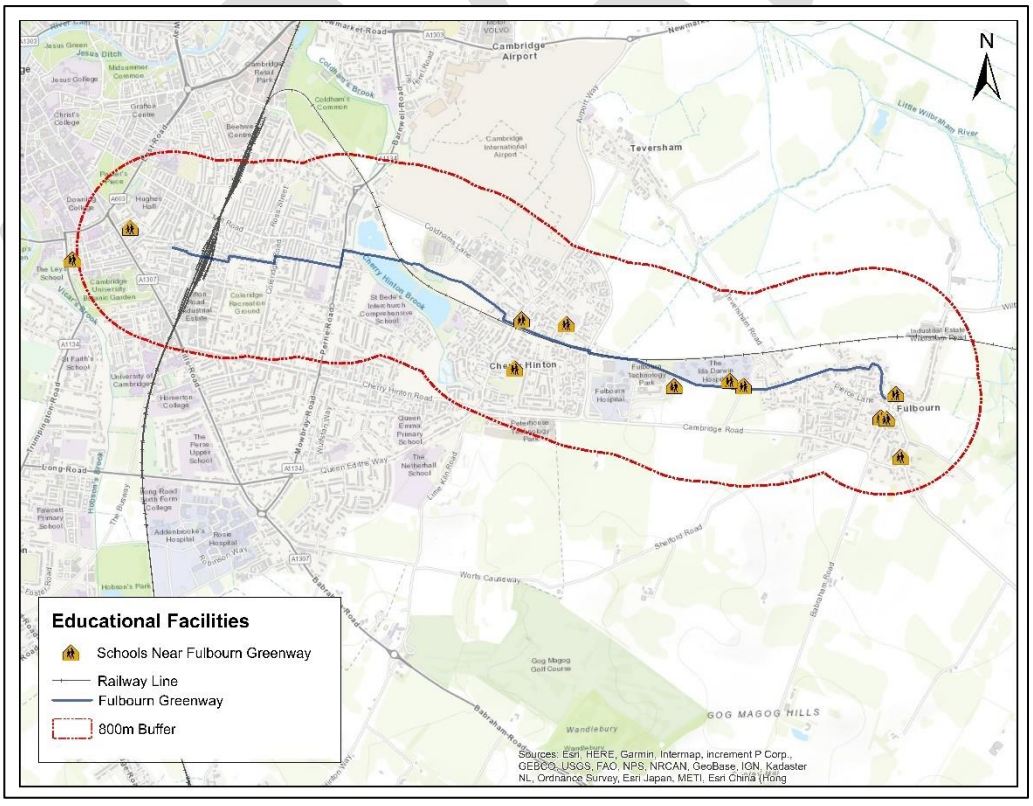


*Figure 13: Schools Located Near the Proposed Fulbourn Greenway*

1.9.3 Figure 14 shows the percentage of residents between the ages of 16-64 in the area between Fulbourn, Cherry Hinton and into Cambridge City Centre. 35-84% of the population are between the ages of 16-64. This high percentage of working-age population evidences potential demand for active travel routes as an alternative for commuting into local places or work or employment areas in the city centre.

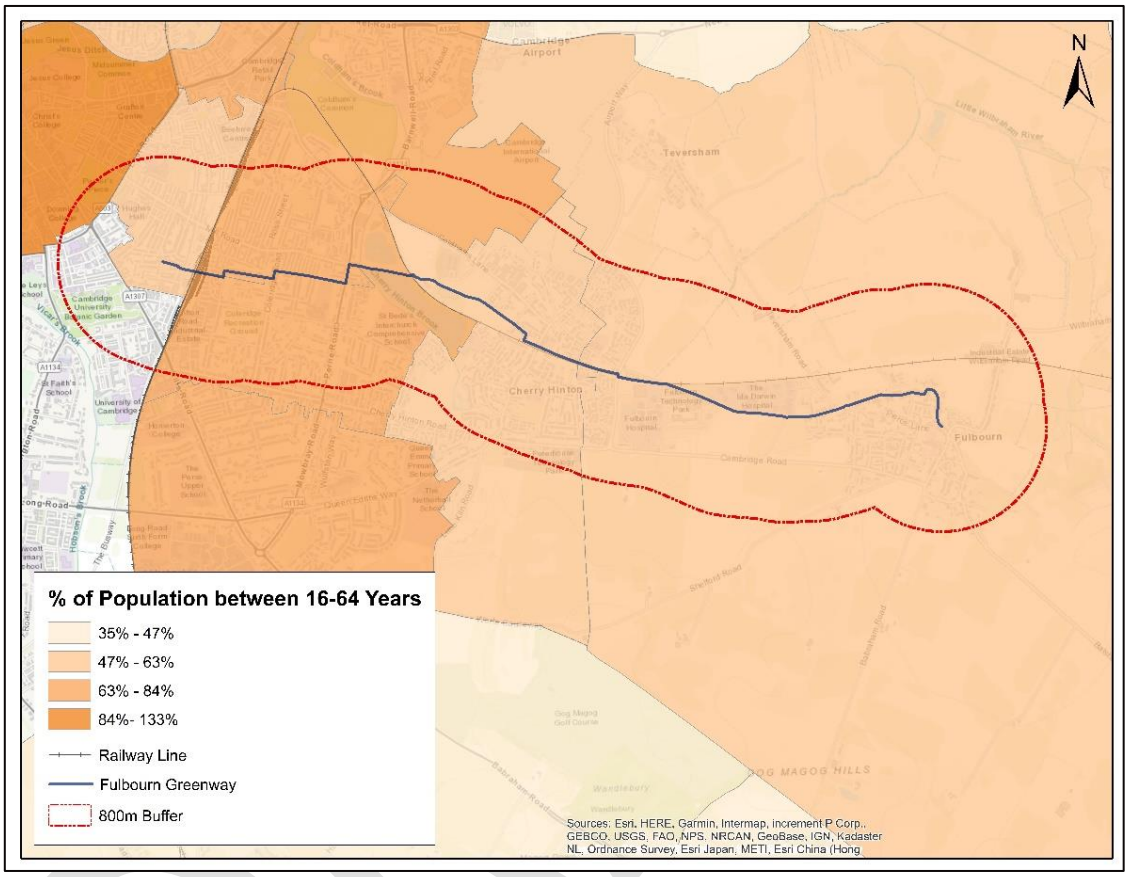


*Figure 14: Percentage of the Population 16-64 years*

1.9.4 In a report by the Centre of Ageing Better and Sustrans[35], levels of physical activity and use of active travel decline with age. Given not only health and wellbeing benefits to individuals, but the associated potential for reducing congestion and environmental benefits that align to local, regional and national policy goals (see section 1.5), walking and cycling infrastructure provision in this area is required to offer viable alternatives to the current overreliance on cars for journeys.

[35] Best foot forward: Exploring the barriers and enablers to active travel among 50-70 year olds | Centre for Ageing Better (ageing-better.org.uk)

## Car Ownership

1.9.5 Figure 15 highlights the percentage of areas with at least one car available in the area between Fulbourn, Cherry Hinton and into Cambridge City Centre. The map shows 45% or more residents have at least one car in their household. The 2021 census data shows that 43% of the population of Cambridge and South Cambridgeshire have at least 1 car or van per household, 27% have at least 2 vehicles per household and 9% of the population have at least 3. 79% of the population in the area have access to at least one car. As stated in the programme level OBC, forecast economic growth will correlate with a greater number of trips made, and therefore a greater demand on the road network if no investment is made to support and promote sustainable transport. The Programme Level Outline Case noted the importance of investment; without new sustainable transport interventions, peak hour journey times are forecast to increase by as much as 90%. Intervention is therefore required to offer viable alternative modes of transport, such as walking and cycling through the provision of active travel infrastructure.

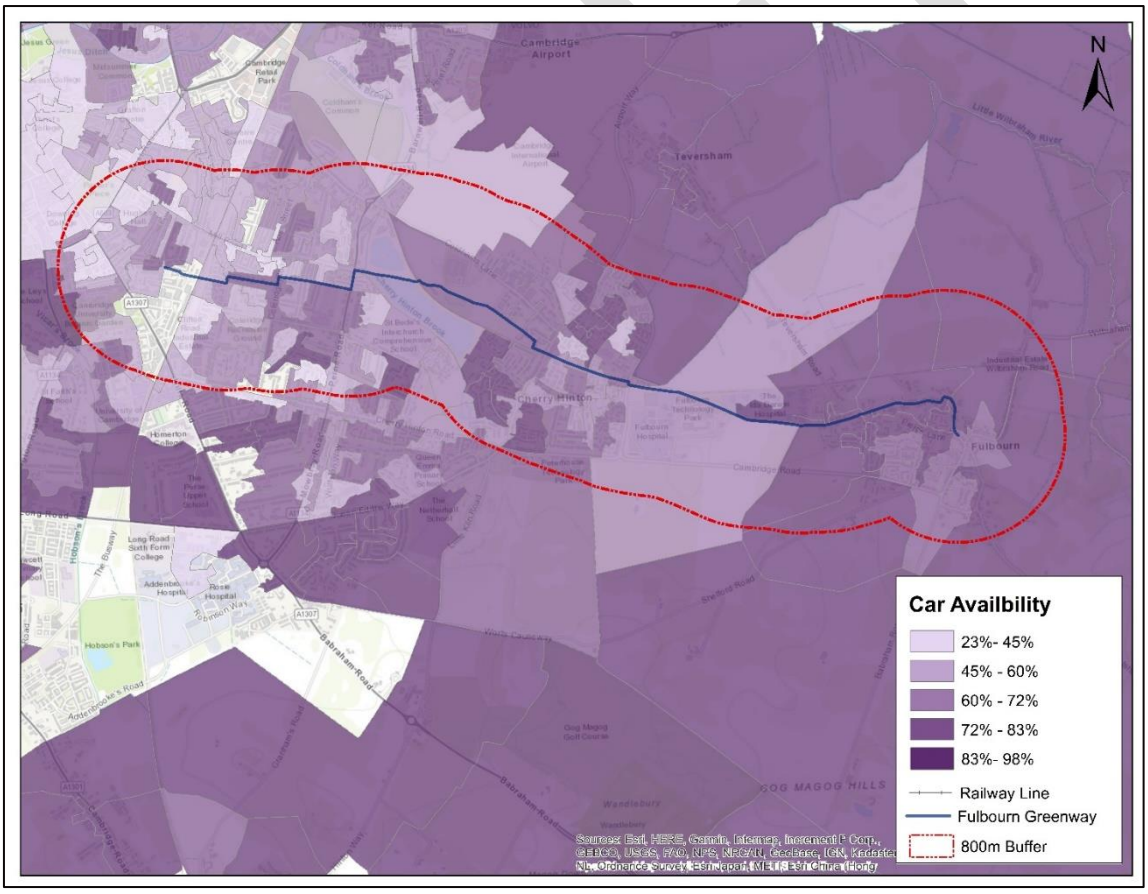


*Figure 15: Percentage of Households with at Least One Car or Van Available*

## 1.10 Environmental Context

1.10.1 Cambridge City Centre lies within an AQMA, with a short section of the proposed Greenway scheme (immediately outside Cambridge Railway Station car park) located within the AQMA. Encouraging mode shift between Cambridge City Centre, Fulbourn and Cherry Hinton may help to improve air quality in and near the AQMA in Cambridge and along the Cambridge Road corridor. This will in turn contribute to meeting strategic aims of reducing greenhouse gas emissions and Net Zero targets, as well as improving the air quality of the surrounding area.

1.10.2 There are also Green Infrastructure and Natural Capital impacts. The Fulbourn Greenway will be designed to provide multiple environmental, cultural and social benefits including wildlife corridors, linking areas of habitat together and creating new areas of habitat. The net impact will be to create well-designed places that deliver on natural capital enhancements and biodiversity gain in line with the Cambridge Local Plan and Environment Act.

## 1.11 Impact of Not Changing

1.11.1 Without scheme intervention, it is likely that car travel will continue to dominate, with associated congestion issues, environmental impacts and health issues, as well as potential risks to economic prosperity in the region. Air Quality issues will likely persist, if not deteriorate further without intervention that enables a shift towards active travel. New developments may also miss the opportunity for active travel modal shifts and behaviour change due to lack of infrastructure provision connecting growth locations and Cambridge City Centre.

1.11.2 Without delivery of Fulbourn Greenway, as well as the proposed network of Greenways more broadly, congestion levels will continue to increase due to a lack of available infrastructure for active travel. There is a risk that cycling could become increasingly unattractive due to the available infrastructure and current levels of cycling may decline. Reliance on the car will likely increase without suitable modal alternatives, such as opportunities for active travel journeys enabled by Fulbourn Greenway. This will negatively impact local communities through increased congestion, associated environmental impacts and adverse wellbeing effects. Without change, the Cambridge City Deal objectives to develop active travel modes that support the planned travel needs of new housing developments and employment risk being unrealised.

1.11.3 Without the delivery of the Greenways and cycleways, the opportunity to achieve net biodiversity gain objectives will be diminished, resulting in a less attractive environment without an enhanced natural habitat, which will in turn also contribute to a reduction in active travel.

1.11.4 Delivery of the Fulbourn Greenway scheme is therefore key in meeting the challenges identified with the current situation and supporting the national, regional, and local strategic priorities.

# 1.12 Strategic Need

1.12.1 The strategic need for Fulbourn Greenway is summarised below. It is notable that whilst the following section focuses on the needs for the Fulbourn scheme specifically, the strategic needs are consistent across all proposed Greenway in routes in Cambridge and are summarised further in the programme level business case.

## Facilitating a growing economy

1.12.2 As stated in the programme level OBC, the economy and population of Cambridge continues to grow, with a planned delivery of 33,480 new homes and 44,000 new jobs by 2031. There is a strategic need to provide a sustainable transport network to cater for this increase in demand.

1.12.3 The increase in the number of jobs and homes in Cambridge will increase the number of people travelling along the road network into Cambridge. There are high levels of congestion along the current highway network therefore without provision of sustainable alternatives journey times will increase and congestion will worsen.

1.12.4 As previously stated, there are high levels of congestion during a typical weekday AM peak period along Cambridge Road and Cherry Hinton Road to access the city centre from Fulbourn and Cherry Hinton. Traffic queues are a leading contributor to high levels of NOx. Reducing levels of congestion will contribute to a cleaner air environment.

## Connecting the city with sustainable transport modes

1.12.5 Economic growth correlates with a greater number of trips made, and therefore a greater demand on the highway network if nothing changes. Without new sustainable transport interventions peak hour journey times are forecast to increase as much as 90%. Sections of the traffic corridor connecting Fulbourn to Cambridge suffer traffic congestion at peak hours and therefore there is a strategic need to reduce the number of trips made by car and provide a sustainable and active alternative transport solution. The Fulbourn Greenway will provide a key element of this sustainable transport plan providing cycling and walking corridors connecting the city with villages in South and East Cambridgeshire.

## Sustainability Agenda

1.12.6 The 2030 Agenda for Sustainable Development, adopted by all United Nations Member State in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. The 17 Sustainable Development Goals (SDGs) are an urgent call for action by all developing and developed countries in a global partnership. They recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health, education, reduce inequality and spur economic growth, all while tackling climate change and working to preserve the natural environment.

1.12.7 Fulbourn Greenway supports the sustainability agenda as part of the overall Greenways scheme, which promotes sustainable development of the Greater Cambridgeshire region by making walking and cycling more attractive as a mode of transport. The travel connectivity to employment and education provided by the Greenways encourages modal shift to sustainable modes of transport. It also provides a more affordable travel option into the city centre.

## Decarbonisation Agenda

1.12.8 National policies outlined in section 2.5 detail the strategic need to align with Net Zero targets through the Ten Point Plan for a Green Industrial Revolution, Gear Change and the Cycling and Walking Investment Strategy. At a regional level, the Cambridgeshire and Peterborough Independent Commission on Climate outline the importance of acting on sustainable opportunities to improve air quality, greenspace and meet Net Zero targets.

1.12.9 The Fulbourn Greenway has the potential to be Net Zero carbon project offsetting construction carbon and adhering to the strategic aims of the outlined policies. As noted within the Programme Outline Case, 81% of the NOx emissions in Cambridge is from road traffic; there is a strategic need to create opportunity for a modal shift from private cars towards more sustainable modes of cycling and walking to improve air quality. Through the delivery of the Fulbourn Greenway a net reduction in highway-kilometres is expected as a result of modal shift to active modes of travel which in turn will lead to a net decrease in greenhouse gas emissions.

### Delivery of Biodiversity Net Gain

1.12.10 In order to align with Net Zero targets, the principle of Biodiversity Net Gain (BNG) has been developed. The National Planning Policy Framework (NPPF) and the Governments 25 Year Environment Plan sets out the strategic need to incorporate net gains for biodiversity. This is detailed through the Environment Bill and the Town and Country Planning Act (TCPA), which present the requirement for a minimum 10% BNG.

