



Cambridge and Peterborough JPSF

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# **SWAFFHAMS GREENWAY**

Outline Business Case





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## Outline Business Case

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# 1 STRATEGIC CASE

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## 1.1 OVERVIEW

1.1.1. The Swaffhams Greenway scheme will offer improved active mode connectivity. The Greenway will include upgrades to shared-use paths and a short section of new off-road shared path on a 12.3km long route between Station Road, Swaffham Prior passing through Swaffham Bulbeck and Stow cum Quay to join the Bottisham Greenway at the junction of Church Road B1102 and Newmarket Road A1303. The scheme will also include traffic calming measures to create a quiet street environment and new and improved signage.

1.1.2. This Strategic Case for the Swaffhams Greenway project forms the first of the five cases for the Outline Business Case (OBC). The purpose of the Strategic Case is to set out the strategic and policy context for the Swaffhams Greenway, to demonstrate the need for the project and provide an assessment of the project's ability to address transport and wider policy requirements.

The Swaffhams Greenway is one of the twelve sustainable travel corridor schemes proposed as part of the Greenways project by Greater Cambridge Partnership (GCP). A Programme Outline Case (POC) for the Greenways Project was prepared in January 2022. This document focuses on the strategic need for the Swaffhams Greenway scheme.

## 1.2 APPROACH

1.2.1. The Strategic Case has been structured to align with the Department for Transport's (DfT) Transport business case guidance for the strategic dimension which outlines key areas that should be covered as part of the business case documentation.

## 1.3 BUSINESS STRATEGY

1.3.1. The Greater Cambridge City Deal was signed between Government and local representatives in 2014. The GCP is the local delivery body, responsible for overseeing the delivery of the City Deal and the promotion of local economic growth and development. The GCP aims to:

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

1.3.2. To ensure infrastructure investment aligns with the above aims, 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.

- 1.3.3. The Swaffhams Greenway effectively meets multiple strategic objectives of the City Deal. Swaffhams Greenway offers a green active travel corridor that enables safe and easy travel to workplaces, local schools, colleges and shops.
- 1.3.4. The scheme is in line with GCP's objective of delivering fast, reliable and affordable ways of travelling between employment and housing hubs as it provides improved links to Cambridge from the villages in the Greenway corridor (Swaffhams Prior, Swaffhams Bulbeck, Lode, Anglesey Abbey and Stow cum Quay) and onwards on other active mode infrastructure (Bottisham Greenway and Horningsea Greenway) to Midsummer Common including connections to the Chisholm Trail.
- 1.3.5. The scheme through improved active mode connectivity reduces community severance by improving active mode links along the B1102 corridor and will provide safer active travel connections between the places where people live, work and shop, thus encouraging more walking and cycling trips.

## 1.4 SCHEME BACKGROUND

- 1.4.1. In 2016, the Greater Cambridge Greenways project began with a review of the existing cycling and walking routes into Cambridge. GCP then consulted local communities to understand how the Greenways could best meet their needs and mitigate concerns. Formal consultations were then carried out on each route, before reports were issued for approval at Executive Board meetings throughout 2020.
- 1.4.2. The villages of Swaffham Bulbeck and Swaffham Prior are approximately 13km and 15km from Cambridge respectively. Both villages are to the northeast of Cambridge across flat terrain and for cyclists they are currently served by shared-use paths adjacent to the B1102. The Swaffhams Greenway route links the villages to Stow cum Quay, where it converges with the Bottisham Greenway, continuing along to Fen Ditton, and then proceeds to the Horningsea Greenway.
- 1.4.3. The Swaffham route will provide a safer crossing point at Quay Road near Anglesey Abbey as well as links to the Chisholm Trail, which leads to Cambridge North and Central stations.

## 1.5 POLICY CONTEXT

- 1.5.1. This section provides the policy context within which the development of the Swaffhams Greenway has been considered. It demonstrates that the delivery of the cycle scheme aligns with the strategic objectives of policies set at local, regional and national scales.
- 1.5.2. The alignment of the Swaffhams Greenway with national policy is shown in Table 1-1. Further detail on national policy for the Greenways programme as a whole is set out in the Greenways POC.

**Table 1-1 National Policy Summary**

Policy	Key Strategic Objectives	Swaffhams Greenway Scheme Alignment
<b>National Policy</b>		
Net Zero Strategy: Build Back Greener (2021)	<ul style="list-style-type: none"> <li>■ Decarbonising all sectors of the UK economy to meet net zero target by 2050.</li> </ul>	Provision of cycling and walking network encourages active travel, reducing reliance on the car and reduced greenhouse gas emissions.



Policy	Key Strategic Objectives	Swaffhams Greenway Scheme Alignment
<b>National Policy</b>		
		Delivery of the Swaffhams Greenway will contribute towards the Net Zero Strategy's goal of making active travel a natural first choice for all who can take them by providing safer cycling and walking infrastructure between Swaffhams and Cambridge.
The Environment Act (2020)	<ul style="list-style-type: none"> <li>Protection of the natural environment from the effects of human activity</li> <li>Protection of people from the effects of human activity on the natural environment</li> <li>Maintenance, restoration or enhancement of the natural environment</li> <li>Monitoring, assessing, considering, advising or reporting on environmental protection</li> </ul>	The Swaffhams Greenway aligns with the goals of the Environment Act, as biodiversity net gain is a key influence along with the general duty to conserve and enhance biodiversity in Cambridge.
Ten Point Plan for a Green Industrial Revolution (2020)	UK to be the world's number one centre for green technology, laying the foundations for economic growth, delivering Net Zero emissions.	Delivery of the Swaffham Greenway will directly contribute to the strategic goals of The Ten Point Plan by providing better air quality through delivering a sustainable active travel cycling route, and in doing so protect our natural environment. Provision of a cycle network will further encourage active travel, reducing reliance on the car and greenhouse gas emissions.
Gear Change (2020)	<ul style="list-style-type: none"> <li>Better streets for cycling and people</li> <li>Cycling and walking at the heart of decision making</li> <li>Empowering and encouraging local authorities</li> <li>Enabling people to cycle and protecting them when they do</li> </ul>	Delivery of the Swaffhams Greenway closely aligns to the vision of Gear Change, creating a safer and more attractive cycling environment in and around Cambridge. Through enabling residents and cycle user groups to use the cycle network as a form of active travel, the strategic goals of Gear Change shall be met.
Cycling and Walking Investment Strategy (CWIS) LTN 1/20 (2020)	Cycling and walking to be the natural choice for short journeys, and to increase cycling and walking levels.	The Swaffhams Greenway will align with the CWIS by providing infrastructure in line with design outlined in the LTN 1/20. Being

Policy	Key Strategic Objectives	Swaffhams Greenway Scheme Alignment
<b>National Policy</b>		
		developed in liaison with local communities and cycling user groups, the route is designed to be inclusive of different stakeholder groups as outlined in both the CWIS and LTN 1/20. Delivery of the Swaffhams Greenway will provide communities access to a well-connected cycle network for both commuting and recreational purposes.
National Planning Policy Framework (updated 2021)	<ul style="list-style-type: none"> <li>■ To provide strong, vibrant, healthy communities</li> <li>■ To contribute to protecting and enhancing our natural, built, and historic environment; including making effective use of land</li> </ul>	<p>The Swaffhams Greenway will help to further the sustainable development goals of the NPPF and align with its key principles by:</p> <ul style="list-style-type: none"> <li>■ Improving the health of communities by promoting the use of sustainable modes of transport by the provision of an active travel network</li> <li>■ Encouraging the use of non-car modes to minimise air quality effects of car travel</li> <li>■ Creating a well-designed, beautiful and safe environment for pedestrians and cyclists</li> <li>■ Providing Natural Capital benefits and ecosystem services delivered through green infrastructure strategies, which combined offer an effective use of land.</li> </ul>
Transport Investment Strategy (2017)	<ul style="list-style-type: none"> <li>■ To create a more reliable, less congested and better-connected transport network</li> <li>■ To support the creation of new housing</li> </ul>	<p>Delivery of the Swaffhams Greenway will help to achieve the objectives of the TIS by providing an alternative way of travelling to the car, minimising the potential for increased congestion. Provision of alternate attractive travel option will enable the network to better cope with increased demand from planned housing and population growth.</p>

1.5.4. The alignment of the Swaffhams Greenway with regional policy is shown in Table 1-2.

**Table 1-2 – Regional Policy Summary**

<b>Policy</b>	<b>Key Strategic Objectives</b>	<b>Swaffhams Greenway Scheme alignment</b>
Cambridgeshire and Peterborough Independent Commission on Climate (2021)	Better air quality and access to nature, to improve health and wellbeing.	Delivery of the Swaffhams Greenway will contribute to the Commission's recommendations for active travel which includes making cycling more accessible. Reducing the number of journeys made by car will reduce levels of greenhouse gas emissions and improve local air quality. An uptake of active travel will contribute to better health and wellbeing.
England's Economic Heartland Transport Strategy (2020)	Improve local and rural connectivity to support a green recovery from COVID-19 and sustainable growth, whilst reaching Net Zero by 2050.	Delivery of the Swaffhams Greenway will directly contribute to the furthering of this strategic aim to 'improve local and rural connectivity.' The Swaffhams Greenway along with the other Greenway schemes will together provide a network of radial routes from the centre of Cambridge, providing surrounding communities with access to the centre. Doing so through active travel will reduce greenhouse gas emissions.
The Cambridgeshire and Peterborough Local Transport Plan (2019)	Aims to connect all new and existing communities sustainably and provide an integrated rural public transport network.	Delivery of the Swaffhams Greenway will further these strategic goals by providing a sustainable and active travel network in Cambridgeshire and Peterborough. Communities will be safer and better connected, whilst air quality levels will be improved. The delivery of Swaffhams Greenway will be key to ensuring a positive uptake of technologies such as affordable e-bikes and cargo bikes, and for new bike sharing schemes that are supported by the policy.

Policy	Key Strategic Objectives	Swaffhams Greenway Scheme alignment
Local Transport and Connectivity Plan (Draft, 2022)	<p>Aims to address four transportation challenges highlighted by the impact of the pandemic:</p> <ul style="list-style-type: none"> <li>Connectivity and accessibility</li> <li>Making systems work</li> <li>Affordability and flexibility</li> <li>Environmental impact</li> </ul> <p>Aims to provide improvement in six key areas of productivity, connectivity, climate, environment, health and safety.</p>	The Swaffhams Greenway scheme contributes towards delivering elements of an integrated transport system recognised in the LTCP, such as providing safe and attractive walking and cycling infrastructure. The delivery of Swaffhams Greenway scheme will encourage mode shift to sustainable modes of transport by providing active travel infrastructure.

1.5.5. The alignment of the Swaffhams Greenway with local policies is described below.

#### **Cambridge Local Plan (2018)**

1.5.6. The Cambridge Local Plan covers the period of 2018-2031 and identifies the need for 14,000 additional homes and 22,000 jobs. It identifies a series of 'Areas of Major Change' (AOMC), through which a number of the Greenways will run. The Swaffhams Greenway will provide connections for local residents and provide an opportunity for an active commute to new businesses and for employees in the area.

#### **South Cambridgeshire Local Plan (2018)**

1.5.7. Chapter 10 of the Local Plan addresses transport, outlining the aim to 'promote and deliver sustainable transport and infrastructure.' The plan highlights the need for transport provision to be balanced in favour of sustainable modes, to give people a choice as to how they travel.

1.5.8. The Swaffhams Greenway will contribute directly to this strategic aim, providing a sustainable and active travel choice for local communities and commuters alike. By investing in the cycle network, both first and last mile journeys may be made by an active mode, thereby integrating into the wider transport network.

#### **East Cambridgeshire Local Plan (2015)**

1.5.9. The East Cambridgeshire Local Plan is part of the Development Plan for the District, setting out the vision, objectives, spatial strategy and planning policies of the district to deliver planned growth for the district to 2031. The strategic vision includes the provision of 'better cycling and walking facilities and links including segregated cycle routes along key routes linking towns and villages.'

1.5.10. The Swaffhams Greenway will provide upgraded cycling walking facilities and connections for local residents and provide an opportunity for encouraging the use of active modes.

#### **First Proposals: Emerging Greater Cambridge Local Plan (2021)**

1.5.11. The Greater Cambridge Local Plan aims to effectively plan and allocate sites over both Cambridge and South Cambridgeshire. The plan aims to make Greater Cambridge a place where a large decrease in climate impacts correlates with a large increase in quality of life for all communities. It

outlines that new development must reduce carbon emissions and reliance on the private car and contribute towards creating thriving neighbourhoods.

- 1.5.12. Delivery of the Swaffhams Greenway furthers 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.

#### **Active Travel Strategy for Cambridgeshire Consultation Draft (2022)**

- 1.5.13. The Active Travel Strategy for Cambridgeshire builds on achievements in encouraging active travel to date reflected in the high levels of cycling in the city of Cambridge, with the aim of further improving and increasing the proportion of journeys made by active modes across all of Cambridgeshire. The Strategy will enable and encourage more people to switch some of the journeys they once made by private car to active modes, making the use of active modes, travellers preferred mode of travel.
- 1.5.14. Following consultation, which came to an end in November 2022, a programme of schemes for future funding bids and delivery will be finalised, aligning with the Local Cycling and Walking Infrastructure Plan.
- 1.5.15. The Strategy will provide a comprehensive set of policies that will enable quality provision of active travel infrastructure and initiatives in Cambridgeshire including the Swaffhams Greenway to contribute to the County Council's target to achieve Net Zero Carbon by 2045.

#### **SUMMARY OF POLICY CONTEXT**

- 1.5.16. Delivery of the Swaffhams Greenway will contribute to key strategic policies through delivering an active and sustainable mode of travel via a green infrastructure network which will encourage a modal shift away from the car. In doing so, the scheme will deliver multiple environmental, social and economic benefits, and contribute to the reduction in greenhouse gas emissions required to meet Net Zero targets by 2050.

### **1.6 STRATEGIC PROBLEMS AND ISSUES**

- 1.6.1. This section sets out the socio-economic context, the current situation and outlines the strategic need for the scheme.
- 1.6.2. Cambridge is a key economic centre for research, innovation and technology, and is strategically important for attracting international investors into the UK. This relies heavily on Cambridgeshire continuing to offer strong links between businesses, training campuses and housing developments.
- 1.6.3. Tackling congestion was identified in the City Deal as a key barrier to growth. GCP aims to reduce traffic by up to 15% on 2011 levels, equivalent to taking one in four cars off the road compared to today's traffic flows. Commuters into Cambridge by car spend on average a quarter of their journey time stuck in traffic, with significant implications for their productivity and wellbeing. Absence of attractive sustainable travel options linking housing, education and employment further adds to reliance on car use.
- 1.6.4. The study area includes several residential areas along the B1102 corridor including Swaffham Prior, Swaffham Bulbeck and Stow cum Quy as shown in Figure 1. South Cambridgeshire Local Plan identifies Stow cum Quy as an infill village - this village has a poor range of services and



facilities available locally. Hence, the residents need to travel outside the village to meet their daily needs which are mostly short trips.

- 1.6.5. These rural settlements are reliant on the car for travel which will contribute to increasing congestion into Cambridge. Without action, by 2031 car trips into the city are set to increase by up to 70%, with already lengthy journey times expected to double along these links.<sup>1</sup> The proposed Swaffhams Greenway provides an alternative active travel commuter link from the north-eastern settlements along the Swaffhams corridor to the city centre.
- 1.6.6. 10% of East Cambridgeshire residents (including residents in the Swaffhams Greenway corridor), commute to work in Cambridge by walking and cycling, compared to the national average of 14%. 84% of the working population in East Cambridgeshire use the car for access to employment. This is significantly higher than the national average at 73%, which adds considerably to the cost of transport and limits employment accessibility<sup>2</sup>. Lack of equitable access to the transport system by the absence of affordable and alternative active travel options curtails job accessibility as well as limiting the potential labour market for employers.
- 1.6.7. Economic growth in the region will correlate with a greater number of trips made, and therefore a greater demand on the road network if nothing changes. Without new sustainable transport interventions peak hour journey times are forecast to increase by as much as 90%.<sup>3</sup> This traffic congestion will cause delays resulting in a fall in productivity.
- 1.6.8. As shown in Figure 1-2, the Swaffhams corridor has relatively few workplace zones in its vicinity. Most residents will need to travel to Cambridge for work. In the absence of a safe, continuous and attractive active travel option, commuters working in workplaces in central Cambridge are reliant on cars for commuting trips further adding to traffic flows along not only strategic corridors, but also local routes. Increased traffic on local village roads creates an unsafe and unpleasant environment for active travel, hence further discouraging uptake of cycling or walking.

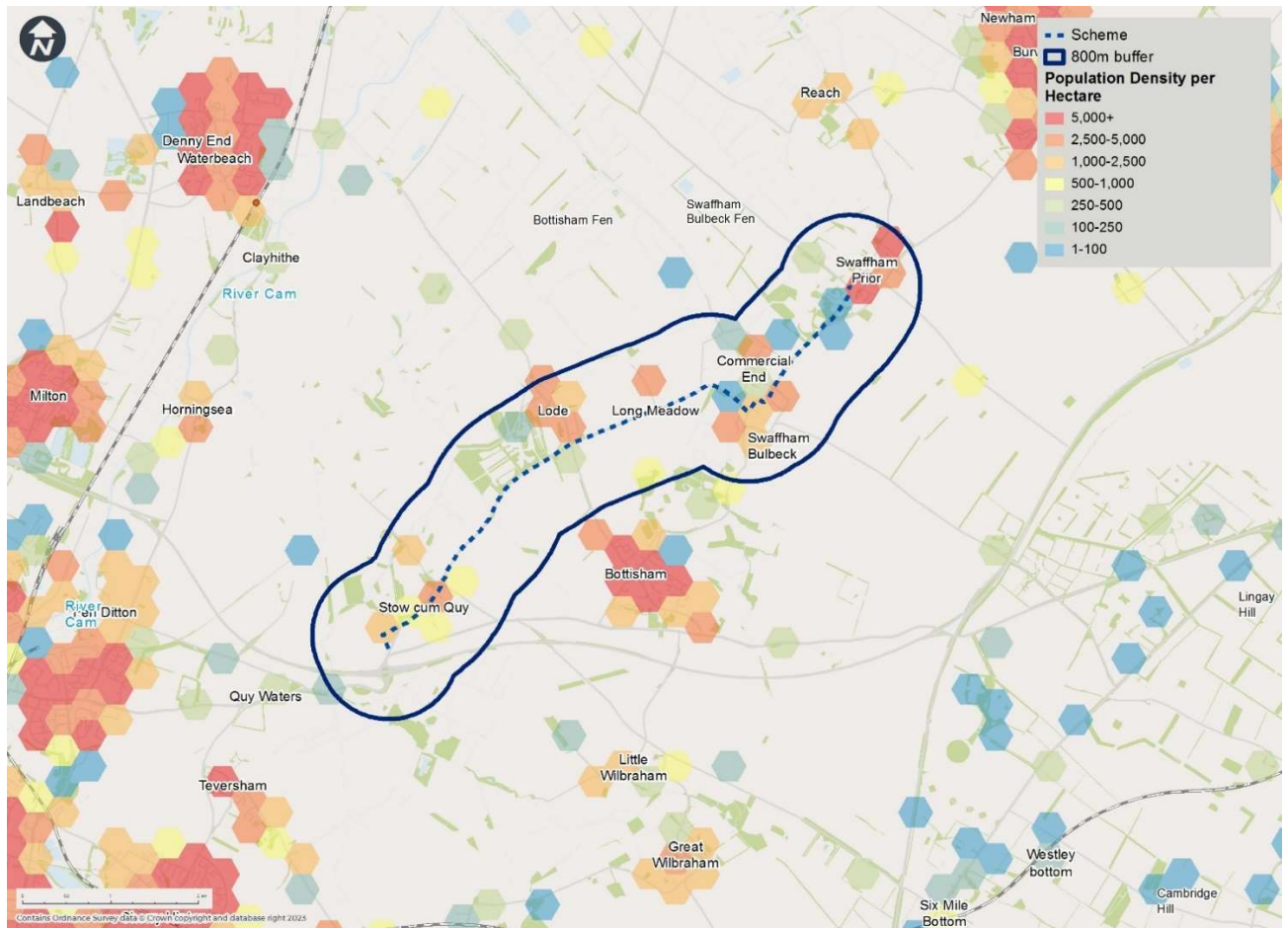
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<sup>1</sup> [Cambourne to Cambridge \(greatercambridge.org.uk\)](https://greatercambridge.org.uk)

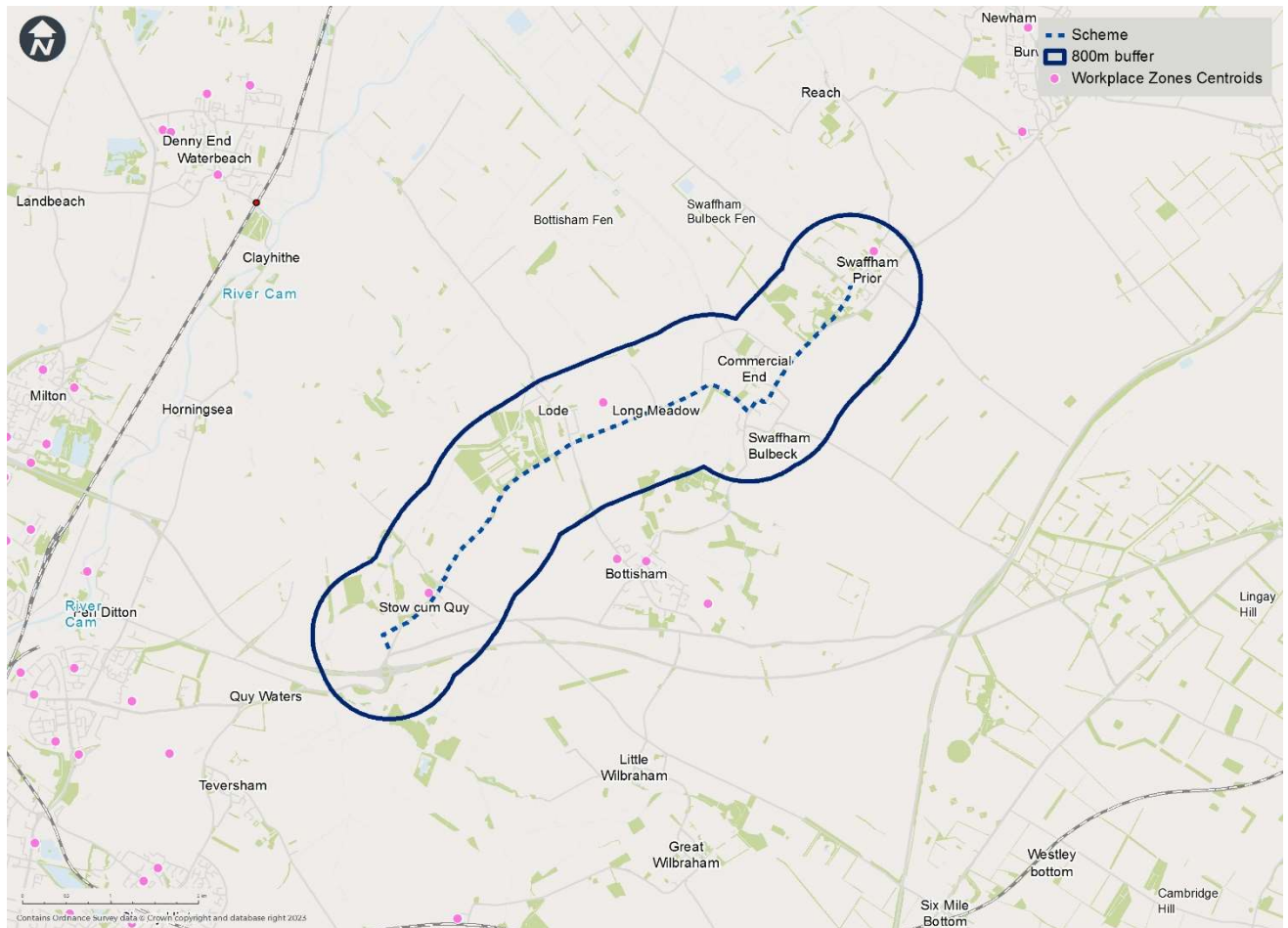
<sup>2</sup> Cambridge to Peterborough Travel to Work Summary, 2021

<sup>3</sup> Greater Cambridge Greenways Programme Outline Case, January 2022 (Draft)

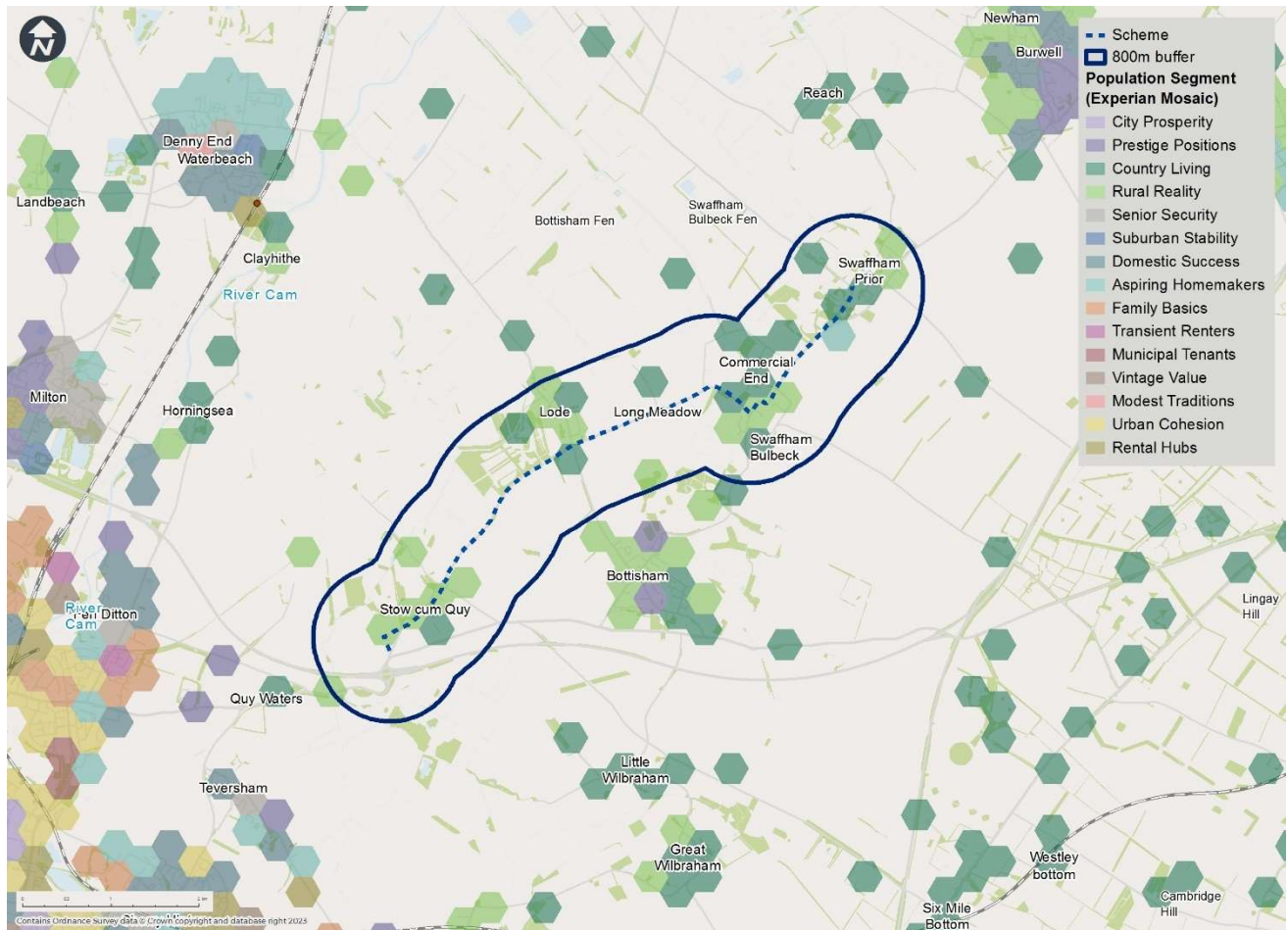
**Figure 1-1 - Population density within the study area**



**Figure 1-2 - Workplace zones near the study area**



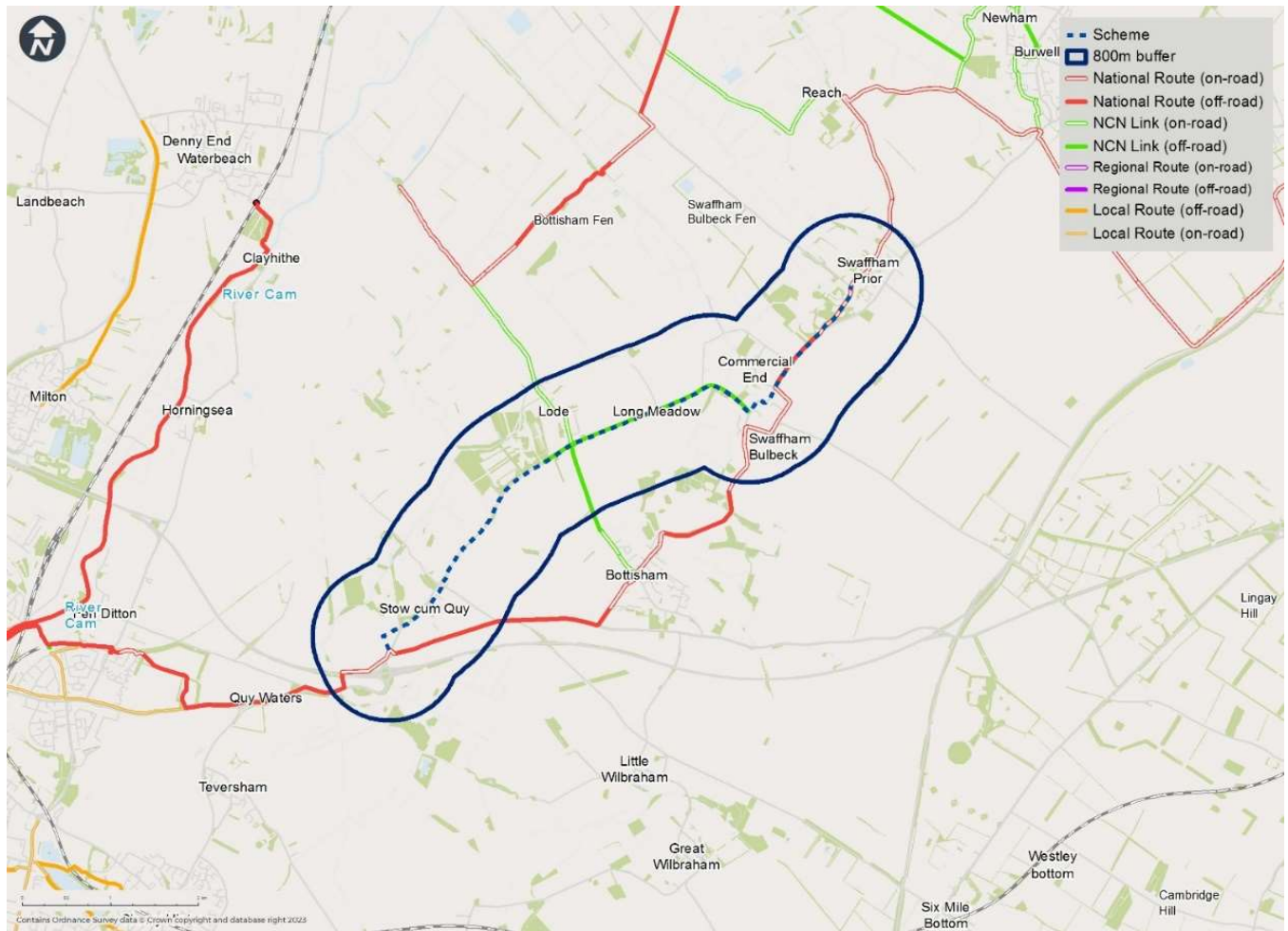
**Figure 1-3 - Experian Mosaic data**



- 1.6.9. Figure 1-3 presents Mosaic data (collected by Experian), a cross-channel consumer classification system which segments the population into 15 groups based on their consumer behaviour.
- 1.6.10. The mosaic presents clusters of 'Country Living', 'Rural Reality' and 'Aspiring Homemakers' population segments in the scheme area near Stow cum Quy, Lode, Swaffham Bulbeck and Swaffham Prior. 'Country Living' populations are well-off homeowners who live in the countryside often beyond easy commuting reach of major towns and cities.
- 1.6.11. 'Rural Reality' and 'Aspiring Homemakers' consist of low income and middle-income households respectively and prefer affordable modes of transport services. 'Aspiring Homemakers' particularly require access to school. Limited affordable alternative transport options create challenges such as inequitable access to education and employment for these population segments.
- 1.6.12. It is evident from Figure 1-4 that the existing National Cycle Network (NCN) links provide active travel connectivity to only a portion of the study area while a significant stretch of approximately 3.2km along the B1102 corridor between Lode Road and A14 J35 intersection does not have direct links to the NCN network.



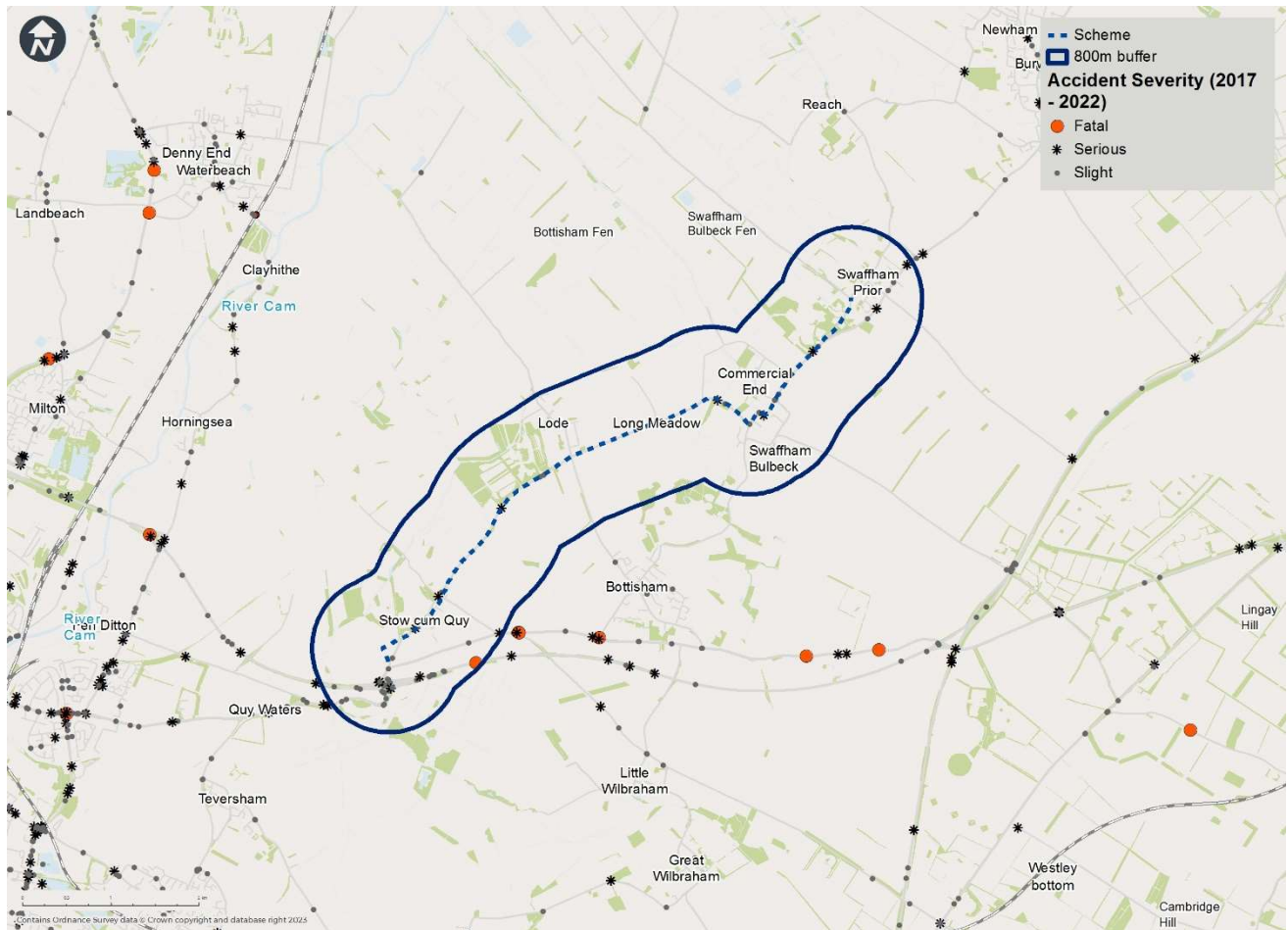
**Figure 1-4 - Location of existing cycle routes**



- 1.6.13. The speed limit along the B1102 corridor is above 30mph. The active travel facilities in the area are mostly not in accordance with the LTN 1/20 guidelines which pose a safety hazard for the existing active travel users in the area and discourages potential active travel journeys.
- 1.6.14. The absence of a safe, direct and attractive active travel route in the area increases the route length and journey time of pedestrians and cyclists travelling to A14 J35 and Cambridge. This makes it unattractive for the residents to use active travel modes regularly. The lack of local amenities in Stow cum Quay, significantly increases the number of short trips by car and carbon emissions which otherwise would have been made by sustainable active travel.
- 1.6.15. Figure 1-5 shows that many accidents occurred in the study area especially at the intersection of Church Road, A1303 Newmarket Road and A14 (A14 J35) between 2017 and 2022. A significant number of these accidents were categorised as serious. Since many walk and cycle trips exist in the area, the number of accidents involving pedestrians and cyclists is likely to increase with an increase in traffic due to the lack of safe active travel infrastructure.



**Figure 1-5 - Accidents by severity**



## 1.7 IMPACT OF NOT CHANGING

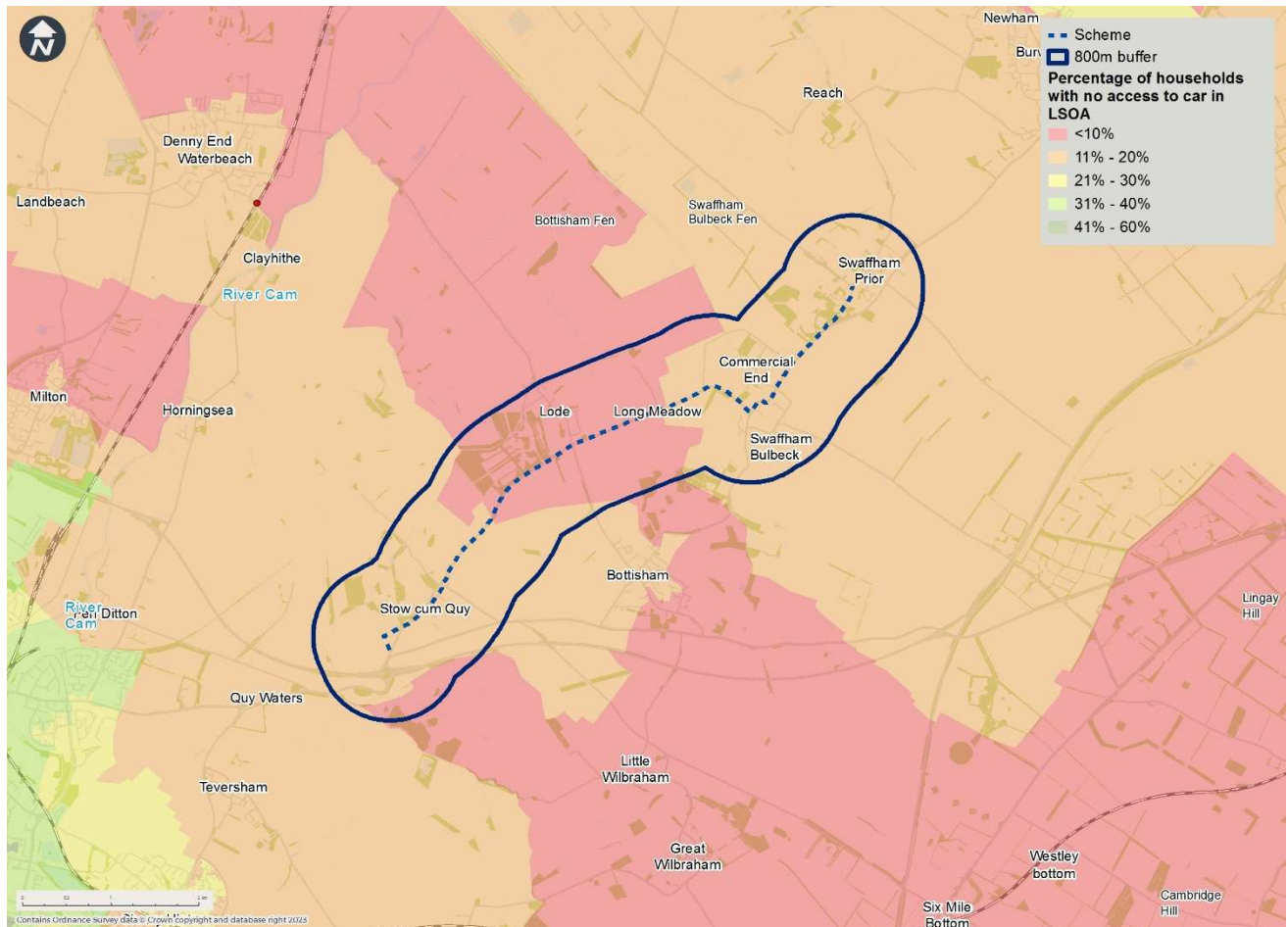
- 1.7.1. Without delivery of the Swaffhams Greenway scheme, the car will remain the dominant mode of transport for commuting even for short trips that could be undertaken by active travel. There is a risk that existing demand for cycling declines due to an increasingly unattractive cycling environment, and reliance on the car will increase. Not only will this have negative consequences for local communities with increased congestion, but the environment will also suffer from high levels of greenhouse gas and carbon emissions, and physical and mental wellbeing will be negatively affected. The Cambridge City Deal objectives of developing active travel modes to support economic growth and the planned travel needs of new housing developments and employment will also be adversely impacted.
- 1.7.2. Without the delivery of the Swaffhams Greenway, the opportunity to realise net biodiversity gains will be reduced, resulting in a less attractive environment without an enhanced natural habitat. Delivery of the Swaffhams Greenway is therefore key in meeting the challenges identified with the current situation, and as described below, in supporting national, regional, and local strategic priorities.

## 1.8 STRATEGIC NEED

- 1.8.1. The strategic need for the Swaffhams Greenway is set out in this section while the key objectives are aligned with the Greenways Programme as a whole.

- 1.8.2. As shown in Figure 1-6, the car ownership in the study area is significantly high. With an increase in economic prosperity, it is expected that large numbers of new jobs will be created in Cambridge by 2031. This will attract trips from the sub-urban areas around Cambridge including Swaffhams which will increase the traffic volume and congestion in the road network in the area. This traffic congestion will increase journey time and delays resulting in a fall in productivity of the residents. Hence there is a strategic need to provide a sustainable transport network to cater to the demand.

**Figure 1-6 Car ownership**

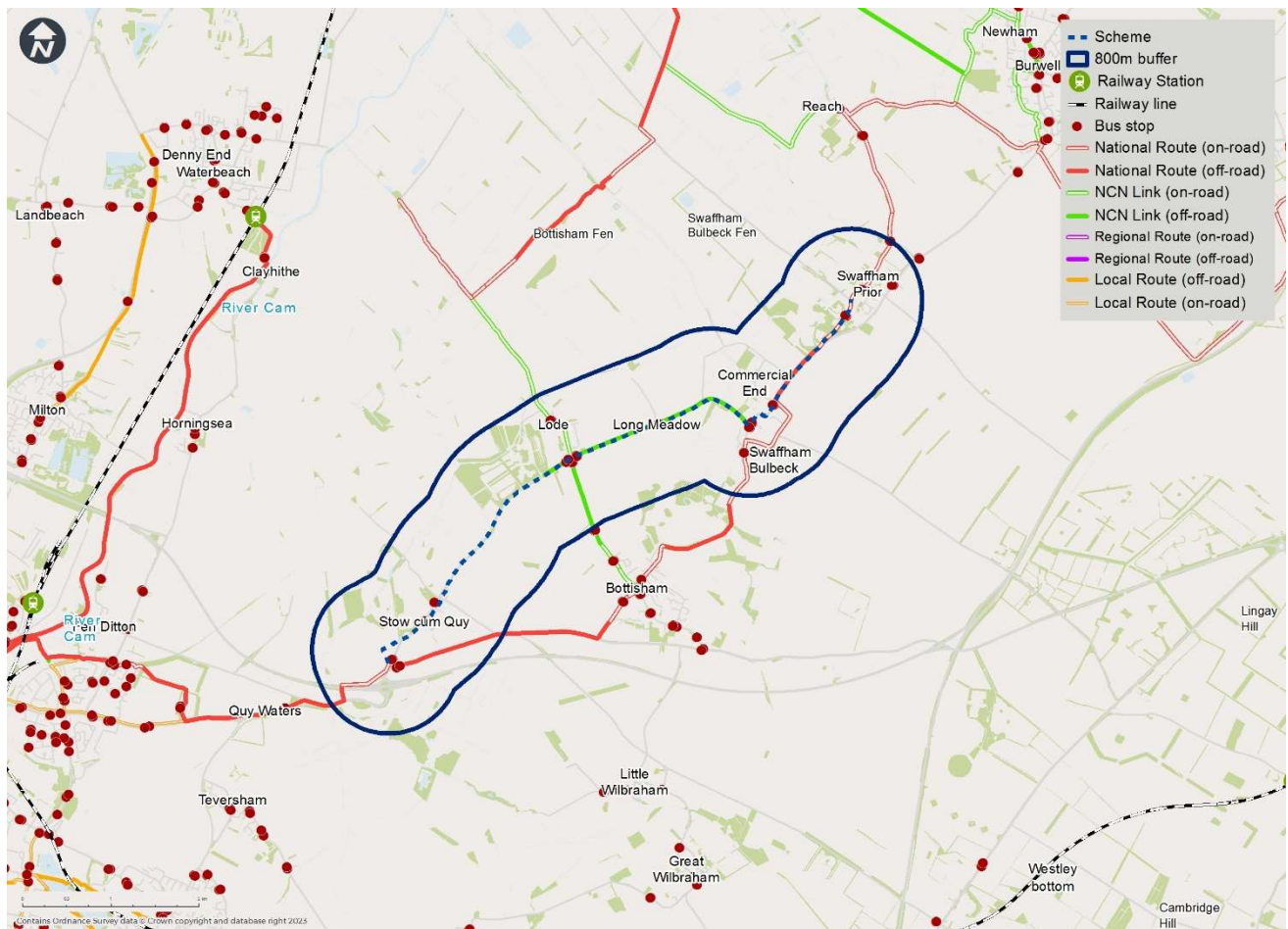


- 1.8.3. In addition, Stow cum Quy being an infill village, it necessitates the provision of safe, direct routes to facilitate and encourage short distance trips by active travel.
- 1.8.4. The South Cambridgeshire Local Plan mentions that proposed developments would be permitted in areas which have sufficient integration and accessibility by walking, cycling or public and community transport. Due to high preference of car travel in the area, there is a strategic need to increase the uptake of active travel in the area for the future development in the area. To encourage active travel among the residents in the area, it is imperative to provide attractive and safe first and last mile connectivity to and from bus stops and railway stations which act as main nodes for connectivity with Cambridge and the wider area.
- 1.8.5. The South Cambridgeshire Local Plan also mentions the necessity for new and improved active travel routes connecting the wider Rights of Way network to strengthen the connections between villages, Northstowe, Cambridge, market towns, and the wider countryside to ensure the

effectiveness of these routes. Additionally, the Rights of Way would also need to be protected with suitable maintenance, crossings, signposting and waymarking.

- 1.8.6. It is observed from Figure 1-7 that the proposed corridor would provide direct access to the A14 corridor via Stow cum Quy in addition to providing a direct linkage between a number of sections of the NCN routes thereby facilitating active travel journeys.

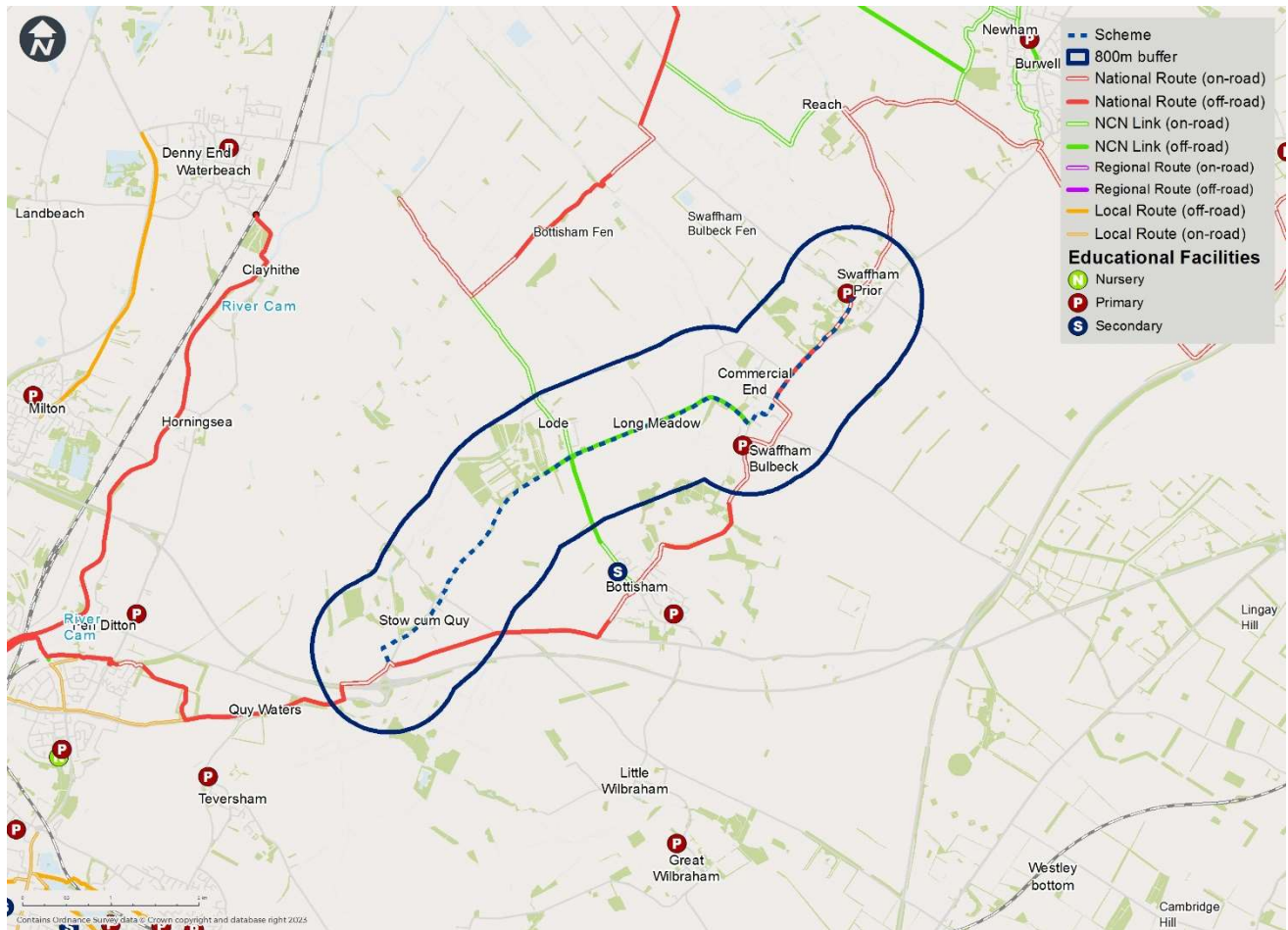
**Figure 1-7 - Connections to public transport network**



- 1.8.7. This interconnected network of safe active travel routes would connect several schools and residential areas as shown in Figure 1-8, thereby supporting use of active travel modes for educational trips, reducing car travel and improving the environment by reducing emissions.



**Figure 1-8 - Connectivity to educational facilities**



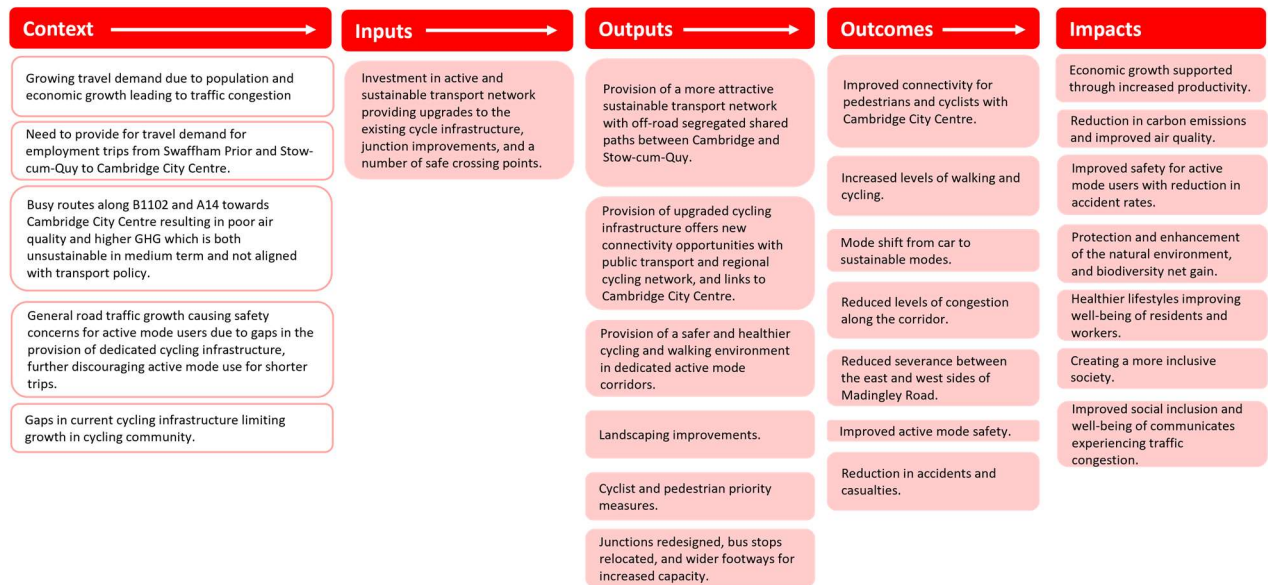
## SUMMARY

- 1.8.8. The existing roads into Cambridge from the Swaffhams corridor are congested at peak times so investing in alternatives would be beneficial. There is an existing active mode route with gaps and substandard sections, hence a continuous high quality route connecting the villages in the corridor with Cambridge is necessary for supporting economic growth.

## 1.9 STRATEGIC OBJECTIVES

- 1.9.1. The logic mapping process reflects the current situation, the strategic priorities established in the key national, regional, and local policies and the strategic needs. These relationships apply both to the overall Greenways Programme and individual schemes including the Swaffhams Greenway. The exercise to map these factors and the opportunities has resulted in the identification of the objectives and planned impacts of the Swaffhams Greenway project. This logic map is shown in Figure 1-9.

**Figure 1-9 - Logic Map**



## 1.10 SMART OBJECTIVES AND MEASURES OF SUCCESS

- 1.10.1. The Greater Cambridge City Deal (2014) outlines strategic objectives aimed at enabling a new wave of innovation-led growth by investing in the infrastructure, housing and skills that will facilitate the continued growth of the Greater Cambridge area. The City Deal will provide £1bn of local and national public sector investment to fund growth in Greater Cambridge, enabling an estimated £4bn of private sector investment in the Greater Cambridge area focussing on areas such as West Cambridge, supported by the implementation of the Swaffhams Greenway.
- 1.10.2. Delivery of the Swaffhams Greenway will further the strategic goals of the GCP through providing enhanced opportunity for active travel to new residents and commuters. With an increased number of people using active travel modes, levels of congestion will be reduced, and air quality and public health improved. Table 1-3 presents the Swaffhams Greenway SMART strategic and operational objectives that are aligned with the overall Greenways Programme together with measures of success.

**Table 1-3 – Swaffhams Greenway SMART Objectives**

Strategic Objectives	Operational Objectives	Measures of Success
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 Ability to contribute to a reduction in vehicular road traffic Propensity to reduce congestion/delay
Contribute to improved air quality and better public health	Connectivity: Improve accessibility to jobs and	Reduced journey time for cycling



	opportunities by active modes through a reduction in journey times and increase ease of interchange with public transport modes	Scale of catchment (jobs, housing) Ability to unlock growth 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, further resulting in improved community health and wellbeing through uptake of active travel	Road safety Protection of green spaces; net biodiversity gain (across the Greenways programme) Environment (air quality and carbon reduction) Quality of the public realm Severance Increase in cycling and walking trips Improved public health and wellbeing

1.10.3. To plan for the successful delivery of the scheme, the following shall be monitored:

- Planning consents
- Phased programme of construction

## 1.11 SCOPE

- 1.11.1. The Swaffhams Greenway is 7.6km long. The scheme will connect with other active mode projects and will provide a link to the Chisholm Trail, which leads to Cambridge North and Cambridge railway stations. The route starts in Swaffhams Prior and continues through Swaffhams Bulbeck in the B1102 corridor, past Anglesey Abbey to Stow cum Quy. At this point, the route joins with the Bottisham Greenway, which would provide a link into Cambridge.
- 1.11.2. The route has a mix of on-road and off-road paths as well as limited sections of quiet streets, with the aim to provide a high-quality route to improve and enhance walking, cycling and, where appropriate, horse riding in the area.
- 1.11.3. The proposals include shared use paths, and wider footways in some locations. Existing shared use paths are also being enhanced and widened to three metres, where possible, with upgraded drainage facilities to reduce flooding. Traffic calming measures, such as speed humps and raised tables, are proposed on some sections of the route to provide a safer environment.
- 1.11.4. Landscaping and ecological enhancements are also proposed, which includes planting to make the route more attractive and support a wide range of wildlife.

## 1.12 COMPLEMENTARY SCHEMES

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

## Cambridge City Access

- 1.12.2. The City Access project aims to improve access to Greater Cambridge by introducing measures to reduce congestion, encourage active travel and improve air quality. The Swaffhams Greenway project is aligned with the objectives of the City Access project. The scheme provides improvements to existing cycling and walking infrastructure and proposes to develop additional routes which encourage active travel and improve air quality as well as provide high quality public spaces.
- 1.12.3. The scheme provides sustainable travel options to people living in a number of villages including Swaffham Prior, Swaffham Bulbeck and Stow cum Quy as an alternative to car travel on the A14 and B1102 to and from Cambridge.
- 1.12.4. The City Access Programme comprises of three elements: firstly, the Making Connection Programme improving the environment for active travel modes, transforming the city's bus network and reducing congestion and pollution, secondly, development of an Integrated Parking Strategy, including the delivery of more residents' parking schemes, and thirdly, making the best use of the city's road network including the recent road network classification consultation.
- 1.12.5. The City Access project is developing a package of measures to deliver a commitment to reduce traffic in Cambridge by 10-15% from 2011 levels by 2030 and is a key complementary scheme for the Greenways programme. To optimise the success of both, it is vital that the Greenways programme is delivered in conjunction with the eight packages comprising the City Access Strategy (illustrated in **Figure 1-10**).

**Figure 1-10 - Cambridge City Access Strategy Measures**



Source: Greater Cambridge Partnership

- 1.12.6. The Swaffhams Greenway will benefit from the positive impacts on reallocation of road space for public transport and active modes incorporated in the City Access Strategy including:
- Reduced traffic congestion within the city centre;
  - Faster, cheaper and more reliable bus journeys, enabling expansion of Park & Ride capacity and facilities;
  - 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; and
  - Continued growth in cycling.
- 1.12.7. The Swaffhams Greenway scheme forms part of the larger Greenway Programme network that provides improvements to existing cycling and walking infrastructure and proposes to develop additional routes which encourage active travel and improve air quality as well as provide high quality public spaces. The Swaffhams Greenway will enable the achievement of Cambridge City Access objectives in the Swaffhams travel corridor and provide an alternative active travel corridor for car travel on the B1102 and A14 onwards into Cambridge on linked active mode routes.

#### **The Horningsea Greenway**

- 1.12.8. The Horningsea Greenway scheme is proposed to provide improved active mode connectivity between north-east Cambridge to the village of Horningsea. The 8km route follows a mix of existing quiet roads (B1047 Horningsea Road), off-road and busier roads (A14 at Junction 34), with the aim of providing a high-quality route to improve active travel in the area. The Greenway would also provide onward active mode connectivity towards Midsummer Common in the city centre.
- 1.12.9. In addition, the Horningsea Greenway route and associated walking and cycling improvements provide an excellent off-road alternative to the A1303.

#### **Bottisham Greenway**

- 1.12.10. The 9.5km long Bottisham Greenway connects Bottisham to Stow cum Quy, Newmarket Road, and Fen Ditton before continuing towards Cambridge city centre. The route proceeds along the A1303 and connects to the A14 underpass which will be easier and safer to use due to lighting and landscaping improvements.
- 1.12.11. The route converges with the Swaffhams Greenway and continues along High Ditch Road past the Wing housing development to Fen Ditton. At this point the route connects to the Horningsea Greenway, providing a safe and attractive active travel route separate from road traffic.

### **1.13 STRATEGIC IMPACTS**

- 1.13.1. This section discusses the economic, social, and environmental strategic impacts of investment in the Swaffhams Greenway.
- 1.13.2. The Swaffhams Greenway forms part of a wider policy of developing sustainable transport in the Greater Cambridge area. It contributes to the provision of a sustainable transport network that adds to transport capacity and connectivity essential to maximise the opportunities for housing and economic growth.

Reliance on the road network will increase congestion and delay as traffic growth occurs which will increase in frequency and impact, which investment in additional highway capacity, even if feasible, will not be able to mitigate. Therefore, investment in high quality, safe, attractive, and comprehensive infrastructure to support pedestrians, cyclists and public transport users is essential to meeting this need.

### **Economic Impacts**

- 1.13.3. From an economic standpoint investment in the Swaffhams Greenway will help reinforce Cambridge's competitive knowledge-based economy. It will provide employees in the Swaffhams corridor and the other areas served by the Greenway with accessibility benefits due to the improved active mode linkage to the city centre. Segregated cycle infrastructure and reduced cycling times will make sustainable travel to work an attractive option for commuting. Associated with this there will be productivity benefits and reduced employee absences due to sickness. Furthermore, an active travel network is an attractive feature for future businesses looking to locate in Cambridge. Provision of the high-quality active travel corridor enables future-proofing behavioural change for sustainable travel use by connecting planned new housing and employment developments.
- 1.13.4. A secondary economic impact will be benefits to general road traffic in the congested transport corridors as continuing road users benefit from a reduction in road traffic levels and a reduced rate of growth in road traffic as others choose to use the Swaffhams Greenway as an alternative transport corridor.

### **Social Impacts**

- 1.13.5. The Swaffhams Greenway will achieve health benefits by encouraging active lifestyles as residents switch to cycling. Physical activity will also have a positive impact on mental health too. The scheme will encourage modal shift resulting in reduced levels of congestion and hence creating a more pleasant living environment. The Swaffhams Greenway will also improve the safety of both active travel and road network users through reduced congestion and a reduction in potential accidents involving cyclists.

### **Environmental Impacts**

- 1.13.6. The Swaffhams Greenway will encourage mode shift from motorised forms resulting in reduced levels of greenhouse gases and pollutants such as NOx and PM10. This will contribute towards achieving strategic aims of Net Zero targets and improving the air quality of surroundings.
- 1.13.7. There are also Green Infrastructure and Natural Capital impacts. The Swaffhams Greenway will be designed to provide multiple environmental, cultural and social benefits. The net impact will be to create well-designed and beautiful places including habitat enhancement that deliver on natural capital enhancements and biodiversity gain in line with the Cambridge Local Plan and Environment Bill.

**Table 1-4 – Scheme Benefits**

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	Improvement in air quality and carbon reduction as the Horningsea Greenway encourages a switch from motorised forms of transport and reduced levels of congestion.
Health benefits	A modal shift towards active travel will bring about numerous health benefits, both physical and mental.  Access to an active-travel network will future-proof behavioural change.
Improved connectivity and accessibility	Improved access to a quality sustainable transport mode linking the city centre and the Swaffhams corridor.

## 1.14 OPTION DEVELOPMENT

### Overview

- 1.14.1. The Swaffhams Greenway scheme was developed through a process of identification, prioritisation and consultation.

### Option Assessment

- 1.14.2. Outline concept design-based work was carried out by 5<sup>th</sup> Studio, with support from JCLA (landscaping) and Allan Tyler (cost). Nigel Brigham carried out an independent review of the 5<sup>th</sup> Studio designs. The Swaffhams Greenway initial designs went to public consultation between 16<sup>th</sup> September – 28<sup>th</sup> October 2019. A further engagement period took place between 21<sup>st</sup> November and 16<sup>th</sup> December 2022. The decision was made to combine the Horningsea, Bottisham and Swaffham consultations due to the close proximity of the villages and the interconnectedness of the routes.

### Consultation

- 1.14.3. A multi-channel approach was taken during the Swaffhams consultation, and the public were asked their preferences regarding the individual elements of the proposed greenway route.
- 1.14.4. In summary, the consultation results showed that 73% of the 144 respondents supported the Anglesey Abbey crossing and path improvements; 71% of respondents supported Quy Court connection to Lode path and 68% of respondents supported the 'Stow cum Quy to the A14 underpass relocated path' upgraded to shared-use path. Other elements of the scheme were also well supported.
- 1.14.5. Through a 'bottom up' methodology, the GCP has engaged with local communities to ensure that routes meet the local needs of people and take advantage of local knowledge. Overall, local



communities engaged positively and provided valuable feedback to help shape developments of the schemes. The key findings from the initial concept designs consultation are presented in Table 1-5.

**Table 1-5 – 2019 Consultation**

Consultation	Dates	Key findings
Initial concept designs	16 <sup>th</sup> September – 28 <sup>th</sup> October 2019	<ul style="list-style-type: none"> <li>Most respondents supported Swaffhams Greenway 'Stow Road/Orchard Street/Church Road junction Route A: round the back of the Wheatsheaf pub'</li> <li>High support for Anglesey Abbey crossing and path improvements.</li> <li>Concerns were raised about 'Swaffhams Greenway element 10: Traffic free slip road and cycle priority to Swaffham Prior'</li> </ul>

## Options

- 1.14.6. The initial proposals presented in the 2019 consultation material were for an active mode connectivity between Cambridge and Swaffhams following existing shared-use cycle paths and quiet roads, with the aim of providing a high-quality alternative route to the B1102.
- 1.14.7. The scheme proposed aimed to improve connectivity and safety for people walking and cycling through Swaffhams via Fen Ditton. Widening of shared use paths was proposed in some locations to provide more space for Greenway users, with improved crossings throughout the scheme to prioritise people. The scheme also aimed to make it easier and safer to use the A14 underpass and address safety concerns by including improved lighting in the area. Coloured surfacing was proposed along sections of the route to highlight the presence of cyclists and improve safety.
- 1.14.8. Coloured surfacing was proposed as a feature along Orchard Street, Main Street, Quay Court and High Street in Swaffhams and along the Riverside in Cambridge, Bell Road and Lode Road in Bottisham. Additionally, junction improvements were proposed at Long Meadow, White Droveaway, Lode Road and Commercial End Junction in Swaffhams. Through the Swaffhams village, traffic calming measures were proposed including gateway features to reduced speed limits around the villages to slow traffic. Landscaping and ecological enhancements were also proposed for the scheme, which includes tree planting to make the route attractive and support a wide range of wildlife.

## GCP Board Approval

- 1.14.9. A summary of 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. Approval to proceed to planning and detailed design was granted by the Executive Board of GCP in June 2020.
- 1.14.10. The scheme is currently at preliminary design stage. Site surveys are being carried out and will be used, alongside feedback, to finalise the preliminary design before starting the detailed design.

1.14.11. The public engagement on the preliminary technical design was undertaken between 27<sup>th</sup> February and 24<sup>th</sup> March 2023. The review of the feedback and comments collected during the consultation is currently ongoing.

### **Constraints**

1.14.12. The following significant constraints on the delivery of the scheme have been identified:

- 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 and other barriers.
- The need to satisfy planning requirements, which will include habitat, flooding and other issues.

1.14.13. These will be addressed through the ongoing development of the scheme and engagement with stakeholders and the feedback received from the February-March 2023 consultation. A review of the consultation feedback is being undertaken.