1.12.11 The Greater Cambridge Partnership takes the commitment to BNG further through its commitment of 20% as outlined in the Cambridge Local Plan. The Local Plan also details the importance of the maintenance of the Green Belt surrounding Cambridge, which will contribute to the biodiversity of the region.

1.12.12 The Greenways projects will potentially deliver biodiversity as well as linkages to wider transport schemes across Cambridge. There are opportunities to provide wildlife corridors adjacent to the road network, linking areas of habitat and creating new habitats where possible as well as enhancing the cycling network and opening up new routes across the region, reducing congestion.

## 1.13 Strategic Objectives

1.13.1.1 Logic mapping presents the linkages between the current situation, including strategic priorities established in the key national, regional, and local policies and the strategic needs, and how these are linked to desired outcomes and impacts of proposals. The exercise to map the inputs required to unlock opportunities and outcomes, and how these contribute to longer term aspirations or impacts for the Greenways is shown in Figure 16.

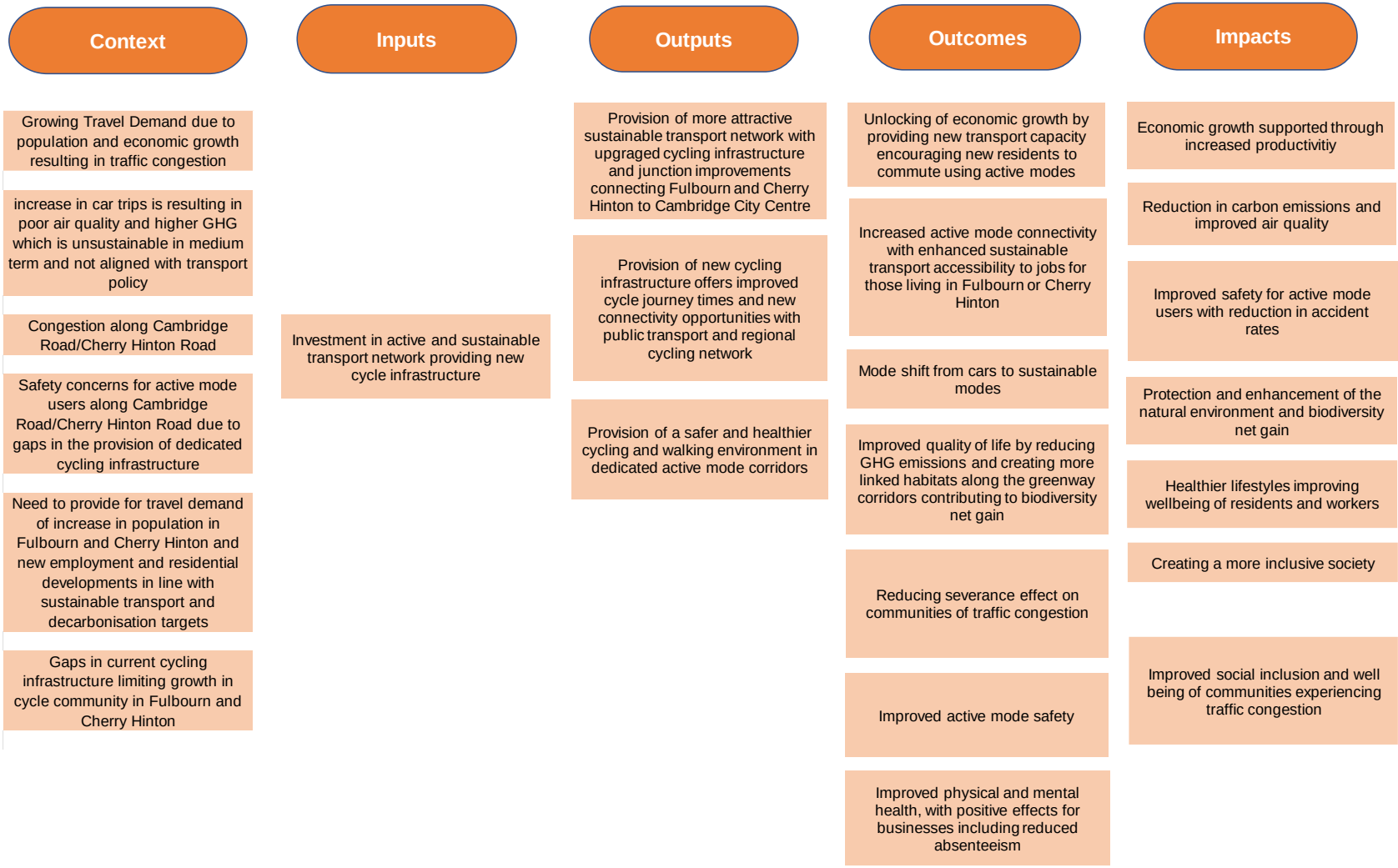


*Figure 16: Logic Map*

## 1.14 SMART Objectives and Measures of Success

1.14.1 Delivery of Fulbourn Greenway will further the strategic goals of the Greater Cambridge Partnership through providing enhanced opportunity for active travel to new residents and commuters alike. With an increased number of people using active travel modes, levels of congestion will be reduced, and air quality and public health improved. The SMART objectives and measures of success for the scheme are given in Table 3, aligning to the overall objectives of the Greenways Programme.

*Table 3: Greenways SMART Objectives (Source: Greater Cambridge Greenways POC (Programme Outline Case))*

| Strategic Objectives | Operational Objectives | Indicator |
|---|---|---|
| Encourage commuting by sustainable transport modes and reduce traffic congestion<br><br>Contribute to improved air quality and better public health | Capacity: Provide the cycle network capacity to accommodate increases in active travel demand due to new housing and employment growth | Increase in cycle network capacity<br>Ability to contribute to a reduction in vehicular road traffic<br>Propensity to reduce congestion/delay |
| | Connectivity: Improve accessibility to jobs and opportunities by active modes through a reduction in journey times and increase ease of interchange with public transport modes | Scale of catchment (jobs, housing)<br>Ability to unlock growth<br>Ease of interchange with public transport |
| | Communities: Contribute to the creation of safe and attractive communities by reducing emissions, severance and the dominance of traffic improving personal security and road safety | Road safety<br>Protection of green spaces; net bio-diversity gain<br>Environment (air quality and carbon reduction)<br>Quality of the public realm<br>Severance |

1.14.2 The Fulbourn Greenway will further the strategic aims of the Greater Cambridge City Deal through increasing the capacity of the active travel network, accommodating increased demand due to the delivery of new housing and employment growth. In doing so, the health and wellbeing of communities will be improved through the uptake of active travel. With a greater number of residents and employees choosing to travel through active means, demands on the road network will be reduced, as will levels of congestion, creating healthier and safer travel and improved air quality. A more pleasant and safe travelling experience for cyclists and walkers will encourage more people to cycle, reduce greenhouse gas emissions and contribute to a cleaner Cambridge.

# 1.15 Scope

1.15.1 The Fulbourn Greenway links the village of Fulbourn with Cambridge City Centre, offering links to potential active travel sites at developments such as Ida Darwin and enabling onward connectivity into future developments to the North at the site of the former Cambridge Airfield. The Fulbourn Greenway is located to the east of Cambridge station and runs for 6.4km (as shown in Figure 1). The route starts in Fulbourn as a 'Quiet Road' which will include measures to reduce traffic speeds. The path joins Fulbourn Old Drift and crosses Yarrow Road, following the shared path by the railway to Cherry Hinton. The Tins and Snakey Path is then used to connect to Perne Road and Romsey, from which point there will be an improved route with crossing upgrades. The route ends over the Carter Bridge towards the railway station, linking to the Chisholm Trail. The full scheme design drawings are presented in Appendix A.

# 1.16 Complementary Schemes

1.16.1 There are a number of complementary schemes which will support the development of the Fulbourn Greenway by extending the network of cycling infrastructure across Cambridge. These complementary schemes are described in the Greenways POC.

### Cambridge City Access

1.16.2 The City Access project is developing a package of measures to reduce traffic in Cambridgeshire by 10-15% from 2011 levels by 2030. This is a key complementary scheme for the Greenways programme. In order for both to be successful, it is vital the Greenways programme is delivered in conjunction with the eight packages comprising the City Access Strategy as shown in Figure 17.

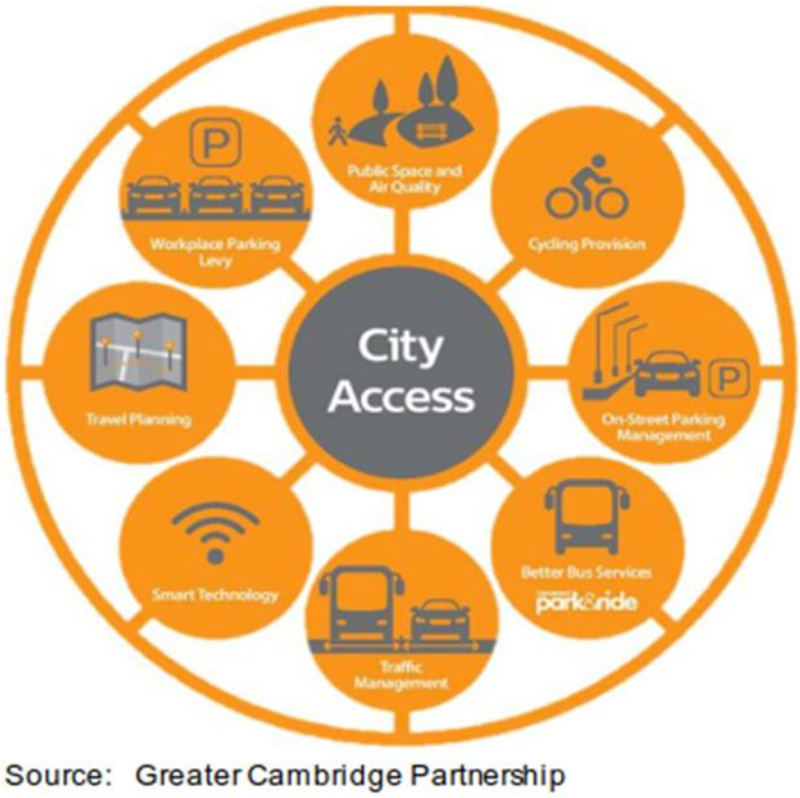


*Figure 17: Access Strategy Packages (Source: Greater Cambridge Greenways POC)*

1.16.3 The Fulbourn Greenway will benefit from the positive impacts on reallocation of road space for public transport and active modes incorporated in the City Access Strategy. This includes:

- Reduced traffic congestion within the city centre
- Faster, cheaper and more reliable bus journeys
- Safer, easier and more attractive walking and cycling journeys
- Reduced pollution and cleaner air
- Fewer stationary or slow moving vehicles
- More cycling and pedestrian infrastructure
- Preservation and enhancement of Cambridge's historic environment
- Improvements to the quality and reliability of public transport
- Continued growth in cycling

1.16.4 Fulbourn Greenway is part of the larger Cambridge Greenway programme that will provide improvements to existing cycling and walking infrastructure to encourage active travel, improve air quality and help wellbeing among residents. The Fulbourn Greenway will help enable the achievement of Cambridge City Access by providing an alternative active travel corridor, thus helping to enable a reduction in the number of vehicles along Cambridge Road and Cherry Hinton Road into Cambridge.

### Chisholm Trail

1.16.5 The Chisholm Trail is a new walking and cycling route that will create mostly off-road and traffic free routes between Cambridge Rail Station and the new Cambridge North Rail Station. The proposed trail will also link to business and science parks in the north and to Addenbrooke's Hospital and the Biomedical Campus in the south[20]. The Fulbourn Greenway is located close to Cambridge Station as shown in Figure 18.

1.16.6 The benefits of the scheme include the following:

- Reducing congestion
- Links major employment to rail stations
- Creates quiet, mostly traffic free routes
- Opens up more green spaces to the public
- Makes cycling a more attractive way to get to work
- Provides major health benefits through more walking and cycling

1.16.7 The proposed Fulbourn Greenway and other Greenway proposals will link Chisholm Trail as the Greenway connects surrounding settlements to Cambridge Rail Station, creating opportunities for multi-modal sustainable travel. The Fulbourn Greenway complements and supports the objectives of Chisholm Trail to provide faster journey times and traffic free routes that will in turn reduce congestion and the reliance of private vehicles.

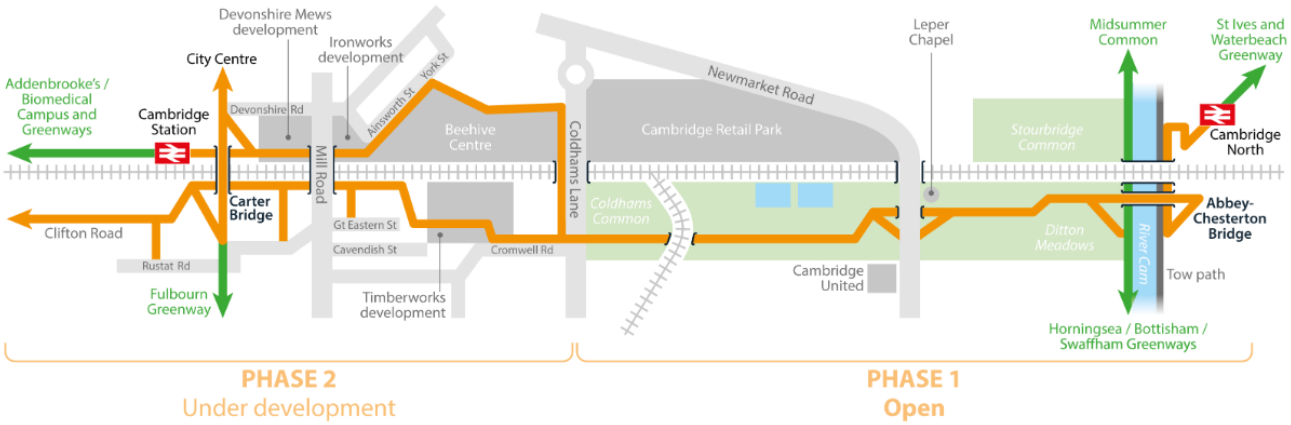


*Figure 18: Chisholm Trail plan* [36]

### Greenways

1.16.8 Fulbourn Greenway is part of a proposed programme of twelve Greenways around Cambridge. The scheme proposes to create a more connected active travel network, providing new and improved active travel infrastructure within Cambridge and the surrounding towns and villages. The Fulbourn Greenway connects to other Greenways in Cambridge City Centre and Railway Station.

[36] https://www.greatercambridge.org.uk/sustainable-transport-programme/active-travel-projects/chisholm-trail)

# 1.17 Strategic Impacts

1.17.1 This section presents the economic, social and environmental strategic impacts of investment in the Fulbourn Greenway. A summary of scheme benefits across all areas can be seen in Table 4.

*Table 4: Scheme Benefits*

| Scheme Benefit | Description |
|---|---|
| Increased safety of the cycle network | Segregated travel away from general traffic on the congested road network will decrease the number of accidents. |
| Reduced road traffic for motorists | Users who continue to use the road network will benefit from a reduction in traffic volume and congestion, translating into journey time savings and improved access to jobs and services. |
| Environmental benefits | As the Fulbourn Greenway facilities modal shift to active travel, reduced congestion, air quality improvements and carbon reduction are anticipated. |
| Health benefits | A modal shift towards active travel will bring about numerous health benefits, both physical and mental.<br><br>Access to an active-travel network will future-proof behavioural change. |
| Improved connectivity and accessibility | Improved access to a quality sustainable transport mode linking Cambridge City Centre to Fulbourn Village and other settlements such as Cherry Hinton. |

## Social Impacts

1.17.2 The Fulbourn Greenway will encourage a modal shift from vehicles to reduce traffic, alleviate high levels of congestion on the surrounding network and create an improved travel environment for local residents. The Fulbourn Greenway will also promote a healthier lifestyle and encourage residents to switch to walking and cycling for shorter journeys. This will have a positive impact for residents both physically and mentally. With the reduced levels of congestion, the cycle and pedestrian routes will be safer, reducing the number of potential accidents that involve cyclists and pedestrians.

## Economic Impacts

1.17.3 The Fulbourn Greenway will offer employees in Fulbourn and Cherry Hinton greater accessibility into the city centre by walking and cycling. The Greenway provides an alternative to commuting to work. With potentially reduced journey times and a more desirable travel environment along Greenway routes, cycling becomes a more attractive alternative for commuters. This will generate decongestion benefits on the road network as a result of mode shift towards sustainable modes and in turn, has health and wellbeing benefits that may help boost reduce employee absences due to sickness. The Greenway will improve connectivity between local villages and the city centre that will further help connect new housing and employment developments in Cambridge and the surrounding areas.

1.17.4 With the implementation of the proposed Greenway, Cambridge becomes further attractive to employers to base their businesses within the city centre and surrounding areas due to the increase in connectivity by sustainable methods of travel and reduction in journey times.

## Environmental Impacts

1.17.5 The Fulbourn Greenway will encourage a modal shift from motorised vehicles and reductions in the levels of traffic congestion, with associated reductions in greenhouse gas levels and the number of health-related pollutants such as NOx and PM10. This in turn contributes to achieving the strategic aims of the Net Zero targets and improving the air quality of the surrounding areas.

1.17.6 The Fulbourn Greenway will be designed to provide multiple environmental, cultural and social benefits, including linking areas of habitat together as well as creating new habitats. The net impact will be able to create a more natural environment that deliver on natural capital enhancements and biodiversity gain in line with Cambridge Local Plan and Environment Act.

1.17.7 There are also potential historic environmental considerations in the area regarding desecrated land at the former Fulbourn Asylum site and some parts of the proposed route interacting with previous burial sites.

# 1.18 Option Development

1.18.1 At programme level, Option Development for the Greenways network involved a process of identification, prioritisation and consultation for each Greenway scheme.

## Option Assessment

1.18.2 A schematic/concept design for the Fulbourn Greenways Scheme based on work carried out by 5th Studio. Nigel Brigham carried out an independent review of the 5th Studio designs. The Fulbourn Greenways' initial designs went to public consultation 15th October – 3rd December 2018.

## 2018 Consultation

1.18.3 A ‘blank canvas’ approach was taken, and the public were asked to voice their preferences for route alignment. Members of the public were also asked to identify where they experienced problems or barriers when walking or cycling.

1.18.4 A number of options were identified, and strong support emerged for the most direct route via Tins Path. The crossing of the railway on Tins Path was also highlighted as a pinch point by many, and there was strong support for an upgrade to the bridge. Additionally, improved surfacing, signage and lighting were also identified as key requirements. 85% of respondents to the consultation supported the proposed improvements to the Tins Path, and 83% supported improvements to Snakey Path.

1.18.5 Concerns were further raised over the high cost of some elements, especially the proposed Tins Path Bridge, and Option B for the Carter Bridge proposals. There was also debate over the environmental impact and plausibility of widening Snakey Path.

1.18.6 Through this ‘bottom up’ methodology, the Greater Cambridge Partnership has engaged with local communities to ensure that routes meet the local needs of people and take advantage of local knowledge.

1.18.7 Overall, local communities engaged positively and provided valuable feedback to help shape developments of the scheme.

## GCP Board Approval

1.18.8 A summary of 2018 Public Consultation findings and final route options were presented to the public and the GCP Executive Board in 2019. The GCP Executive Board then considered the elements of the scheme and selected preferred attributes to be taken forward to the next stage of project development, which were produced as appendices to the cabinet reports. Approval to proceed to planning and detailed design was granted by the Executive Board of GCP in February 2020.

## Constraints

1.18.9 Consistent with constraints identified at the Programme Level OBC, the following significant constraints on the delivery of the scheme have been identified:

- Consultation with Network Rail to discuss final proposals at the Yarrow Road Level Crossing. Network rail require consultation regarding the increased footfall and cycle movements using the level crossing as a result of the scheme.
- There are a number of trees along the proposed route with Tree Protection Orders on. No works can happen to or within certain distance of protected trees without planning permission from the local planning authority.
- Land take is required for the scheme, including the link between Coleridge Rd and Malmora Rd and some areas potentially owned by Network Rail.
- Obtaining the rights for use and construction of the Greenway, which may involve private landowners.
- The need to ensure continuity, which can involve the need for high quality crossings of roads, rivers, and other barriers.
- The need to satisfy planning requirements, which may include habitat, flooding and other issues.
- These constraints will be addressed during scheme development and engagement with stakeholders and 2023 public engagement.

## Next Steps

1.18.10 The next stages in the scheme development process includes the following:

- 2023 Public consultation
- Engagement with landowners and stakeholders
- Environmental and ecology impacts
- Proposals and preparatory work for planning consents

# 2 Economic Case

## 2.1 Introduction

2.1.1 The Economic Case determines the Value for Money (VfM). To assess the VfM, qualitative and quantitative scheme impacts are examined and compared against the scheme costs. The overall economic appraisal of the Fulbourn Greenway has been undertaken in the line with Transport Analysis Guidance (TAG). In accordance with the guidance, the monetised benefits from this active travel scheme have been derived using the Department for Transport's (DfT) Active Mode Appraisal Toolkit (AMAT). AMAT has been used to generate monetary benefits from increased walking and cycling as a result of the Fulbourn Greenway improvements.

2.1.2 Fulbourn Greenway is part of a programme comprising twelve Greenways to provide access into Cambridge from rural settlements to the north, south, east and west, meeting centrally at Cambridge Station. Fulbourn Greenway is located to the east of Cambridge station and is approximately 4.0 miles long. The Greenway starts at Fulbourn connecting to Cambridge Station and Cherry Hinton South. Further scheme details and maps are provided in section 1 (Strategic Case). Table 5 provides a summary of scheme elements for Fulbourn Greenway.

*Table 5: Summary of Scheme Elements*

**Walking & Cycling**

- **Multiuser links such as -** Upgrading of greenway links - link widening & development
- **Infrastructure Improvements such as -** Upgrading Tins path bridge, collapsible bollards, installation of SUDS feature, toucan crossing
- **Traffic calming such as -** Sign carrying bollards, speed table for pedestrian and cyclist priority
- **Surfacing such as -** Remove the existing surface defects and resurfacing of few sections
- **Quiet Roads –** Speed limits reduced to 20mph

**Public Realm**

- **Landscaping Improvements**: Removal of obstructive wooden barriers, vegetation clearing, new timber fencing
- **Lighting:** Wayfinding and lighting improvements

2.1.3 The drawings of the scheme are included within Appendix A.

## 2.2 Approach to Economic Appraisal

2.2.1 This economic appraisal considers both qualitative, quantitative (monetised) impacts. The impacts and cost of scheme have been analysed in accordance with TAG and the HM Treasury Green Book. The following appraisal guidance has been used to assess the impact of the Fulbourn Greenway:

- TAG Unit A5-1 (November 2022): Active Mode Appraisal
- TAG Unit A1-1 (November 2022): Cost-Benefit Analysis
- TAG Unit A4-1 (November 2022): Social Impact Appraisal
- TAG Unit A4-2 (May 2020): Distributional Impact Assessment
- TAG Unit A3 (May 2022): Environmental Impact Appraisal

- DfT Value for Money Framework

2.2.2 In line with TAG, all costs and benefits have been appraised in 2010 prices and values. Costs and benefits have been deflated to 2010 using the May 2022 Gross Domestic Product (GDP) deflator (in line with the GDP deflator values provided in AMAT).

2.2.3 For the purpose of the economic appraisal, it has been assumed that the proposed Fulbourn Greenway opening year is 2026. TAG unit A5-1 states that the length of the appraisal period should reflect how long the infrastructure last before investment is required. Therefore, a 20- year appraisal period has been considered in line with other proposed Greenways.

## ACTIVE MODE APPRAISAL TOOLKIT

2.2.4 The DfT's Active Mode Appraisal Toolkit (AMAT) (November 2022) has been used to estimate the benefits associated with improved cycling and walking infrastructure along the Fulbourn Greenway. The tool considers the following benefits:

- Physical activity
- Absenteeism
- Journey quality
- Environmental
- Indirect tax
- Congestion.

2.2.5 There are a number of default assumptions within AMAT which are used to estimate the benefits. These assumptions come from the National Travel survey or TAG and include journey length, journey speed, diversion factors and proportion in employment, background growth rate and car and taxi occupancy. These values are not changed unless there is more up-to-date or local data which can be referenced.

2.2.6 For the purpose of this appraisal, assumptions within AMAT were kept consistent with the default assumptions with the exception the assumption set out in Table 6. This was updated to better reflect Cambridge cycling conditions.

*Table 6: Assumption Refined under AMAT*

| | Default Assumption | Altered Assumptions | Rationale |
|---|---|---|---|
| Cycling – Average Length of Trip | 4.84 | 5.14 | National Travel Survey updated from 2012-14 to 2019 values |

2.2.7 The Fulbourn greenway has multiple infrastructure changes along the corridor that need to be considered separately to ensure all the benefits are realised. To calculate the overall benefits of the scheme, the Greenway has been divided into sections based on the current and proposed infrastructure. The AMAT input requires the percentage of a cycle trip that uses the intervention. This allows the route to be broken by length, ensuring benefits are not replicated. The sections considered for Fulbourn Greenway are set out in Table 7 and displayed in Figure 19.

*Table 7: Summary of AMAT Sections*

| Section | Description | Length of Route (Km) | Existing Infrastructure | Proposed Infrastructure |
|---|---|---|---|---|
| 1 | Carter Bridge Approach from Devonshire Road | 0.48 | Segregated shared-use path | Wayfinding improvements towards Fulbourn |
| 2 | Greville Road / Rustat Road Connection to Brookfields | 1.18 | Quiet Roads / Segregated shared-use path | Widening of shared-use path<br>Traffic calming measures<br>Creation of a new 3m multi user link is proposed between Marmora Road and Perne Road.<br>4m toucan crossing |
| 3 | The Tins to Orchard Estate | 1.38 | Segregated shared-use path | Improvement of Tins Path Bridge, vegetation clearance and new timber fencing |
| 4 | Orchard Estate to High Street | 0.29 | Quiet Roads / Segregated share use path | Path widening and surfacing |
| 5 | High Street to Yarrow Road | 1.05 | No Provision | The construction of a new multiuser 3m path, wayfinding and lighting improvements. |
| 6 | Yarrow Road (Cherry Hinton) / Fulbourn Old drift (Tesco) to Fulbourn High Street (Through Cow Lane) | 2.42 | Share use path / Quiet Roads | Traffic calming measures, priority junction improvements, and quiet roads (20mph street) |

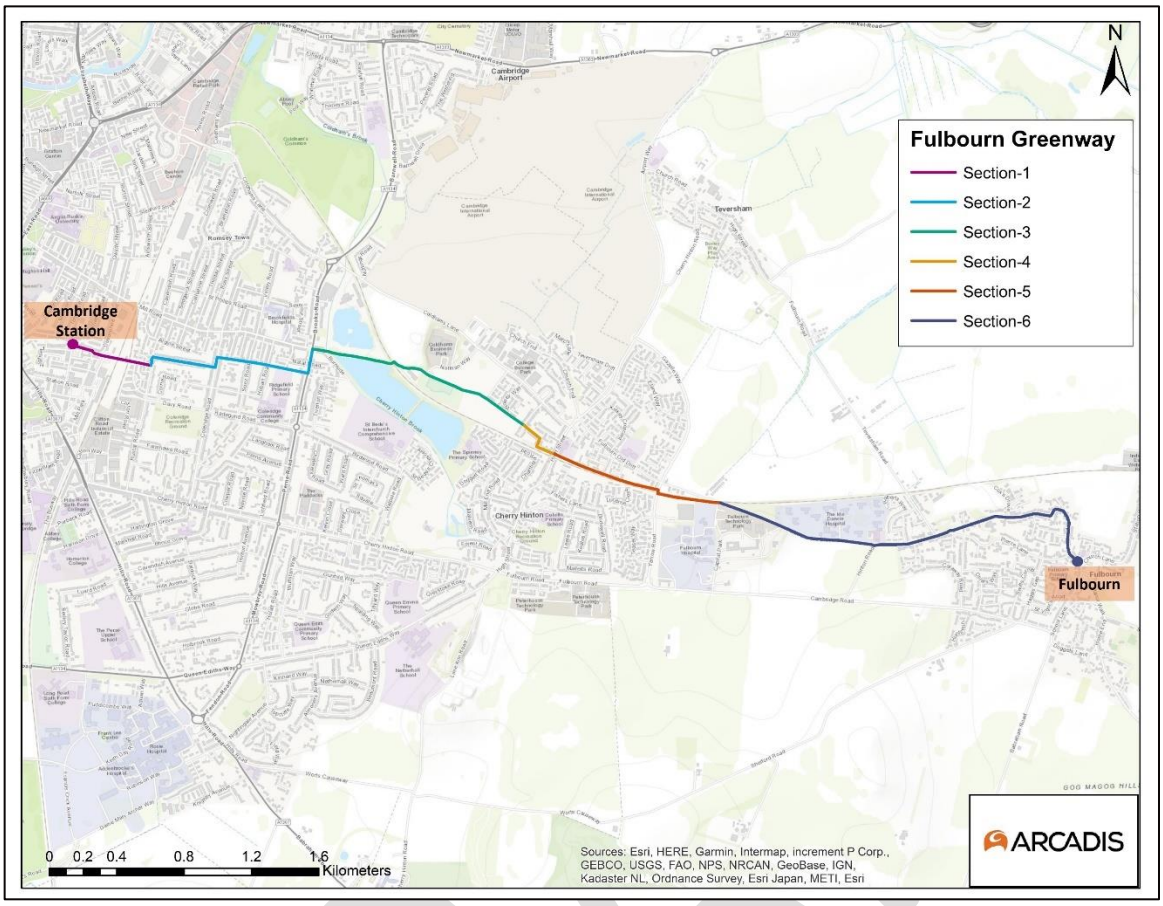


*Figure 19: AMAT Sections*

## Existing Demand Analysis

2.2.8 The with scheme and without scheme demand is required as an input into AMAT. To determine the without scheme demand, different cyclist and pedestrian counts carried out along the proposed Fulbourn Greenway during 2022 have been used. The location and type of the counts considered for each section are explained in given below in Table 8 and Figure 20.

2.2.9 Without scheme demand has mostly utilised Manual Classified Counts (MCCs). The MCC data was collected between 07:00-10:00 & 15:00-19:00 (7 hours) on Thursday 15th September 2022. The without scheme demand for Cambridge Carter Bridge is derived from Cambridgeshire Cycle Route Monitoring (CCRM). This data was collected between 7:00 to 18:30 (11.5 hours) on 10th June 2021.

2.2.10 The counts were not available for 24-hours and the AMAT input requires 24-hour flows. Therefore, the counts have been factored up to 24-hour flows. The 24-hour factor has been derived from the 24-hour Vivacity permanent counters data collected for Mill Road, Cambridge. This is the 24-hour count located closest to the scheme. Table 9 outlines the existing demand of the cycling and walking (24 hours) for each of the AMAT sections.

*Table 8: Data count for AMAT section*

| Section | Description | Count Type |
|---|---|---|
| 1 | Carter Bridge Approach from Devonshire Road | Cambs Cycle Route Monitoring (CCRM10) |
| 2 | Greville Road / Rustat Road Connection to Brookfields | Manual Classified Counts (MCC 6 & 7) |
| 3 | The Tines to Orchard Estate | Manual Classified Counts (MCC 8) |
| 4 | Orchard Estate to High Street | Manual Classified Counts (MCC 10) |
| 5 | High Street to Yarrow Road | Manual Classified Counts (MCC 10) |
| 6 | Yarrow Road (Cherry Hinton) / Fulbourn Old drift (Tesco) to Fulbourn High Street (Through Cow Lane) | Manual Classified Counts (MCC 11) |

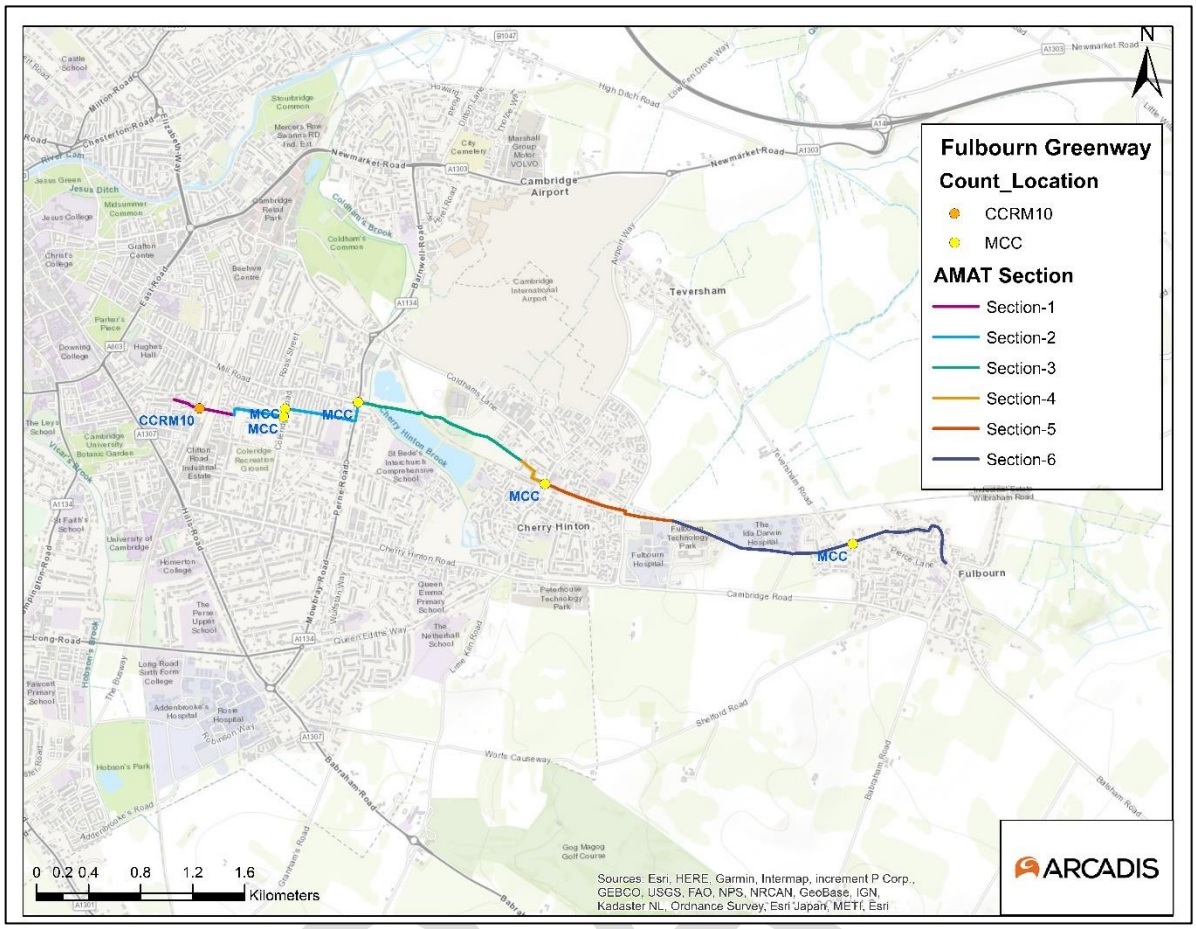


*Figure 20: Fulbourn Count Locations*

*Table 9: AMAT Demand (Daily Trips – 24 Hours)*

| Section | Description | Cycling Demand | Pedestrian Demand |
|---|---|---|---|
| 1 | Carter Bridge Approach from Devonshire Road | 3123 | 915 |
| 2 | Greville Road / Rustat Road Connection to Brookfields | 673 | 679 |
| 3 | The Tines to Orchard Estate | 381 | 230 |
| 4 | Orchard Estate to High Street | 620 | 539 |
| 5 | High Street to Yarrow Road | 122 | 364 |
| 6 | Yarrow Road (Cherry Hinton) / Fulbourn Old drift (Tesco) to Fulbourn High Street (Through Cow Lane) | 556 | 427 |

2.2.11 Table 9 shows that there are mixed count volumes across the proposed Fulbourn Greenway route length. It appears that proximity to Cambridge Centre (by the station) corresponds with higher counts. This is likely reflective of demand by cyclists using the station and the City Centre from the surrounding area. The built-up areas along the route generally have higher counts than the sections which are currently off-road paths.