### **Next Steps**

1.14.14. The next stages in the design process will undertake the following tasks:

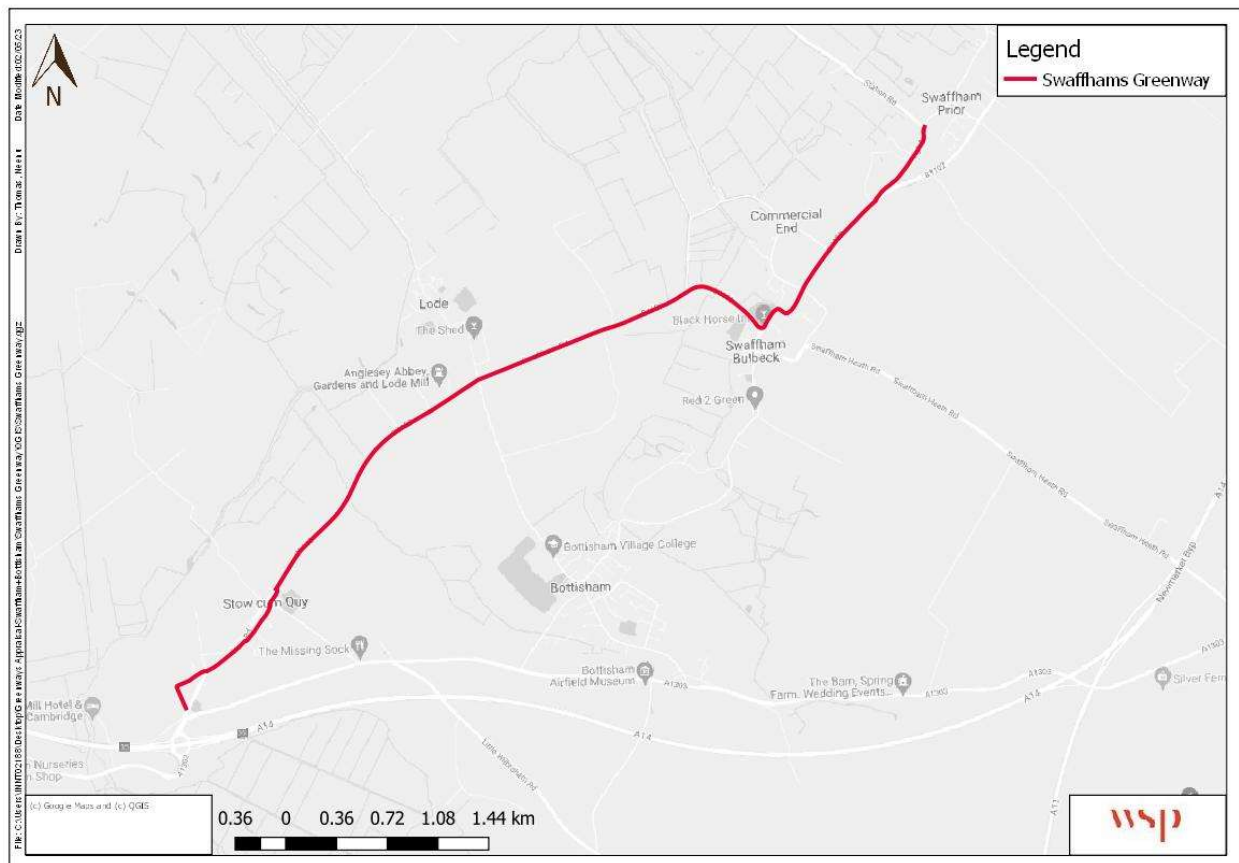
- Environmental surveys
- Landowner Discussions
- Landowner Negotiations
- Detailed design

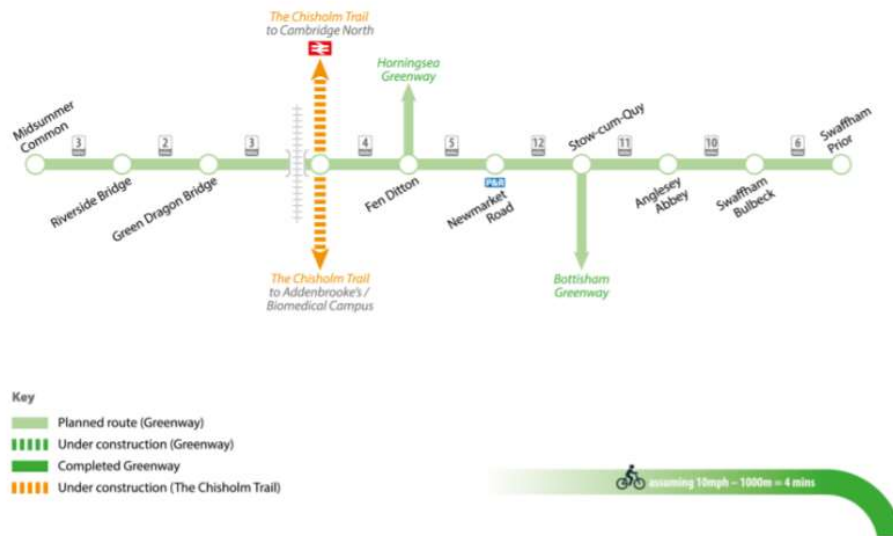
## 2 ECONOMIC CASE

### 2.1 INTRODUCTION

- 2.1.1. The Economic Case identifies the impacts of the scheme to inform the assessment of the Value for Money (VfM). It considers the impacts that can be measured and quantified, and those which can be assessed qualitatively. To assess the VfM, these impacts have been compared to the scheme costs.
- 2.1.2. The Swaffhams Greenway scheme will be an improved walking and cycling route between Swaffham Prior and Swaffham Bulbeck into Cambridge. Improvements are proposed from Stow Road to High Street along Main Street, Colliers Lane, Quay Road and B1102 Swaffham Road. The Greenways network will run through different environments including quiet streets and shared use path for cyclists and pedestrians. The scheme will connect villages along the route to each other, with new and improved signage enabling a direct connection with Cambridge. Parts of this option require land acquisition from third parties to enable construction and would be subject to land negotiations.

**Figure 2-1 – Swaffham Greenway Scheme**





**Table 2-1 – Summary of Scheme Elements**

Element	Infrastructure
Walking & Cycling	<ul style="list-style-type: none"> <li>Quiet Roads – speed limits reduced to 20mph</li> <li>Shared use paths – A 3-metre-wide path with a 2-metre grassy strip running parallel. Where the path runs beside the carriageway a green verge will separate the path from the road, this will be as wide as possible.</li> <li>Signage – Greenway specific wayfinding marker posts could be placed at regular intervals and junctions.</li> </ul>
Public Realm	<ul style="list-style-type: none"> <li>Lighting – solar studs could be used at specific points to aid wayfinding in low light</li> <li>Maintenance – a maintenance package for the route is being planned</li> </ul>

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

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

## 2.2 APPROACH TO ECONOMIC APPRAISAL

2.2.1. The appraisal has been undertaken in alignment with the principles of the HM Treasury Green Book and the Department for Transport (DfT) Transport Analysis Guidance (TAG) for schemes of this nature. As set out in these guidance documents, the appraisal of the scheme has been largely undertaken in line with the following guidance:

- TAG Unit A1-1 (May 2018): Cost-Benefit Analysis
- TAG Unit A1-2 (July 2017): Scheme Costs
- TAG Unit A1-3 (March 2017): User and Provider Impacts
- TAG Unit A4-1 (May 2020): Social Impact Appraisal
- TAG Unit A4-2 (May 2020): Distributional Impact Assessment
- TAG Unit A3 (May 2019): Environmental Impact Appraisal
- TAG Unit A5-1 (May 2020): Active Mode Appraisal
- DfT Value for Money Framework

- 2.2.2. The appraisal of the scheme considers both the impacts that can be quantified, and monetised, as well as those that can only be assessed qualitatively. Considering the range of proposals along the corridor, various appraisal techniques have been used to assess the impacts which can be quantified. All benefits and costs have then been consolidated in a wider economic appraisal model.
- 2.2.3. In line with TAG, all costs and benefits in the appraisal have been presented in 2010 Present Values (PV), market prices. Costs and benefits have been deflated to 2010 prices using the GDP Deflator forecasts within the TAG Data Book v1.20.1 and discounted to 2010 values using the social discount rates also within the TAG Data Book. The market price adjustment factor of 1.19 from the TAG Data Book has been used to convert from factor prices to market prices.
- 2.2.4. It has been assumed that the scheme opening year is 2025. The impacts have been considered over a 20-year appraisal period. TAG Unit A1-1 Cost Benefit Analysis states that the appraisal period should 'cover the period of usefulness of the assets encompassed by the options under consideration'.
- 2.2.5. The following sections set out the approach employed to appraise the various elements of the scheme.

### ACTIVE MODE APPRAISAL TOOLKIT

- 2.2.6. In line with TAG Unit A5-1, the DfT's Active Mode Appraisal Toolkit (AMAT) (November 2022 update) has been used to estimate the benefits associated with improved cycling infrastructure along the proposed Swaffhams Greenway. The tool considers the benefits in terms of physical activity, absenteeism, journey quality, environmental, indirect tax and congestion.
- 2.2.7. The current and anticipated scheme demand is input to the AMAT, as well as the change in infrastructure provision. Combining this with a number of assumptions from the National Travel Survey (NTS) regarding journey length, journey speed, purpose split and cycling diversion factors, the tool outputs the benefits associated with the intervention. The scheme costs can also be input to the tool such that the Benefit to Cost Ratio (BCR) can be calculated, however for this submission the benefits and costs have been brought together in the economic appraisal model. A wider appraisal model was used so that a number of benefit streams could be collated and then compared with the scheme costs to produce an overall BCR for the scheme.
- 2.2.8. Two assumptions in the AMAT were refined in order to more accurately represent the local conditions in Cambridge, as outlined below.

**Table 2-2 – Refined Assumptions**

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



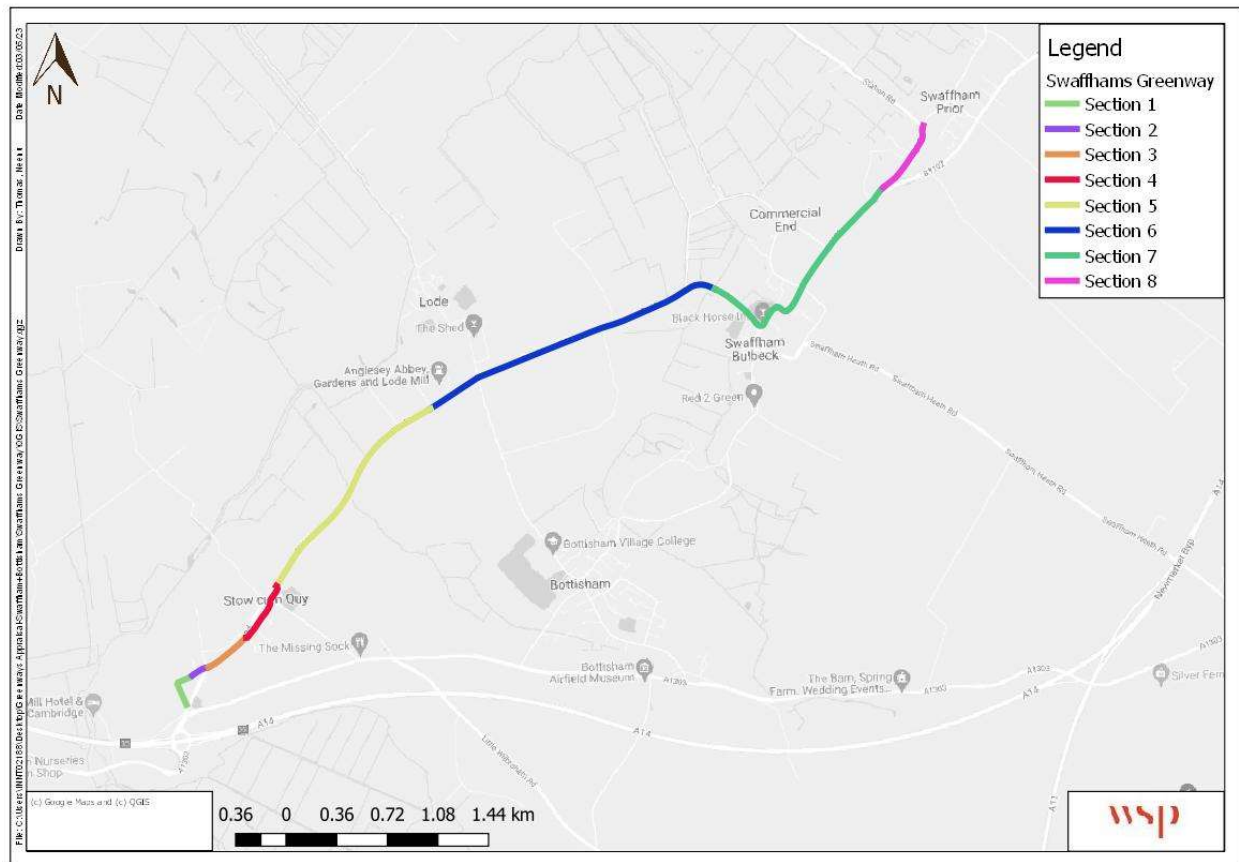
- 2.2.9. In line with DfT guidance and to ensure the scheme benefits were not over-estimated, the AMATs were split into sections depending on the type of existing and proposed infrastructure present along the corridor. For example, the AMAT requires an input of how much of an average cycling trip will use the intervention, where the length of an AMAT section is divided by average trip length (5.14km). This allowed the route to be broken by length, ensuring benefits were not replicated.
- 2.2.10. The sections are set out in Table 2-3. The scheme was split into eight AMAT sections. These sections have been split to reflect the different type of cycling infrastructure provision along the Greenway network. Count data for these sections enabled an assessment to be made of the directional movement of cyclists and pedestrians.

**Table 2-3 – Summary of AMAT Sections**

Section	Description	Length of Route	Existing Infrastructure	Proposed Infrastructure
1	New Parallel route from Church Road to Orchard Street	0.29km	No cycling provisions	3m wide Shared use path
2	Orchard Street-Stow Road	0.13km	No cycling provisions	Quiet street environment
3	Stow Road-Main St (upto Wheelright way Minter Cl)	0.34km	(Narrow) shared use path adjacent to the carriageway	3m wide Shared use path
4	Main St (from Wheelright Minter Cl) to B1102	0.46km	No cycling provisions	Quiet street environment
5	B1102 Colliers Lane to Anglesey Abbey	1.70km	2.5 m Shared use	-
6	Anglesey Abbey to Gutter Bridge Ditch	2.23km	(Narrow) shared use path adjacent to the carriageway	3m wide Shared use path
7	Gutter Bridge Ditch to High Street B1102	1.82km	(Narrow) shared use path adjacent to the carriageway	3m wide Shared use path
8	High Street B1102 to Station Road	0.55km	No cycling provisions	Quiet street environment

- 2.2.11. The AMAT sections discussed above are also shown in Figure 2-2 below.

**Figure 2-2 – Swaffham Greenway AMAT Sections**

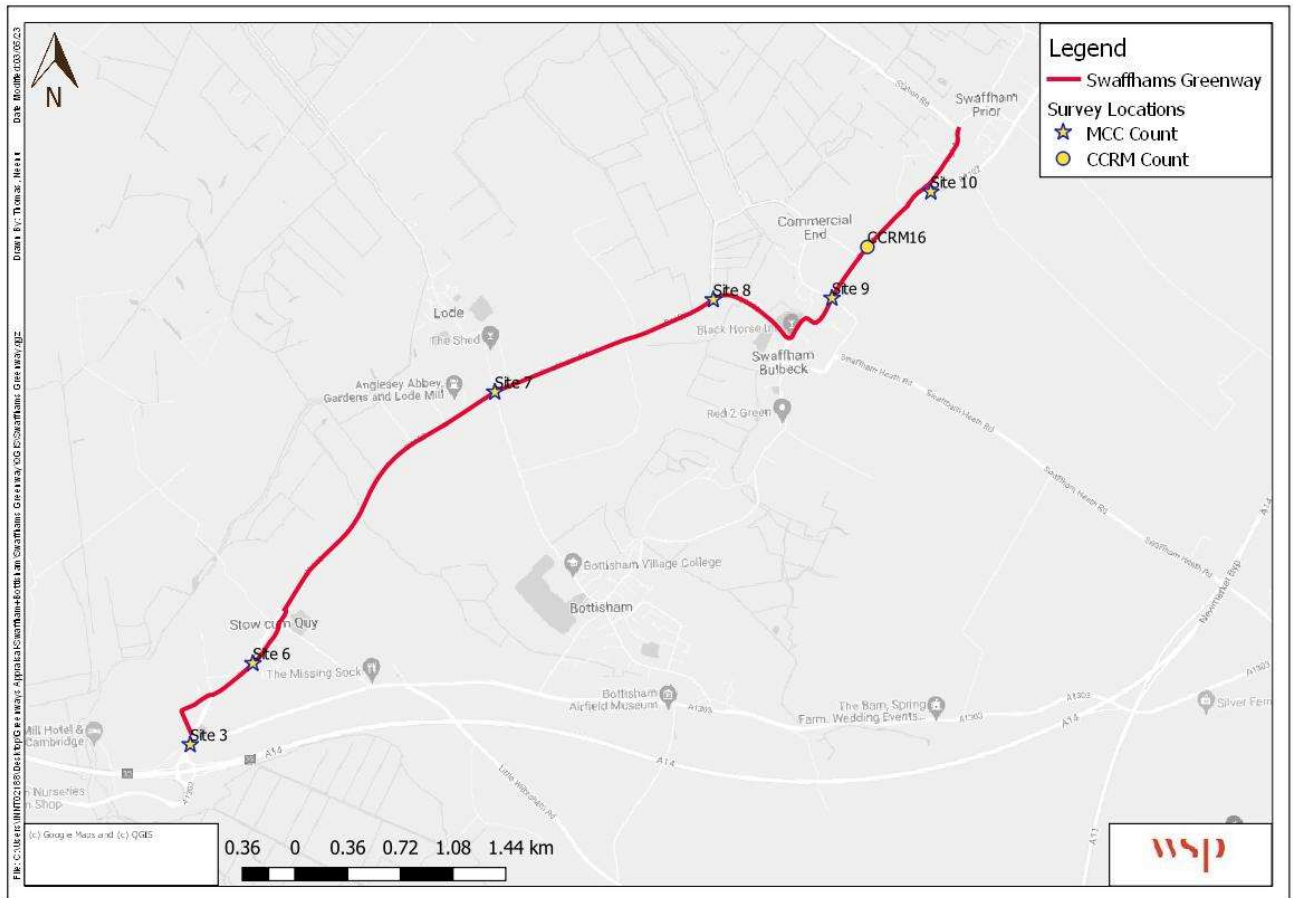


2.2.12. The following sections discuss the approach to using the AMAT toolkit in this submission.

### Existing Demand

2.2.13. The AMAT requires the existing and scheme induced demand to be included as an input. To establish the existing cycling demand along the route, Manual Classified Turning Counts (MCCs) were carried out along the route to gauge walking and cycling demand and Cambridge Cycle Route Monitoring (CCRM16) count was also reviewed. The locations of the counts used are outlined in Figure 2-3.

**Figure 2-3 – Swaffhams Greenway Count Data Locations**



- 2.2.14. The Manual Classified Counts (MCCs) conducted in September 2022 by WSP, provided existing demand for all the sections. The MCC was collected between 0700-1000 and 1500 to 1900, a total of 7 hours. CCRM16 count data provided by Cambridgeshire County Council was reviewed but the average of MCC Sites 8 and 9 provided a more realistic average compared to the CCRM16 average for Section 7 (between Gutter Bridge Ditch to High Street B1102). In the year 2020, CCRM16 showed an unrealistic rise compared to other years which might be due to the pandemic situation which prevailed then. MCC averages were considered for most of the sections along the Greenway.
- 2.2.15. As AMAT assumes a 24-hour flow as input to calculate benefits, the MCCs were factored up to 24-hour flows. This adjustment used 24-hour count data collected in March 2022 on Vinery Road, Cambridge. The flows have been annualised within the AMAT, using an annualisation factor of 305 days. Table 2-4 below outlines the existing cycling and walking demand analysed for each AMAT section.

**Table 2-4 – Existing Cycling and Walking Demand (Daily Trips – 24 Hours)**

Section	Description	Source	Cycling Demand	Pedestrian Demand
1	New Parallel route from Church Road to Orchard Street	Average of MCC Site 3 and Site 6	62	18
2	Orchard street-Stow Road	Average of MCC Site 3 and Site 6	62	18
3	Stow Road-Main St (upto Wheelright way Minter Cl)	MCC Site 6	119	37
4	Main St (from Wheelright Minter Cl) to B1102	MCC Site 6	77	41
5	B1102 Colliers Lane to Anglesey Abbey	MCC Site 7	107	31
6	Anglesey Abbey to Gutter Bridge Ditch	Average of MCC Site 7 and Site 8	61	13
7	Gutter Bridge Ditch to High Street B1102	Average of MCC Site 8 and Site 9	64	30
8	High Street B1102 to Station Road	MCC Site 10	37	9

2.2.16. Two-way flows were used as the existing demand flows at all sections. The counts indicate that cyclist demand is greater along Stow Road to Anglesey Abbey and decreases towards the High Street.

### **Scheme Induced Demand**

2.2.17. To estimate the scheme induced cycling demand, an uplift percentage of 25% was used, which was derived from pre- and post-implementation traffic surveys from several comparable schemes outlined in the GCP Impact Evaluation Evidence Paper (2019)<sup>4</sup>, Cycle City Ambition Programme (2013-2018)<sup>5</sup>, and Outcomes of the Cycling City and Town Programme (2017)<sup>6</sup>, 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 through green space.

<sup>4</sup> GCP Impact Evaluation Evidence Paper (2019)

<sup>5</sup> [Cycle City Ambition Programme 2013-18](#)

<sup>6</sup> <https://www.sustrans.org.uk/media/2970/2970.pdf>

2.2.18. A walking demand uplift of 10% was used, which was derived from an average of case studies outlined in Making the Case for Investment in the Walking Environment (2011).<sup>7</sup> Examples from this study include:

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

2.2.19. The demand forecasts are show in Table 2-5.

**Table 2-5 – Forecasted Cycling and Pedestrian Demand**

Section	Description	Source	Cycling Demand	Pedestrian Demand
1	New Parallel route from Church Road to Orchard Street	Average of MCC Site 3 and Site 6	78	20
2	Orchard street-Stow Road	Average of MCC Site 3 and Site 6	78	20
3	Stow Road-Main St (upto Wheelright way Minter Cl)	MCC Site 6	149	40
4	Main St (from Wheelright Minter Cl) to B1102	MCC Site 6	97	45
5	B1102 Colliers Lane to Anglesey Abbey	MCC Site 7	134	34
6	Anglesey Abbey to Gutter Bridge Ditch	Average of MCC Site 7 and Site 8	76	15
7	Gutter Bridge Ditch to High Street B1102	Average of MCC Site 8 and Site 9	80	33
8	High Street B1102 to Station Road	MCC Site 10	46	10

### Intervention

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

- No provision
- Shared bus lane
- Wider lane

<sup>7</sup> <https://www.livingstreets.org.uk/media/1394/2011-making-the-case-full-report.pdf>



- On-road non-segregated cycle lane
- On-road segregated cycle lane
- Off-road segregated cycle track

2.2.21. The AMAT toolkit classifications for existing and proposed infrastructure only capture a limited number of cycle interventions and therefore the most comparable selection was made in the toolkit according to examples outlined in the user guidance. For example, the proposed infrastructure for the route includes several sections of shared use footway, which is not specifically a selection in the AMAT Toolkit and has therefore been categorised as 'off-road segregated cycle track'. This category was selected as AMAT user guidance states that an off-road segregated cycle track is 'a path or track with right of way for pedal cycles that is separate to the road, typically with a level difference (that may or may not also be useable for pedestrians)'. For sections that include light touch on road measures such as sinusoidal speed humps, reduced speed limits and carriageway markings, 'shared bus lane' has been selected in order to differentiate these sections from existing on road sections, which have been classified as 'no provision'. Table 2-6 below outlines the type of existing / proposed infrastructure for each section of the route, alongside the subsequent classification for each section in the AMAT Toolkits.

**Table 2-6 – Summary of AMAT Sections**

Section	Type of Infrastructure (Existing / Proposed)	AMAT Classification (Existing / Proposed)
1	No cycling provision/Shared use path	No Provision/Off road segregated
2	No cycling provision/Quiet Street environment	No Provision/Shared bus lane
3	Narrow Shared use/3m wide Shared use	No Provision/Off road segregated
4	No cycling provision/Quiet Street environment	No Provision/Shared bus lane
5	2.5m Shared use/No Proposals	Off road segregated/ Off road segregated
6	Narrow Shared use/3m wide Shared use	No Provision/Off road segregated
7	Narrow Shared use/3m wide Shared use	No Provision/Off road segregated
8	No cycling provision/Quiet Street environment	No Provision/Shared bus lane

## Outputs

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

- Congestion benefit
- Infrastructure
- Accident
- Local air quality
- Noise

- Greenhouse gases
- Reduced risk of premature death
- Absenteeism
- Journey ambience
- Indirect Tax

## ACCIDENT REDUCTION

- 2.2.23. Accident data was obtained along the Swaffhams Greenway corridor for the period between 2018 and 2022. During this 5 year period, only one accident involving cyclists occurred along the corridor which was serious in severity.
- 2.2.24. The scheme proposals include improved cycle facilities along the corridor, such as:
- Introducing 3m wide shared use path
  - Quiet Street environment:
    - Reducing speed limits from 30mph to 20mph
    - Proposed cycle markings
- 2.2.25. Due to greater separation between cyclists and vehicles and reduced vehicles speeds, the scheme proposals are expected to lead to a reduction in road collisions involving cyclists.
- 2.2.26. Following analysis of these collisions, the reported serious collision was considered to have been avoidable with the proposal of 3m wide shared use path with 2m wide separation from the main carriageway, in place. This was then converted to a yearly average, and then multiplied against the TAG values for accidents by severity, as shown in Table 2-7.

**Table 2-7 – Accident Savings by Severity**

	Accident Savings by Severity		
	Fatal	Serious	Slight
Cost of a casualty (£, 2010, TAG Databook v1.20.2)	-	£210,760	£21,483
Number of collisions involving cyclists	-	1	0
Number of cycle accidents that may have been prevented by the scheme (5 years)	-	1	0
Number of prevented cycle accidents per annum	-	0.2	0
Accident savings per annum (£, 2010)	-	£ 42,152.00	£ 0

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

## NON-MONETISED IMPACTS OF THE SCHEME

- 2.2.28. There are a number of elements of the scheme for which the impacts cannot be quantified and monetised, these include:
- Reduced speed limits – the Swaffhams Greenway includes traffic calming measures reducing speeds to 20mph

- Maintenance – a maintenance package is planned for the Swaffhams Greenway. This will be carried out with reference to the GCP Greenways Maintenance Guidance. However, the maintenance costs rates by type of active mode infrastructure have not yet been assessed by the GCP.

2.2.29. Where appropriate, these elements of the scheme are considered within the Environmental and Social Impacts sections of the Economic Case.

## SCHEME COSTS

- 2.2.30. It is estimated that the Swaffhams Greenway scheme will cost in the region of £7.10m, based on direct construction works, design and other fees, risk contingency and inflation.
- 2.2.31. Indirect construction costs include main contractor's preliminaries, traffic management, overheads and profit. Indirect non-construction costs include Stats and professional fees.
- 2.2.32. Further detail on the estimation of the scheme costs is presented in the Financial Case. The cost of the scheme used in the economic appraisal is outlined in Table 2-8 below.

**Table 2-8 – Cost , £, Q4 2022 Prices**

Cost	With Risk and Contingency	Without Risk and Contingency
Total Cost	£ 7,100,000	£ 4,641,000

## 2.3 ECONOMIC APPRAISAL ASSUMPTIONS

- 2.3.1. The main appraisal assumptions are set out in Table 2-9.

**Table 2-9 – Economic Appraisal Assumptions**

Criteria	Assumption	Source
Opening year	2025	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	See Table 2-4 for a breakdown of demands used	Count Data
Scheme induced cycle demand	25%	Schemes outlined in GCP Impact Evaluation Evidence Paper Cycle City Ambition Programme 2013-2018
Existing path pedestrian demand	See Table 2-4 for a breakdown of demands used	Count Data
Scheme induced pedestrian demand uplift	10%	Living Street: Making the Case for Investment in the Walking Environment
Journey purpose split	Business: 12% Commuting: 25.5% Other: 62.5%	January 2023 TAG Data Book v1.20.2
Values of time	Commuter – 9.95 Other – 4.54 (£,2010)	January 2023 TAG Data Book v1.20.2 (A1.3.2)
Market price adjustment factor	1.19	January 2023 TAG Data Book v1.20.2 (A1.3.1)
Optimism bias on capital costs	23%	TAG Unit A1-2
Cost spend profile	2024/25 (50%) -2025/26 (50%)	WSP

## 2.4 ECONOMIC APPRAISAL RESULTS

### PRESENT VALUE OF BENEFITS

- 2.4.1. The tables below show a summary of the results of the appraisal for each element of the scheme by area of interventions.

## Cycling and Pedestrian Provision

- 2.4.2. The table below shows the monetised benefits associated with the improved cycling and walking infrastructure which includes new off-road cycle paths, improvements to existing cycling infrastructure, footway widening and way finding signages.

**Table 2-10 – Cycling and Pedestrian Monetised Benefits**

Cycling and pedestrian provision	£, 2010 PV over 20-year appraisal period
<b>All Sections Combined</b>	
Congestion	24,027
Infrastructure	519
Accident	3,716
Local air quality	552
Noise	191
Greenhouse gases	6,245
Reduced risk of premature death	955,505
Absenteeism	138,477
Journey ambience	395,911
Indirect taxation	-7,293

- 2.4.3. The largest benefit associated with the increased number of cyclists as a result of the scheme is the health benefit through increased physical activity including reduced risk of premature death. Journey ambience accounts for the second largest benefits impact followed by absenteeism benefits. There are decongestion benefits as a result of modal shift from private car to cycling, and associated impacts – fewer road accidents, improved air quality, reduced noise and reduced greenhouse gas emissions. The scheme benefits are in line with the objectives outlined in the strategic case including encouraging commuting by sustainable modes and reducing traffic congestion as well as contributing to improved air quality and better public health. The reduction in private car use has a negative impact on indirect tax revenues to central government due to the impact of mode shift resulting in less road traffic and a consequent reduction in fuel duty. However, the reduction of car trips is considered a positive when considering the strategic objectives of the scheme.

## Accidents

- 2.4.4. Table 2-11 below shows the benefits of the scheme induced accident reduction.



**Table 2-11 – Accident Benefits**

Impact	£, 2010 PV over appraisal period
Accidents (Collision savings)	£ 785,536

- 2.4.5. The scheme proposals, which include greater separation from general traffic for active modes, is estimated to result in a total saving of £0.79m as a result of fewer collisions involving cyclists over the 20-year appraisal period. This is in addition to the accident benefit estimated in AMAT which results from a reduction in highway-kilometres due to mode shift to active modes.

## PRESENT VALUE OF COSTS

- 2.4.6. The cost assessment included direct construction costs, indirect construction costs, indirect non-construction costs, and inflation. Inflation was assumed of 3.24% for the period from 4Q 2022 to 4Q 2024, as well as an additional inflation contingency of 3% per annum over the construction period, due to current economic circumstances.
- 2.4.7. For the economic appraisal optimism bias has been applied to the scheme costs to reflect the systematic tendency to underestimate scheme costs. In July 2021, DfT adjusted the methodology for how optimism bias should be applied within the economic appraisal. The revised guidance (TAG Unit 1.2) states that the base costs with optimism bias applied should be compared to the risk-adjusted cost. The costs should be similar, but if there is a large disparity, the higher costs should be used. Due to a low variation between the two costs, the base cost with optimism bias has been used as the core scenario for the appraisal. A sensitivity test has been included with risk-adjusted costs.
- 2.4.8. TAG Unit A1-2 provides guidance for the recommended level of optimism bias to be applied for different types of projects at different stages of the scheme development. For a scheme of this nature, at the OBC stage, a 23% optimism bias has been applied to the base scheme costs within the economic appraisal.
- 2.4.9. Following the application of optimism bias, the scheme costs have been adjusted to produce costs consistent with the benefits, namely in 2010 prices and values, with the market factor adjustment applied.
- 2.4.10. The present values of the scheme costs are shown in Table 2-12.

**Table 2-12 – Present Value Costs**

	£,2010 PV
Present Value of Costs (PVC)	£ 3,030,687

## 2.5 VALUE FOR MONEY STATEMENT

- 2.5.1. The core scenario benefits and costs described above produce a benefit to cost ratio (BCR) of 0.8:1, as presented in Table 2-13 below.

**Table 2-13 – Economic Appraisal, Core Scenario, £2010 PV**

<b>Benefit / Cost Type</b>	<b>£ 2010 PV, 20-year appraisal</b>
Noise	191
Local air quality	552
Greenhouse gases	6,245
Journey quality	395,911
Physical activity	1,093,983
Accidents	3,716
Economic efficiency: commuters	6,124
Economic efficiency: other	15,005
Economic efficiency: business users and providers	2,897
Wider public finances (indirect tax)	-7,293
<b>Present Value of Benefits (PVB)</b>	<b>2,302,868</b>
<b>Present Value of Costs (PVC)</b>	<b>3,030,687</b>
<b>Net Present Value (NPV)</b>	<b>727,819</b>
<b>Benefit-Cost Ratio (BCR)</b>	<b>0.8</b>

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

## 2.6 SENSITIVITY TESTS

- 2.6.1. Sensitivity testing has been undertaken to explore the sensitivity of the expected outcomes of the appraisal to changes in inputs. The following sensitivity tests have been carried out, drawing on the key assumptions made in the core scenario:
- Test 1: New to cycle demand reduced to 20%
  - Test 2: New to cycle demand reduced to 12.5%
  - Test 3: New to cycle demand increased to 30%
  - Test 4: No pedestrian demand uplift
  - Test 5: 46% optimism bias
  - Test 6: Capital costs including risk / no optimism bias
  - Test 7: 30-year appraisal
  - Test 8: Accidents reduced by 50%
  - Test 9: 40-year appraisal
- 2.6.2. The table below shows the impact on PVB, PVC, NPV and BCR of each of these tests compared to the BCR for the core scenario.

**Table 2-14: Sensitivity Analysis**

Test	PVB (£m)	PVC (£m)	NPV (£m)	BCR
<b>Core Scenario</b>	<b>2,302,868</b>	<b>3,030,687</b>	<b>727,819</b>	<b>0.8</b>
Test 1: New to cycle demand reduced to 20%	2,094,752	3,030,782	936,030	0.7
Test 2: New to cycle demand decreased to 12.5%	1,806,412	3,030,914	1,224,502	0.6
Test 3: New to cycle demand increased to 30%	2,499,912	3,030,602	530,690	0.8
Test 4: No pedestrian demand uplift	2,248,398	3,030,700	782,302	0.7
Test 5: 46% optimism bias	2,302,868	3,597,498	1,294,630	0.6
Test 6: Capital cost inc. risk / no optimism bias	2,302,868	3,769,618	1,466,750	0.6
Test 7: 30-year appraisal period	3,402,104	3,030,479	371,625	1.1
Test 8: Accidents reduced by 50%	1,910,100	3,030,687	1,120,587	0.6
Test 9: 40-year appraisal period	4,470,716	3,030,296	1,440,419	1.5

## 2.7 ENVIRONMENTAL IMPACTS

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

### NOISE

2.7.2. Overall, the scheme is expected to reduce vehicle traffic as people transfer to foot or bicycle. Traffic noise would reduce accordingly. Based on the outputs of the AMAT, the monetised impact on noise of modal shift from private car is estimated to be negligible.

2.7.3. Given the nature of interventions, the impact of construction noise is expected to be minimal and short lived.

### AIR QUALITY

2.7.4. Modal shift to cycling and walking, and associated reduced road traffic, will result in locally improved air quality. Based on the outputs of the AMAT, the monetised impact on air quality of modal shift from private car is estimated to be negligible.

### GREENHOUSE GASES

2.7.5. The net reduction in highway-kilometres as a result of modal shift to active modes, will lead to a net decrease in greenhouse gas emissions. Based on the outputs of the AMAT, the monetised impact on greenhouse gases of modal shift from private car is estimated to be £6,245 (2010 PV).

### LANDSCAPE AND TOWNSCAPE

2.7.6. There are no nationally designated landscape sites such as national parks or Areas of Outstanding Natural Beauty within the 1km Study Area.