## Scheme Induced Demand

2.2.12 In line with TAG Unit A5-1, the with scheme demand (uplift in cycling and walking with the proposed Fulbourn Greenway) have been taken from comparative studies. To estimate the scheme induced cycling demand, an uplift percentage of 25% was used. The uplift percentage was derived from pre- and post-implementation traffic surveys from several comparable schemes outlined in the GCP Impact Evaluation Evidence Paper (2019)[37], Cycle City Ambition Programme (2013-2018)[38], and Outcomes of the Cycling City and Town Programme (2017)[39], including:

- Arbury Road (Cambridge) – Traffic lanes narrowed to 2.6m with removed centre line and kerb lines moved to accommodate new raised cycleway as well as carriageway / footway resurfacing
- Links to east Cambridge – shared foot and cycleway, parking restrictions and carriageway resurfacing
- Filwood Greenway (Bristol) – mixed strategic route including off road cycle track though green space

2.2.13 A 10% uplift for walking trips was considered, derived from an average of the case studies outlined in 'Making the Case for Investment in the Walking Environment' (2011)[40]. These include:

- Kensington High Street
- Five Roads Home Zone, Ealing
- Wanstead High Street Walking Improvements

2.2.14 The same uplift was used across the whole route. As this is a corridor enhancement, even though the level of improvement varies across the corridor, the uplift is expected to be consistent across the length of the scheme as people will travel between the two destinations.

2.2.15 Based on the cycling and walking uplifts, the forecast with scheme demand is shown in Table 10.

[37] GCP Impact Evaluation Evidence Paper (2019)
[38] Cycle City Ambition Programme (2013-2018)
[39] Outcomes of the Cycling City and Towns programme, 2017
[40] https://www.livingstreets.org.uk/media/1394/2011-making-the-case-full-report.pdf

*Table 10: AMAT Demand Forecasts (Daily Trips – 24 Hours)*

| Section | Description | Cycling Demand | Pedestrian Demand |
|---|---|---|---|
| 1 | Carter Bridge Approach from Devonshire Road | 3904 | 1006 |
| 2 | Greville Road / Rustat Road Connection to Brookfields | 841 | 747 |
| 3 | The Tines to Orchard Estate | 476 | 253 |
| 4 | Orchard Estate to High Street | 775 | 593 |
| 5 | High Street to Yarrow Road | 153 | 400 |
| 6 | Yarrow Road (Cherry Hinton) /Fulbourn Old drift (Tesco) to Fulbourn High Street (Through Cow Lane) | 695 | 470 |

## AMAT Inputs for Proposed Fulbourn Greenway

2.2.16 To calculate the journey ambience benefits of the Fulbourn Greenway, AMAT requires the current and proposed infrastructure. AMAT also requires the proportion of a trip which uses the scheme infrastructure. This was calculated by dividing the length of each section by the average length of a cycle journey (5.14km). Figure 21 explains the key AMAT inputs which feed into the benefits calculated.

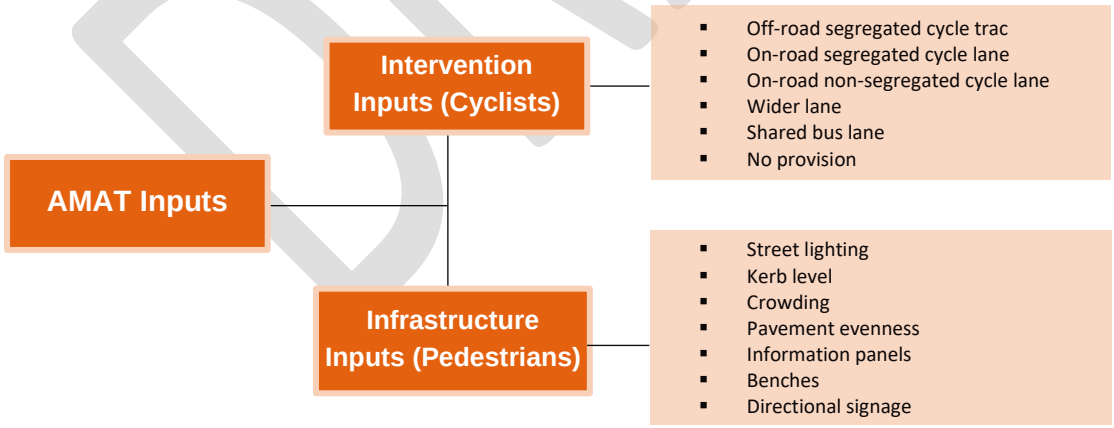


*Figure 21: AMAT Input*

2.2.17 In line with AMAT guidance, inputs for the proposed Fulbourn Greenway design were classified using examples from the AMAT user guide. Classification of proposed infrastructure as an "off-road segregated cycle track" included any current or proposed infrastructure that is a “path or track with right of way for pedal cycles that is separate to the road, typically with a level difference” (AMAT user guide). The infrastructure improvements that include the development of one-way cycle lane with priority junction improvements, and quiet roads are considered as a wider bus lane dependent Table 11 explains the type of existing/proposed infrastructure for each section of the route, alongside the subsequent classification for each section in AMAT.

*Table 11: Type of Infrastructure / AMAT classification*

| Section | Type of Infrastructure (Existing / Proposed) | AMAT Classification (Existing / Proposed) |
|---|---|---|
| 1 | Segregated shared-use path / Segregated shared-use path | Off-road segregated cycle track / Off-road segregated cycle track |
| 2 | Mix between Segregate and non- segregated infrastructure / Segregated shared-use path and quiet roads with few traffic calming measures | No provision / Off-road segregated cycle track for section between (Marmora Road and Perne Road section only)<br>On-road non segregated cycle lane / On road non segregated cycle lane (remainder of the section) |
| 3 | Segregated shared-use path / Segregated shared-use path with ambiance improvement and infrastructure development | Off-road segregated cycle track / Off-road segregated cycle track |
| 4 | Segregated shared-use path / Segregated shared-use path with markings for cyclist | Off-road segregated cycle track / Off-road segregated cycle track |
| 5 | Segregated footpath / Widened Segregated shared-use path with ambiance improvement and infrastructure development | No provision / Off-road segregated cycle track |
| 6 | No provision / One-way cycle lane and quiet roads (20mph street) with priority junction improvements | No Provision / Shared Bus Lane |

2.2.18 It is important to note, while the sections have been developed to group similar infrastructure changes together, there are still some sections that contain different types of infrastructure within them. Section 2 covers mainly minor improvements to quiet roads and some existing segregated infrastructure. However, it also includes a new off-road link between Marmora Road and Perne Road. As such, in Section 2 journey ambience benefits have only been calculated for the new segregated link. Section 5 between Cherry Hinton High Street and Yarrow Road is currently only a footpath and there is no provision for cyclists. In AMAT, the input for this section is therefore no provision without scheme and a segregated off-road cyclist track with scheme. Section 6 through Fulbourn mainly consists of traffic calming measures (speed tables and reducing the speed limit) and in AMAT, this section is categorised as no provision without scheme and a shared bus lane with scheme (due to advisory cycle markings).

## AMAT Outputs for Proposed Fulbourn Greenway

2.2.19 AMAT monetises impacts of infrastructure provision in terms of health benefits, environmental benefits, travel benefits, and taxation changes. These are summarised in Figure 22.

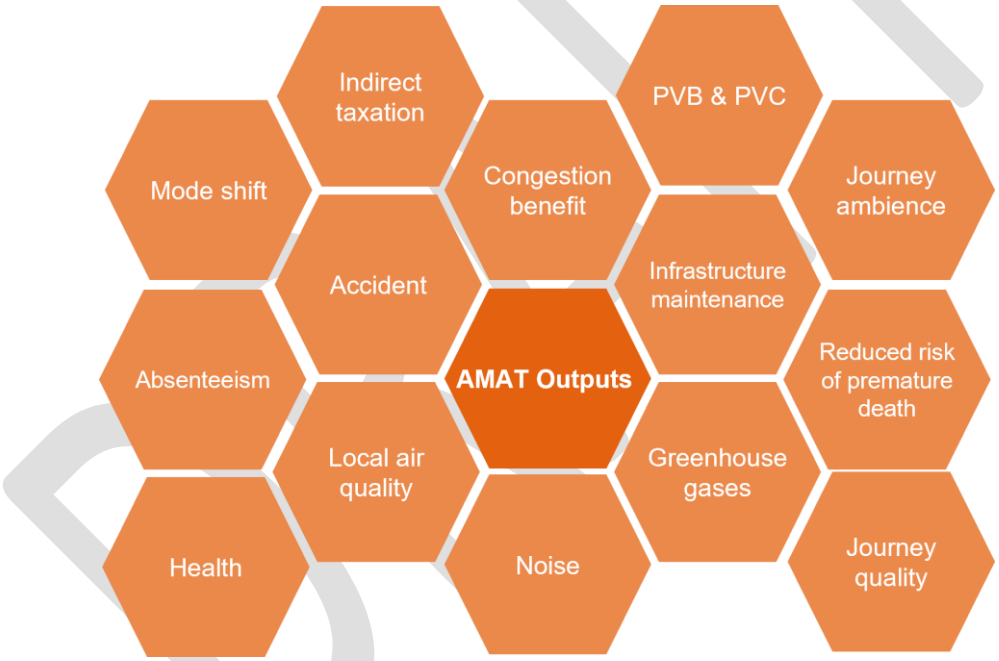


*Figure 22: AMAT Benefits*

## Accident Reduction

2.2.20 AMAT provides accident benefits resultant from a reduction in car kilometres (km) travelled, but does not calculate the benefits to cyclists due to a reduction in collisions from a safer environment. Along the proposed Fulbourn Greenway, accident data was collected for the 5-year period between 2017 and 2021. During this period, 24 accidents occurred along the corridor in total, with 15 being slight and 9 serious. The location of the accidents is shown in Figure 23.

2.2.21 The concept design proposal along the Fulbourn Greenway includes the safety features for cyclists such as:

- Road widening to create refuge island
- New crossing point
- Speed table
- Toucan crossing
- Reduction in speed limit
- Junction bypass for cyclists

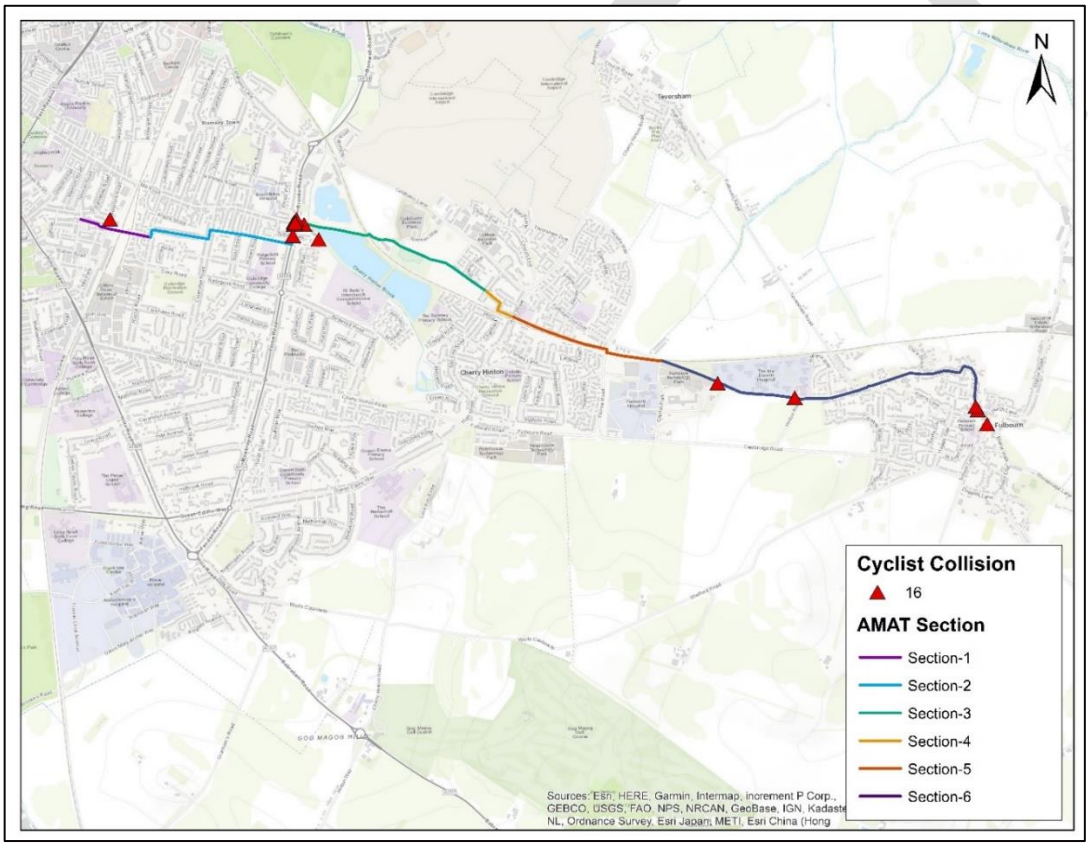


*Figure 23: Collision Locations on Fulbourn Greenway*

2.2.22 The scheme proposals are expected to result in a decrease in road incidents involving cyclists as there will be more space between cyclists and vehicles alongside slower vehicle speeds at key hotspots. Accident data was analysed to determine the accidents involving cyclists over the between 2017 and 2021.16 out of 24 collisions over this timeframe along the proposed Greenway involved a cyclist. This indicates the importance of the scheme in helping to improve safety along the route. Using professional judgement, analysis has been undertaken to estimate which collisions may have been avoidable with the scheme intervention in place. A yearly average was ascertained by dividing the number of potentially avoidable collisions by 5 (the number of years between 2017 and 2021), which was then multiplied against the TAG values for accidents by severity, as shown in Table 12.

*Table 12: Accident Savings by Severity (2010 prices and values)*

| | Collision Savings by Severity | | |
|---|---|---|---|
| | **Fatal** | **Serious** | **Slight** |
| Cost of a casualty (£, 2010, TAG Databook v1.20.2) | £ 1,833,608 | £ 2,10,760 | £ 21,483 |
| Number of collisions involving cyclists | - | 7 | 9 |
| Number of cycle accidents that may have been prevented by the scheme | - | 1 | 2 |
| Number of prevented cycle accidents per annum | - | 0.2 | 0.4 |
| **Accident savings per annum (£, 2010)** | **-** | **£ 42,152.00** | **£ 8,593.20** |

2.2.23 The overall benefits over the 20-year appraisal period are £445,551 (2010 prices and values)

## Cyclist and Pedestrian Journey Time Impacts

2.2.24 As Greenways aim to improve active travel uptake levels by increasing the attractiveness and safety of provision, journey time savings are secondary to the scheme objectives. Comparing the journey times for cyclists and pedestrians along the proposed Fulbourn Greenway route against other routes between Fulbourn, Cherry Hinton and Cambridge shows no discernible difference on journey times. Therefore, for the proposed Fulbourn Greenway, no journey time savings for cyclists or pedestrians have been calculated.