- 2.7.7. The scheme is situated within rural landscape, occupied by residential properties. The townscape is designated locally as West Cambridge Conservation Area. The villages along the route, Stow Cum Quy, Lode, Swaffham Prior, and Swaffham Bulbeck are all located within the proposed scheme and locally designated as Conservation Areas. The villages are small and are connected by the road B1102. The scheme runs along a B road, and crosses footways and other smaller residential roads. The townscape has low human interaction with most of the interactions being between cyclists/pedestrians and vehicle users.
- 2.7.8. Culturally there are numerous Listed Buildings and scheduled monuments which contribute positively to the value of the townscape. There are also several priority habitat traditional orchards within the 1km scheme. Historic field boundaries and patterns remain but many smaller fields have been merged involving the removal of hedgerows.
- 2.7.9. The scheme will integrate into the existing pattern of the landscape, following existing field boundaries, and main roads. The landscape is assessed as having moderate scenic value. Changes to views would be minimal and not out of context with the baseline.
- 2.7.10. There will likely be a minor impact on hedgerows and trees along the B1102, however there will be the opportunity for strengthening existing hedgerows and to provide additional tree planting. The minor vegetation losses associated with the scheme will not be significant. There are opportunities to introduce additional planting and restore fragmented hedgerows along the route of the scheme.
- 2.7.11. The proposed changes will be notable at construction but would be short term and temporary in effect. Once open, changes to the overall landscape and townscape character would be largely imperceptible. The scheme follows existing landscape patterns with the potential to increase tranquillity, causing no effect to layout, density, scale, and cultural contribution.
- 2.7.12. Compared to the baseline, there are only minor changes to localised visual receptors, which will have minimal impact.
- 2.7.13. The overall assessment score for landscape and townscape is neutral.

## **HISTORIC ENVIRONMENT**

- 2.7.14. Within the proposed scheme extent there are two Local Planning Authority (LPA) Conservation Areas (Swaffham Prior and Swaffham Bulbeck) and one Grade II Registered Park and Garden (Swaffham Prior House). Beyond of the proposed scheme (50m), there is one scheduled monument, one Grade II registered park and garden, one Grade I listed building, two Grade II\* listed buildings and a further 26 no. Grade II listed buildings.
- 2.7.15. An assessment of locally listed buildings has been scoped out at this stage along with a detailed assessment of non-designated buried heritage assets (i.e. archaeological remains), as it not possible to accurately predict or quantify the archaeological resource without a thorough assessment using a range of standard sources, including a search of the LPA Historic Environment Record (HER).
- 2.7.16. The proposed scheme would have a direct, minor adverse impact on the Swaffham Prior conservation area, deriving from the proposed red asphalt surfacing to the existing highway and new signage. Such works would affect how the asset is understood and appreciated by changing the visual appearance and character of the area.

- 2.7.17. The proposed scheme is likely to have a negligible impact on Swaffham Bulbeck conservation area since no alterations or additions are proposed within its extent.
- 2.7.18. There will be a negligible impact on the Grade II Swaffham Prior House and Anglesey Abbey registered park and gardens since the proposed works lie outside of the park and garden boundary. As such, no direct physical impact is anticipated on these assets.
- 2.7.19. There will be a neutral effect on the Swaffham Bulbeck moated site scheduled monument.
- 2.7.20. No impact is predicted on the remaining listed buildings beyond the proposed scheme.
- 2.7.21. An assessment of the impact of the proposed scheme on non-designated heritage assets has not been undertaken at this stage. The proposed scheme has the potential to result in the partial or complete loss of buried heritage assets where ground disturbance is proposed outside of the existing highway, or within the agricultural fields. Potential impacts on buried archaeological remains would depend on the nature of any proposed ground disturbance. Further assessment of archaeological potential will be required.
- 2.7.22. Overall the assessment concludes a Minor Adverse effect upon designated and non-designated heritage assets, resulting from physical changes to the Swaffham Prior conservation area.

## **BIODIVERSITY**

- 2.7.23. Potential impacts on the Eversden and Wimpole Woods Special Area of Conservation (SAC) and on the barbastelle bats, that use the woods and are the principal reason for its European designation, would be neutral.
- 2.7.24. Neutral impacts are also expected on birds, barn owl, reptiles, hedgehog, and brown hare.
- 2.7.25. Slight adverse impacts could affect hedgerows, potentially an Important Hedgerow under the Hedgerow Regulations 1997, and traditional orchard which is a Habitats of Principal Importance.
- 2.7.26. The removal of small habitats to facilitate the Proposed Scheme could have a slight adverse impact and the potential to effect bats, otter, water vole and Great Crested Newts (GCN).
- 2.7.27. Mitigation proposals should be developed which may include the following enhancement measures:
- Pollution control measures;
  - Wildlife planting, to include areas with wildflowers;
  - Bird and bat boxes; and
  - Invertebrate hotels.
- 2.7.28. A precautionary approach has been applied to the assessment score, further surveys are recommended which could affect the assessment score and/or require specific mitigation.
- 2.7.29. Further surveys would more likely bring the assessment score down to Neutral, rather than increase it to Moderate Adverse. Overall, the assessment concludes a slight minor adverse impact upon biodiversity.



## WATER ENVIRONMENT

- 2.7.30. The majority of the scheme is located within Flood Zone 1. There are a number of locations which are located in Flood Zone 3. Both have a high risk of fluvial flooding.
- 2.7.31. The scheme crosses the Swaffham Lode and Bottisham Lode. The river Cam is approximately 4km northwest of the scheme. There are areas at high risk to surface water flooding along the extent of the scheme.
- 2.7.32. The proposed scheme may increase the transportation of pollutants; however, a surface water drainage strategy will mitigate these risks.
- 2.7.33. The summary assessment score is Neutral to Slight Adverse.

## SUMMARY

- 2.7.34. The table below summarises the environmental impacts of the scheme.

**Table 2-15 – Summary of Environmental Impacts**

Environmental Impact	Assessment, £
Noise	191
Air Quality	552
Greenhouse Gases	6,245
Landscape	Neutral
Townscape	Neutral
Historic Environment	Slight Minor Adverse
Biodiversity	Slight Minor Adverse
Water Environment	Neutral to Slight Adverse

- 2.7.35. The TAG worksheets are included in Appendix D.

## 2.8 SOCIAL IMPACTS

- 2.8.1. The following sections summarise the social impacts of the Swaffhams Greenway scheme.
- 2.8.2. Given the stage of business case development, the assessments are largely qualitative. Some social impacts are monetised using a quantitative assessment based on output from the AMAT.

### RELIABILITY

- 2.8.3. Through providing a continuous walking and cycling route between Swaffham Prior and Swaffham Bulbeck, Lode and Stow cum Quy, the Swaffhams Greenway scheme will improve reliability for those travelling by active modes along this corridor and onwards on other cycling infrastructure into central Cambridge.
- 2.8.4. The impact of the scheme on reliability is estimated to be **Slight Beneficial**.

## PHYSICAL ACTIVITY

- 2.8.5. The improvement to active mode facilities will encourage more cycling and pedestrian travel. Increased usage of the cycle network will promote more physical activity. Greater levels of cycling will result in health benefits through reduced health problems including diabetes and high blood pressure. An uplift in physical activity is also likely to result in a reduction in absenteeism which will give rise to positive benefits for the user and businesses.
- 2.8.6. AMAT estimates the monetised impact of physical activity to be **£1,093,983** (2010 PV).
- 2.8.7. In addition, an increase in walking trips along the Swaffhams Greenway route will result in further health benefits. These benefits have not been fully captured within the appraisal (i.e., health impacts as a result of the increase in pedestrians due to the provision of dedicated crossings and improved lighting).

## JOURNEY QUALITY

- 2.8.8. TAG Unit A4.1 sub-divides journey quality impacts into three groupings:
- traveller care (including cleanliness, level of facilities, information and the general transport environment)
  - travellers' views (including the view and pleasantness of external surroundings in the duration of the journey)
  - traveller stress (including frustration, fear of accidents and route uncertainty)
- 2.8.9. The improvements to the cycling and walking infrastructure along the route will improve the pleasantness of surroundings for users.
- 2.8.10. Based on the outputs of the AMAT tool, the monetised impact on journey quality is estimated to be **£395,911**.

## ACCIDENTS

- 2.8.11. The scheme is anticipated to result in a reduction in traffic movements as people are encouraged to use active modes. Users of motorised modes who shift mode to active modes will result in fewer vehicles and an overall reduction in highway-kilometres travelled and the number of highway accidents.
- 2.8.12. Based on the outputs of the AMAT, the monetised impact on accidents is estimated to be **£3,716**.

## SECURITY

- 2.8.13. The improved lighting provision along the route will increase the perception of safety for pedestrians and cyclists. Lighting improvements such as solar studs will give a greater sense of security to users of the Greenway, particularly on off-road sections.
- 2.8.14. The impact of the scheme on security is estimated to be **Slight Beneficial**.

## ACCESS TO SERVICES

- 2.8.15. The expansion, and improvement, of cycling and pedestrian infrastructure provided by the Swaffhams Greenway scheme will improve accessibility between Swaffham Prior, Swaffham Bulbeck, Lode and Stow cum Quy and Cambridge. In addition, accessibility for both pedestrians and cyclists will be enhanced with respect to improvements in path widening and wayfinding signs.
- 2.8.16. The impact of the scheme on access to services is estimated to be **Neutral**.

## AFFORDABILITY

- 2.8.17. Affordability will increase for previous bus or car users as the cost of travel will decrease as they will no longer pay fares or fuel and non-fuel vehicle operating costs.
- 2.8.18. The impact of the scheme on affordability is estimated to be **Slight Beneficial**.

## SEVERANCE

- 2.8.19. The introduction of the Swaffhams Greenway will improve the cycle facility provision between Swaffham Prior, Swaffham Bulbeck, Lode, Stowe cum Quy and Cambridge. Improved surface quality is expected to reduce the severance currently created due to the lack of facilities benefitting the active modes.
- 2.8.20. The impact of the scheme on severance is estimated to be **Slight Beneficial**.

## OPTION AND NON-USE VALUES

- 2.8.21. The proposed scheme does not introduce new travel options. Therefore the impact is considered to be **Neutral**.

## SUMMARY

- 2.8.22. The table below summaries the social impacts of the scheme.

**Table 2-16 – Summary of Social Impacts**

<b>Social Impact</b>	<b>Assessment</b>
Reliability	Slight Beneficial
Physical Activity	£1,093,983
Journey Quality	£395,911
Accidents	£3,716
Security	Slight Beneficial
Access to Services	Neutral
Affordability	Slight Beneficial
Severance	Slight Beneficial
Option and Non-Use Values	Neutral

## 2.9 DISTRIBUTIONAL ANALYSIS

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

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

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

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

2.9.4. The findings from this DI assessment are set out in Table 2-17 below.

**Table 2-17 – Distribution Impact Assessment**

Indicator	Appraisal output criteria	Potential impact	Qualitative Comments	Assessment
<b>User benefits</b>	The TUBA user benefit analysis software or an equivalent process has been used in the appraisal; and/or the value of user benefits Transport Economic Efficiency (TEE) table is non-zero.	Yes, positive	AMAT has been used to appraise user benefits for the scheme. This analysis does not produce spatial distribution of the benefits, but an overall benefit.	User benefits for pedestrians and cyclists are forecast to provide benefits for those who do not have access to a car (due to age, affordability and physical ability).
<b>Noise</b>	Any change in alignment of transport corridor or any links with significant changes (>25% or <-20%) in vehicle flow as an indicator of significant change.	Yes, positive	There are no significant changes (>25% or <-20%) in vehicle flow, speed, %HGV content expected as a result of the scheme.	No further assessment.
<b>Air quality</b>	Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or % HGV content: <ul style="list-style-type: none"> <li>■ Change in 24-hour AADT of 1000 vehicles or more</li> <li>■ Change in 24-hour AADT of HGV of 200 HGV vehicles or more</li> <li>■ Change in daily average speed of 10kph or more</li> <li>■ Change in peak hour speed of 20kph or more</li> </ul>	Yes, positive	There are no significant changes in vehicle flow, speed, %HGV content expected as a result of the scheme.	No further assessment.

Indicator	Appraisal output criteria	Potential impact	Qualitative Comments	Assessment
	<ul style="list-style-type: none"> <li>Change in road alignment of 5m or more</li> </ul>			
<b>Accidents</b>	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, positive	The scheme is expected to reduce the number of collisions that occur along the Greenway corridor as a result of the scheme proposals such as greater separation between active modes and vehicles.	Through benefitting those who walk and cycle the scheme will benefit those who do not have access to a car, including due to age, affordability and physical ability.
<b>Security</b>	Any change in public transport waiting/ interchange facilities including pedestrian access expected to affect user perceptions of personal security.	Yes, positive	The installation of lighting studs along off-road sections of the route will improve the security of users along the corridor.	This may provide a particular benefit to socially vulnerable groups such as the disabled, elderly and ethnic minorities.
<b>Severance</b>	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content.	Yes, positive	Improved surface quality along the greenway will reduce the severance currently created due to the lack of active mode benefitting upgrades.	This may provide a particular benefit to the economically disadvantaged along the greenway corridor who are most reliant on walking and cycling.
<b>Accessibility</b>	Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. demolition & re-location of a school).	Yes, positive	The expansion, and improvement, of existing cycling and pedestrian infrastructure along the route will improve accessibility between East Cambridge and Central Cambridge. In addition, the improved paving infrastructure will improve accessibility for both pedestrians and cyclists in terms of pavement evenness and level access.	No further assessment.
<b>Affordability</b>	In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in	Yes, positive	The scheme will encourage modal shift to active modes, which may reduce the cost of travel for users	No further assessment.



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

## 2.10 VALUE FOR MONEY ASSESSMENT

- 2.10.1. The economic appraisal for the Swaffhams Greenway scheme produces a BCR of 0.8:1, implying poor value for money. The main benefits are associated with increased physical activity as a result of users switching to active modes. Benefits associated with the scheme's journey quality improvement accrue the second most scheme benefits. Other scheme benefits include decongestion from a reduction in vehicles on the highway network as a result of modal shift. Overall, the benefits amount to £2.30m (2010 PV). The cost of the scheme is £3.03m (2010 PV), which includes 23% optimism bias.
- 2.10.2. Sensitivity tests undertaken demonstrate that changes in the forecast demand assumptions will not change the outcome significantly and the scheme remains in the poor value for money category (BCR ranging between 0.6:1 and 0.8:1). An assessment of the sensitivity of changes in the cost assumption (optimism bias and inclusion of a risk assumption in place of optimism bias) shows that the BCR also remains in the poor value for money category. The greatest impact on the scheme value for money is changing the appraisal period. A 30-year appraisal period increases the BCR to 1.1:1 and a 40-year appraisal period increases the BCR to 1.5:1 (Low to Medium value for money category).
- 2.10.3. There are also other impacts not captured or monetised in the appraisal that positively impact on the case for the scheme, strengthening the value for money implied by the BCR. These include social benefits in terms of severance, security, affordability and access to services.
- 2.10.4. This appraisal has considered the Swaffhams Greenway as a standalone scheme. There are potential connectivity benefits encouraging additional demand arising from the network effects of integration with neighbouring planned schemes, particularly the Horningsea Greenway and

Bottisham Greenway. The latter will provide a significant enhancement in accessibility by cycle into central Cambridge and other cycle route corridors such as the north to south Chisholm Trail and the cycling and walking improvements along Newmarket Road as part of the Cambridge Eastern Access sustainable transport improvements.

- 2.10.5. The scheme is also aligned with the Making Connections Programme which aims to improve the environment for active travel modes, transform the city bus network and reducing congestion and pollution. Hence, there is a strategic fit with GCP's policy ambitions to promote sustainable modes and deliver mode shift from private vehicles in order to ensure the ongoing economic growth of the Cambridge city region.

## 3 FINANCIAL CASE

### 3.1 INTRODUCTION

- 3.1.1. This chapter presents the Financial Case for the Swaffhams Greenway scheme and demonstrates its initial affordability. It sets out the currently identified scheme costs and funding cover for the development and the implementation of the Swaffhams Greenway.

### 3.2 SCHEME COSTS

- 3.2.1. Scheme costs and a cost profile for the Swaffhams Greenway is provided in Table 3-1. The capital costs have been estimated by WSP. The outturn cost estimate is based on the concept design scheme drawings for the Swaffhams Greenway with planned completion of construction by end of 2025. It should be recognised that any delay to the scheme opening is likely to result in an increase in costs from those presented here.
- 3.2.2. Indirect construction costs include main contractor's preliminaries, traffic management, overheads and profit. Indirect non-construction costs include Stats and professional fees.
- 3.2.3. It is estimated that the Swaffhams Greenway will cost in the region of £7.10m, including allowances for inflation, as set out in Table 3-1.

**Table 3-1 – Swaffhams Greenway Scheme Costs, £000s, Quarter 4, 2021 Prices**

Item	2024	2025	Total
Direct Construction Costs	1,105	1,105	2,210
Indirect Construction Costs	553	553	1,105
Indirect Non-Construction Costs	663	663	1,326
<b>Sub-total</b>	<b>2,321</b>	<b>2,321</b>	<b>4,641</b>
Risk / Contingency	929	929	1,857
Inflation (Construction Mid-Point 3Q 2024)	106	106	211
Inflation Contingency	195	195	390
<b>Scheme Total</b>	<b>3,550</b>	<b>3,550</b>	<b>7,100</b>

- 3.2.4. The Swaffhams Greenway scheme will incur maintenance costs. A Greenway Maintenance Guidance has been produced by the GCP. Currently, CCC and the GCP are assessing the costs of maintaining the Greenways network in coordination with the County Council's Highways team in order 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 Swaffhams Greenway. It is not expected that the maintenance costs will be excessive.
- 3.2.5. The Maintenance Guide assumes that approximately 11.48km of the Swaffham Greenway is existing road or path, with only 0.78km of new infrastructure to be created. Gritting, grass verge

cutting, and hedge cutting are the only three treatments provided by Highways when maintaining paths. However, it is likely that the Swaffhams Greenway will require other interventions 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. The development and implementation of the Swaffhams Greenway is funded by the 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. Third party funding will be reviewed for the Swaffhams 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. This chapter presents the Commercial Case for the Swaffhams Greenway scheme, describing the proposed procurement approach, risk allocation and contract management processes which are aligned with the overall approach for the Greenways programme. Specific details are provided for the Swaffhams Greenway.

### 4.2 PROCUREMENT APPROACH

- 4.2.1. The Greenways Programme will be implemented using established Cambridgeshire County Council contracts, or Government Procurement Frameworks will be used to procure external support for tasks including Design, Early Contactor Involvement and Communications (where not available internally). For the Swaffhams Greenway scheme WSP has been procured for the design role under the Joint Professional Services Framework (JPSF), as shown in Table 4-1. JFG Comms via WSP is supporting the communications activities, CBRE are acting as Land Agents, Pathfinder Legal are providing legal services, and Milestone 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 4-1 – Programme Consultants and Contractors**

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

To date, GCP has commissioned the consultants WSP through its JPSF to prepare the Swaffhams Greenway preliminary scheme designs and provide business case support.



- 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 Horningsea Greenway scheme 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 the scheme. 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. The main payment option mechanism to be used for Milestone is the NEC contract Target cost Option C. GCP has Option A and Option E available, but Option C is the GCP's preferred option.

## **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 the Swaffhams Greenway risk management plan / risk register. The risk register is detailed in the Management Case. Specific factors pertaining to the Swaffhams Greenway scheme, including construction risks, the stage that the project is at in its development and importantly, the level of risk in the project and the appetite to accept or transfer it to a contractor will be considered in making an informed decision on risk allocation. The approach will be to ensure that the contractual arrangements for the delivery of the Swaffhams Greenway scheme places risks with the party best positioned to deal with the risks.

## **4.5 CONTRACT MANAGEMENT**

- 4.5.1. Management of the contracts for the design and delivery of the Swaffhams Greenway scheme is undertaken by the Programme Manager, who is employed by GCP and has day to day responsibility for the delivery of the scheme.

## 5 MANAGEMENT CASE

### 5.1 INTRODUCTION

- 5.1.1. The purpose of the Management Case 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 scheme 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.

### 5.2 EVIDENCE OF SIMILAR PROJECTS

- 5.2.1. The GCP will deliver the Swaffhams Greenway as part of the Greenways Programme using delegated powers from CCC, although in some areas such as Right of Way restrictions the GCP will rely on the County Council's statutory powers.
- 5.2.2. As a relatively new delivery body, 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 5-1.

**Table 5-1 – Evidence of Similar Projects**

Scheme Name	Objectives & Scope	Implementation
Chisholm Trail Phase 1 (c.£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 1 opened in December 2021, connecting Cambridge North to Coldham's Lane. Phase 1 of the trail is a joint project between the GCP and Cambridgeshire County Council.
Chisholm Trail Phase 2 (c.£21m)	The 1.4km long walking and cycling route connects to Phase 1 at Coldham's Common on Coldham's Lane, providing a link to Cambridge railway station and new housing developments alongside the railway line.	Ongoing
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,	The scheme was opened in August 2020, and implemented by Cambridgeshire County Council and contractor, Milestone.

Scheme Name	Objectives & Scope	Implementation
	to give them equal priority with pedestrians over oncoming vehicles to provide a safer environment for cycling and pedestrians.	
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 <sup>8</sup> )	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.	<p>The measures were implemented in phases from 1997, promoting sustainable travel modes to improve the city centre environment.</p> <p>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.</p>
Cambridgeshire Guided Busway (c.£150 <sup>9</sup> )	This busway was designed to provide a high-quality public transport connection between Huntingdon and St Ives, to the north west of Cambridge, and Addenbrooke's Hospital and Trumpington Park & Ride to the south of Cambridge.	<p>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.</p> <p>Construction began in July 2006 with the busway opened in August 2011.</p> <p>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.</p>
Histon Road (c.£10.6m) <sup>10</sup>	<p>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:</p> <ul style="list-style-type: none"> <li>- A new bus lane from Blackhall Road to Carisbrooke Road,</li> <li>- New bus stop bypasses for cyclists</li> </ul>	Ongoing

<sup>8</sup> This is an estimate as the scheme was implemented over several phases since 1996 and includes a range of supporting measures

<sup>9</sup> Total cost of the Cambridgeshire Guided Busway including £109m contribution from Cambridgeshire County Council.

<sup>10</sup> <https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/histon-road-background>

Scheme Name	Objectives & Scope	Implementation
	<ul style="list-style-type: none"> <li>- Improved cycle lanes</li> <li>- 2 new pedestrian crossings</li> <li>- Removal of on-street parking</li> </ul>	

## 5.3 COMPLEMENTARY SCHEMES

- 5.3.1. 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.
- 5.3.2. This section details planning and transport proposals across Greater Cambridge which offer potential complementarity with the Greenways Programme and hence with the Swaffhams Greenway. Key complementary schemes include the planned Bottisham and Horningsea Greenways which will offer connectivity into Cambridge city centre (Midsummer Common) and north east to the village of Horningsea respectively.
- 5.3.3. The complementary schemes identified in this section offer network opportunities to maximise the benefits to cyclists and pedestrians through an extensive and inter-connected system of routes. This is a continuation of the current linkage which has been developed by delivering both Cross City Cycling and the Chisholm Trail and future projects through schemes such as Cambridge City Access.

### Horningsea Greenway

- 5.3.4. Horningsea is located approximately 10km north of Cambridge. The Horningsea Greenway scheme will offer improved active mode connectivity between the village of Horningsea and Fen Ditton. The Greenway will include upgrades to shared-use paths between Horningsea and Fen Ditton, a high-quality parallel crossing at the junction of B1047 as well as safety improvements at the Fen Ditton Church junction. The scheme will also include traffic calming measures including raised tables and 20mph speed limits.
- 5.3.5. The scheme is in line with GCP's objective of delivering fast, reliable and affordable ways of travelling between employment and housing hubs as it provides improved links to Cambridge from Horningsea, Fen Ditton and onwards on other active mode infrastructure to Midsummer Common. The scheme also reduces community severance by improving transport links across B1047 and provides safe active travel connections between the places where people live, work and shop, thus encouraging more walking and cycling trips.

### Bottisham Greenway

- 5.3.6. Bottisham is located approximately 10km northeast of Cambridge across flat terrain and for cyclists it is currently served by shared-use paths adjacent to the A1303. In network terms, the Bottisham Greenway will connect with the Horningsea Greenway at Fen Ditton before continuing towards Cambridge with connections to the Chisholm Trail. Parts of the existing National Cycle Network in Fen Ditton (Wadloes Path) have been widened as part of a 'quick win' scheme.



- 5.3.7. 'Quick win' schemes are small-scale projects located within highways boundaries, and as a result can be delivered quickly. As a 'quick win', the GCP has recently widened and resurfaced the path near the A1303 to make it easier for walkers, cyclists, and horse riders to travel from Bottisham into Cambridge.

### **Cambridge Eastern Access**

- 5.3.8. The Cambridge Eastern Access project aims to provide a safer and improved route along the Newmarket Road corridor for walking and cycling and public transport. The existing transport infrastructure experiences significant congestion that cannot support future economic growth. The project includes provision of high-quality pedestrian facilities, controlled crossings, segregated cycle tracks, bus lanes and junction improvements. The project also includes relocating and expanding the Newmarket Road Park & Ride site.
- 5.3.9. The Newmarket Road improvement scheme is seen as a transformative project that along with other city-wide transport schemes is needed to support future economic growth. Provision of improved sustainable transport options will encourage mode shift from the car to walking, cycling and public transport. Benefits of this shift to healthier travel modes will be improved air quality, quality of life, health and wellbeing. The mode shift impact of the project will also result in reduction in carbon emissions.

### **Chisholm Trail**

- 5.3.10. The Chisholm Trail is a mostly off-road walking and cycling route under construction in Cambridge. Once completed, the full trail will run over 26 kilometres, linking Addenbrooke's Hospital and the Biomedical Campus in the south to Cambridge North railway station and the business and science parks. Phase 1 of the Chisholm Trail between Coldham's Common and Cambridge North railway station is 2.1km in length and opened in December 2021. The route also connects with the Guided Busway and the national Cycle Network, and green spaces in Cambridge including: Coldham's Common, the Leper Chapel Meadows and Barnwell Lake area, Ditton Meadows and Stourbridge Common.
- 5.3.11. Phase 2 is currently underway, however, it requires access to land owned by Network Rail and other private owners in order for the trail to be completed. Phase 2 of the Chisholm Trail includes links to the Melbourn Greenway and the Fulbourn Greenway.
- 5.3.12. As part of the Greenways network, the Swaffhams Greenway will benefit from the additional connectivity offered by the Chisholm Trail improving accessibility to a range of destinations in the city.

### **Cross City Cycling Project**

- 5.3.13. 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

- 5.3.14. 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.

### **Cambridge City Access**

- 5.3.15. The Cambridge City Access project is promoting ways to improve access by sustainable transport to the city centre and key employment sites, and to reduce congestion by encouraging commuters away from cars. The programme has been conceived and developed to:

- Reduce traffic by 15% from the 2011 baseline, freeing up road space for more public transport services, and other sustainable transport modes
- Ensure public transport is more affordable, accessible and connects to where people want to travel, both now and in the future
- Raise the money needed to fund the delivery of transformational bus network changes, fares reductions and improved walking and cycling routes
- Make it safe and attractive to walk and cycle for everyday journeys
- Support decarbonisation of transport and improvements to air quality
- Make Greater Cambridge a more pleasant place to live, work, travel or just be

- 5.3.16. A package of eight measures, ranging from the development of an integrated parking strategy to a review of the city's road network classification have been developed to help support sustainable growth in Greater Cambridge with the Making Connections programme central to this.

### **Making Connections**

- 5.3.17. The Making Connections programme is being developed to provide a transformational change in travel behaviour which will complement the strategy measures set out in Figure 5-1. Making Connections comprises a complete overhaul of the bus network to provide new routes, longer operating hours, more affordable fares and new destinations, funded by a charge for driving that will reduce congestion and free up space for public transport, walking and cycling. Investment in the bus network will reach around £50m a year, making it one of the biggest changes outside London since deregulation of the bus industry in the 1980s.
- 5.3.18. The programme will rebalance the use of highway space to enable more people to travel, whilst making Greater Cambridge a more attractive place in which to live and work, and to visit. It will reduce congestion, reduce emissions, increase public transport use, and boost walking and cycle use for short journeys in the city.

**Figure 5-1 – Cambridge City Access Strategy Measures**



Source: Greater Cambridge Partnership

5.3.19. The Greenways Programme as a whole will benefit from the positive impacts on reallocation of road space for public transport and active modes incorporated in the City Access Strategy including:

- Reduced traffic congestion within the city centre
- Faster, cheaper and more reliable bus journeys, enabling expansion of Park & Ride capacity and facilities
- 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; and
- Continued growth in cycling

## 5.4 GOVERNANCE, ORGANISATIONAL STRUCTURES AND ROLES

5.4.1. This section describes the programme governance and roles of the entities. The overall structure is shown in Figure 5-1.

### Executive Board

5.4.2. The delivery of the Project will involve at least five 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; and
- Final approval to implement the project and complete a Detailed Design.

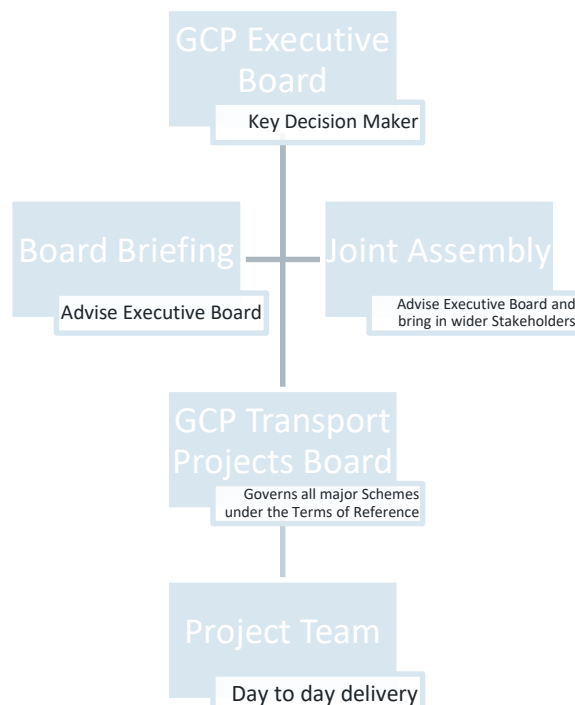
### Transport Programme Board

5.4.3. 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.

5.4.4. 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 5-1 – Overall Greenways Programme Governance Structure**



### Cycling Projects Meeting

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

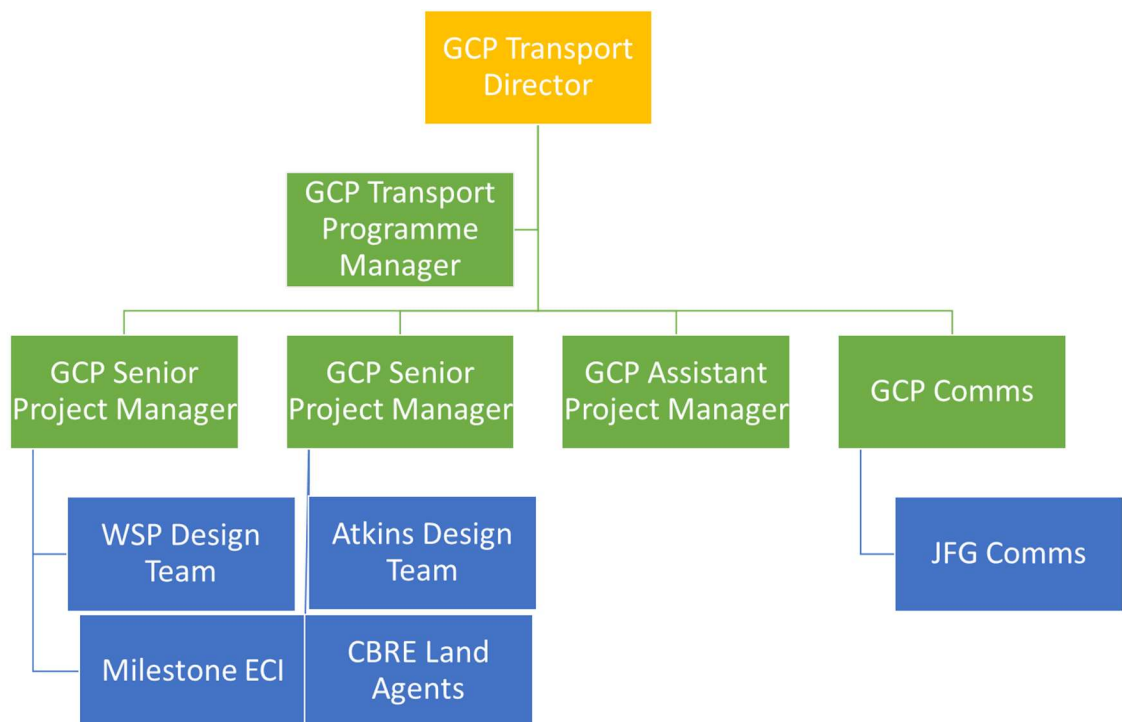
- Construction Programming, including prioritisation of routes (before ultimate sign off by Transport Programme Board)
- Decisions on design options (unless controversial at which point potential issues will be escalated)
- Initial review of documents including the overall Business Case for the Greenways 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

5.4.6. The Greenways is a complex programme of works. The following section sets out how the scheme will be managed.

5.4.7. Figure 5-2 sets out the structure of the team.

**Figure 5-2 – Structure of the Greenways Management Team**



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

## Internal GCP Resources

5.4.9. 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 (i.e., 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**

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

- Be the face of the project, representing GCP at main stakeholder events to provide updates on the projects
- Be 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; and
- 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, i.e., 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**

- 5.4.11. External support resources are procured through established County Council contracts or Government Procurement Frameworks for various tasks including Design, Early Contractor Involvement, Communications (where not available internally). The Swaffhams Greenway scheme consultants and contractors have been procured, namely Atkins and WSP, as shown in Table 5-1. 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**

- 5.4.12. Atkins and WSP have been appointed to deliver the following aspects of the Greenways 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 a proportionate TAG compliant Outline Business Case
  - Preparation of Planning Application, submission, and determination support (as required)
  - Wayfinding Strategy (Atkins only)
  - Land referencing (WSP only)
  - Engagement event materials
- 5.4.13. They will also be procured at the suitable time for:
- Detailed Design
  - Full Business Case
  - Procurement support
  - Construction Supervision

### **Milestone**

- 5.4.14. 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

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

#### **CBRE and Pathfinder Legal**

5.4.16. 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

5.4.17. 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 PRoWs

## **5.5 PROJECT ASSURANCE, APPROVAL PLAN AND PROGRAMME**

### **Programme Assurance**

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

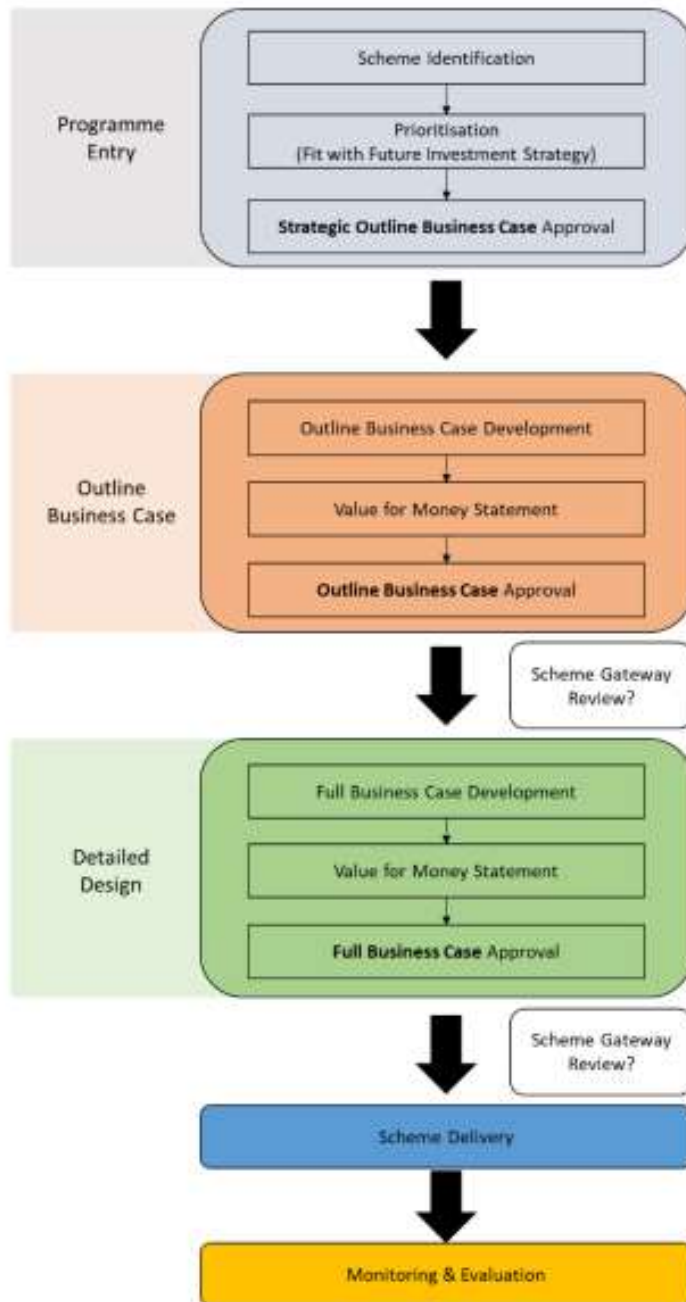
- Ensuring good liaison and collaboration throughout the project to achieve good governance
- Assuring that user needs and expectations are being met or managed
- Ensuring that risks are being controlled
- Monitoring project expenditure versus benefits
- Informing the project of any changes caused by external events
- Ensuring adherence to relevant procedures, standards and specifications; and
- 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**

5.5.2. The programme for the overall 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 5-3 commencing with programme entry through to full business case development. The Swaffhams Greenway scheme, as with the other individual schemes, is developed at Outline Business Case stage as an addendum to the Programme Outline Case.

5.5.3. The Framework ensures compliance with DfT's minimum requirements for Assurance Frameworks.

**Figure 5-3 - GCP Indicative Process for Business Case Development**



Source: Greater Cambridge City Deal Assurance Framework

### Approvals to Date

5.5.4. 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

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

- 5.5.6. The high-level programme for the delivery of the Greenways is based on an approximately four-year programme. 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 5-2. This has been slightly adapted to allow for an additional stage for sign-off for the first versions of technical design.
- 5.5.7. Individual greenway scheme's outline business case development takes place in Delivery Stage 2a Approved Option and Delivery in Stage 3 Preliminary Design.

**Table 5-2 – Greenways Programme Project Stages**

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  Processes for planning permission, traffic regulation orders, compulsory purchase orders and Government statutory approvals as required	GCP Executive Board
Delivery Stage 5: Construction (Mobilisation and Construction)	Procurement of a provider(s) to construct the project  Construction of the project  Post-project review to assess how well the project objectives and outputs have been met	GCP Executive Board

## Swaffhams Greenway Outline Delivery Plan

- 5.5.8. The technical concept design for the Swaffhams Greenway route has been completed. This has given greater clarity on what the key delivery risks and opportunities are. This has enabled the project team to develop a more accurate programme for the subsequent preliminary and detailed design stages, as well as an indicative construction programme. As requested by the Executive Board, officers are now in a position to demonstrate how the programme can be achieved. The Outline Delivery Plan, shown in Table 5-3, sets out an indication of when the Swaffhams Greenway route will be constructed, and what early works can be expected in 2023. The Outline Delivery Plan for the Swaffhams Greenway provides milestones and scheduled dates for completion.

**Table 5-3 – Swaffhams Greenway Outline Delivery Plan 2022-2025**

Year	Delivery Plan
2022	<ul style="list-style-type: none"> <li>■ Development of Concept Design</li> <li>■ Planning and Consents Strategies</li> <li>■ Traffic Surveys</li> <li>■ Topographical Surveys</li> </ul>
2023	<ul style="list-style-type: none"> <li>■ Development of preliminary designs</li> <li>■ Public Engagement and preceding Stakeholder Engagement completed – April 2023</li> <li>■ Environmental surveys</li> <li>■ Land owner discussions</li> <li>■ Land owner negotiations</li> <li>■ Detailed design and technical approvals</li> <li>■ Planning Applications</li> <li>■ Traffic Regulation Orders (TRO)</li> <li>■ Compulsory Purchase Orders (CPO) / PRoW orders</li> <li>■ Full Business Case</li> </ul>
2024	<ul style="list-style-type: none"> <li>■ Compulsory Purchase Orders (CPO) / PRoW order work to continue as in 2023</li> <li>■ Finalisation of land agreements</li> <li>■ Construction (subject to approvals): <ul style="list-style-type: none"> <li>– Swaffham to Abbey Lane, including junction</li> <li>– Commercial End junction</li> <li>– White Drove way to Longmeadow including junction</li> <li>– Longmeadow to Lode Road including junction</li> </ul> </li> </ul>
2025	<ul style="list-style-type: none"> <li>■ Construction to be completed of all remaining sections of the Swaffhams Greenway</li> </ul>

## 5.6 STAKEHOLDER ENGAGEMENT AND COMMUNICATIONS

- 5.6.1. This section sets out the strategy for developing communications and stakeholder management on the project. Effective communication is critical to the success of the Swaffhams Greenway project. The key priorities for communications during the development of the design of the project are to:

- Provide all relevant stakeholders with clear, well-structured details of the GCP vision, project objectives and possible options, as well as being clear about what this project does and does not cover
- Create opportunities for stakeholders to express their opinions and encourage the opportunity to share their views on the options freely and openly
- Use an appropriate methodology for collecting stakeholder responses and analyse them
- Build upon the feedback received during the public consultation period
- Create a consistent message to convey that the Swaffhams Greenway is part of the Greenways programme to ensure stakeholders are aware that the Swaffhams Greenway is not only part of the Greenways Programme, but also a part of a wider vision set forward by the GCP
- Ensure the benefits and impacts of the scheme are clearly presented to all stakeholders
- Identify advocates for the scheme
- Manage any reputational risks associated with the scheme
- Raise the profile of the GCP and its work
- Ensure all engagement and communication is recorded and reported where necessary

- 5.6.2. The Swaffhams Greenway is now proceeding with development of the agreed alignments and initial design work. This involves environmental surveys, key structure design, more detailed costing, and land negotiation. Stakeholder engagement at this point has involved discussions with residents and stakeholders to understand and incorporate needs and concerns within principal design standards for the route. The initial consultation event in 2019 was met with a positive response with most respondents in favour of the majority of the elements of the proposed Swaffhams Greenway.
- 5.6.3. Many respondents supported the majority of the elements of the proposed Swaffhams Greenway after the initial consultation event in 2019, particularly the Anglesey Abbey crossing and path improvements. Accordingly, this information was then fed into the designs for initial proposals for the Swaffhams route.
- 5.6.4. Responses from the initial public consultation undertaken in 2019 shaped the proposals that were presented in the four-week engagement period that ran between 27th February 2023 and 24th March 2023. A range of key stakeholders along the Swaffhams Greenway were engaged and continue to be engaged as the project progresses. These include partner authorities, council members, parish councils, representatives of walking, cycling and equestrian groups, and owners of land where access agreements are needed to operate or construct the route.
- 5.6.5. A report will be finalised in May 2023 to detail the key findings from the 2023 engagement period.
- 5.6.6. The consultation strategy for this stage of the Swaffhams Greenway proposal was designed by the GCP communications team with input from the County Council's Research Team. The strategy involved the identification of the audience, the design of consultation materials and design, and the analysis of the results.

### **Scheme Communications Plan**

- 5.6.7. In addition to the strategic programme-wide communication messages and objectives set out above, an individual route engagement and communications plan has been developed and implemented for the Swaffhams Greenway.
- 5.6.8. There are two key channels for proactive communications that the GCP will use to tell the story of the Swaffhams Greenway as it 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

5.6.9. 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 5-4 – Communications Method for the Swaffhams Greenway**

<b>Audience</b>	<b>Type of Communication</b>	<b>Frequency</b>	<b>Responsibility</b>
<b>General Public</b>	Formal consultation – online survey and paper return survey  Regular website updates provided on GCP Greenways webpages (i.e., Greenway specific updates and preliminary design)  GovDelivery Updates	Initial Swaffhams consultation autumn 2019  Swaffhams engagement early 2023  Quarterly	GCP Communications Team
<b>Other Key Stakeholders</b>	Meetings Emails	As Required	Project Manager
<b>Members</b>	Reports  Briefing Sessions	As per Scheme Updates / Progress	Project Manager
<b>Technical Officers CCC / GCP</b>	Project Team Meetings	As Required	Project Manager
<b>General Correspondence</b>	Letters, Emails, GCP social media	As Required	Project Manager / Communications Team

## 5.7 RISK AND ISSUES MANAGEMENT

- 5.7.1. The Swaffhams Greenways scheme risk management is documented in the Issues and Risks Log produced by WSP.
- 5.7.2. Key Risks for the Greenways Programme 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 Highways England 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 Greenway
- 5.7.3. 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
  - Development of a land access strategy / prioritising land acquisition critical to the scheme development.
  - Identification of alternative routes to minimise environmental impacts
- 5.7.4. A risk register has been produced for the Swaffhams Greenway scheme for the current stage of scheme development, namely preliminary design. Risk mitigation will be assessed from a strategic perspective and will be reviewed monthly.
- 5.7.5. The key risks to the scheme are as follows:
- **Programme acceleration** – Quick Win schemes, as well as some sections or the route progressing ahead of others are likely to result in lack of correct resources, thus increasing the costs.
  - **Substandard Pavement Depths** – No Coring survey is proposed. This may have reputational cost implications, an impact on safety, as well as traffic disruption.
  - **Excavation Instability** – There are poor ground conditions and a high water table, resulting in health and safety risks and programme delays.
  - **Maintenance** – There is an insufficient budget for ongoing maintenance of new infrastructure, as well as insufficient space for storage of bespoke street furniture/kerbs. This may have reputational cost implications, an impact on safety, as well as traffic disruption.
  - **Existing Trees** – There is risk of damage to existing trees, including trees located within private gardens which could have a negative impact on the environment.
  - **Costs** – If there is construction cost overrun there is risk of delay to the project.
  - **Quality** – Lack of information due to insufficient specification for the works could result in unacceptable standards.

- **Ground Contamination** – Potential presence of ground contamination will result in additional construction costs.
- **Drainage** - Unforeseen works to existing drainage and/or lengthily negotiations with drainage authority for new connections will result in programme delays and additional construction costs.
- **Highways Boundaries / Hedges** – There is some opposition in relation to removal of existing hedges which may lead to late design changes leading to programme delay and additional costs.
- **Buildability** – The scope of works may increase during the construction phase leading to delays, compensation events and re-design.
- **Utility Diversion Works** - Statutory Utilities plant cannot be relocated or diverted/protected within budget and programme timescales, resulting in programme delays, design changes and cost increases.
- **Service Upgrade Works** – Utilities company disturbing the completed works and failing to reinstate to the desired standard, resulting in programme delay and extensive public disruption through uncoordinated programme.

5.7.6. Mitigation measures identified are as follows:

- **Programme acceleration** – robust programme in place.
- **Substandard Pavement Depths** – Carry out Visual Survey. Consider solutions to optimise the structural and functional performance of the existing pavement. Further investigation during construction to resolve specific soft spots.
- **Excavation Instability** – Carry out ground investigation in proposed excavation areas. Excavation to be designed by competent person.
- **Maintenance** – Design to reduce street clutter / unnecessary street furniture. Consider sourcing material locally using approved suppliers.
- **Existing Trees** – Arboriculture survey. Residual risks to be shown on drawings. Tree removal will include stump gridding. Proposed levels to be higher than existing or the same
- **Costs** – Cost Estimates to be carried out at key milestones or if the scheme changes (WSP/ GPC). Early contractor involvement to obtain cost estimates. Monitor cost during construction to ensure cost do not exceed budget. Implement required corrective measures.
- **Quality** – Quality Assurance Process to be in place to monitor quality of construction works. GCP to implement site monitoring measures/ independent quality manager.
- **Ground Contamination** – Carry out ground investigation
- **Drainage** - Early consultation with drainage authority. Eliminate requirement for new connections application by re-utilising existing drainage The design of SuDS is based on infiltration to achieve its benefits, but it does not rely on infiltration (overflow system / perforated pipe provided)
- **Highways Boundaries / Hedges** – Obtain accurate highways boundary information. Liaise with CCC Search Team.
- **Buildability** – Ensure risk allowance/contingency is calculated and regularly reviewed as scheme develops. Undertake extensive SU surveys and investigations following the NRSWA process including GPR, trial holes, and extensive investigations (throughout the affected site length with particular attention to impacts from proposed tree removal and replacement). ECI to build scheme scope knowledge and understanding.
- **Utility Diversion Works** - Undertake extensive SU surveys and investigations following the NRSWA process (including GPR and trial holes).

- **Service Upgrade Works** – Work with SU to programme any required works, ensure that all communications with SU's are logged. Early liaison / coordination with utility companies to identify and reschedule programmed works.

## 5.8 MONITORING AND EVALUATION

- 5.8.1. On completion of the construction of the Swaffhams Greenway, a review of the delivery process will be undertaken in accordance with the Greater Cambridge City Deal Project Review Protocol.
- 5.8.2. 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.
- 5.8.3. A monitoring and evaluation plan and benefits realisation plan have been produced for the Swaffhams Greenway scheme.
- 5.8.4. 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.
- 5.8.5. 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; and
  - Fuller evaluation.
- 5.8.6. It is proposed that the Greenways programme follows enhanced monitoring practice as the programme is likely to be more than £50m in value.

### Monitoring and Evaluation Plan

- 5.8.7. The outline Monitoring and Evaluation Plan is set out below in Table 5-5. Monitoring of the key outcomes including cycle and pedestrian usage of the scheme will be implemented at key locations on the route. The monitoring will be undertaken through targeted counts, as a minimum on an annual basis, preferably more regularly to assess seasonal effects, assessing the new active mode usage with baseline demand. The Monitoring and Evaluation Plan will also monitor actual scheme expenditure compared to budget, and project delivery compared with key scheme programme milestones.

### Benefits Realisation Plan

- 5.8.8. The Benefits Realisation Plan is shown in Table 5-6.

**Table 5-5 – 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 Ability to contribute to a reduction in vehicular road traffic Propensity to reduce congestion/delay	Active travel surveys Non-motorised user counts Traffic counts Before and after implementation queue length survey	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	Reduced journey time for cycling Scale of catchment (jobs, housing) Ability to unlock growth Ease of interchange with public transport	Before and after air quality monitoring using air quality measurement facilities Active travel surveys 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, severance and the dominance of traffic improving personal security and road safety	Road safety Protection of green spaces; net biodiversity gain Environment (air quality and carbon reduction) Quality of the public realm Severance	Assessment of road traffic collisions Before and after air quality monitoring using air quality measurement facilities	Pre or during delivery / post opening (up to 5 years)	GCP
Efficient project delivery	Cost during construction and outturn costs against budget	Cost expenditure compared to milestones	Cost monitoring by area of spend compared with programme	During and post opening	GCP

**Table 5-6 – Benefits Realisation Plan**

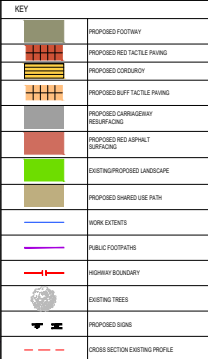
Objective Supported	Enabling changes	Benefits experienced	Who will benefit	Benefit Owner
Capacity: Provide the cycle network capacity to accommodate increases in active travel demand due to new housing and employment growth	Provision of improved segregated cycling infrastructure: attract new active mode users in the Swaffhams Greenway corridor	Unlock economic growth by providing new transport capacity / encouraging new residents to commute using active modes into Cambridge	Residents / employees / wider community	GCP / East 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 offering more direct routes/links and developing network connectivity with the Horningsea and Bottisham Greenway projects, Chisholm Trail and other Cambridge active mode networks	Increased active mode transport accessibility to jobs in the city centre  Mode shift from car to active modes	Residents / employees / wider community	GCP / East 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 of new & improved cycling infrastructure – development of dedicated active mode corridor including signage and lighting leading to safer and healthier cycling & walking environment	Greater active mode travel safety  Reduced GHG emissions, more linked habitats along the Swaffhams Greenway corridor contributing to Bio-diversity Net Gain  Reduced severance effect on residential communities due to traffic congestion relief  Improved well-being of travellers, with positive effects for businesses through higher productivity	Residents / employees / wider community	GCP / East Cambridgeshire District Council / Cambridge City Council



# Appendix A

## SCHEME DRAWINGS





NOTES
1. ALL DIMENSIONS IN METRES, UNLESS OTHERWISE STATED.
2. DESIGN BASED ON OS MAPPING SUBJECT TO TOPOGRAPHIC SURVEY AT NEXT STAGE OF DESIGN.
3. PROPOSED DESIGN WITHIN HIGHWAY BOUNDARY UNLESS OTHERWISE STATED.



PO#	04/11/2022	DOA	ROAD SAFETY ALERT STAGE 1 ISSUE	END	AMR
PO#	02/08/2022	AP	TRAT ISSUE	DOA	AMR
REV	DATE	BY	DESCRIPTION	CHK	APP





## S2 - FOR INFORMATION



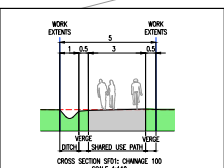
## GREENWAYS- SWAFFHAMS ROUTE

GENERAL ARRANGEMENT  
SHEET 01 OF 13

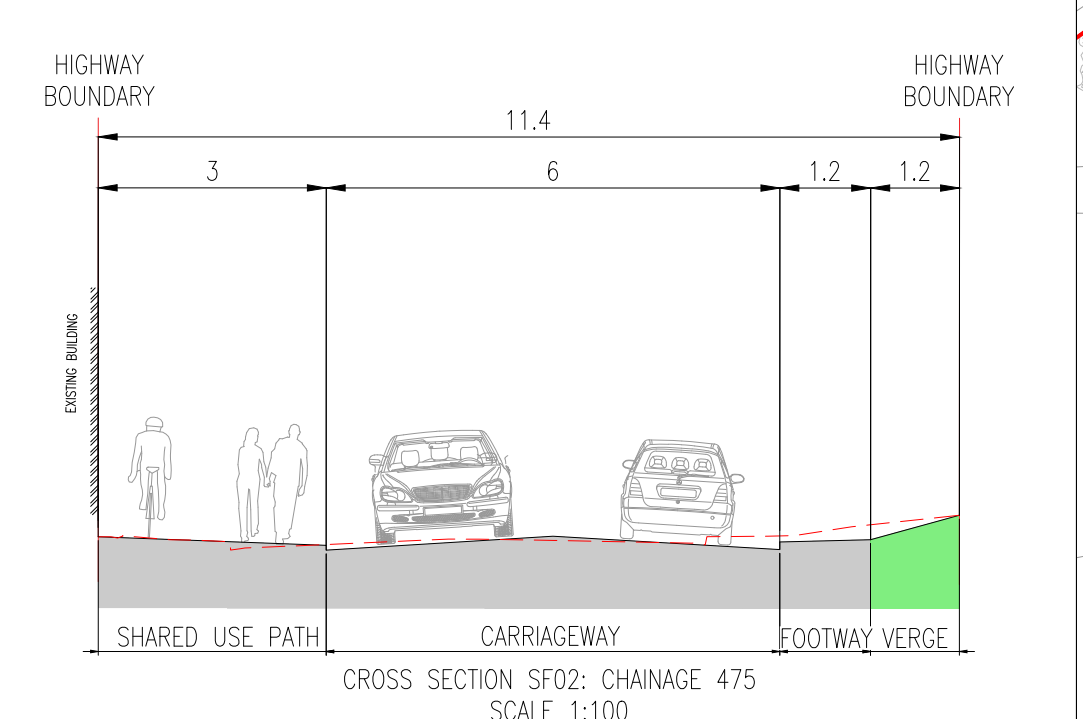
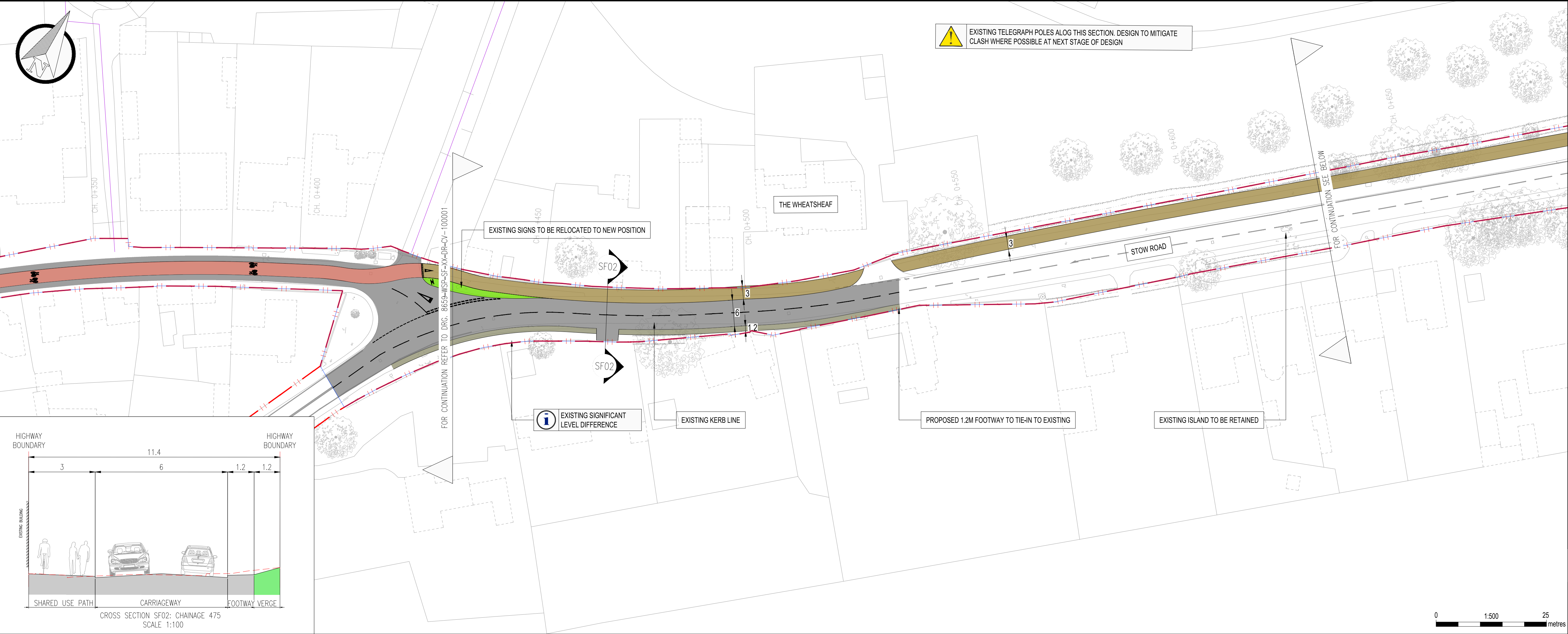
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WSP-PROJECT NO.					
70088659					
DRAWING NO.					REV.
8659-WSP-SF-XX-DR-CV-100001					P02

KEY TO HEALTH AND SAFETY SYMBOLS	
	INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
	INDICATES A RESIDUAL RISK FOR INFORMATION.
	INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
	INDICATES A RESIDUAL RISK AS A WARNING.

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

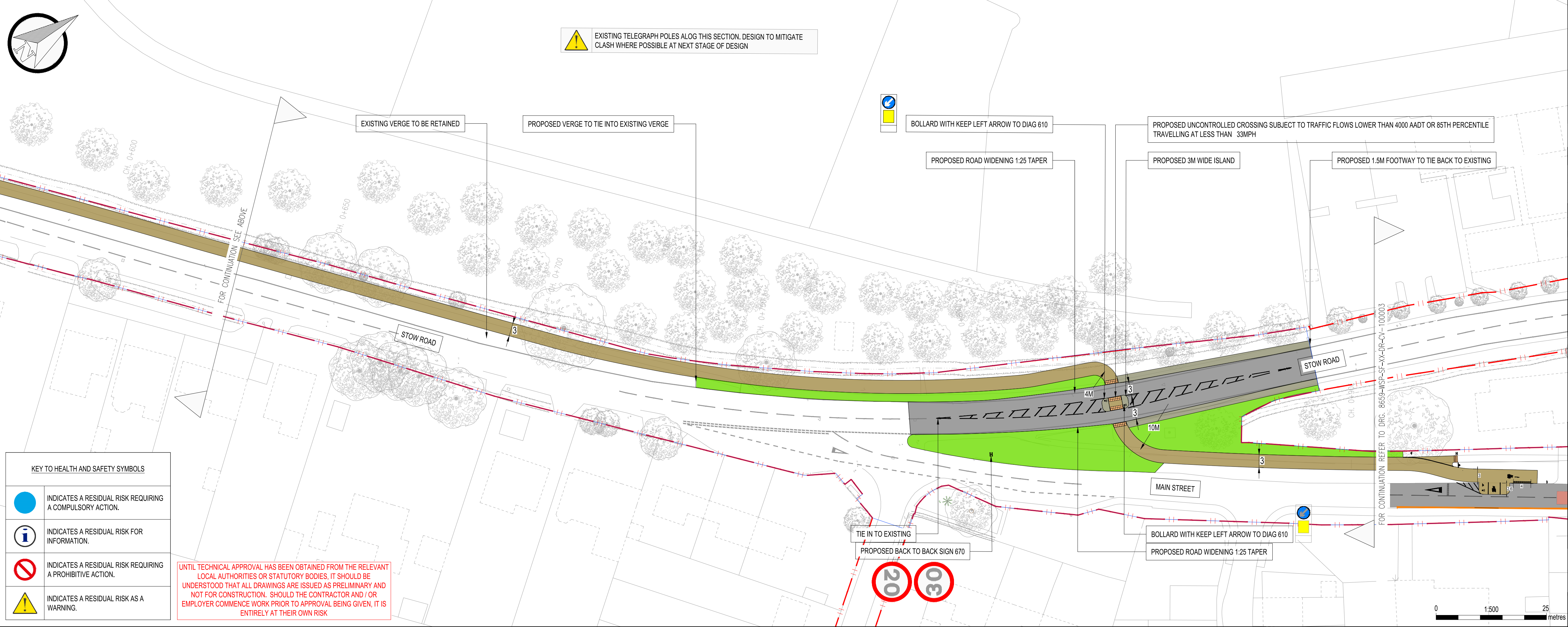






KEY	
	PROPOSED FOOTWAY
	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
	PROPOSED RED ASPHALT SURFACING
	EXISTING/PROPOSED LANDSCAPE
	PROPOSED SHARED USE PATH
	WORK EXTENTS
	PUBLIC FOOTPATHS
	HIGHWAY BOUNDARY
	EXISTING TREES
	PROPOSED SIGNS
	CROSS SECTION EXISTING PROFILE

- NOTES
1. ALL DIMENSIONS IN METRES, UNLESS OTHERWISE STATED.
  2. DESIGN BASED ON OS MAPPING SUBJECT TO TOPOGRAPHIC SURVEY AT NEXT STAGE OF DESIGN.
  3. PROPOSED DESIGN WITHIN HIGHWAY BOUNDARY UNLESS OTHERWISE STATED.



KEY TO HEALTH AND SAFETY SYMBOLS	
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P02	04/11/2022	RVA	ROAD SAFETY AUDIT STAGE 1 ISSUE	BKD	AKM
P01	02/06/2022	AP	FRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS  
S2 - FOR INFORMATION

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T+ 44(0) 1223 558 050, F+ 44(0) 1223 558 051  
wsp.com

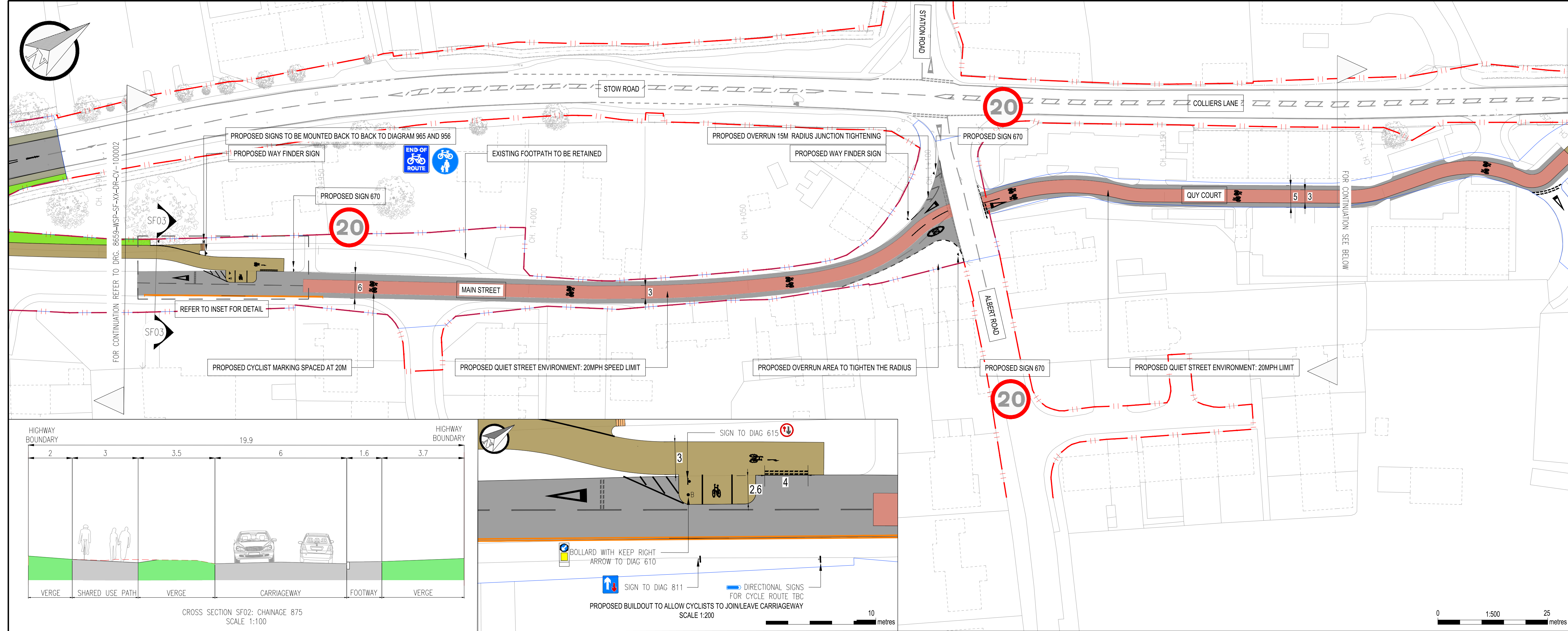
CLIENT  
  
GREATER CAMBRIDGE PARTNERSHIP

PROJECT  
GREENWAYS- SWAFFHAMS ROUTE

TITLE  
GENERAL ARRANGEMENT  
SHEET 02 OF 13

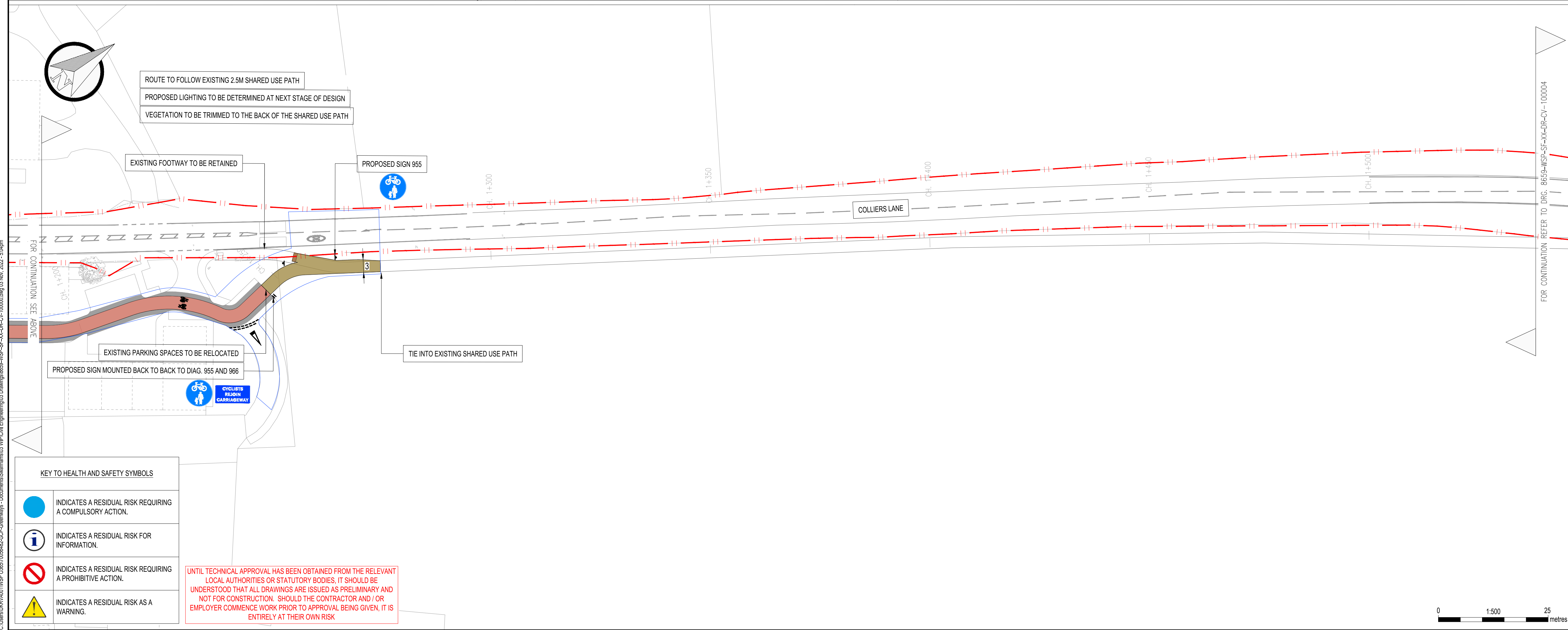
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WSP PROJECT NO. 70088659					
DRAWING NO. 8659-WSP-SF-XX-DR-CV-100002					REV P02





KEY	
	PROPOSED FOOTWAY
	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
	PROPOSED RED ASPHALT SURFACING
	EXISTING/PROPOSED LANDSCAPE
	PROPOSED SHARED USE PATH
	WORK EXTENTS
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  3. PROPOSED DESIGN WITHIN HIGHWAY BOUNDARY UNLESS OTHERWISE STATED.