## Non-Monetised Impacts of The Scheme

2.2.25 There are several impacts of the Fulbourn Greenway scheme that have not been measured and monetised, such as:

- **Journey Ambience Improvement:** Green junction improvements, clearing vegetation and landscaping improvements, wayfinding and lighting improvements, upgrading Tins path railway bridge, and widening of the street for the better visibility are journey quality improvements which have not been monetised.
- **Quite Road and Multiuse Pathways:** Traffic calming measures reducing speeds to 20mph and speed tables. These increase the perception of safety and security which have not been monetised.

2.2.26 If appraised in more detail and monetised, it is likely these benefits will further enhance the case for investment and VfM for the Fulbourn Greenway proposals.

## Scheme Costs

2.2.27 The estimated cost of Fulbourn Greenway will be £3,305,376 (2010 prices and values) based on direct construction works, designs and other fees. The costs assume 5.59% inflation over the construction period. Further detail on the estimation of scheme costs is presented in the Financial Case in Section 3.

2.2.28 As scheme completion is estimated to be by the end of 2025, first year scheme benefits will be realised in 2026. Taking this into consideration, for the purpose of the economic appraisal, the scheme opening year is considered as 2026. The cost profile of the scheme used in the economic appraisal is outlined in Table 13. It has been assumed that there will be an equal spend profile across both construction years.

2.2.29 Consistent with TAG Unit A1-2, for a scheme of this nature at OBC stage, a 23% optimism bias has been applied to the base scheme costs (Table 13) within the economic appraisal**.**

*Table 13: Cost Estimation and Spend Profile, £ 2010 prices and values*

| | Total Estimated Cost | 2024 | 2025 |
|---|---|---|---|
| **Scheme Cost Excluding Risk** | £3,305,376 | £ 1,687,436 | £ 1,617,940 |

## Main Economic Appraisal Assumptions

2.2.30 The main assumptions for the economic appraisal are presented in Table 14.

*Table 14: Main Economic Appraisal Assumptions*

| Criteria | Assumption | Source |
|---|---|---|
| Opening year | 2026 | GCP |
| Base year | 2010 | DfT Base Year |
| Appraisal period | 20 years | AMAT default |
| Discount rate | 3.5% 0-20 years | January 2023 TAG Data Book v1.20.2 (A1 1.1) |
| GDP Deflator | - | January 2023 TAG Data Book v1.20.2 (Annual Parameters) |
| Existing path cycle demand | MCC counts | Count Data |
| Scheme induced cycle demand | 25% | Schemes outlined in GCP Impact Evaluation Evidence Paper<br>Cycle City Ambition Programme 2013-2018 |
| Existing path pedestrian demand | MCC counts | Count Data |
| Scheme induced pedestrian demand uplift | 10% | Living Street: Making the Case for Investment in the Walking Environment |
| Optimism bias on capital costs | 23% | TAG Unit A1-2 |
| Cost spend profile | 2024/25 | Arcadis |

# 2.3 Summary AMAT Impacts

2.3.1 Table 15 and Table 16 present the monetised AMAT benefits associated with the improved cycling and walking infrastructure (this excludes the accident benefits above). Section 1 is in close proximity to Cambridge station, the city centre and has high current cyclist volumes. It would not be appropriate to include health benefits from this section as high cycle counts and modest intervention may obscure estimation of scheme impacts of the Fulbourn Greenway. Therefore, benefits from this small section have been excluded from the total economic appraisal.

2.3.2 The largest benefit associated with the increased number of cyclists as a result of the scheme is the reduction risk of premature death (health benefits). Absenteeism accounts for the second largest benefit followed by journey ambience. Absenteeism benefits is the link between increased physical activity and improved health reducing the number of 'sick days'. Journey ambience is improved safety and/or environmental conditions. There are decongestion benefits as a result of modal shift from private car to active travel, and associated impacts including fewer road accidents, improved air quality, reduced noise and reduced greenhouse gases emissions.

2.3.3 The scheme benefits are consistent with the Strategic Case's goals, which include promoting sustainable means of transportation, reducing traffic congestion, and improving air quality and public health.

*Table 15: Monetised Benefits (2010 prices and values) from AMAT*

| | Congestion benefit | Infrastructure maintenance | Accident | Local air quality | Noise | Greenhouse gases | Reduced risk of premature death | Absenteeism | Journey ambience |
|---|---|---|---|---|---|---|---|---|---|
| Section 1 | 103,437 | 2,203 | 15,797 | 2,298 | 811 | 25,442 | 4,161,055 | 584,278 | - |
| Section 2 | 23,589 | 502 | 3,602 | 524 | 185 | 5,802 | 990,199 | 147,324 | 264,548 |
| Section 3 | 12,912 | 275 | 1,972 | 287 | 101 | 3,176 | 529,581 | 76,403 | - |
| Section 4 | 21,522 | 458 | 3,287 | 478 | 169 | 5,294 | 896,412 | 132,019 | - |
| Section 5 | 5,001 | 107 | 764 | 111 | 39 | 1,230 | 228,782 | 37,665 | 131,000 |
| Section 6 | 19,151 | 408 | 2,925 | 426 | 150 | 4,710 | 793,222 | 115,966 | 215,561 |
| **£, 2010 PV over 20-year appraisal period*** | **82,175** | **1,750** | **12,550** | **1,826** | **644** | **20,213** | **3,438,196** | **509,376** | **611,108** |

**Total in this table excludes Section 1 benefits*

*Table 16: AMAT Benefits by category (2010 prices and values)*

| AMAT Section | Mode Shift | | Health | | Journey Quality | |
|---|---|---|---|---|---|---|
| Section1 | 121,245 | 2.49% | 4,745,333 | 97.51% | 0 | 0.00% |
| Section 2 | 27,651 | 1.93% | 1,137,522 | 79.56% | 264,548 | 18.50% |
| Section 3 | 15,135 | 2.44% | 605,984 | 97.56% | 0 | 0.00% |
| Section 4 | 25,228 | 2.39% | 1,028,431 | 97.61% | 0 | 0.00% |
| Section 5 | 5,862 | 1.45% | 266,447 | 66.07% | 131,000 | 32.48% |
| Section 6 | 22,448 | 1.96% | 909,188 | 79.25% | 215,561 | 18.79% |
| **£, 2010 PV over 20-year appraisal period*** | **96,323** | | **3,947,572** | | **611,108** | |

**Total in this table excludes Section 1 benefits*

# 2.4 Appraisal Results

2.4.1 The benefits and costs are consolidated in Table 17. The ratio of the Present Value of Costs (PVB) and the Present Value of Benefits (PVC), indicating the relative costs and benefits of the proposed intervention is Benefit Cost Ratio (BCR) of the overall scheme. A BCR of greater than 1 implies that every £1 spent delivers at least £1 worth of benefits. For Fulbourn Greenway the BCR ratio is 1.54 indicating an initial 'medium' value for money. As described in Section 2.3.1, section 1 benefits have been excluded from the overall monetised benefits and are not included within the Present Value of benefits presented in Table 17 and Table 18.

*Table 17: Analysis of Monetised Costs and Benefits (2010 prices and values)*

| **Analysis of Monetised Costs and Benefits** | **£, 2010 PV over 20-year appraisal period** |
|---|---|
| Noise | 644 |
| Local Air Quality | 1,826 |
| Greenhouse Gases | 20,213 |
| Journey Quality | 611,108 |
| Physical Activity | 3,947,572 |
| Accidents | 458,101 |
| Economic Efficiency: Consumer Users (Commuting) | 25,646 |
| Economic Efficiency: Consumer Users (Other) | 44,326 |
| Economic Efficiency: Business Users and Providers | 12,203 |
| Wider Public Finances (Indirect Taxation Revenues) | -22,835 |
| Present Value of Benefit (PVB) | 5,098,804 |
| Present Value of Costs (PVC) | 3,305,376 |
| Net Present Value (NPV) | 1,780,198 |
| Benefit Cost Ratio (BCR) | 1.54 |

*Table 18: Cost Benefit Analysis, £,2010 prices and values*

| | **PVB** | **PVC** | **BCR** |
|---|---|---|---|
| **Complete Fulbourn Greenway Scheme** | 5,098,804 | 3,305,376 | 1.54 |

# 2.5 Sensitivity Tests

2.5.1 Sensitivity testing has been carried out to understand how sensitive appraisal outputs are when the inputs are changed. The following sensitivity tests have been carried out, drawing on the key assumptions made in the core scenario:

- Test 1: 50% reduction in cyclist demand compared to core scenario
- Test 2: 25% reduction in cyclist demand compared to core scenario
- Test 3: 25% increase in cyclist demand compared to core scenario
- Test 4: No pedestrian demand uplift
- Test 5: 30-year appraisal
- Test 6: Accidents reduced by 50%
- Test 7: 46% optimism bias (Capital cost w/o risk considered)
- Test 8: Capital costs including risk / no optimism bias (Capital cost with risk is considered)

2.5.2 The table below shows the impact on PVB, PVC, and BCR of each of these tests compared to the BCR for the core scenario.

*Table 19: Sensitivity Analysis (2010 prices and values)*

| Test | PVB (£m) | PVC (£m) | BCR |
|---|---|---|---|
| **Core Scenario** | | | **1.54** |
| Test 1: 50% reduction in cyclist demand compared to core | 3,461,846 | 3,305,376 | 1.05 |
| Test 2: 25% reduction in cyclist demand compared to core | 4,138,091 | 3,305,376 | 1.25 |
| Test 3: 25% increase in cyclist demand compared to core | 5,916,950 | 3,305,376 | 1.79 |
| Test 4: No pedestrian demand uplift | 4,476,172 | 3,305,376 | 1.35 |
| Test 5: 30-year appraisal period | 7,119,539 | 3,305,376 | 2.15 |
| Test 6: 50% reduction in accident benefit | 4,858,577 | 3,305,376 | 1.47 |
| Test 7: 46% optimism bias | 5,098,805 | 3,923,450 | 1.30 |
| Test 8: Capital cost including risk / no optimism bias | 5,098,805 | 3,438,870 | 1.48 |

2.5.3 The sensitivity testing shows that the BCR is most sensitive to cyclist demand. Changing cycling demand inputs shows the value from money ranges from ‘low’ to ‘medium’.

2.5.4 The pedestrian demand does not have a large impact on the overall BCR. If the proposed Fulbourn Greenway does not have any additional demand from pedestrians, the BCR falls just below a ‘medium’ value for money category. Reducing the overall accident benefits, the proposed Fulbourn Greenway still maintains a ‘medium’ value for money.

2.5.5 Increasing the costs (46% optimism bias and including risk) lowers the BCR and value for money category to ‘low’. However, this just falls below the threshold for ‘medium’ value money. Lastly, increasing the appraisal period to 30 years moves the value for money category to ‘high’.

2.5.6 Eight sensitivity tests have been undertaken to provide confidence around the core economic assessment. While there is a range of BCRs for different scenario tests, they show that the BCR does not fall below 1 and have a ‘poor’ value for money on any of the tests. There are also changes in assumptions that result in an increase in VfM to a ‘high’ category. This demonstrates that the initial ‘medium’ VfM is robust, with significant changes in demand (over 50% reduction in cyclist demand growth for example) required to reduce the BCR to below 1.

# 2.6 Environmental Impacts

2.6.1 Environmental Impact Appraisal is undertaken as part of the transport appraisal process in line with TAG unit A3. The environmental impacts of the proposed Fulbourn Greenway are described below. These have been monetised where possible within AMAT. TAG worksheets for the environmental impacts assessed qualitatively are provided in Appendix D.

## Noise

2.6.2 Modal shift to active travel will reduce car kilometres and consequently reduce noise from road traffic. AMAT monetises the noise benefits as £644 (2010 prices and values).

## Air Quality

2.6.3 The Fulbourn Greenway will encourage a mode shift to active modes, reducing car kilometres and consequently improving air quality on key routes into Cambridge. AMAT monetises the air quality benefits as £1,826 (2010 prices and values).

## Greenhouse Gases

2.6.4 The mode shift from car to active modes reduces car kilometres which will decrease greenhouse gas emissions. AMAT monetises the greenhouse gas benefits as £20,213 (2010 prices and values).

## Townscape

2.6.5 The proposed Fulbourn Greenway will be notable at construction but would be short term and temporary in effect. Construction activities are not out of character with a built-up area.

2.6.6 During operation, changes will be largely imperceptible in the wider townscape causing no effect to layout, density, scale and cultural contribution. However the impact of any bright coloured thermoplastic surfacing should be carefully considered in the designated locality of the Conservation Areas to ensure the shade does not impact on the appearance of the culturally rich townscapes. Any bright colours could potentially result in a slight adverse effect.

2.6.7 Overall, the changes are minor and do not impact wider townscape character and offer only minor changes to localised visual receptors.

2.6.8 The overall impact is **neutral**.

## Historic Environment

2.6.9 There are four Conservation Areas and six Grade II listed buildings the settings of which may be impacted to by the proposed Fulbourn Greenway. There are two scheduled monuments and two registered parks and gardens within the 1km study area, but these assets will not be impacted by the proposed Fulbourn Greenway.

2.6.10 The western limit of Proposed Scheme is adjacent to the eastern edge of the New Town And Glisson Road Conservation Area; it passes along the southern edge of Mill Road Conservation Area; it passes along the northern edge of the Fulbourn Hospital Conservation Area; it passes through the Fulbourn Conservation Area. There will be a direct impact on the four Conservation Areas resulting from small-scale changes.

2.6.11 The proposed Fulbourn Greenway, as currently designed, would have a neutral effect on the designated heritage assets within the study area of the Proposed Scheme through changes to the setting.

2.6.12 An assessment of the non-designated assets has not been completed at this stage. The proposed Fulbourn Greenway has the potential to result in the partial or complete loss of buried heritage assets in areas where ground disturbance is proposed outside of the existing highway. Potential archaeological remains relating to the site of the former Mortuary Chapel and burial ground associated with Fulbourn Asylum may be at risk of partial or complete loss dependent upon the nature of any ground disturbance proposed in that area.

2.6.13 The overall impact is **neutral**.

## Biodiversity

2.6.14 The proposed works are within 2 km of three Sites of Special Scientific Interest (SSSIs), Fulbourn Fen SSSI, c.725m east of the Project start/finish in Fulbourn, Cherry Hinton Chalk Pit SSSI, c.990m south of the Project route through Cherry Hinton and Great Wilbraham Common SSSI c.1300m east of the proposed works in Fulbourne. The proposed works have minimal potential to impact these designated sites.

2.6.15 Five local nature reserves are present within 1 km of the proposed works, Limekiln Close and West Pit LNR in 700m south of the proposed works, East Pit Local Nature Reserve (LNR) is 760 m south of the works, Barnwell LNR is c.745 m north of the Project Route from Brookfields, Barnwell II LNR is c.625m north of the Project Route from Brookfields and Coldham's Common LNR is c.720m north of the Project Route from Brookfields. The proposed works have minimal potential to impact these Local Nature Reserves.

2.6.16 Within the vicinity of the works there are a range of notable and priority habitats, however the habitats of notable value likely to be impacted by the works are limited to hedgerows and trees. There is potential that trees will require removal to facilitate the works. In addition, a number of trees along the works corridor are covered by Tree Preservation Orders (TPOs). There are also other habitats along the route including scrub and grassland, that although not priority habitats, have biodiversity and green infrastructure value. The project may need to deliver biodiversity net gain which should be considered from the design stage.

2.6.17 There is potential for a range of protected species to be impacted by the proposed works. The trees and hedgerows that may be removed are likely to support nesting birds and may support roosting bats. The verges along the route are likely to support reptiles, and there is potential for great crested newts to be present in suitable terrestrial habitats along the route (although no ponds are known to be likely to be impacted by the works). There is potential for badger setts to be present along the route. Lighting of the route may impact foraging and commuting bats. It is not considered that otter and water vole have the potential to be impacted the works. Considering the scale of the proposed works, it is considered that potential impacts to protected and notable species could be managed through avoidance and mitigation.

2.6.18 The overall impact is **slight adverse**.

## Water Environment

2.6.19 The site boundary spans two hydrological catchments, the Cherry Hinton Brook to the west and the Bottisham Lode to the east. Both of these watercourses are Water Framework Directive (WFD) surface waterbodies with a current status of Moderate. The underlying groundwater body, the Cam and Ely Ouse Chalk, is a designated Principal aquifer, of strategic importance for public water supply, and has a current WFD status of Poor.