P02	04/11/2022	RVA	ROAD SAFETY AUDIT STAGE 1 ISSUE	BKD	AKM
P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS  
S2 - FOR INFORMATION

**wsp**

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**GREATER CAMBRIDGE PARTNERSHIP**

PROJECT  
GREENWAYS- SWAFFHAMS ROUTE

TITLE  
GENERAL ARRANGEMENT  
SHEET 03 OF 13

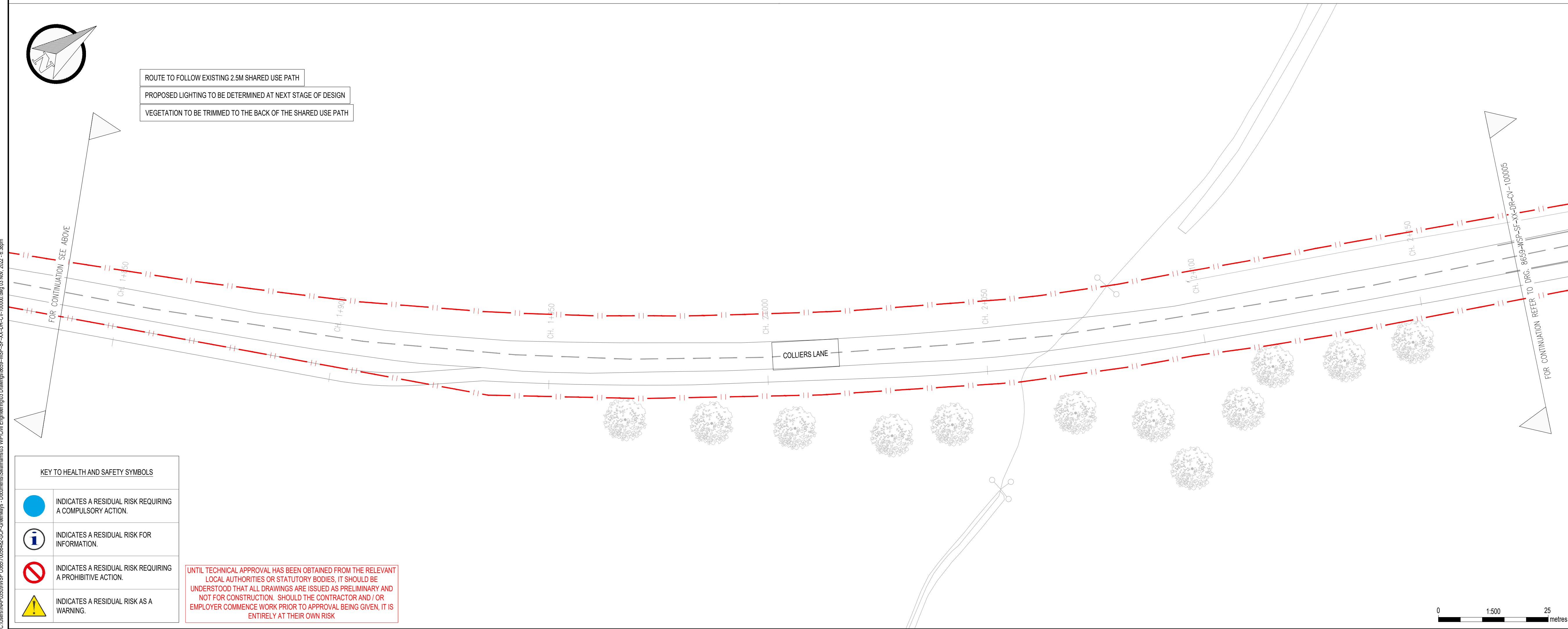
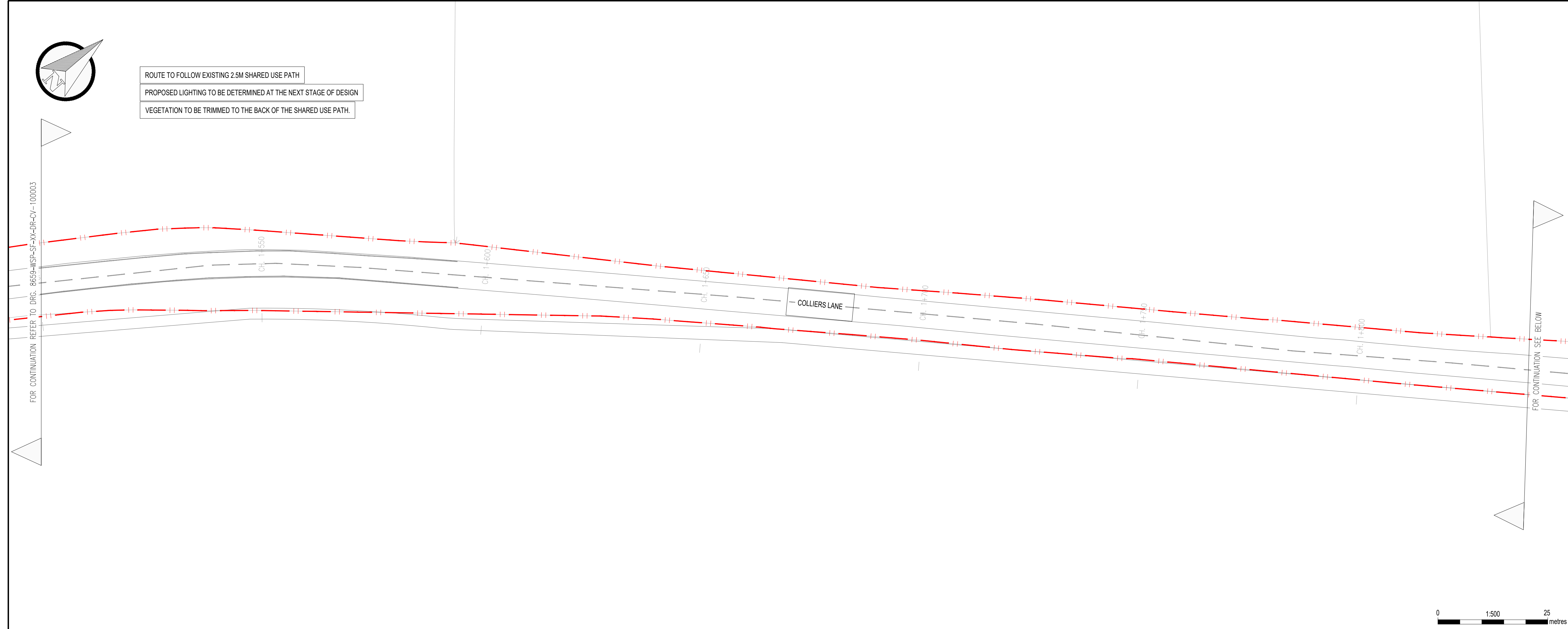
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WSP PROJECT NO.	70088659	REV	P02
DRAWING NO.	8659-WSP-SF-XX-DR-CV-100003		

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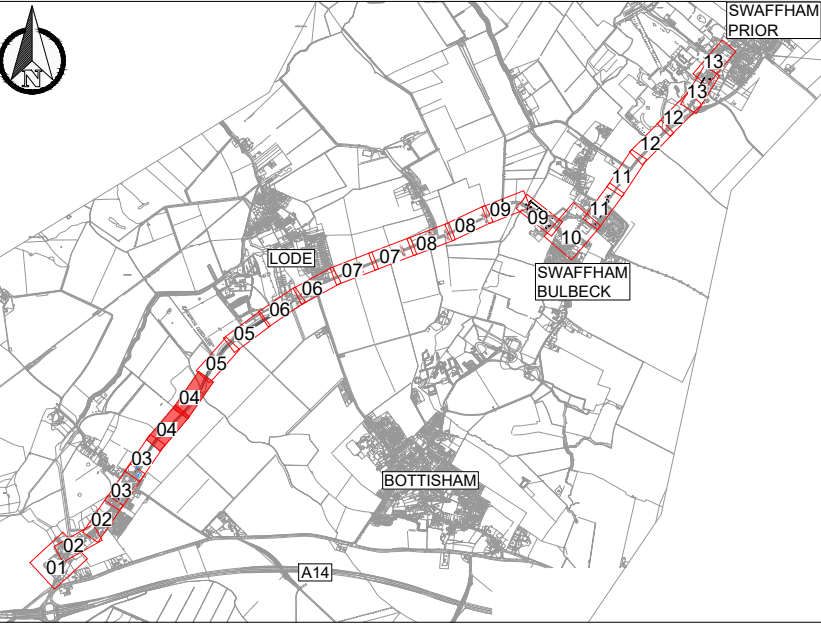
KEY TO HEALTH AND SAFETY SYMBOLS

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	INDICATES A RESIDUAL RISK FOR INFORMATION.
	INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
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KEY	
	PROPOSED FOOTWAY
	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
	PROPOSED RED ASPHALT SURFACING
	EXISTING/PROPOSED LANDSCAPE
	PROPOSED SHARED USE PATH
	WORK EXTENTS
	PUBLIC FOOTPATHS
	HIGHWAY BOUNDARY
	EXISTING TREES
	PROPOSED SIGNS
	CROSS SECTION EXISTING PROFILE

- NOTES
- ALL DIMENSIONS IN METRES, UNLESS OTHERWISE STATED.
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P02	04/11/2022	RVA	ROAD SAFETY AUDIT STAGE 1 ISSUE	BKD	AKM
P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS

S2 - FOR INFORMATION

62-64 Hills Road, Cambridge, CB2 1LA, UK  
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GREATER CAMBRIDGE PARTNERSHIP

PROJECT

GREENWAYS- SWAFFHAMS ROUTE

TITLE

GENERAL ARRANGEMENT  
SHEET 04 OF 13

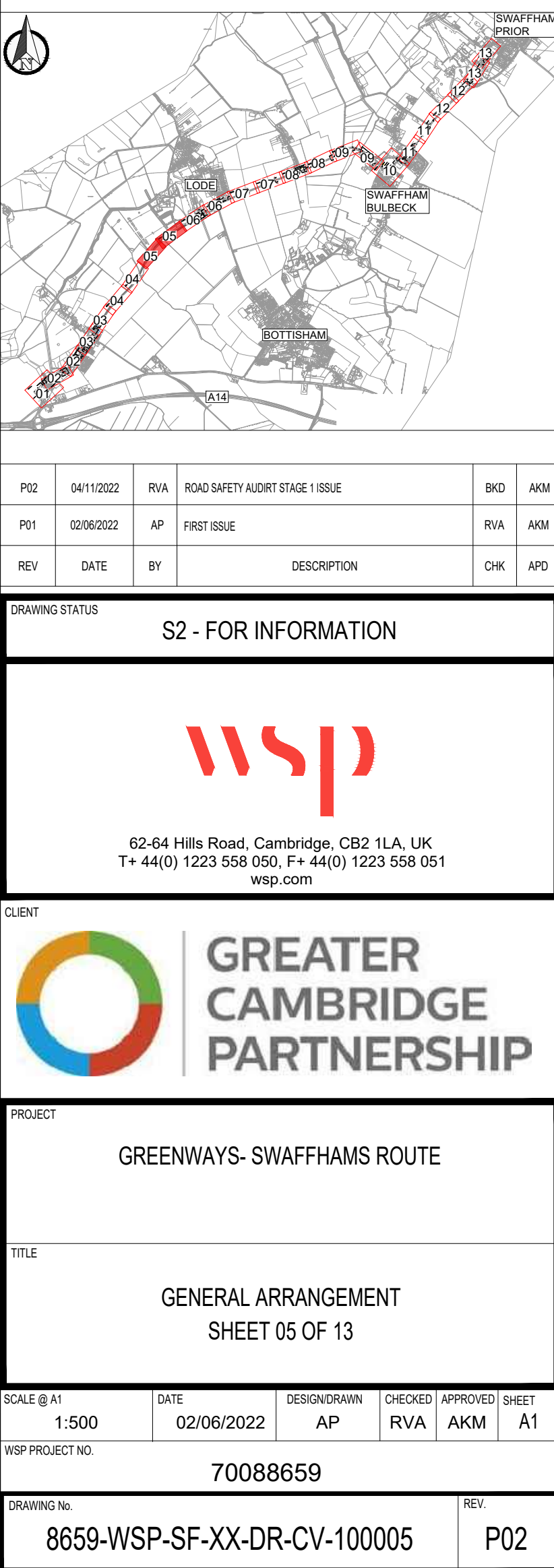
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WSP PROJECT NO.

70088659

DRAWING NO.	REV.
8659-WSP-SF-XX-DR-CV-100004	P02

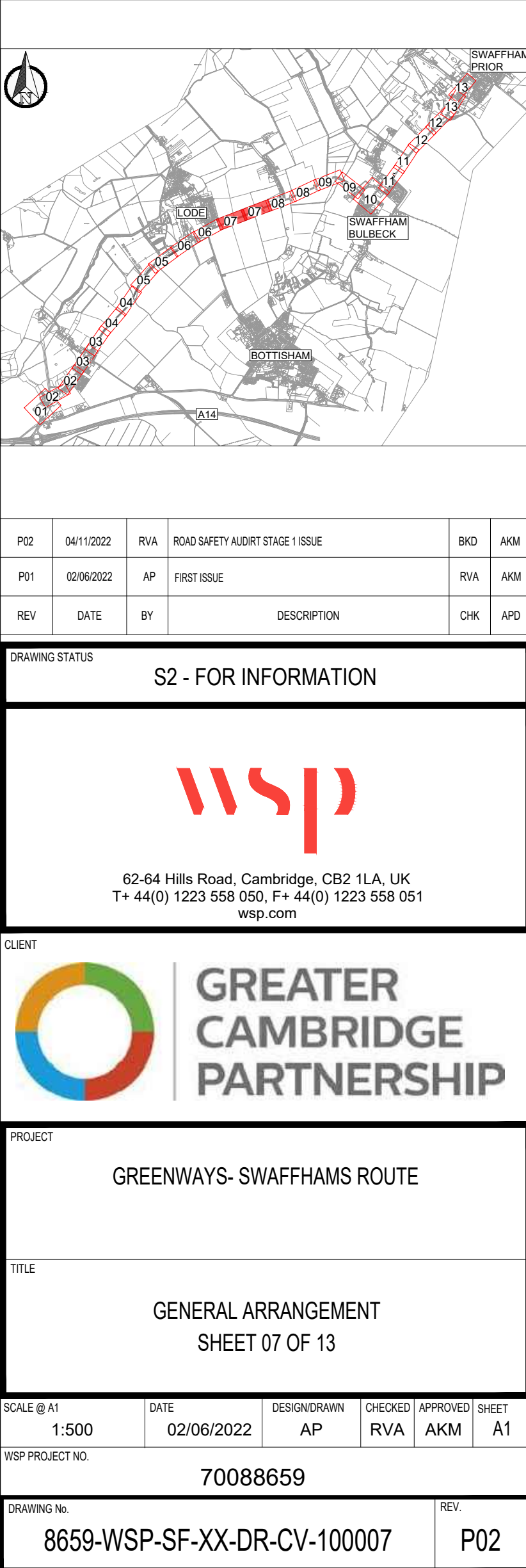




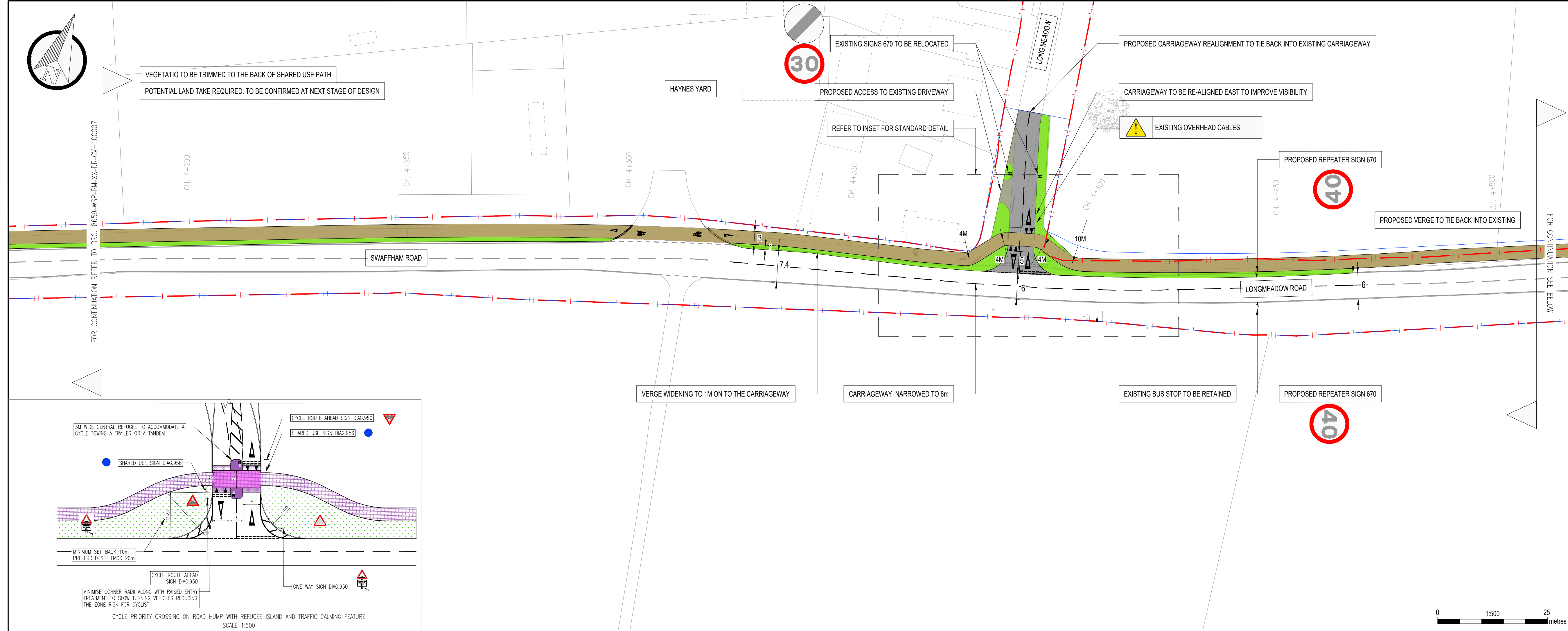






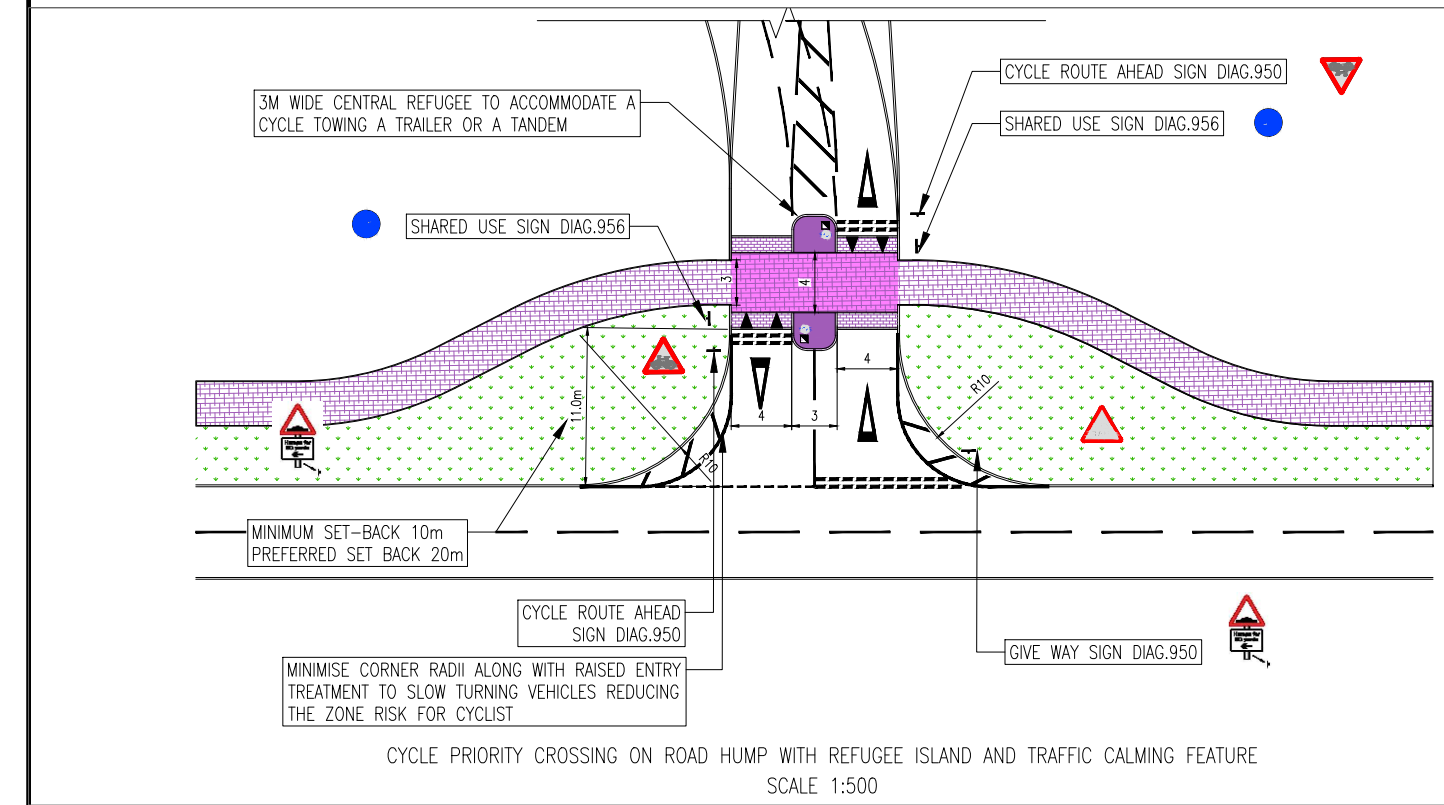






KEY	
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	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
	PROPOSED RED ASPHALT SURFACING
	EXISTING/PROPOSED LANDSCAPE
	PROPOSED SHARED USE PATH
	WORK EXTENTS
	PUBLIC FOOTPATHS
	HIGHWAY BOUNDARY
	EXISTING TREES
	PROPOSED SIGNS
	CROSS SECTION EXISTING PROFILE

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P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS

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**GREATER CAMBRIDGE PARTNERSHIP**

PROJECT

GREENWAYS- SWAFFHAMS ROUTE

TITLE

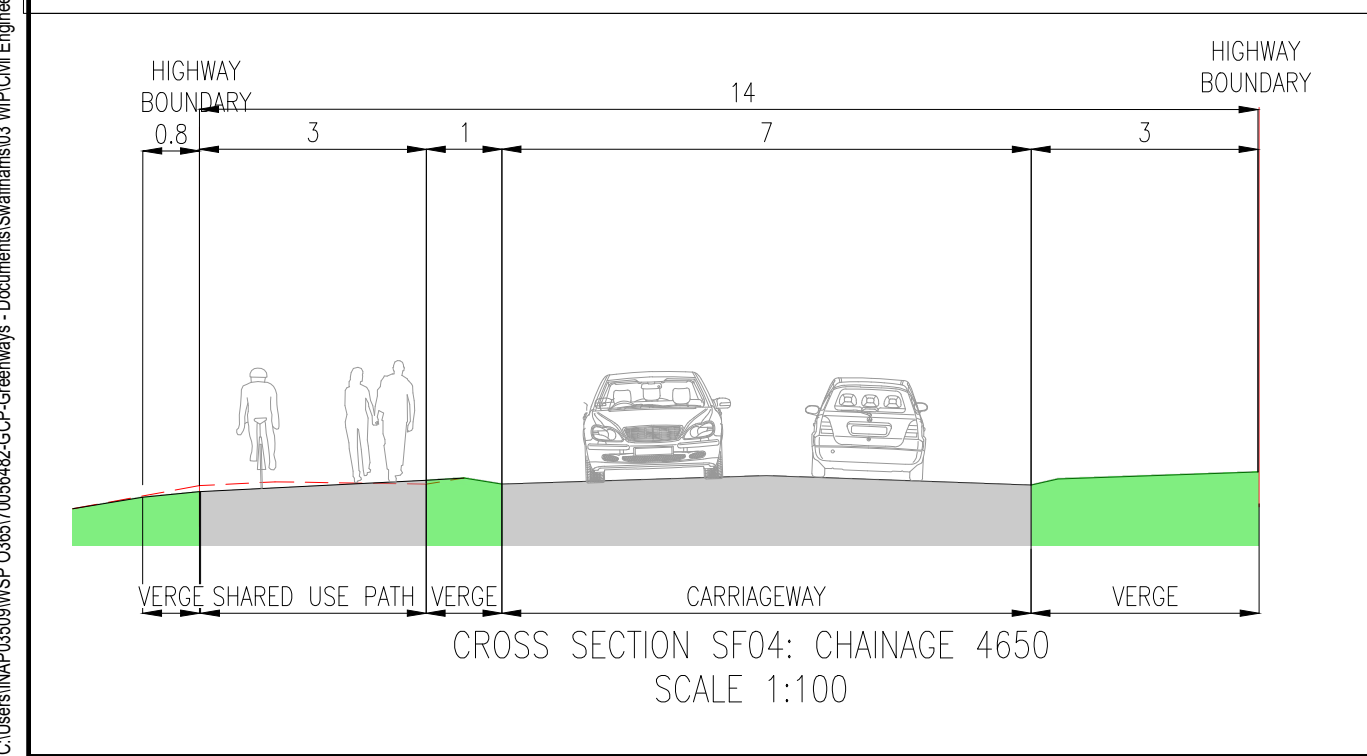
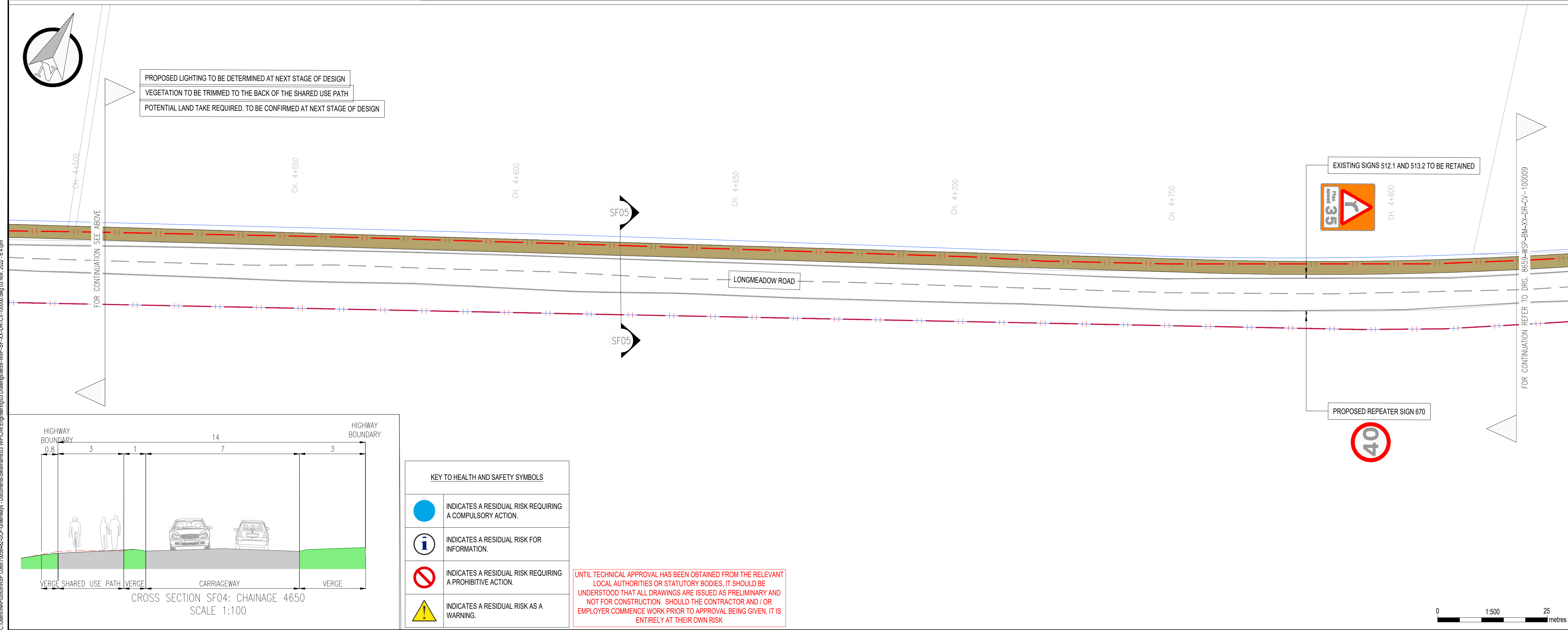
GENERAL ARRANGEMENT  
SHEET 08 OF 13

SCALE @ A1	DATE	DESIGN/DRAWN	CHECKED	APPROVED	SHEET
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WSP PROJECT NO.

70088659

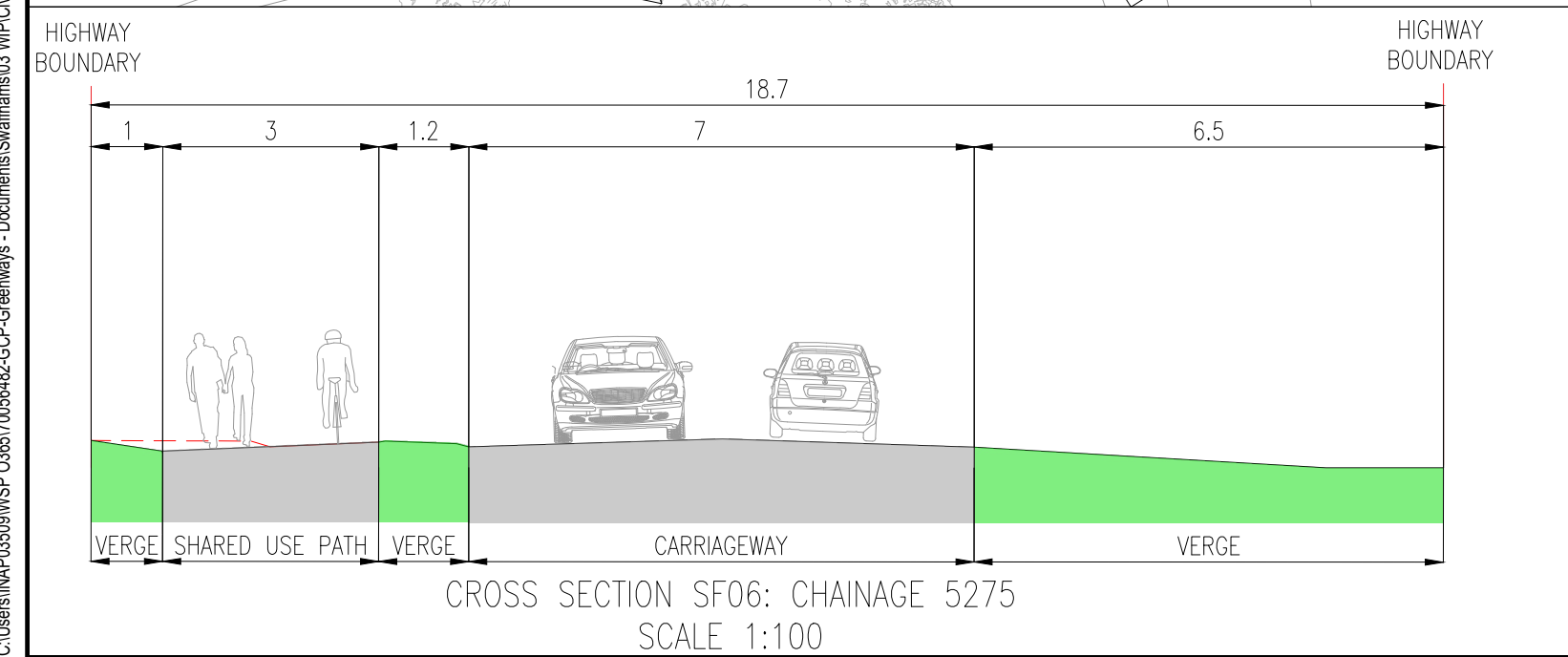
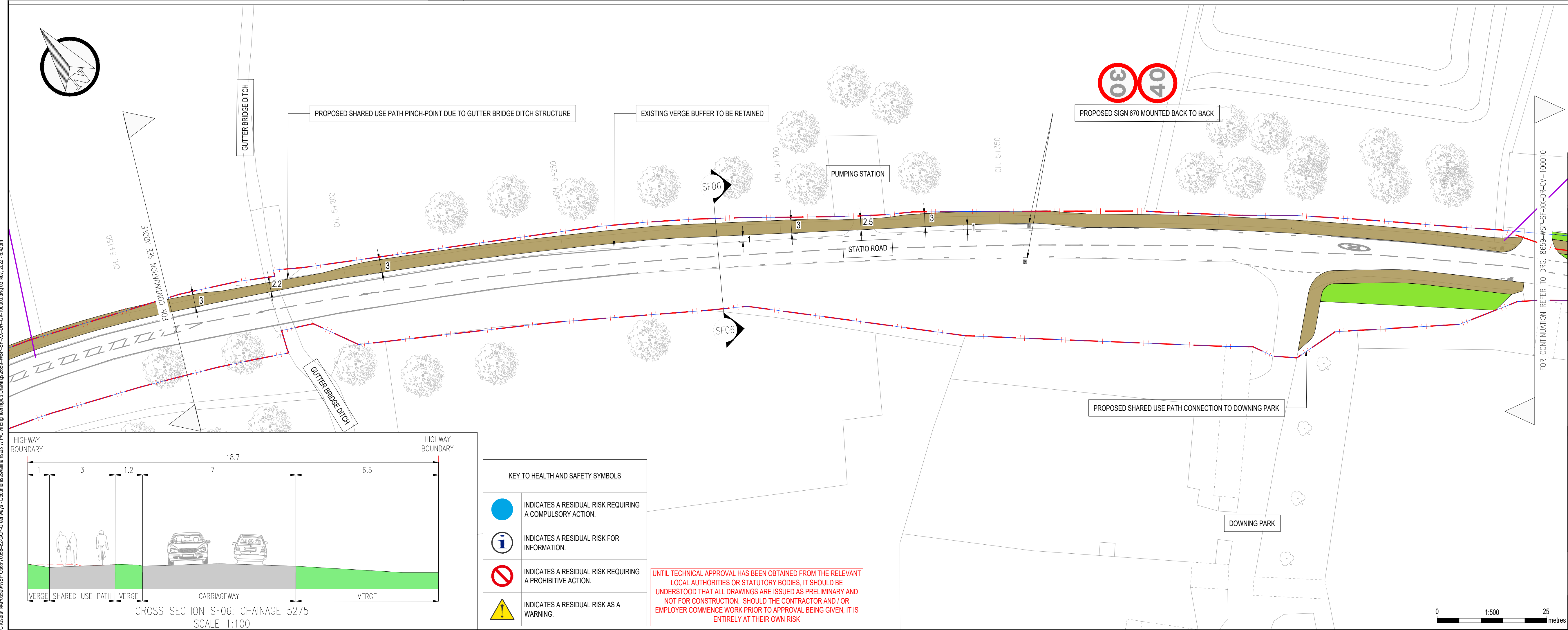
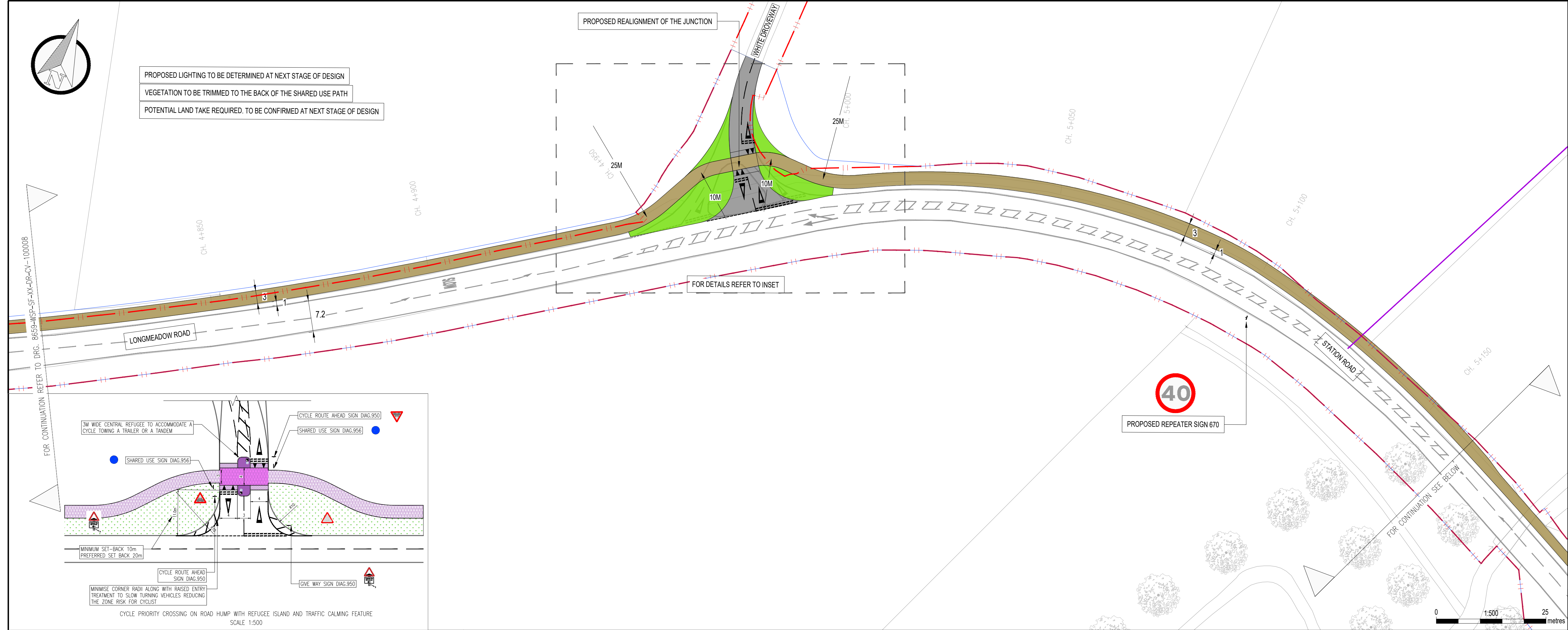
DRAWING No.	REV.
8659-WSP-SF-XX-DR-CV-100008	P02



KEY TO HEALTH AND SAFETY SYMBOLS	
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PROPOSED FOOTWAY

PROPOSED RED TACTILE PAVING

PROPOSED CORDUROY

PROPOSED BUFF TACTILE PAVING

PROPOSED CARRIAGEWAY RESURFACING

PROPOSED RED ASPHALT SURFACING

EXISTING/PROPOSED LANDSCAPE

PROPOSED SHARED USE PATH

WORK EXTENTS

PUBLIC FOOTPATHS

HIGHWAY BOUNDARY

EXISTING TREES

PROPOSED SIGNS

CROSS SECTION EXISTING PROFILE

NOTES

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3. PROPOSED DESIGN WITHIN HIGHWAY BOUNDARY UNLESS OTHERWISE STATED.