2.6.20 The Cherry Hinton Brook does not have an extensive floodplain and there are no areas of the Bottisham Lode floodplain within the study area. Areas at risk of surface water flooding are also relatively limited, with some areas of 'medium risk' (chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) each year). Environmental Agency mapping notes that flooding from groundwater is unlikely within the study area.

2.6.21 With good practice measures in place to control pollution risks and surface water runoff during construction and assuming suitable drainage provision for the operational scheme, it is assessed that the impacts on water environment receptors would range from having a Low Significance to Insignificant.

2.6.22 The overall impact is **neutral**.

# 2.7 Social Impacts

2.7.1 As per TAG unit A4-1 'Social impacts cover the human experience of the transport system and its impact on social factors, are not considered as part of economic or environmental impacts. Each social impact is required to be assessed as part of the appraisal and an assessment entered into the Appraisal Summary Table (AST)'. The eight social impacts are monetised or assessed qualitatively below.

## Reliability

2.7.2 The proposed Fulbourn Greenway is likely to improve reliability for those cycling and walking between Fulbourn, Cherry Hinton and Cambridge. A reduction in car kilometres is also likely to improve reliability for motorists. The overall impact is **slight beneficial**.

## Physical Activity

2.7.3 Improving cycling and walking infrastructure and increasing connectivity by active travel to Cambridge is likely to encourage people to walking and cycle instead of driving. This is going to lead to health benefits through increased physical activity. The benefits have been monetised within the AMAT assessment. AMAT calculates the total health benefits as circa £7.6m.

## Journey Quality

2.7.4 Upgrades to the cycling and walking route along the Fulbourn Greenway is likely to improve the level of facilities. This will in turn improve travellers' views of the area and increase their view and pleasantness of the surroundings. Journey quality for the relevant sections is monetised through AMAT. AMAT calculates the total journey quality benefits as circa £612,000.

## Accidents

2.7.5 The Fulbourn Greenway improves safety for pedestrians and cyclists through safer and more segregated infrastructure. Furthermore, accidents will reduce as a result of mode-shift to active modes, reducing cars on the road and overall car kilometres. Accident benefits have been monetised through an accident assessment and through AMAT. The accident benefits have been calculated as circa £458,000.

## Security

2.7.6 Improvements to cycling and walking infrastructure increases the number of users and therefore, increase the perception of safety through better informal surveillance. This is especially prevalent on those segregated routes e.g. between Cherry Hinton High Street and Yarrow Road. Any improved lighting provision will also increase in the perception of safety. The overall impact is **slight beneficial**.

### Access to Services

2.7.7 The proposed Fulbourn Greenway will improve access by cycling and walking to health care, jobs and education by active modes between Cambridge, Fulbourn and Cherry Hinton. As mentioned within the security impacts it is likely to reduce the fear of crime or antisocial behaviour. However, the Greenway is not likely to have an impact on public transport services, therefore, the overall impact is **slight beneficial**.

### Affordability

2.7.8 The proposed Fulbourn Greenway will help encourage people to shift to active travel modes, this reduces the cost of travel relative to car operating costs. Therefore, the overall impact is **slight beneficial**.

### Severance

2.7.9 The proposed Fulbourn Greenway has a number of improved crossings for active travel users, this will help reduce severance across key roads along the route. This is likely to have a greater benefit for pedestrians and the overall impact is **slight beneficial**.

### Option and non-use values

2.7.10 The proposed Fulbourn Greenway does not include “measures that will substantially change the availability of transport services within the study area” and therefore, this is not assessed.

## 2.8 Distributional Impacts

2.8.1 TAG Unit A5-2 states that ‘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.

2.8.2 The DI assessment considers 9 indicators which include:

- Noise
- Air Quality
- User Benefits
- Accidents
- Severance
- Accessibility
- Security
- Affordability

2.8.3 TAG Unit A4-1 states that a DI should be a proportionate approach, with a screening undertaken to determine whether each indicator needs to be assessed. A screening assessment for the Fulbourn Greenway has been carried out. If the screening assessment meets the appraisal outcome criteria for further assessment, a proportionate approach has been undertaken and the impacts assessed qualitatively. The assessment is provided in Table 20.

*Table 20: DI Assessment Screening Proforma*

| Indicator | Appraisal Output Criteria | Potential Impact | Qualitative Comments |
|---|---|---|---|
| User Benefits | The Transport User Benefits Assessment (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, neutral. | There could be journey time benefits for those travelling by car. This will be as a result of mode shift to active travel reducing the number of cars on the road in turn improving journey times.<br><br>There are likely to be no journey time impacts for cyclists or pedestrians as a result of using the greenway.<br><br>There is no significant deprivation along the route therefore, the overall impact is neutral. |
| Noise | Any change in alignment of transport corridor or any links with significant changes ( >25% or <-20%) in vehicle flow, speed or % Heavy Duty Vehicle (HDV)content. Also note comment in TAG Unit A3. | Yes, slight beneficial | There are no significant changes in flow, speed or HDV content. Therefore, a further assessment is not required.<br>The beneficial impacts are likely to come from decongestion benefits due to modal shift to active modes. The overall impact is slight beneficial. |
| Air Quality | Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %Heavy Goods Vehicle (HGV) content:<br>• Change in 24-hour Average Annual Daily Traffic (AADT) of 1000 vehicles or more | Yes, slight beneficial | There are no significant changes in flow, speed or HDV content. Therefore, a further assessment is not required.<br>The beneficial impacts are likely to come from decongestion benefits due to modal shift to active modes. The overall impact is slight beneficial. |

| Indicator | Appraisal Output Criteria | Potential Impact | Qualitative Comments |
|---|---|---|---|
| | • Change in 24-hour AADT of HGV of 200 HGV vehicles or more<br>• Change in daily average speed of 10kph or more<br>• Change in peak hour speed of 20kph or more<br>Change in road alignment of 5m or more | | |
| 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 number of pedestrians, cyclists or motorcyclists using road network. | Yes, slight beneficial | The improvements to the route are likely to make it safer for pedestrians and cyclists to travel. This is important for those without access to a car. The overall impact is likely to be slight beneficial. |
| Security | Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security. | Yes, slight beneficial | Due to the increased attractiveness of the route, there will be more users increasing informal surveillance and the perception of personal security. This will likely benefit vulnerable users. The impact is slight beneficial. |
| 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, moderate beneficial | Providing a cycling and walking connection between Cambridge, Cherry Hinton and Fulbourn will help reduce severance between communities. Improvements to crossings such as the one towards Snakey Path will help reduce severance for vulnerable users and those without access to a car. The overall impact is moderate beneficial. |
| Accessibility | Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, | No impact on timings or routings to | The proposed Fulbourn Greenway is unlikely to significantly impact accessibility. However, it may provide some |

| Indicator | Appraisal Output Criteria | Potential Impact | Qualitative Comments |
|---|---|---|---|
| | 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). | public transport services. | accessibility benefits to those without access to a car to help access jobs, health care and education along the Greenway. The overall impact is neutral. |
| 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 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) | Yes, neutral | The greenway is unlikely to have a significant impact on affordability. However, mode shift to cycling and walking will reduce the cost of travel. This will likely benefit those in the most deprived areas. There are no areas of significant deprivation in the study area. Therefore, the overall impact is neutral. |

# 2.9 Value for Money Statement

2.9.1 **The overall BCR of the Fulbourn Greenway is 1.54 which is categorised as 'medium' value for money.**

2.9.2 The main benefits are a reduced risk of premature death as a result of health benefits from people taking up cycling and walking as a result of the proposed Fulbourn Greenway. The Greenway also has absenteeism benefits, marginal external costs benefits (decongestion, air quality, noise, greenhouse gases and accident) and journey quality benefits. The total benefits are circa £5.1m (2010 prices and values) and the total costs £3.3m (2010 prices and values).

2.9.3 The results of the sensitivity testing show that with changes to the cyclist demand the value for money category falls into 'low', however, the BCR remains above 1. With a 30-year appraisal period, the value for money category is 'high'. Increases in costs indicate that the value for money category may fall below 'medium', however, it still maintains a BCR of 1.3 and above.

2.9.4 There are many other benefits which cannot be monetised within AMAT, such as journey quality benefits associate with the widening of the current infrastructure and lighting. There are also a number of social benefits which include security, severance and affordability. These all help strengthen the value for money case.

# 3 Financial Case

## 3.1 Introduction

3.1.1 This chapter demonstrates the initial affordability of the Fulbourn Greenway scheme to establish the Financial Case. Identified scheme costs and funding cover for the development and implementation of Fulbourn Greenway are presented.

## 3.2 Scheme Costs

3.2.1 Table 21 presents scheme costs (concept design estimate) and a cost profile for Fulbourn Greenway. Arcadis have estimated the capital costs based on existing high-level concept information, limited to the Civils and structures. Budget Estimate also excludes costs associated with traffic data acquisition, namely traffic survey and signal data fees. Appendix E contains a cost plan for the scheme. The estimate has been based on the current market rates. The costs are subject to change in the procurement routes, material selection and external factors. As the design develops, the cost estimate will evolve along with the assumptions that have been made.

3.2.2 Indirect construction costs include contractor fee, traffic management and night working. Indirect non-construction costs include statutory undertaker and professional fees/local authority fees. An allowance has been included for utility diversions, which are likely to be required but at the time of this estimate are unknown and unquantified. Anticipated professional fees, management and direct costs have also been incorporated into this estimate on a percentage basis. Allowances have been included for commuted sums and Network Rail fees associated with the new bridge.

3.2.3 The outturn cost estimate is based on the concept design scheme drawings and assumes scheme opening in 2026, with planned completion of construction by December 2025. Any delay to the scheme opening is likely to result in an increase in costs from those presented here.

3.2.4 Including a 5.59% inflation allowance, 30% allocation for risk and the assumptions stated above, it is estimated that the Fulbourn Greenway scheme will cost approximately £6.48m.

*Table 21: Fulbourn Greenway Scheme Costs, £, Q1, 2023 Prices*

| Item | 2024 | 2025 | Total |
|---|---|---|---|
| Direct Construction Costs | 1,184,133 | 1,184,133 | 2,368,266 |
| Indirect Construction Costs | 75,699 | 75,699 | 151,398 |
| Indirect Non-Construction Costs | 1,099,129.50 | 1,099,129.50 | 2,198,259 |
| **Sub-total (excluding risk and inflation)** | **2,358,961.50** | **2,358,961.50** | **4,717,923** |

| Item | 2024 | 2025 | Total |
|---|---|---|---|
| **Scheme Total (including risk and inflation)** | **3,238,075.50** | **3,238,075.50** | **6,476,151** |

3.2.5 The Greenways schemes will incur maintenance costs. A Greenway Maintenance Guide has been produced by the GCP. Cambridgeshire County Council and the GCP are assessing the costs of maintaining the Greenways network in coordination with the County Council's Highways team to apply for maintenance funding to accompany the development funding. This will provide the resources required by the maintenance teams to uphold the quality of the Greenways network. It is not expected that the maintenance costs will be excessive and in some locations the Greenways will upgrade existing degraded cycling infrastructure.

3.2.6 As Fulbourn Greenway improves mainly existing infrastructure, it is not envisioned that maintenance costs will result in any exceedances as a result of the scheme. Fulbourn Greenway will require interventions similar to other Greenways such as pothole filling, siding out, tree root damage and surface cracks filling, adding to the cost of maintaining the network.

## 3.3 Funding Cover

3.3.1 Fulbourn Greenway's development and implementation will be funded by GCP through City Deal funding. The City Deal funding aims to enable the GCP to promote economic growth and development. However, the GCP is looking to secure an appropriate proportion of the costs from local developer contributions through the planning process and some of the Greenways have S106 agreements in place. Third party funding will be reviewed for each Greenway project. The GCP is also seeking opportunities to bid for other development funds such as the Transforming Cities Fund and National Highways designated funding to consolidate the GCP's overall programme budget.

# 4 Commercial Case

## 4.1 Introduction

4.1.1 Consistent with the overall approach for the Greenways Programme, this chapter establishes the Commercial Case for Fulbourn Greenway specifically, including the proposed procurement approach, payment mechanisms, risk allocation and contract management processes.

## 4.2 Procurement Approach

4.2.1 External support for tasks such as Design, Early Contactor Involvement and Communications (where not available internally) on the Fulbourn Greenway scheme will be procured using established Cambridgeshire County Council contracts or Government Procurement Frameworks. For Fulbourn Greenway, WSP has been procured for the design role under the Joint Professional Services Framework (JPSF), as shown in Table 22. JFG Comms via WSP is supporting the communications activities, CBRE are acting as Land Agents, Pathfinder Legal are providing legal services, and Milestone (formerly Skanska) has been appointed as ECI contractor for the scheme. This appointment has been made via Cambridgeshire County Council's Highways Framework Contract ECI during 2022 into main construction.

*Table 22: Programme Contractors and Consultants*

| Consultant | Role | Procurement Route |
|---|---|---|
| Atkins | Design, Business Case, Planning and main consultant for Waterbeach, St Ives, Sawston and Melbourn Greenways | Joint Professional Services Framework |
| WSP | Design, Business Case, Planning and main consultant for Comberton, Haslingfield, Barton, Fulbourn, Swaffhams, Horningsea and Bottisham Greenways | Joint Professional Services Framework |
| JFG Comms | Support the Communications activities required including day to day management of stakeholders and landowners | Joint Professional Services Framework via WSP |
| CBRE | Land Agents for the scheme, to value, negotiate and organise acquisition of land for the Greenways | Crown Commercial Services Framework |
| Pathfinder Legal | Legal support for land acquisition and any rights requirements | County Council Legal Services Agreement |
| Milestone | Early Contractor Involvement | CCC Highways Contract |

4.2.2 Milestone Infrastructure has successfully managed and carried out similar construction works in and around Cambridge, for example the Histon Road project. Milestone Infrastructure has also committed to developing a major projects team to work on larger scale projects demonstrating Milestone's commitment to providing the necessary resources for the implementation of the Greenways network.

4.2.3 GCP is satisfied that Milestone continues to have:

- 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

4.2.4 Early contractor involvement is expected to be incorporated with the traditional approach of separate contracts for the design and construction works for each of the individual Greenways' schemes. This will allow close control of the design process by the client, but also enable the delivery contractor to influence the design to reduce risks and cost by using their experience of the buildability and risks of designs.

### Construction Procurement

4.2.5 Under the County Council's Highways Term Service Framework (TSF), the project has access to Milestone Infrastructure to deliver the main construction of the scheme. Milestone are well placed as they also deliver the maintenance of the network, are in close liaison with Street Works and have already competitively tendered to win the TSF. They also have smaller teams able to do work that is relatively minimal, for example widening of existing footpaths in a more agile way than other frameworks or a full tender process would allow. However, it may be that other contractors are required to complete the scheme given the overall volume of works to deliver the overall Greenways Programme. In this situation, the primary option would be utilisation of the Eastern Highways Alliance Framework which provides access to multiple major contractors.

## 4.3 Payment Mechanism

4.3.1 New Engineering Contract (NEC) contract target cost Option C is the main payment option mechanism to be used for Milestone. Option C, involving an activity schedule that shares out-turn financial risks between the client and contractor in an agreed proportion[41], is GCPs preferred option. GCP has Option A and Option E available.

[41] https://www.neccontract.com/products/contracts/nec3/engineering-and-construction-contract/option-c

## 4.4 Risk Allocation

4.4.1 An overall risk register has been produced for the Greenways programme. A scheme specific management of risk will be undertaken using risk management plans for Fulbourn Greenway. Specific factors pertaining to Fulbourn Greenway, 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 will be considered in making an informed decision to allocate risk. The approach will be to ensure that the contractual arrangements for the delivery of Fulbourn Greenway places risks with the party best positioned to deal with them.

## 4.5 Contract Management

4.5.1 The Programme Manager, employed by GCP, has day to day responsibility for the delivery of the scheme. The Programme Manager also is responsible for management of the contracts for the design and delivery of the Fulbourn Greenway scheme.

# 5 Management Case

## 5.1 Introduction

5.1.1 The purpose of the management dimension of the business case is to demonstrate that robust arrangements are in place for the delivery, monitoring and evaluation of the scheme.

5.1.2 Demonstrating that the project can be successfully delivered requires evidence of successful delivery of similar projects, evidencing that the scheme is being managed in accordance with best practice, and that the necessary arrangements are in place for change and contract management, benefits realisation and risk management.

5.1.3 The GCP will deliver Fulbourn Greenway as part of the Greenways programme using delegated powers from Cambridgeshire County Council, although in some areas such as Right of Way restrictions the GCP will rely on the County Council's statutory powers.

5.1.4 As a relatively new consortium, the GCP has delivered a limited number of schemes within the current City Deal. However, the constituent members of the GCP have a long history of successfully delivering schemes both large and small in scale, to time and budget. Cambridgeshire County Council has successfully delivered large-scale public transport and active mode orientated transport projects in recent years, including those shown in Table 23.