04/11/2022

RVA

ROAD SAFETY AUDIT STAGE 1 ISSUE

BKD

AKM

02/06/2022

AP

FRST ISSUE

RVA

AKM

CHK

APD

DRAWING STATUS

S2 - FOR INFORMATION

wsp

62-64 Hills Road, Cambridge, CB2 1LA, UK  
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wsp.com

CLIENT

GREATER CAMBRIDGE PARTNERSHIP

PROJECT

GREENWAYS- SWAFFHAM ROUTE

TITLE

GENERAL ARRANGEMENT  
SHEET 09 OF 13

SCALE @ A1

DATE

DESIGN/DRAWN

CHECKED

APPROVED

SHEET

1:500

02/06/2022

AP

RVA

AKM

A1

WSP PROJECT NO.

70088659

DRAWING NO.

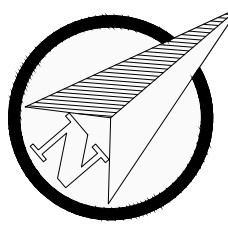
8659-WSP-SF-XX-DR-CV-100009

REV

P02

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PROPOSED LIGHTING TO BE DETERMINED AT NEXT STAGE OF DESIGN  
VEGETATION TO BE TRIMMED TO THE BACK OF THE SHARED USE PATH  
POTENTIAL LAND TAKE REQUIRED. TO BE CONFIRMED AT THE NEXT STAGE OF DESIGN

FOR CONTINUATION REFER TO DRG. 8659-WSP-SF-XX-DR-CV-100009

EXISTING OVERHEAD CABLES

EXISTING TACTILE TO BE EXTENDED TO THE BACK OF THE SHARED USE PATH

PROPOSED DITCH. EXACT LOCATION TO BE CONFIRMED AT NEXT STAGE OF DESIGN

EXISTING OVERHEAD CABLES

EXISTING BENCH TO BE RELOCATED

EXISTING LAMP POST TO BE RELOCATED

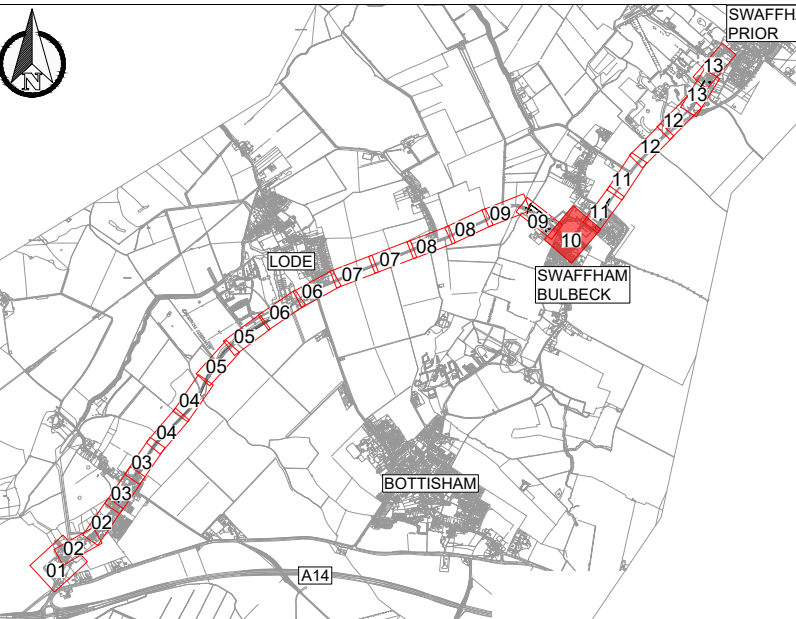
SHARED USE PATH TO TIE INTO EXISTING

ROUTE TO FOLLOW EXISTING PATH

EXISTING BUS STOP

KEY	
	PROPOSED FOOTWAY
	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
	PROPOSED RED ASPHALT SURFACING
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	WORK EXTENTS
	PUBLIC FOOTPATHS
	HIGHWAY BOUNDARY
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P02	04/11/2022	RVA	ROAD SAFETY AUDIT STAGE 1 ISSUE	BKD	AKM
P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS  
S2 - FOR INFORMATION

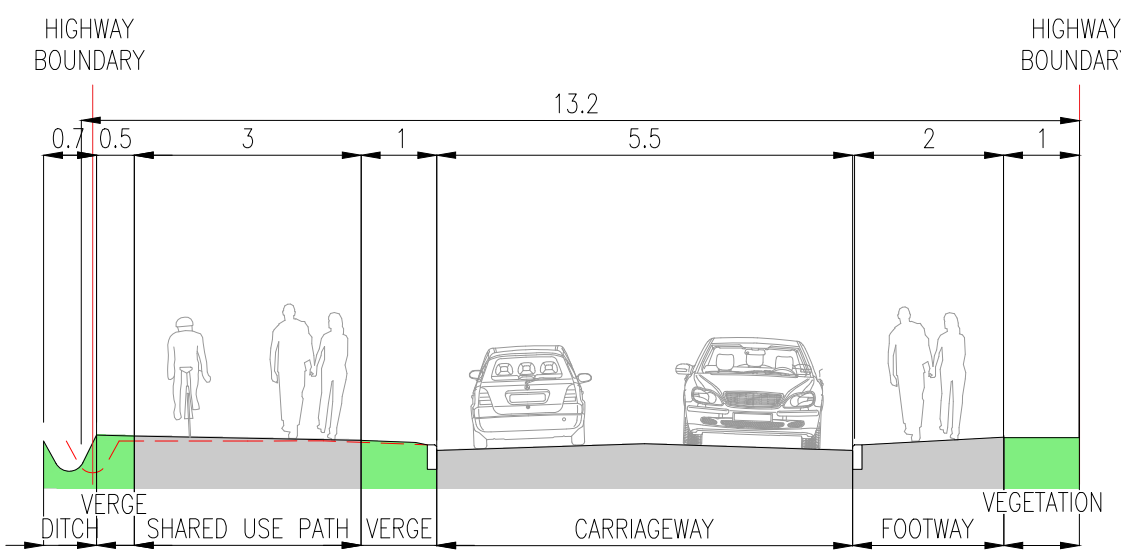


PROJECT  
GREENWAYS- SWAFFHAMS ROUTE  
TITLE  
GENERAL ARRANGEMENT  
SHEET 10 OF 13

SCALE @ A1	DATE	DESIGN/DRAWN	CHECKED	APPROVED	SHEET
1:500	02/06/2022	AP	RVA	AKM	A1

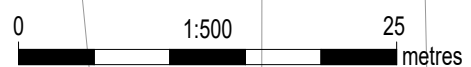
WSP PROJECT NO.  
70088659

DRAWING NO.	REV.
8659-WSP-SF-XX-DR-CV-100010	P02



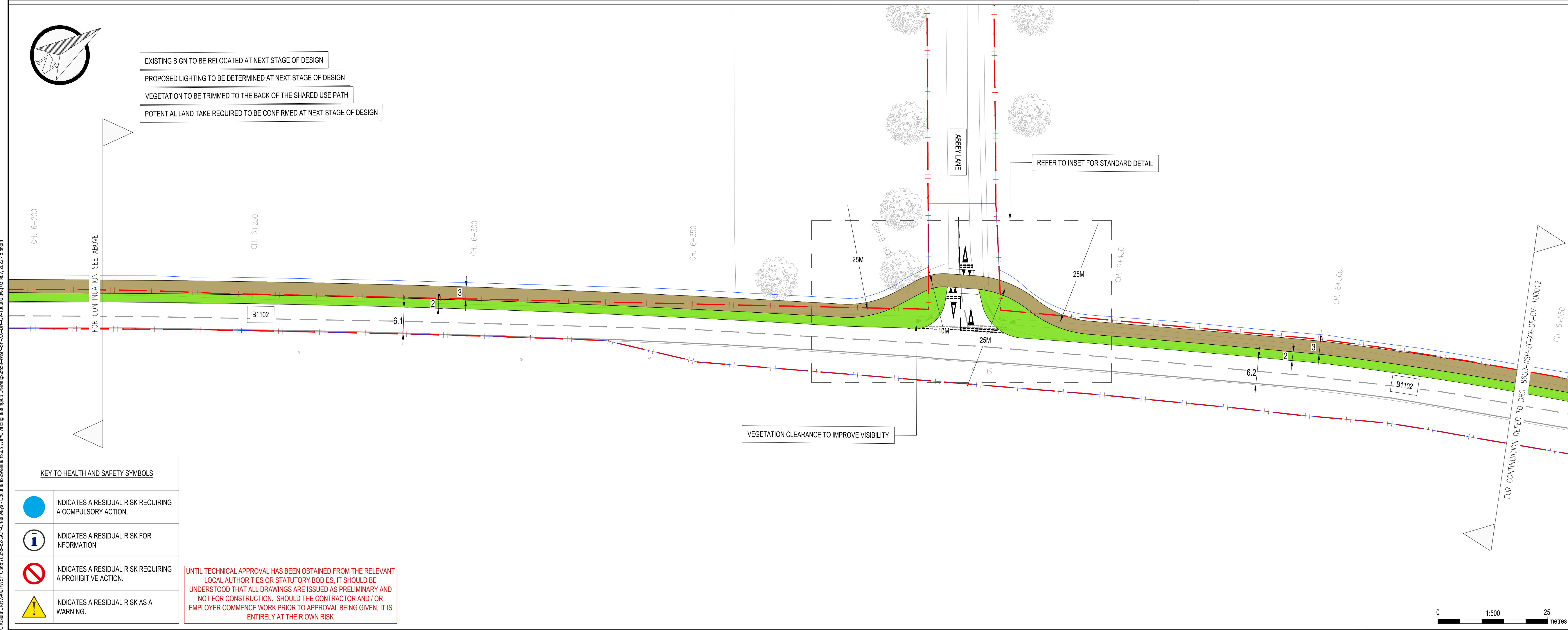
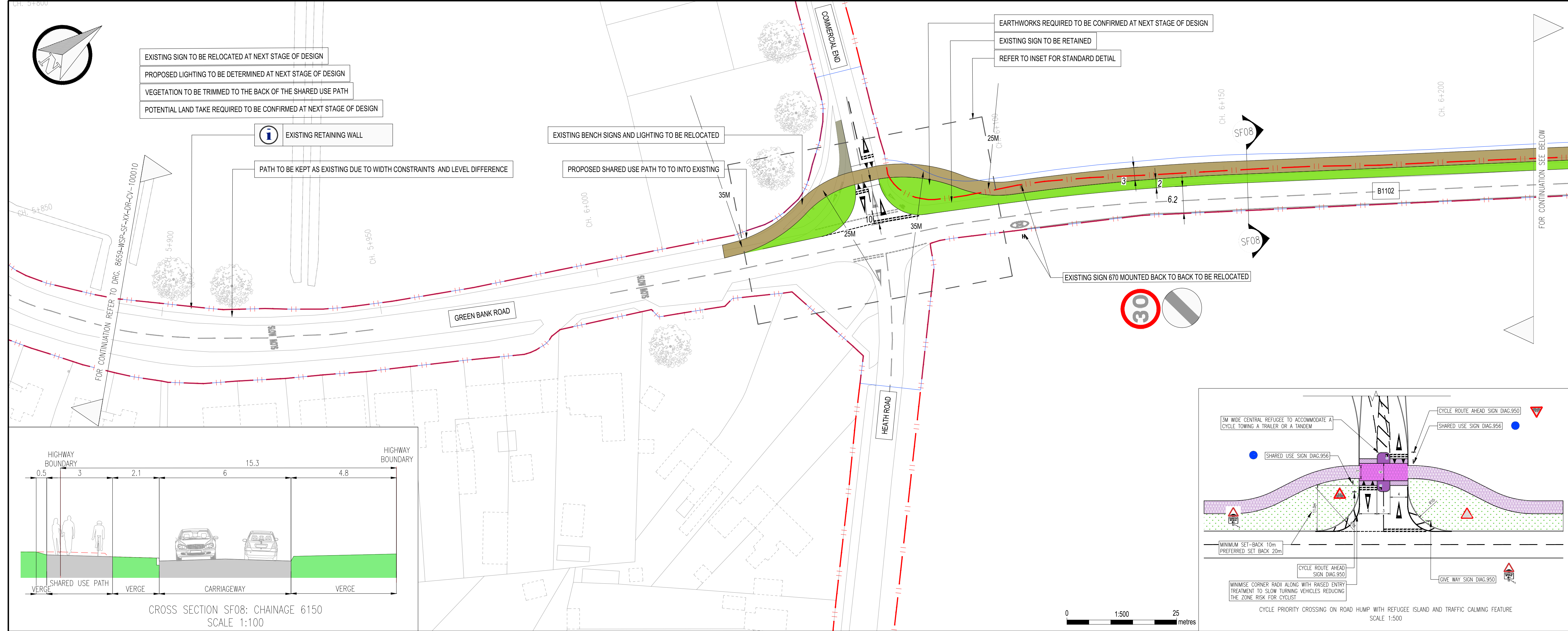
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**KEY**

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[Symbol]	PROPOSED RED TACTILE PAVING
[Symbol]	PROPOSED CORDUROY
[Symbol]	PROPOSED BUFF TACTILE PAVING
[Symbol]	PROPOSED CARRIAGEWAY RESURFACING
[Symbol]	PROPOSED RED ASPHALT SURFACING
[Symbol]	EXISTING/PROPOSED LANDSCAPE
[Symbol]	PROPOSED SHARED USE PATH
[Symbol]	WORK EXTENTS
[Symbol]	PUBLIC FOOTPATHS
[Symbol]	HIGHWAY BOUNDARY
[Symbol]	EXISTING TREES
[Symbol]	PROPOSED SIGNS
[Symbol]	CROSS SECTION EXISTING PROFILE

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**GENERAL ARRANGEMENT**

**SHEET 11 OF 13**

**SCALE @ A1**

1:500	02/06/2022	AP	AKM	AKM	A1
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WSP PROJECT NO. 70088659

DRAWING NO. 8659-WSP-SF-XX-DR-CV-100011

REV. P02

**KEY TO HEALTH AND SAFETY SYMBOLS**

[Symbol]	INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
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**S2 - FOR INFORMATION**

**wsp**

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wsp.com

**CLIENT**

**GREATER CAMBRIDGE PARTNERSHIP**

**PROJECT**

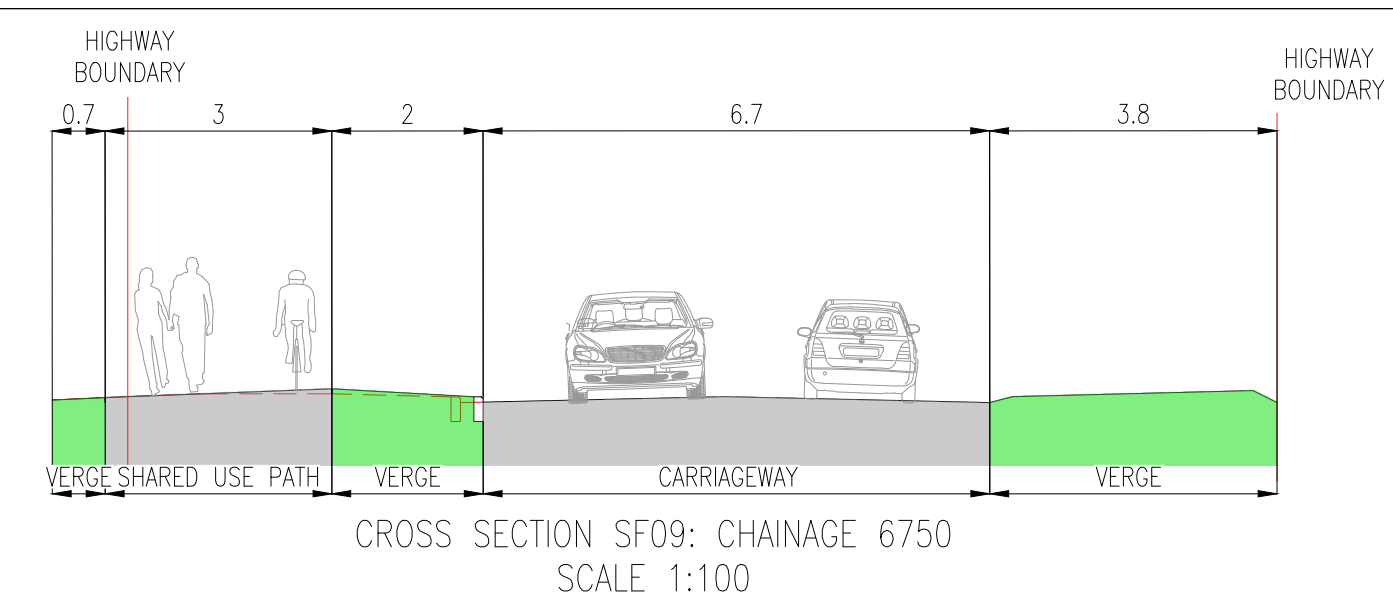
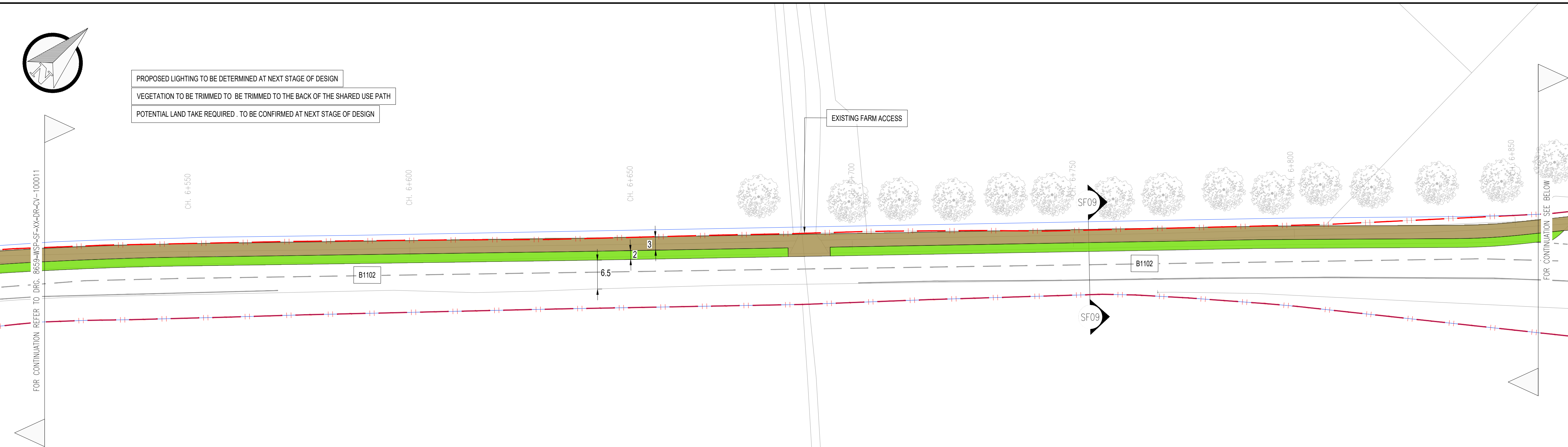
**GREENWAYS- SWAFFHAMS ROUTE**

**TITLE**

**GENERAL ARRANGEMENT**

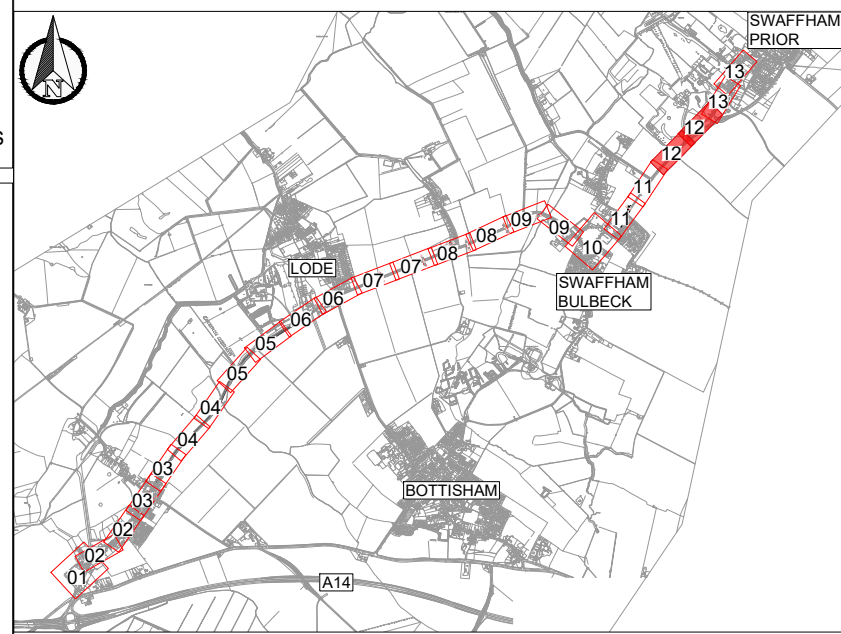
**SHEET 11 OF 13**





KEY	
	PROPOSED FOOTWAY
	PROPOSED RED TACTILE PAVING
	PROPOSED CORDUROY
	PROPOSED BUFF TACTILE PAVING
	PROPOSED CARRIAGEWAY RESURFACING
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P02	04/12/2022	RVA	ROAD SAFETY AUDIT STAGE 1 ISSUE	BKD	AKM
P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS

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wsp.com



PROJECT

GREENWAYS- SWAFFHAMS ROUTE

TITLE

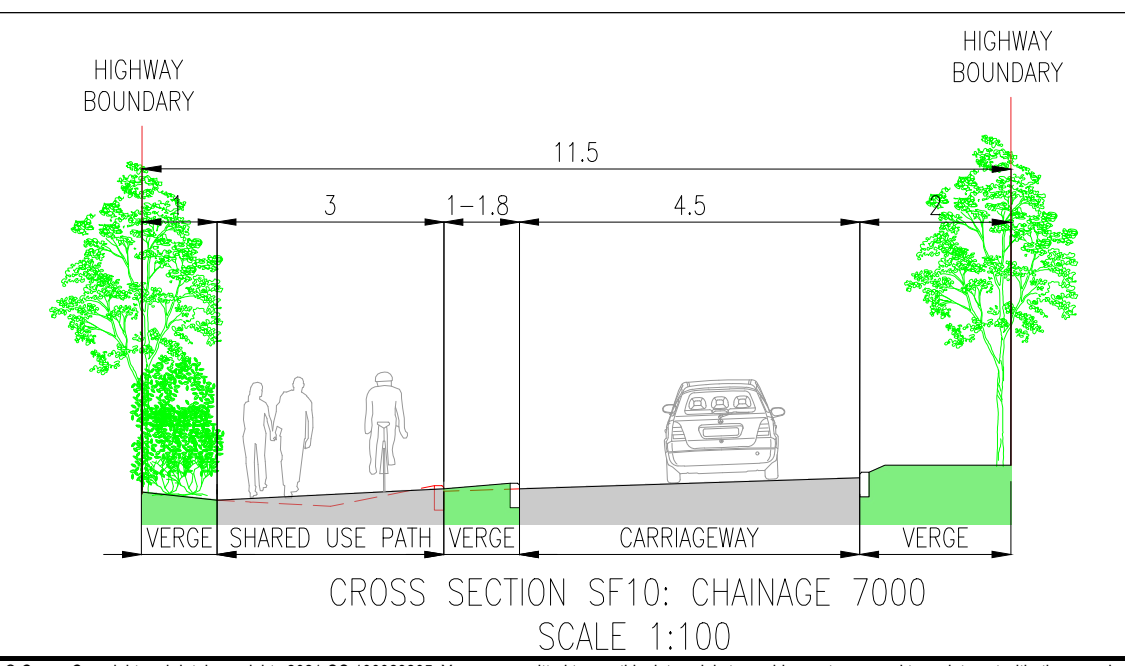
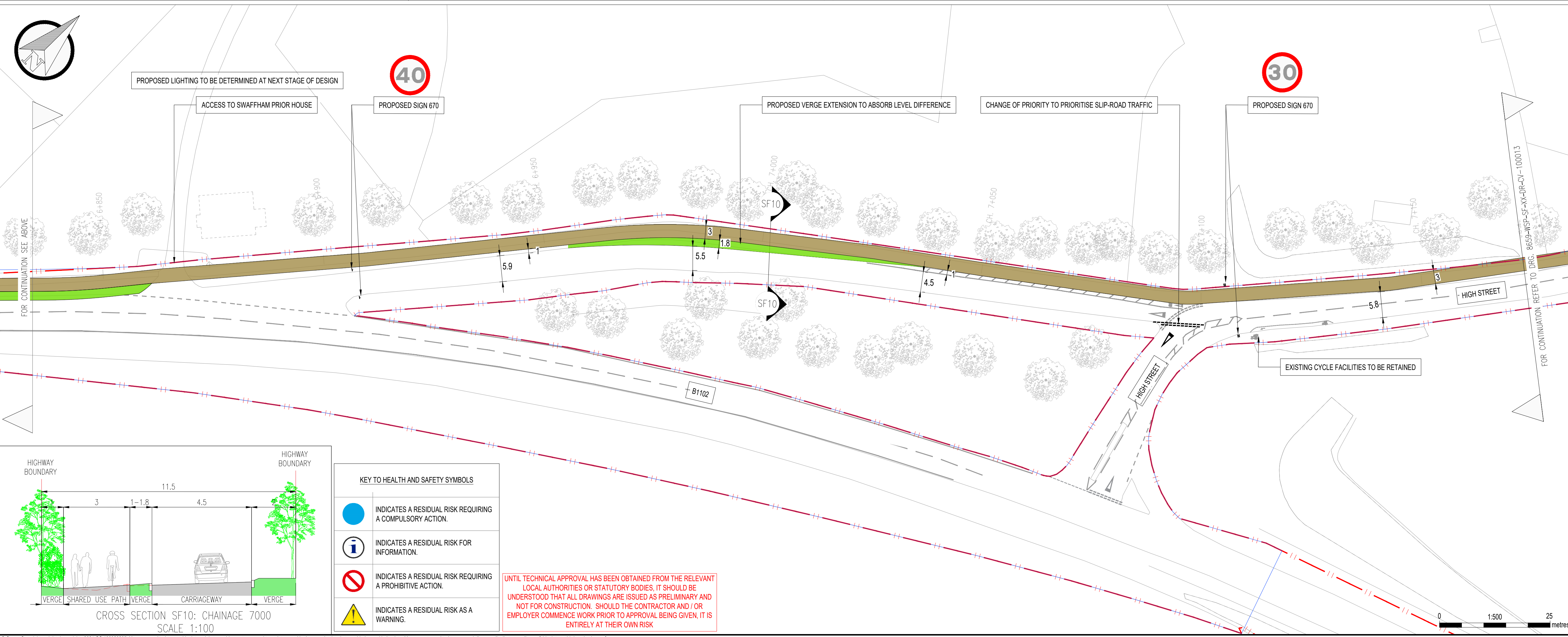
GENERAL ARRANGEMENT  
SHEET 12 OF 13

SCALE @ A1	DATE	DESIGN/DRAWN	CHECKED	APPROVED	SHEET
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WSP PROJECT NO.