*Table 23: Evidence of Similar Projects (Source: Greater Cambridge Greenways POC)*

| | **Objectives & Scope** | **Implementation** |
|---|---|---|
| Chisholm Trail Phase 1 (£21m) | The 2.1km long Phase 1 of the Chisholm Trail is a walking and cycling route which aims to provide a mostly traffic-free route between Cambridge North and Cambridge stations and intermediate communities. | Phase One opened in December 2021, connecting Cambridge North to Coldham's Lane. Phase one of the trail is a joint project between the GCP and Cambridgeshire County Council |
| Babraham Road cycleway improvement works (£6m) | The 1.1km long 2.5m wide cycleway connects the Babraham Research Campus and Babraham with surrounding villages. | The cycleway was completed in December 2017 and delivered by Cambridgeshire County Council contractors. |
| Fendon Road roundabout (£2.1m) | Fendon Road roundabout is the UK's first Dutch-style roundabout which is designed with an outer ring for cyclists, in a contrasting red surface, to give them equal priority with pedestrians over oncoming vehicles to provide a safer cycling and pedestrians. | The scheme was opened in August 2020, and implemented by Cambridgeshire County Council and contractors, Milestone. |

| | Objectives & Scope | Implementation |
|---|---|---|
| Fen Ditton and Stow-cum-Quy. (Five Cross City Cycling Schemes total of £8m) | Construction of a new foot/cycleway on Ditton Lane and Horningsea Road which is part of the Cross City Cycling schemes being funded by the GCP. | The scheme was delivered by the GCP. |
| The Cambridge Core Traffic Scheme (c.£7m[42]) | This scheme delivered improved access for pedestrians, cyclists and public transport through traffic management and priority measures in the area bounded by the inner ring road.<br>Delivery of this project demonstrates the ability of the promoters to think about the full impacts of a public transport scheme. | The measures were implemented in phases from 1997, promoting sustainable travel modes to improve the city centre environment.<br>Between 1993 and 2003 the number of private vehicles in the city centre reduced by 15%. Public transport patronage on routes into Cambridge also increased. |
| Cambridgeshire Guided Busway (c.£150[43]) | This busway was designed to provide a high-quality public transport connection between Huntingdon and St Ives, to the northwest of Cambridge, and Addenbrooke's Hospital and Trumpington Park & Ride to the south of Cambridge. | The overall route is 42km long with 25km of that being guided busway and 17km of on-street provision including bus priority measures. Access to Cambridge City Centre is provided via on-street running.<br>Construction began in July 2006 with the busway opened in August 2011.<br>Although there were challenges during the delivery of the scheme, learning from this can benefit the delivery of future significant transport measures in the county. |
| Histon Road (c.£10.6m)[44] | The Histon Road project aims to provide better bus, walking and cycling facilities for those travelling on this busy key route into Cambridge. This is to be achieved through:<br>A new bus lane from Blackhall Road to Carisbrooke Road,<br>New bus stop bypasses for cyclists<br>Improved cycle lanes<br>2 new pedestrian crossings<br>Removal of on-street parking | This scheme was completed in December 2022 |

[42] This is an estimate as the scheme was implemented over several phases since 1996 and includes a range of supporting measures

[43] Total cost of the Cambridgeshire Guided Busway including £109m contribution from Cambridgeshire County Council.

[44] https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/histon-road-background

# 5.2 Complementary Schemes

5.2.1 The Greater Cambridge Greenways Programme forms part of the GCP's wider strategy to create better and greener transport networks. There are several planning and transport proposals which have varying degrees of synergy with the objectives of the Greenways project.

5.2.2 In addition to the complementary schemes outlined in the Strategic Case, the following schemes are identified in addition to the Cambridge City Access, Chisholm Trail and general Greenways development.

### Cross City Cycling Project

5.2.3 In January 2015, the Executive Board agreed that the Cross City Cycling projects should form part of the City Deal programme. The Cross City Cycling projects are a network of five cycling routes linking residents to workplaces and other centres of activity. These projects are as follows:

- Arbury Road
- Cambridge North Railway Station and Science Park
- Ditton Lane & Links to East Cambridge
- Hills Road and Cambridge Biomedical Campus
- Fulbourn/Cherry Hinton Eastern Access

5.2.4 The GCP has worked with partners in the County Council and contractors to deliver these projects which aim to reduce congestion and encourage cycling as a healthier mode of transport. These projects located on radial routes in residential areas improved connectivity with the city centre and are complementary to the Greenways network connecting the city with the surrounding rural villages.

### High Quality Public Transport (HQPT) Corridors

5.2.5 Four HQPT designated corridors are identified in the 2030 strategic plan for Greater Cambridge. These corridors will focus on improving public transport connectivity between residential areas including new housing developments and employment centres across Cambridge either directly or through interchange to other public transport services and active modes. The HQPTs connectivity and capacity improvements will also enhance investment opportunities along each of the four designated corridors which together with active mode enhancements offered by the Greenways and the other cycling projects in Greater Cambridge will offer a package of quality alternatives to the car.

# 5.3 Programme Governance and Roles

5.3.1 This section describes the programme governance and roles of the entities. The overall structure is shown in Figure 24.

### Executive Board

5.3.2 The delivery of the Project will involve at least 5 key stage decisions to be taken by the Executive Board, as follows:

- Decision to proceed with the development of the Project (Complete)

- Consideration of options and approval to consult on initial options (Complete)
- Selection of a preferred option following consultation and agreement to take forward preliminary design
- Approval of preliminary design and Outline Business Case with agreement to enter relevant statutory processes and the preparation of a full business case
- Final approval to implement the project and complete a Detailed Design

## Transport Programme Board

5.3.3 The Transport Programme Board is the regular decision-making body for the Greenways, it takes decisions by exception on matters raised by the Senior Project Managers. It is held on a monthly basis with Highlight reports provided one week in advance of the meetings. It is the responsibility of the Senior Project Managers to attend the Board and ensure they are provided with any issues which are in exception.

5.3.4 A project is in exception if:

- The project will not deliver the objectives agreed with the Executive Board
- The forecast overall cost of the project exceeds what has been reported to the Executive Board
- The forecast completion of the project exceeds the date reported to the Executive Board
- A key decision milestone is forecast to be missed by 3 months (in line with the Executive Board cycle of meetings)
- A project is at risk of causing significant reputational damage to GCP or its partners

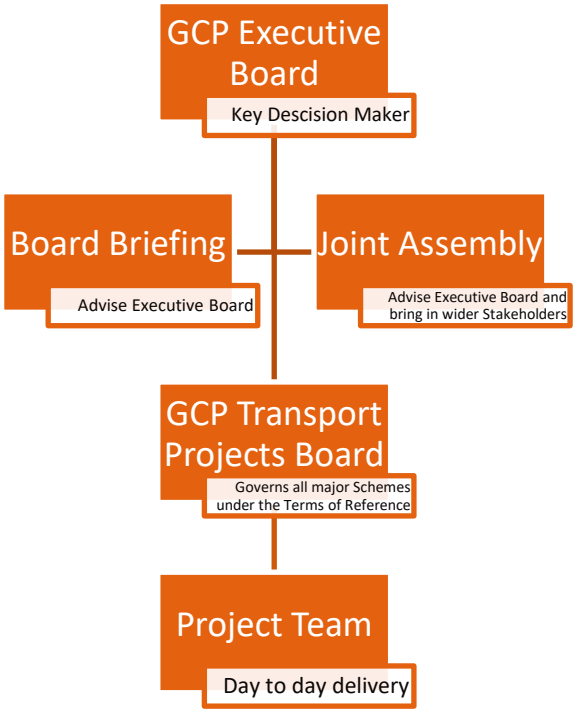


*Figure 24: Overall Programme Governance Structure (Source: Greater Cambridge Greenways POC)*

## Cycling Projects Meeting

5.3.5 The Cycling Projects Meeting is primarily a coordination meeting between the different Active Travel projects. It includes:

- Construction Programming, including prioritisation of routes (before ultimate sign off by Transport Programme Board)
- Decisions on design options (unless controversial at which point, they will be escalated)
- Initial review of documents including the overall Business Case for the Greenways and design principles (before going on to appropriate decision-making bodies such as the Transport Programme Board)
- Decisions on timing of communications with the public and stakeholders

## Resources

5.3.6 The Greenways is a complex programme of works. Therefore, the following section sets out how the scheme will be managed. Figure 25 sets out the structure of the team.

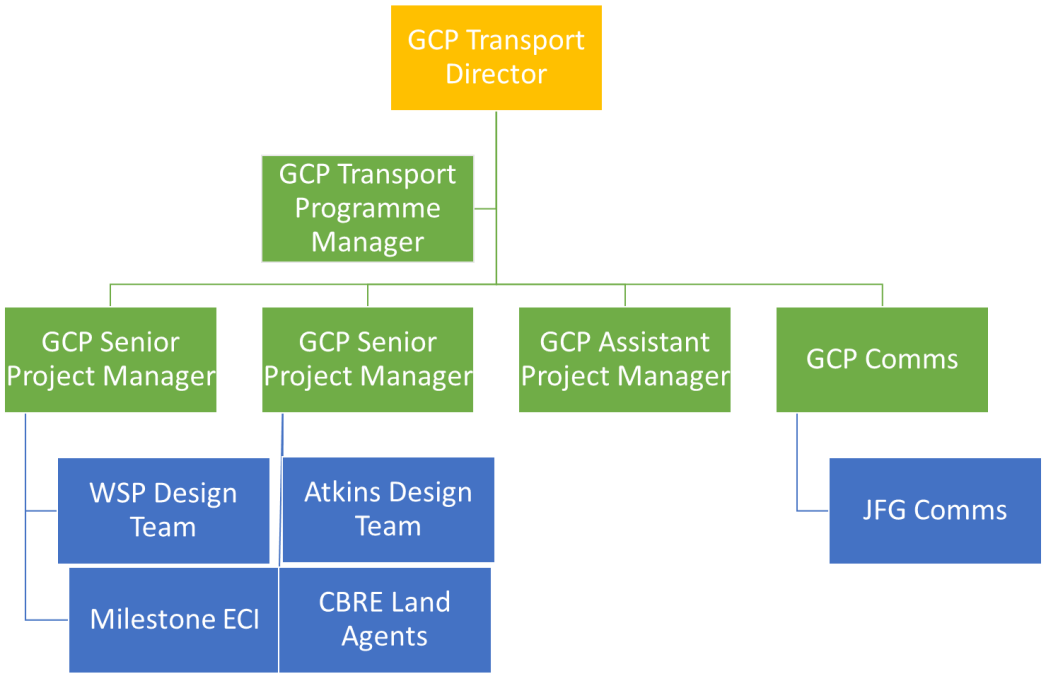


*Figure 25: Structure of the Greenways Management Team (Source: Greater Cambridge Greenways POC)*

5.3.7 The roles and responsibilities of each of the management team is detailed below.

## Internal GCP Resources

5.3.8 The internal GCP resources are set out below.

## GCP Transport Director

- Overall accountable for the project, responsible for the structure of the project team and owns the Business Case
- Monitor & control the project tolerance at a strategic level
- Make decisions on escalated issues

## GCP Transport Programme Manager

- Responsible for monitoring and reporting on the programme budget to Transport Programme Board (TPB)
- Responsible for ensuring that Project Managers are adhering to the Assurance Framework
- Overall responsibility for producing the Procurement Strategy (ie. Working with Project Managers to ensure the appropriate options are available)
- Monitors the progress of the programme against agreed key milestones (aligned to the reporting cycle for GCP)
- Resolutions of day to day issues (specific to Greenways Programme only)
- Escalates significant issues to GCP Transport Director
- Sign off of all key contract documentation where commercially sensitive (specific to Greenways Programme only)

## GCP Senior Project Managers

5.3.9 The Senior Project Manager will run the programme on a day-to-day basis in accordance with this document. The main responsibilities of the Project Manager are to:

- Face of the project, representing GCP at main stakeholder events to provide updates on the projects;
- Responsible for the relationship with key stakeholders including County, District and Parish Councils as well as bodies such as National Highways and Network Rail
- Deliver the project to a required specification and quality within budget and according to plan
- Direct and motivate project support resources
- Project manage and plan all stages of the project
- Prepare project, stage and exception plans
- Manage project risks (includes contingency planning)
- Monitor progress, expenditure and resources, initiating corrective action as required
- Keep the Transport Programme Board informed of deviations in plans and seek endorsement for associated action
- Prepare stage reports for the Joint Assembly and Executive Board
- Identify, commission and oversee external resources necessary for the assessment, evaluation, design, management and planning of the project
- Be responsible for project administration
- Facilitate a post construction review of the project
- Ensure that all new highway assets created/network amended is recorded. This includes the legal category of any new highway e.g. cycle track, together with details of extent, boundaries, and infrastructure.

## GCP Assistant Project Manager

- Organise Project meetings and taking minutes as appropriate
- Coordinate communications with stakeholders when required
- Update finance, programme and risk registers etc. as required

- Provide support to Senior Project and Programme Manager when required

## GCP Communications Team

- Responsible for producing the overall Communications Plan for the Greenways Programme
- Responsibility for stakeholder management that is not specific to design, ie. Councillors and Parishes
- Responsible for coordinating responses to enquiries (this is partly delegated to JFG Comms)
- Ensure the overall story of the Greenways is understood and communicated positively
- Produce regular updates for the public and key stakeholders

## Consultant and Contractor Support

5.3.10 External support resources will be procured through established County Council contracts or Government Procurement Frameworks for various tasks including Design, Early Contactor Involvement, Communications (where not available internally). For this scheme the consultants and contractors have been procured, namely Atkins and WSP. Milestone will be the proposed contractor responsible for construction under the Cambridge County Council Highways Contract. The consultant / contractor responsibilities are set out below.

## Atkins and WSP

5.3.11 Atkins and WSP have been appointed for the 11 Greenways to deliver the following aspects of the programme:

- Concept and Preliminary Design
- Transport modelling (as required)
- Transport assessment (as required)
- Environmental Impact Assessment and other relevant surveys and assessments (as required)
- Initial Cost estimating
- CDM Principal Designer
- Preparation of proportionate TAG compliant Outline Business Case
- Preparation of Planning Application, submission, and determination support (as required)
- Wayfinding Strategy (Atkins only)
- Programme Outline Business Case (WSP only)
- Land referencing (WSP only)
- Engagement event materials

5.3.12 They will also be procured at the suitable time for:

- Detailed Design
- Full Business Case
- Procurement support
- Construction Supervision

## Milestone

5.3.13 Milestone have been appointed in Early Contractor Involvement for the Greenways Programme. This work consists of:

- Producing budget estimates for the GCP schemes/projects

- Managing and co-ordinating the GCP programme of works, including co-ordination with highways contract to achieve efficiencies where possible linking planned GCP and CCC schemes/projects
- Producing and reviewing risk and opportunity registers for the schemes/projects.
- Design maturity and Buildability assessments
- Value engineering opportunities
- Review of utility diversions
- Assist where required for land take assessments, with particular focus on temporary land take requirements for construction period
- Construction programme development
- Planning and execution of design surveys including but not limited to; Ground Penetrating Radar ("GPR"), trial holes, ground investigation, TOPO and drainage surveys
- Developing traffic management solutions and co-ordinate with the CCC streetworks team to confirm road space availability

5.3.14 Subject to performance and capacity this will lead to Milestone constructing the Greenways projects.

### CBRE and Pathfinder Legal

5.3.15 CBRE have been appointed as the land agents responsible for the Greenways Programme. They are procured to:

- Complete land acquisition strategies for each Greenway
- Complete land valuation for each Greenway
- Advise on the process of CPO as required
- Negotiate land on behalf of the GCP

5.3.16 They are supported by Pathfinder Legal who are responsible for

- Preparation of CPO documentation as required
- Legal advice on the process for CPO
- Completion of acquisition paperwork
- Advice on legal process to designate, or change designation of Public Right of Ways (PRoW)

## 5.4 Project Assurance, Approvals Plan and Programme

### Programme Assurance

5.4.1 Responsibility for assuring the delivery of the project, rests with the Programme Board and Cycling Projects Meeting and includes:

- Ensuring good liaison and collaboration throughout the project to achieve good governance
- Assuring that user needs and expectations are being met or managed
- Ensuring that risks are being controlled
- Monitoring project expenditure versus benefits
- Informing the project of any changes caused by external events
- Ensuring adherence to relevant procedures, standards and specifications
- Ensuring highway aspects designed in accordance with Manual for Streets 2 and the Design Manual for Roads and Bridges, LTN1/20, as appropriate

## GCP Work Stages

5.4.2 The programme for the Greenways project is aligned with the GCP work stages process set out in the GCP Local Assurance Framework (LAF). This LAF sets out, “membership, responsibilities, and principles that are in place for agreeing and overseeing investments to deliver the overarching City Deal objectives”. The LAF process is shown in Figure 26 commencing with programme entry through to full business case development.

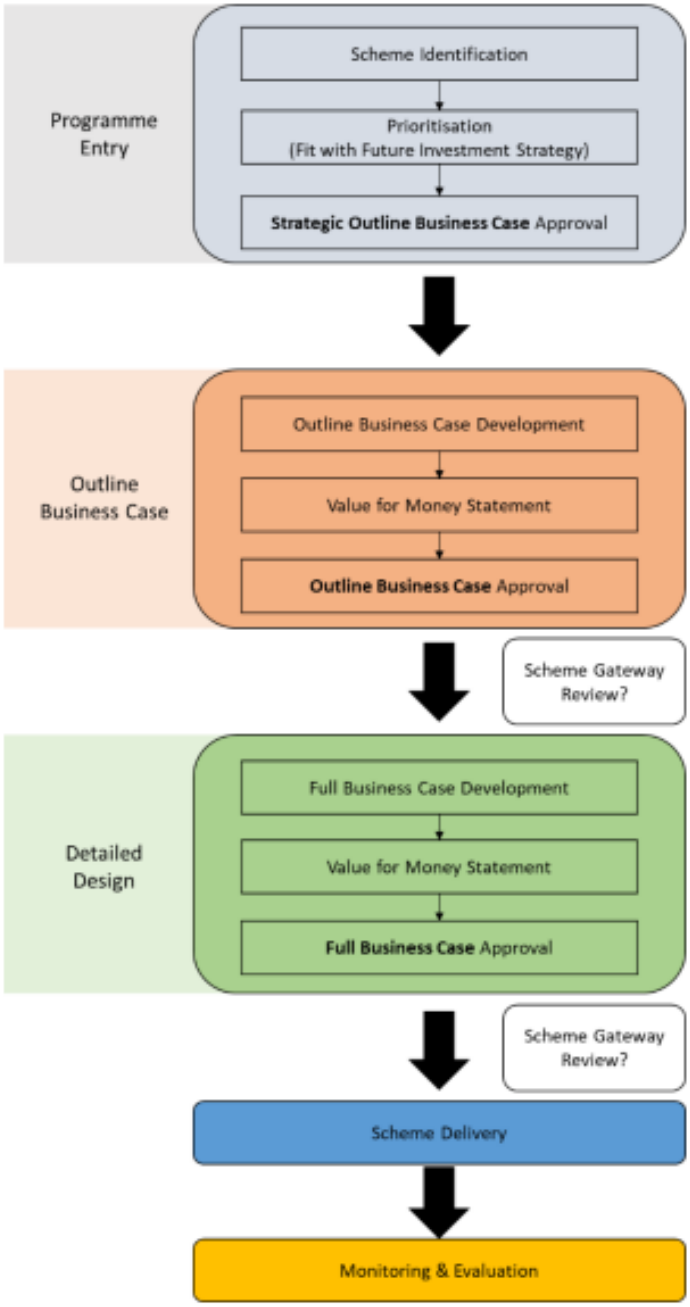


*Figure 26: GCP Indicative Process for Business Case Development, Source: Greater Cambridge City Deal Assurance Framework (Source: Greater Cambridge Greenways POC)*

## Approvals to Date

5.4.3 The programme entry work stage has been completed with the development of the programme outline case and approval by the Executive Board.

## High Level Programme

5.4.4 This section provides an overview of the staged process through which the project will be delivered.

5.4.5 The high-level programme for the delivery of the Greenways is based on an approximately four-year programme. Scheme specific programmes will be set out at Outline Business Case stage for each scheme.

5.4.6 The Project will consist of a number of stages in line with the Major Infrastructure Project Delivery Stage, Key Decision Matrix and GCP Assurance Framework. This is shown in Table 24. This has been slightly adapted to allow for an additional stage for sign-off for the first versions of technical design.

*Table 24: Structure of the Greenways Management Team*

| Stage | Description | Approval |
|---|---|---|
| Strategy Stage 0: Policy and Strategy | Preparation of Project Initiation Document (PID) | Complete |
| Delivery Stage 1: Project Set Up / Initial Options | Project resource planning, development of stakeholder engagement strategy and preparation of project development briefs | Complete |
| Delivery Stage 2: Feasibility Study | Identification of options, conceptual design work, strategic business case and assessments to facilitate initial stakeholder engagement to allow selection of a Preferred Option | GCP Executive Board (Complete) |
| Delivery Stage 2a: Approved option | Feasibility Design of Preferred Option | GCP Transport Programme Board |
| Delivery Stage 3: Preliminary Design | Preliminary Design of Preferred Option and agreement of Outline Business Case | GCP Executive Board |
| Delivery Stage 4: Detailed Design | Final business case and detailed design to facilitate project approval.<br>Processes for planning permission, traffic regulation orders, compulsory purchase orders and Government statutory approvals as required | GCP Executive Board |

| Stage | Description | Approval |
|---|---|---|
| Delivery Stage 5: Construction (Mobilisation and Construction) | Procurement of a provider(s) to construct the project<br>Construction of the project<br>Post-project review to assess how well the project objectives and outputs have been met | GCP Executive Board |

### Fulbourn Greenway Outline Delivery Plan

5.4.7 The design for the Fulbourn Greenway route has now been completed to a RIBA 2 concept design phase. This has highlighted the key design risks and potential constraints, enabling development an indicative timetable of how the programme can be achieved (Table 25). This will be reviewed and updated throughout development of the business case and design stages.

*Table 25: Fulbourn Greenway Outline Delivery Plan 2022-2025*

| Year | Delivery Plan |
|---|---|
| 2022 | Concept Design (completed)<br>Traffic Surveys (completed)<br>Land Owner Discussions (ongoing) |
| 2023 | Outline Business Case (ongoing)<br>Preliminary Design<br>Land Owner Negotiations<br>Stakeholder Negotiations<br>Traffic Regulation Orders (TRO)<br>Compulsory Purchase Orders (CPO) / PRoW orders<br>Commissioning of Full Business Case<br>Public Consultation (June 2023) |
| 2024 | Detailed design and technical approvals<br>Early Contractor Involvement:<br>Compulsory Purchase Orders (CPO) / PRoW order work to continue as in 2023<br>Quick Wins – Construction of the Eastern Section (East of Yarrow Road to Fulbourn)<br>Finalisation of land agreements |
| 2025 | Construction to be completed Fulbourn Greenway (December 2025) |

## 5.5 Stakeholder Engagement and Communications

5.5.1 As detailed in the Programme Outline Case, an overarching stakeholder engagement and communications plan for the Greenways was produced by the GCP in March 2022.[45] Given the importance of effective communication and engagement for the success of Fulbourn Greenway, the following section establishes how communications and stakeholder management will be developed on the project.

5.5.2 Stakeholder engagement and public consultation is important to scheme development, particularly regarding design. Fulbourn Greenway is proceeding to preliminary design stage later in 2023. Section 1.18 details the stakeholder engagement activity undertaken to date, namely involving a public consultation on Fulbourn Greenway's initial designs between 15th October – 3rd December 2018. Local communities engaged positively and provided valuable feedback to help shape developments of the scheme. This included feedback on how far respondents agreed with individual elements of the proposed Greenway Route and concerns[46]. Specific feedback from the consultation is presented in the Strategic Case Section 1.

5.5.3 The next public consultation is scheduled for June 2023 and will discuss further the constraints identified from previous engagement (see section 1.18.9).

## Scheme Communications Plan

5.5.4 A detailed communications plan is in development and will be updated once completed.

5.5.5 There are two key channels for proactive communications that the GCP as Fulbourn Greenway is developed in the context of the Greenways Programme:

- The Website - The Greater Cambridge Partnership website is the key communications platform where information regarding the Greenways project is provided.
- Quarterly GovDelivery Updates – Communication updates are issued quarterly to outline the progress made on the Greenways project.

5.5.6 Designed by the GCP communications team with input from the County Council's research team, project communication is governed through the Communications Plan, as outlined below. The purpose of the strategy is to ensure that accurate and timely messages about the scheme are disseminated to a range of identified stakeholder groups.

*Table 26: Communications Method for the Fulbourn Greenway*

| Audience | Type of Communication | Frequency | Responsibility |
|---|---|---|---|
| General Public | Formal consultation – online survey and paper return survey | Initial Fulbourn Greenway consultation 2018 | GCP Communications Team |

[45] Greater Cambridge Greenways - Overarching Communications and Engagement Plan, GCP, March 2022
[46] https://www.greatercambridge.org.uk/asset-library/Sustainable-Transport/Active-Travel-Projects/Greater-Cambridge-Greenways/Fulbourn-Greenway/fulbourn-greenway-consultation-report-march-20193.pdf

| Audience | Type of Communication | Frequency | Responsibility |
|---|---|---|---|
| | Regular website updates provided on GCP Greenways webpages (i.e., Greenway specific updates and preliminary design)<br>GovDelivery Updates | Fulbourn Public Consultation June 2023<br>Quarterly | |
| Other Key Stakeholders | Meetings<br>Emails | As Required | Project Manager |
| Members | Reports<br>Briefing Sessions | As per Scheme Updates / Progress | Project Manager |
| Technical Officers<br>CCC / GCP | Project Team Meetings | As Required | Project Manager |
| General Correspondence | Letters, Emails, GCP social media | As Required | Project Manager / Communications Team |

# 5.6 Risk and issues Management

5.6.1 The Fulbourn Greenway risk management is documented in the Programme Issues and Risks Log produced by WSP.

5.6.2 Key Risks for the Greenways Programme (as described in Greater Cambridge Greenways POC) as a whole, are as follows:

- Resourcing – staffing of the project team and the Communications team
- Procurement process – the risk of time and cost extensions to procurement
- Consents – obtaining planning consents, and Network Rail and National Highways approvals
- Acquisition of land - potential delays in obtaining land access consents with possible associated delays to the completion of the elements of the preliminary design
- Cost escalation – effectiveness of project controls to manage costs
- Environmental impacts affecting the route of the scheme
- Other infrastructure schemes/developments taking precedence over the Greenways

5.6.3 Mitigation measures identified include the following:

- The Issues and Risks Log for the overall Greenways programme forms the basis for developing the individual Risk Issues and Logs for each of the Greenways schemes

- An overarching Stakeholder Engagement & Comms Plan and Tracker has been produced to plan and log all engagement across the Greenways project including undertaking re-engagement and wider stakeholder engagement. The GCP Comms team issue quarterly progress and communications updates via its website and Gov-delivery.
- Costings for the scheme to be reviewed by designers at every design stage

5.6.4 A risk register has been produced for the Fulbourn Greenway scheme (Appendix F) for the current stage of scheme development, namely concept design. Risk mitigation will be assessed from a strategic perspective and will be reviewed monthly.

5.6.5 The key five risks to the scheme and associated mitigation measures and score (risk likelihood multiplied by impact) are provided in Table 27:

.

*Table 27: Risk Register*

| Risk | Description | Mitigation | Score |
|---|---|---|---|
| Level Crossing | Network Rail may require a structure to pass over the existing level crossing at Yarrow Road. | Ongoing liaison with Network Rail | 16 |
| Cost overruns | Volatility associated with construction costs. | Detailed feasibility study and close working with potential contractors to determine costs. Updated costs to provide an extra level of assurance. | 12 |
| Low scheme uptake | Not as many people use the scheme as forecast | Feed into engagement activities where applicable to take into account feedback at early stages. Undertake sufficient sensitivity testing. | 12 |
| Acceptability of Scheme | Acceptability of scheme from the public. | Develop robust narrative to align with the national, regional and local policy. Feed into engagement activities where applicable to take into account feedback at early stages. Include effective communication with all to explain objectives of the scheme and maintain buy-in. | 12 |

| Risk | Description | Mitigation | Score |
|---|---|---|---|
| Construction Challenges | Unforeseen ground conditions, utility diversion over-runs, increased utility costs, design issues, poor contract supervision, contract terms not robust, etc. | No specific mitigations required until interventions are developed, and more detailed drawings and surveys commissioned. Early contractor engagement. | 6 |

# 5.7 Monitoring and Evaluation

5.7.1 On completion of the construction of the Fulbourn Greenway, a review of the delivery process will be undertaken in accordance with the Greater Cambridge City Deal Project Review Protocol.

5.7.2 The Project Manager will facilitate the review to produce a review report for consideration by the Project Board, ahead of scrutiny by the Joint Assembly and sign off by the Executive Board.

5.7.3 A monitoring and evaluation plan and benefits realisation plan have been produced for the Fulbourn Greenway scheme.

5.7.4 The DfT's 'Monitoring and Evaluation Framework for Local Authority Major Schemes' guidance document forms the basis of the monitoring strategy alongside the GCP's Assurance Framework.

5.7.5 The DfT guidance sets out the requirements for the monitoring of schemes and outlines three tiers of monitoring and evaluation, these are:

- Standard monitoring
- Enhanced monitoring
- Fuller evaluation

5.7.6 It is proposed that the Greenways programme follows enhanced monitoring practice as the scheme is likely to be more than £50m in value.

## Monitoring and Evaluation Plan

5.7.7 The outline Monitoring and Evaluation Plan is set out in Table 28 and this follows the same approach as the other Greenways. Monitoring of cycle and pedestrian usage of the scheme will be implemented at key locations along the proposed Fulbourn Greenway route. The monitoring will be undertaken through targeted counts, as a minimum on an annual basis, preferably more regularly to assess seasonal effects. This will help assess active mode usage of the proposed Fulbourn Greenway. The Monitoring and Evaluation Plan will also monitor scheme expenditure project delivery.

*Table 28: Outline Monitoring and Evaluation Plan*

| Objective | Enabling objective / outcome | Performance indicator | Methodology | Timescale | Owner of Monitoring Task |
|---|---|---|---|---|---|
| Encourage commuting by sustainable transport modes and reduce traffic congestion | Capacity: Provide the cycle network capacity to accommodate increases in active travel demand due to new housing and employment growth | Increase in cycle network capacity<br>Reduction in vehicular road traffic<br>Propensity to reduce congestion/delay | Active travel surveys<br>User counts<br>Traffic counts<br>Before and after implementation queue lengths | Pre or during delivery / post opening (up to 5 years) | GCP |
| Contribute to improved air quality and better public health | Connectivity: Improve accessibility to jobs and opportunities by active modes through a reduction in journey times and increase ease of interchange with public transport modes | Scale of catchment (jobs, housing)<br>Ability to unlock growth<br>Ease of interchange with public transport | Before and after air quality monitoring using air quality measurement<br>Active travel surveys<br>Land use surveys and land value change assessments | Pre or during delivery / post opening (up to 5 years) | GCP |
| | Communities: Contribute to the creation of safe and attractive communities by reducing emissions, | Road safety<br>Protection of green spaces;<br>Air quality improvement and carbon reduction | Assessment of road traffic collisions<br>Before and after air quality monitoring using air quality | Pre or during delivery / post opening (up to 5 years) | GCP |

| Objective | Enabling objective / outcome | Performance indicator | Methodology | Timescale | Owner of Monitoring Task |
|---|---|---|---|---|---|
| | severance and the dominance of traffic improving personal security and road safety | Quality of the public realm<br>Severance | measurement facilities | | |
| Efficient project delivery | Cost during construction and outturn costs against budget | Costs | Cost monitoring by area of spend compared with programme/budget | During and post opening | GCP |

## Benefits Realisation Plan

5.7.8 The Benefits Realisation Plan is shown in Table 29 and is similar to the other Greenways schemes.

*Table 29: Benefits Realisation Plan*

| Objective Supported | Enabling changes | Benefits experienced | Who will benefit | Benefit Owner |
|---|---|---|---|---|
| Capacity: Provide the cycle network capacity to accommodate increases in active travel demand due to new housing and employment growth | Provision of improved cycling infrastructure: attract new active mode users to the Fulbourn Greenway route | Unlock economic growth by providing new transport capacity / encouraging new residents to commute using active modes into Cambridge | Residents / employees / wider community | GCP / South Cambridgeshire District Council / Cambridge City Council |
| Connectivity: Improve accessibility to jobs and opportunities by active modes through a reduction in journey times and increased ease of interchange with public transport modes | Provision of new and improved cycling infrastructure<br>Enhanced connectivity with other Greenways and Cambridge active travel networks | Increased active travel accessibility to jobs and education within the city centre<br>Mode shift from car to active travel | Residents / employees / wider community | GCP / South Cambridgeshire District Council / Cambridge City Council |
| Communities: Contribute to the creation of safe and attractive communities by reducing emissions, severance and the dominance of traffic improving personal security and road safety | Provision improved and new cycling infrastructure – development of dedicated active travel corridor to provide a better walking and cycling environment | Greater active mode travel safety<br>Reduced GHG emissions<br>Improved severance across key roads<br>Improved well-being of the community | Residents / employees / wider community | GCP / South Cambridgeshire District Council / Cambridge City Council |

# Appendix A

## Scheme Design Drawings

# Appendix B

## AMCB – PA – TEE Tables

# Appendix C

## Appraisal Summary Table

# Appendix D

## TAG Environmental Worksheets

# Appendix E

## Fulbourn Greenway Cost Plan

# Appendix F

## Risk Register

**ARCADIS CONSULTING (UK) LIMITED**

Arcadis

80 Fenchurch Street,

EC3M 4BY

London

United Kingdom

Send us an email

+44 (0) 20 7812 2000

+44 (0) 20 7812 2001