70088659

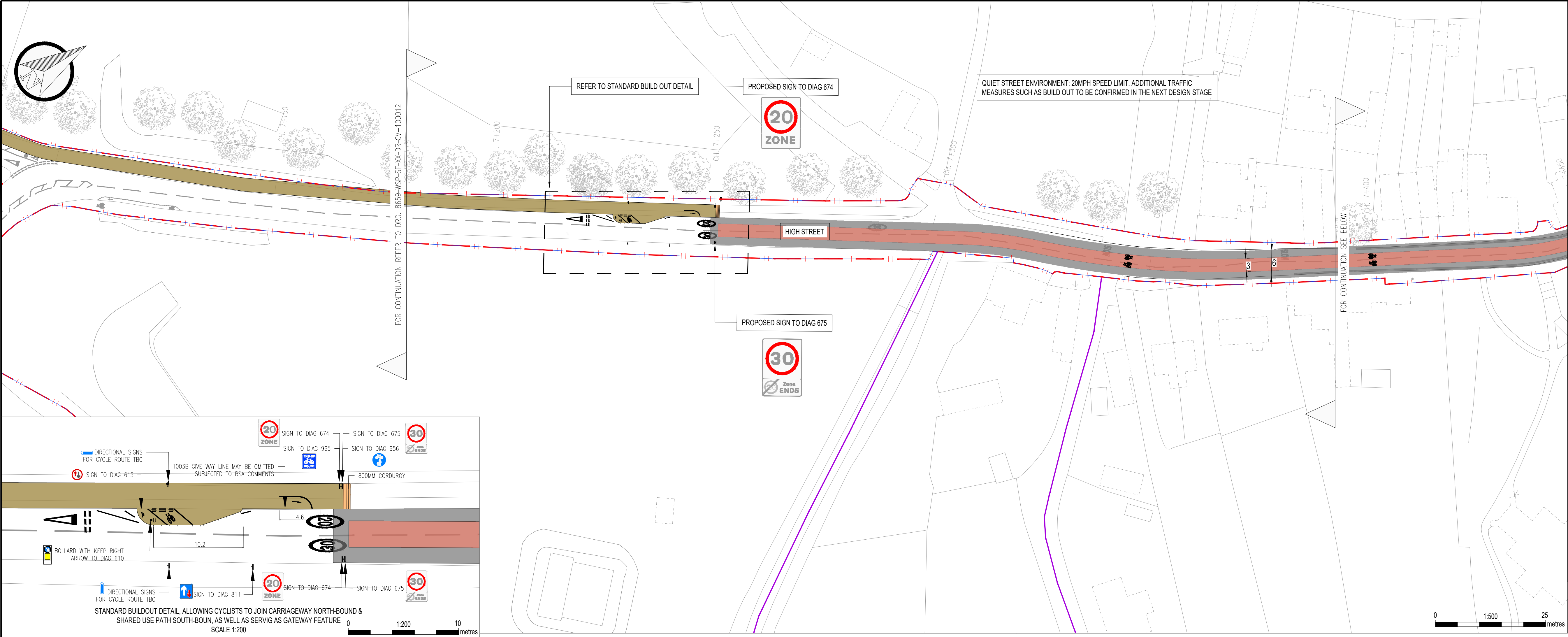
DRAWING No.	REV
8659-WSP-SF-XX-DR-CV-100012	P02



KEY TO HEALTH AND SAFETY SYMBOLS	
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KEY

	PROPOSED FOOTWAY
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	PROPOSED SHARED USE PATH
	WORK EXTENTS
	PUBLIC FOOTPATHS
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	EXISTING TREES
	PROPOSED SIGNS
	CROSS SECTION EXISTING PROFILE

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P01	02/06/2022	AP	FIRST ISSUE	RVA	AKM
REV	DATE	BY	DESCRIPTION	CHK	APD

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S2 - FOR INFORMATION

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wsp.com

CLIENT

GREATER CAMBRIDGE PARTNERSHIP

PROJECT

GREENWAYS- SWAFFHAMS ROUTE

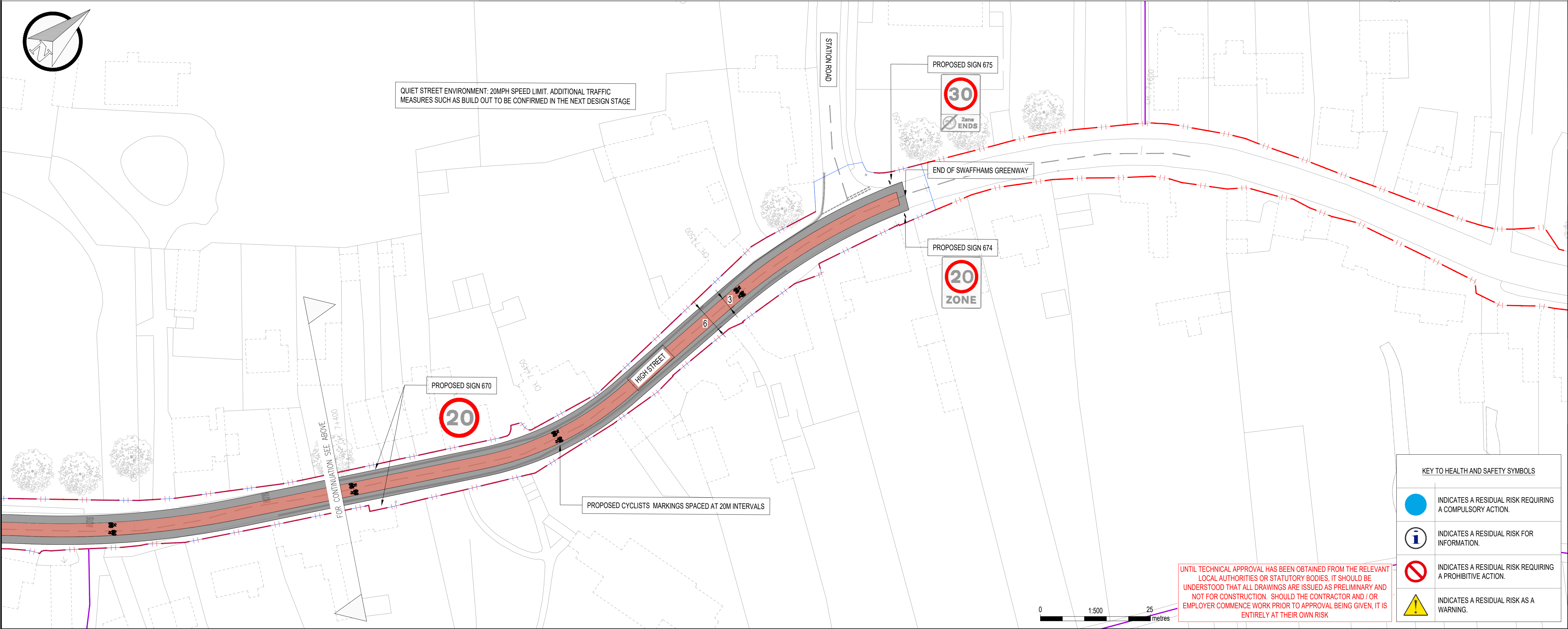
TITLE

GENERAL ARRANGEMENT  
SHEET 13 OF 13

SCALE @ A1	DATE	DESIGN/DRAWN	CHECKED	APPROVED	SHEET
1:500	02/06/2022	AP	RVA	AKM	A1

WSP PROJECT NO. 70088659

DRAWING NO.	REV.
8659-WSP-SF-XX-DR-CV-100013	P02



KEY TO HEALTH AND SAFETY SYMBOLS

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# Appendix B

## TEE - PA - AMCB TABLES



Economic Efficiency of the Transport System (TEE) - Swaffhams Greenway

<b>Non-business: Commuting</b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
<b><u>User benefits</u></b>		<b>TOTAL</b>		<b>Private Cars and LGVs</b>		<b>Passengers</b>		<b>Passengers</b>			
Travel time	6,124			6,124							
Vehicle operating costs	0										
User charges	0										
During Construction & Maintenance	0										
<b>NET NON-BUSINESS BENEFITS: COMMUTING</b>	<b>6,124</b>	<b>(1a)</b>		<b>6,124</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b><u>Non-business: Other</u></b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
<b><u>User benefits</u></b>		<b>TOTAL</b>		<b>Private Cars and LGVs</b>		<b>Passengers</b>		<b>Passengers</b>			
Travel time	15,005			15,005							
Vehicle operating costs	0										
User charges	0										
During Construction & Maintenance	0										
<b>NET NON-BUSINESS BENEFITS: OTHER</b>	<b>15,005</b>	<b>(1b)</b>		<b>15,005</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b><u>Business</u></b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
<b><u>User benefits</u></b>		<b>TOTAL</b>		<b>Business Cars &amp; LGVs</b>		<b>Passengers</b>		<b>Freight</b>		<b>Passengers</b>	
Travel time	2,897			2,897							
Vehicle operating costs	0										
User charges	0										
During Construction & Maintenance	0										
<b>Subtotal</b>	<b>2,897</b>	<b>(2)</b>		<b>0</b>	<b>2,897</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b><u>Private sector provider impacts</u></b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
Revenue	0										
Operating costs	0										
Investment costs	0										
Grant/subsidy	0										
<b>Subtotal</b>	<b>0</b>	<b>(3)</b>									
<b><u>Other business impacts</u></b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
Developer contributions		<b>(4)</b>									
<b>NET BUSINESS IMPACT</b>	<b>2,897</b>	<b>(5) = (2) + (3) + (4)</b>									
<b>TOTAL</b>		<b>MODES</b>		<b>ROAD</b>		<b>COACH</b>		<b>RAIL</b>		<b>OTHER</b>	
Present Value of Transport Economic Efficiency Benefits (TEE)	<b>24,027</b>	<b>(6) = (1a) + (1b) + (5)</b>									

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

Public Accounts (PA) Table - Swaffhams Greenway					
	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
<b>Local Government</b>					
<b>Funding</b>	<b>TOTAL</b>	<b>INFRASTRUCTURE</b>			
Revenue	0				
Operating Costs	-519	-519			
Investment Costs	0				
Contributions	0				
Grant/Subsidy Payments	0				
<b>NET IMPACT</b>	-519 (7)				
<b>Central Government Funding:</b>					
<b>Transport</b>					
Revenue	0				
Operating costs	0				
Investment Costs	3,031,206				3,031,206
Contributions	0				
Grant/Subsidy Payments	0				
<b>NET IMPACT</b>	3,031,206 (8)				
<b>Central Government Funding: Non-</b>					
<b>Transport</b>					
Indirect Tax Revenues	7,293 (9)				7,293
<b>TOTALS</b>					
<b>Broad Transport Budget</b>	3,030,687 (10) = (7) + (8)				
<b>Wider Public Finances</b>	7,293 (11) = (9)				
Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.					

### Analysis of Monetised Costs and Benefits

Noise	191	(12)
Local Air Quality	552	(13)
Greenhouse Gases	6,245	(14)
Journey Quality	395,911	(15)
Physical Activity	1,093,983	(16)
Accidents	789,252	(17)
Economic Efficiency: Consumer Users (Commuting)	6,124	(1a)
Economic Efficiency: Consumer Users (Other)	15,005	(1b)
Economic Efficiency: Business Users and Providers	2,897	(5)
Wider Public Finances (Indirect Taxation Revenues)	- 7,293	- (11) - sign changed from PA table,
Present Value of Benefits (see notes) (PVB)	2,302,868	(16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	3,030,687	(10)
Present Value of Costs (see notes) (PVC)	3,030,687	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	-727,819	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	0.8	BCR=PVB/PVC

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



# Appendix C

## APPRAISAL SUMMARY TABLE



Appraisal Summary Table					Date produced:		5	5	2023	Contact:	
Name of scheme:		Swaffhams Greenway							Name	Thomas Fitzpatrick	
Description of scheme:		The Swaffhams Greenway scheme provides an upgrade of walking and cycling facilities between Swaffham Prior, Swaffham Bulbeck, Lode, Stow cum Quay and Cambridge.							Organisation	GCP	
									Role	Promoter/Official	
Impacts		Summary of key impacts			Assessment						
					Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	The scheme will provide new and improved direct segregated cycling and walking infrastructure offering a safer travelling environment. The scheme is expected to facilitate some mode shift from car to cycling and therefore will benefit the local highway network in terms of reduced congestion.	Value of journey time changes(£)				-	2,897			
			Net journey time changes (£)								
			0 to 2min	2 to 5min	> 5min						
	Reliability impact on Business users	Reliability impacts on business users are likely to be very small and have not been considered at this stage and therefore a qualitative assessment is not provided.	-				Not Assessed				
Regeneration	Scheme regeneration impacts are likely to be very small and have not been considered at this stage and therefore a qualitative assessment is not provided.	-				Not Assessed					
Wider Impacts	Wider impacts have not been assessed at this stage of the scheme assessment. Improved cycling connectivity will provide better access to the labour market and jobs, but the scale of improvement is relatively small. Therefore a qualitative score has not been provided	-				Not Assessed					
Environmental	Noise	Overall, the scheme is expected to reduce vehicle traffic as people transfer to foot or bicycle. Traffic noise would reduce accordingly.	-				-	191			
	Air Quality	Modal shift to cycling and walking, and associated reduced road traffic, will result in locally improved air quality.	-				-	552			
	Greenhouse gases	The net reduction in highway-kilometres as a result of modal shift to active modes, will lead to a net decrease in greenhouse gas emissions.	Change in non-traded carbon over 60y (CO2e)				-	6,245			
			Change in traded carbon over 60y (CO2e)								
	Landscape	There are no nationally designated landscape sites such national parks or Areas of Outstanding Natural Beauty within the 1km Study Area. The Proposed Scheme is situated within rural landscape, occupied by residential properties. Culturally there are numerous Listed Buildings and scheduled monuments which contribute positively to the value of the townscape. The Proposed Scheme follows existing landscape patterns with the potential to increase tranquillity, causing no effect to layout, density, scale, and cultural contribution. The Proposed Scheme is not significantly different to the baseline and there are only minor changes to localised visual receptors. This slight change will have minimal effect to be experienced by close residential receptors.	-				Neutral				
			-				Neutral				
	Historic Environment	Within the proposed scheme extent there are two Local Planning Authority (LPA) Conservation Areas (Swaffham Prior and Swaffham Bulbeck) and one Grade II Registered Park and Garden (Swaffham Prior House). Outside of the proposed scheme (50m), there is one scheduled monument, one Grade II registered park and garden, one Grade I listed building, two Grade II* listed buildings and a further 26 no. Grade II listed buildings. The proposed scheme would have a direct, minor adverse impact on the Swaffham Prior conservation area, deriving from the proposed red asphalt surfacing to the existing highway and new signage. The proposed scheme is likely to have a negligible impact on Swaffham Bulbeck conservation area since no alterations or additions are proposed within its extent. There will be a negligible impact on the Grade II Swaffham Prior House and Anglesey Abbey registered park and gardens since the proposed works lie outside of the park and garden boundary.	-				Slight Minor Adverse				
			-				Slight Minor Adverse				
	Biodiversity	Potential impacts on the Eversden and Wimpole Woods Special Area of Conservation (SAC) and on the barbastelle bats, that use the woods and are the principal reason for its European designation, would be neutral. 2.7.25.Slight adverse impacts could affect hedgerows, potentially an Important Hedgerow under the Hedgerow Regulations 1997, and traditional orchard which is a Habitats of Principal Importance. A precautionary approach has been applied to the assessment score, further surveys are recommended which could affect the assessment score and/or require specific mitigation.					Slight Minor Adverse				
	Water Environment	The majority of the scheme is located within Flood Zone 1. There are a number of locations which are located Flood Zone 3. Both have a high risk of fluvial flooding. The scheme crosses the Swaffham Lode and Bottisham Lode. The river Cam is approximately 4km northwest of the scheme. There are areas at high risk to surface water flooding along the extent of the scheme. The proposed scheme may increase the transportation of pollutants; however, a surface water drainage strategy will mitigate these risks	-				Neutral to Slight Adverse				
Social	Commuting and Other users	The scheme is expected to facilitate some mode shift from car to cycling and therefore will benefit the local highway network in terms of reduced congestion.	Value of journey time changes(£)				-	21,129			
			Net journey time changes (£)								
			0 to 2min	2 to 5min	> 5min						
	Reliability impact on Commuting and Other users	The Swaffhams Greenway scheme will provide an upgraded continuous walking and cycling route from between Swaffham Prior and Swaffham Bulbeck into Cambridge, improving reliability for those travelling by active modes along the corridor.	-				Slight Beneficial				
	Physical activity	The improvement to active mode facilities will encourage more cycling and pedestrian travel. Increased usage of the cycle network will promote more physical activity. Greater levels of walking and cycling will result in health benefits through reduced health problems including diabetes and high blood pressure. The increase in physical activity is also likely to result in a reduction in absenteeism which will give rise to positive benefits for the user and businesses, and economic growth in the region.	-				-	1,093,983			
	Journey quality	The improvements to the cycling and walking infrastructure along the route will improve the pleasantness of surroundings for users.	-				-	395,911			
	Accidents	The scheme is anticipated to result in a reduction in traffic movements as people are encouraged to use active modes. Users of motorised modes who shift mode to active modes will result in fewer vehicles and an overall reduction in highway-kilometres travelled and therefore the number of highway accidents.	-				-	789,252			
	Security	Security improvements based on Greenways lighting strategy will form a part of the Swaffhams Greenway scheme, providing some benefits with respect to security along the network.	-				Moderate Beneficial				
	Access to services	The Swaffhams Greenway scheme is not expected to have an impact on the accessibility of services, as there is already walking and cycling infrastructure in place along the road, and there is only a ashort section of new route.	-				Neutral				
Affordability	Due to the scheme instigating mode shift, affordability will increase for previous bus or car users as the cost of travel will decrease as they will no longer pay fares or fuel and non-fuel vehicle operating costs.	-				Slight Beneficial					
Severance	The introduction of the Swaffhams Greenway scheme will improve severance slightly for cyclists and pedestrians due to improved continuity of the cycling and walking infrastructure and priority at junctions for active modes.	-				Slight Beneficial					
Option and non-use values	The proposed scheme does not introduce new travel options.	-				Neutral					
Public Accounts	Cost to Broad Transport Budget	Cost of funding is split between local (operating costs) and central government funding (investment costs).	-				-	3,030,687			
	Indirect Tax Revenues	The scheme is expected to have a negative impact on tax revenues through mode shift to cycling from car resulting in a small reduction in car kilometres is associated with a reduction in fuel duty.	-				-	-7,293			

# Appendix D

## TAG WORKSHEETS



TAG Landscape Impacts Worksheet

	Step 2	Step 3				Step 4
Features	Description	Scale it matters	Rarity	Importance	Substitutability	Impact
Pattern	The pattern of landscape within the wider 1km study area is of low-lying, gently undulating land rising to the north-east. The land is lowest within the central section of the route, between Lode and Swaffham Bulbeck, rising gently towards Cambridge, and towards the north-east end of route. The route starts north of the A14 in Stow Cum Quy, following the B1102 north east, passing Lode and Swaffham Bulbeck, ending within the centre of Swaffham Prior. The landscape pattern is of irregular arable fields defined by mature, fragmented hedgerows and interspersed by small, scattered woodlands. Landuse is predominantly farmland, of varying sizes. Roads follow linear routes with low density settlements comprised villages along the main roads.	The pattern of the landscape is typical of the local area.	The landscape pattern is common at all scales.	The landscape pattern is of medium importance at the local level.	Loss of field margin or roadside vegetation can be substituted. Loss of mature trees could be replaced in the medium to long term.	<b>Slight beneficial</b> The proposal will integrate into the existing pattern of the landscape, following existing field boundaries, and main roads. There will likely be a minor impact on hedgerows and trees along the main road associated with the Proposed Scheme, however there will be the opportunity for strengthening existing hedgerows and to provide additional tree planting. Overall, the Proposed Scheme will be a broadly imperceptible change to the landscape pattern.
Tranquillity	The rural landscape comprised of arable fields, interspersed villages, and rural roads provides a medium level of tranquillity. The B1102 which runs through the study area limits tranquillity in surrounding localised locations but tranquillity levels remain to the peripheries of the study area within the fields, along trails and footpaths. There is lower tranquillity within the villages along the route.	Tranquillity in the study area matters at the local level.	Available levels of tranquillity in the study area is locally common.	Levels of tranquillity within the study area is of medium importance at the local level.	Tranquillity cannot be substituted.	<b>Neutral</b> The Proposed Scheme is likely to reduce traffic on local roads by encouraging vehicle users to instead cycle along the Greenway. The potential reduction in traffic, could result in a slight beneficial effect on local tranquillity. However, the increased presence of movement from users of the Proposed Scheme will be visible within and around the study area.
Cultural	There are no nationally designated landscape sites such national parks or Areas of Outstanding Natural Beauty within the 1km Study Area. Villages along the route of the Proposed Scheme are locally designated as Conservation Areas (Stow Cum Quy, Swaffham Bulbeck and Swaffham Prior) and include numerous Listed Buildings and scheduled monuments. There are also several priority habitat traditional orchards within the 1km site. Historic field boundaries and patterns remain but many smaller fields have been merged involving removal of hedgerows.	The conservation areas, settlement layout and field pattern matter at the local level.	A landscape with cultural linkages as found in the study area is common at the regional and local level, areas identified as Conservation Areas are not rare nationally but locally noteworthy.	Cultural landscapes in the study area are important at a regional, local and site scale.	Cultural landscapes cannot be substituted.	<b>Neutral</b> The Proposed Scheme would follow existing field boundaries and roads and would pass through locally designated Conservation Areas. Degradation to existing cultural landscapes including field boundaries and layout surrounding the Proposed Scheme is unlikely.
Landcover	Landcover surrounding the 1km Study Area is a mixture of village settlements and agricultural land comprised of medium to large arable fields with few smaller pastoral fields close to villages. Arable farming dominates over pastoral. Field boundaries consist of hedgerows and small woodland pockets. Scattered woodlands are prevalent within the Study Area, particularly at the edges of settlements which are comprised of historic villages along B roads. Most minor roads in the area are characteristically tree-lined.	Landcover within the study area matters at the local level.	Landcover within the study area is locally common.	Landcover in the study area is of moderate importance at a local level.	Field margins across the study area are replaceable. Woodland and mature tree cover would be replaceable in the medium to long term.	<b>Neutral</b> As the Proposed Scheme follows existing lanes and roads, losses associated with the Proposed Scheme to the existing landcover are generally limited to field margins which will be nominable and broadly imperceptible in the context of the local land cover.
Summary of character	Overall, the landscape character within the study area is that of an arable rural landscape with a small to large, regular shaped fields, hedgerow field boundaries, village settlements along country roads with scattered woodlands and few small pastoral fields at the village edges. Roads are B roads with a mixture of winding and linear. The B1102 limits localised levels of tranquillity which runs through the Study Area. Vegetation clearance to accommodate the Proposed Scheme would be minimal and there is the opportunity for hedgerow and tree planting to restore some of the characteristics of the landscape. The landscape has a moderate scenic value into the surrounding fields from the route. Changes to views would be minimal and not out of context with the baseline. There are areas with residential receptors adjacent to the Proposed Scheme however, the changes proposed are typical of a road environment.	Overall the landscape character matters at the local level.	Overall the landscape character of the study area is regionally, and locally common.	Overall the landscape character of the study area is of low importance at a national and regional level. At local level the landscape character is of moderate importance.	Overall the landscape character across the study area is replaceable in the medium to long term.	<b>Neutral to slight beneficial</b> The proposed changes will be notable at construction but would be short term and temporary in effect. The minor vegetation losses associated with the Proposed Scheme will not be significant when considered in the context of the overall character of the area and there is the opportunity to introduce additional planting and restore fragmented hedgerows along the route of the Proposed Scheme. At operation changes to the overall landscape character would be largely imperceptible as the Proposed Scheme follows existing landscape patterns with the potential to increase tranquillity. To prevent cyclists reaching high speeds near settlements, suggested speed reduction measures should be included within the design. Visual effects can be mitigated with good quality design to a level that is not considered to result in the potential for significant adverse effects. The Proposed Scheme is not significantly different to the baseline and only a slight change will have minimal effect to experience by close residential receptors.

Reference Sources

<p>Greater Cambridge Landscape Character Assessment (2021) - Prepared by Chris Blandford Associates</p> <p>Ordnance Survey Mapping - 1:25,000</p> <p>Google Maps Satellite Imagery</p>
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Step 5 - Summary Assessment Score

Neutral
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Qualitative Comments

<p>Although the Proposed Scheme will be notable during construction, these would be short-term and temporary in effect. The existing adjacent landscape consists of agricultural land with fragmented hedgerow boundaries and small scattered woodlands. The minor losses associated with the Proposed Scheme will not be significant when considered in the context of the overall character of the area. There is the opportunity for mitigation and additional planting, with which most of the visual effects can be mitigated to a level which is not considered to result in the potential for significant effects. As the Proposed Scheme is not significantly different to the baseline views and will represent only a slight change to those experienced by site users currently, the impact of the Proposed Scheme is therefore considered to be Neutral.</p>
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TAG Landscape Impacts Worksheet

	Step 2	Step 3				Step 4
Features	Description	Scale it matters	Rarity	Importance	Substitutability	Impact
Pattern	The pattern of landscape within the wider 1km study area is of low-lying, gently undulating land rising to the north-east. The land is lowest within the central section of the route, between Lode and Swaffham Bulbeck, rising gently towards Cambridge, and towards the north-east end of route. The route starts north of the A14 in Stow Cum Quy, following the B1102 north east, passing Lode and Swaffham Bulbeck, ending within the centre of Swaffham Prior. The landscape pattern is of irregular arable fields defined by mature, fragmented hedgerows and interspersed by small, scattered woodlands. Landuse is predominantly farmland, of varying sizes. Roads follow linear routes with low density settlements comprised villages along the main roads.	The pattern of the landscape is typical of the local area.	The landscape pattern is common at all scales.	The landscape pattern is of medium importance at the local level.	Loss of field margin or roadside vegetation can be substituted. Loss of mature trees could be replaced in the medium to long term.	<b>Slight beneficial</b> The proposal will integrate into the existing pattern of the landscape, following existing field boundaries, and main roads. There will likely be a minor impact on hedgerows and trees along the main road associated with the Proposed Scheme, however there will be the opportunity for strengthening existing hedgerows and to provide additional tree planting. Overall, the Proposed Scheme will be a broadly imperceptible change to the landscape pattern.
Tranquillity	The rural landscape comprised of arable fields, interspersed villages, and rural roads provides a medium level of tranquillity. The B1102 which runs through the study area limits tranquillity in surrounding localised locations but tranquillity levels remain to the peripheries of the study area within the fields, along trails and footpaths. There is lower tranquillity within the villages along the route.	Tranquillity in the study area matters at the local level.	Available levels of tranquillity in the study area is locally common.	Levels of tranquillity within the study area is of medium importance at the local level.	Tranquillity cannot be substituted.	<b>Neutral</b> The Proposed Scheme is likely to reduce traffic on local roads by encouraging vehicle users to instead cycle along the Greenway. The potential reduction in traffic, could result in a slight beneficial effect on local tranquillity. However, the increased presence of movement from users of the Proposed Scheme will be visible within and around the study area.
Cultural	There are no nationally designated landscape sites such national parks or Areas of Outstanding Natural Beauty within the 1km Study Area. Villages along the route of the Proposed Scheme are locally designated as Conservation Areas (Stow Cum Quy, Swaffham Bulbeck and Swaffham Prior) and include numerous Listed Buildings and scheduled monuments. There are also several priority habitat traditional orchards within the 1km site. Historic field boundaries and patterns remain but many smaller fields have been merged involving removal of hedgerows.	The conservation areas, settlement layout and field pattern matter at the local level.	A landscape with cultural linkages as found in the study area is common at the regional and local level, areas identified as Conservation Areas are not rare nationally but locally noteworthy.	Cultural landscapes in the study area are important at a regional, local and site scale.	Cultural landscapes cannot be substituted.	<b>Neutral</b> The Proposed Scheme would follow existing field boundaries and roads and would pass through locally designated Conservation Areas. Degradation to existing cultural landscapes including field boundaries and layout surrounding the Proposed Scheme is unlikely.
Landcover	Landcover surrounding the 1km Study Area is a mixture of village settlements and agricultural land comprised of medium to large arable fields with few smaller pastoral fields close to villages. Arable farming dominates over pastoral. Field boundaries consist of hedgerows and small woodland pockets. Scattered woodlands are prevalent within the Study Area, particularly at the edges of settlements which are comprised of historic villages along B roads. Most minor roads in the area are characteristically tree-lined.	Landcover within the study area matters at the local level.	Landcover within the study area is locally common.	Landcover in the study area is of moderate importance at a local level.	Field margins across the study area are replaceable. Woodland and mature tree cover would be replaceable in the medium to long term.	<b>Neutral</b> As the Proposed Scheme follows existing lanes and roads, losses associated with the Proposed Scheme to the existing landcover are generally limited to field margins which will be nominable and broadly imperceptible in the context of the local land cover.
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Step 5 - Summary Assessment Score

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Qualitative Comments

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**TAG Landscape Impacts Worksheet**

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Tranquillity	The rural landscape comprised of arable fields, interspersed villages, and rural roads provides a medium level of tranquillity. The B1102 which runs through the study area limits tranquillity in surrounding localised locations but tranquillity levels remain to the peripheries of the study area within the fields, along trails and footpaths. There is lower tranquillity within the villages along the route.	Tranquillity in the study area matters at the local level.	Available levels of tranquillity in the study area is locally common.	Levels of tranquillity within the study area is of medium importance at the local level.	Tranquillity cannot be substituted.	<b>Neutral</b> The Proposed Scheme is likely to reduce traffic on local roads by encouraging vehicle users to instead cycle along the Greenway. The potential reduction in traffic, could result in a slight beneficial effect on local tranquillity. However, the increased presence of movement from users of the Proposed Scheme will be visible within and around the study area.
Cultural	There are no nationally designated landscape sites such national parks or Areas of Outstanding Natural Beauty within the 1km Study Area. Villages along the route of the Proposed Scheme are locally designated as Conservation Areas (Stow Cum Quy, Swaffham Bulbeck and Swaffham Prior) and include numerous Listed Buildings and scheduled monuments. There are also several priority habitat traditional orchards within the 1km site. Historic field boundaries and patterns remain but many smaller fields have been merged involving removal of hedgerows.	The conservation areas, settlement layout and field pattern matter at the local level.	A landscape with cultural linkages as found in the study area is common at the regional and local level, areas identified as Conservation Areas are not rare nationally but locally noteworthy.	Cultural landscapes in the study area are important at a regional, local and site scale.	Cultural landscapes cannot be substituted.	<b>Neutral</b> The Proposed Scheme would follow existing field boundaries and roads and would pass through locally designated Conservation Areas. Degradation to existing cultural landscapes including field boundaries and layout surrounding the Proposed Scheme is unlikely.
Landcover	Landcover surrounding the 1km Study Area is a mixture of village settlements and agricultural land comprised of medium to large arable fields with few smaller pastoral fields close to villages. Arable farming dominates over pastoral. Field boundaries consist of hedgerows and small woodland pockets. Scattered woodlands are prevalent within the Study Area, particularly at the edges of settlements which are comprised of historic villages along B roads. Most minor roads in the area are characteristically tree-lined.	Landcover within the study area matters at the local level.	Landcover within the study area is locally common.	Landcover in the study area is of moderate importance at a local level.	Field margins across the study area are replaceable. Woodland and mature tree cover would be replaceable in the medium to long term.	<b>Neutral</b> As the Proposed Scheme follows existing lanes and roads, losses associated with the Proposed Scheme to the existing landcover are generally limited to field margins which will be nominable and broadly imperceptible in the context of the local land cover.
Summary of character	Overall, the landscape character within the study area is that of an arable rural landscape with a small to large, regular shaped fields, hedgerow field boundaries, village settlements along country roads with scattered woodlands and few small pastoral fields at the village edges. Roads are B roads with a mixture of winding and linear. The B1102 limits localised levels of tranquillity which runs through the Study Area. Vegetation clearance to accommodate the Proposed Scheme would be minimal and there is the opportunity for hedgerow and tree planting to restore some of the characteristics of the landscape. The landscape has a moderate scenic value into the surrounding fields from the route. Changes to views would be minimal and not out of context with the baseline. There are areas with residential receptors adjacent to the Proposed Scheme however, the changes proposed are typical of a road environment.	Overall the landscape character matters at the local level.	Overall the landscape character of the study area is regionally, and locally common.	Overall the landscape character of the study area is of low importance at a national and regional level. At local level the landscape character is of moderate importance.	Overall the landscape character across the study area is replaceable in the medium to long term.	<b>Neutral to slight beneficial</b> The proposed changes will be notable at construction but would be short term and temporary in effect. The minor vegetation losses associated with the Proposed Scheme will not be significant when considered in the context of the overall character of the area and there is the opportunity to introduce additional planting and restore fragmented hedgerows along the route of the Proposed Scheme. At operation changes to the overall landscape character would be largely imperceptible as the Proposed Scheme follows existing landscape patterns with the potential to increase tranquillity. To prevent cyclists reaching high speeds near settlements, suggested speed reduction measures should be included within the design. Visual effects can be mitigated with good quality design to a level that is not considered to result in the potential for significant adverse effects. The Proposed Scheme is not significantly different to the baseline and only a slight change will have minimal effect to experience by close residential receptors.

**Reference Sources**

Greater Cambridge Landscape Character Assessment (2021) - Prepared by Chris Blandford Associates  
Ordnance Survey Mapping - 1:25,000  
Google Maps Satellite Imagery

**Step 5 - Summary Assessment Score**

Neutral

**Qualitative Comments**

Although the Proposed Scheme will be notable during construction, these would be short-term and temporary in effect. The existing adjacent landscape consists of agricultural land with fragmented hedgerow boundaries and small scattered woodlands. The minor losses associated with the Proposed Scheme will not be significant when considered in the context of the overall character of the area. There is the opportunity for mitigation and additional planting, with which most of the visual effects can be mitigated to a level which is not considered to result in the potential for significant effects. As the Proposed Scheme is not significantly different to the baseline views and will represent only a slight change to those experienced by site users currently, the impact of the Proposed Scheme is therefore considered to be Neutral.



**TAG Townscape Impacts Worksheet**

Features	Step 2	Step 3					Step 4
	Description	Scale it matters	Rarity	Importance	Substitutability	Changes in Without-scheme case	Impact
Layout	The townscapes of Stow Cum Quoy, Lode, Swaffham Prior, and Swaffham Bulbeck villages are all located within the proposed scheme. The villages are associated with residential development. The townscapes have a fine grain of medium to large plot sizes following an irregular layout. Large areas of open green space surround the villages, with land use associated with agriculture. The underlying topography is undulating at approximately 10-20m Above Ordnance Datum (AOD). The villages are small in size, all connected by the road B1102. The route starts north of the A14 in Stow Cum Quoy, following the B1102 north east, passing Lode and Swaffham Bulbeck, ending within the centre of Swaffham Prior.	The layout of the townscape matters on a local scale.	The layout of the townscape is common regionally and locally.	The townscape layout is of low importance at a local scale.	Development of open space is not readily reversible.	Changes to the layout and grain without the Scheme are unlikely.	<b>Neutral Effect</b> The Proposed Scheme will integrate into the existing pattern of the townscape, following existing roads. There will be no impact on plot sizes, open spaces or the road layout associated with the Proposed Scheme. Overall, the Proposed Scheme will be a minor change to the townscape pattern.
Density and mix	The townscape is of low density including residential houses in private plots and in terraces. Large areas of open green space predominantly as fields are interspersed within the townscape. There is an abundance of medium sized agricultural fields surrounding the villages and roadside. The largest townscape is within Swaffham Prior, the village to the north of the route.	The low density matters on a local scale.	The low density of buildings is common locally and regionally.	The low density is of high local importance.	Loss of low density built form is not readily reversible.	Changes to the density without the Scheme are unlikely.	<b>Neutral Effect</b> The introduction of a greenway would not impact the density of the townscape and as such would have no impact on the wider townscape character.
Scale	Residential properties are of medium to large scale. They are typically two to three storeys and largely semi-detached or detached. There are very few other buildings within the site.	The medium to large scale of buildings matters locally.	The medium to large scale of residential buildings is common locally.	The medium to large scale of buildings is of medium importance locally.	Loss of townscape scale is of low substitutability.	Changes to the scale of the townscape without the scheme are unlikely.	<b>Neutral Effect</b> The introduction of the Proposed Scheme would not impact the scale of the Site and surrounding area, the highest elements include new sign posts and tree planting both of which are already present.
Appearance	The townscape is dominated by period built form designed with pitched roofs, chimney stacks and regular shapes. The dominant material is brick and the buildings contrast with adjacent agricultural land. The current shared surface/footway is of tarmac. There are vistas towards surrounding landscape from the villages, and tree framed views.	The period townscape matters on a local scale.	Townscape appearance is relatively common locally.	The appearance to the east is important locally.	Loss of period architecture with hand crafted details and their contribution to townscape character is irreplaceable.	Changes to the appearance of the townscape are unlikely.	<b>Neutral Effect</b> The Proposed Scheme will not change appearance of built form within the existing townscape.
Human interaction	The townscape has low human interaction with some interactions between cyclists/pedestrians and vehicle users. More opportunities are available with a higher pedestrian usage along the main B1102 road and cycle route, with provision of bus stops, and rest stops.	The human interaction matters locally.	The levels of human interaction are common locally.	Provision of footways/cycleways are of high importance locally.	Human interaction has a high potential for substitution.	The interaction of people with the townscape would likely remain the same without the Proposed Scheme.	<b>Neutral Effect</b> The existing human interaction will likely be improved by the Proposed Scheme including a designated cycleway however this will likely be used as a thoroughfare rather than for interaction with other features within the villages.
Cultural	The townscape comprises numerous period buildings and sympathetic architecture that positively contribute to the cultural value of the townscape. Within Swaffham Bulbeck, there is a scheduled monument of the Denny Moat, close by to the route, which adds to the character of this townscape.	The cultural contributions are of medium importance locally and regionally.	Cultural contributions are common locally and regionally.	Cultural contributions are important locally.	Cultural features have low substitutability.	Changes to the cultural contribution of the townscape are low without the Proposed Scheme.	<b>Neutral Effect</b> As no features of cultural value would be lost as a result of the Proposed Scheme, the cultural contribution of the townscape will not change.
Land use	The Proposed Scheme is situated within rural landscape, occupied by residential properties. Arable land and fields punctuate the buildings throughout the study area. Surrounding the small villages, land is occupied by agriculture on the urban fringe. The site itself is along a B road, with the crossing of footways and other smaller residential roads.	Residential land use along with the provision of roads and cycleways matters locally.	Residential land use is common locally.	The combination of land use is important locally.	Change of use of buildings is relatively easily reversed however this form of change is uncommon. Open space is irreplaceable. Land use of roads and cycleways is substitutable.	Changes to the land use of the site are unlikely without the Proposed Scheme.	<b>Neutral Effect</b> Any minor change of land use from alongside the road will complement the surrounding townscape characteristics.
Summary of character	The townscape is heavily dominated by period, well crafted residential properties. Overall plots are medium/large following a semi-regular layout. The townscape has small levels of human interaction. There is a strong sense of rural landscape.	Overall the townscape character matters locally where the townscape is designated locally as West Cambridge Conservation Area.	Overall the townscape is relatively uncommon locally.	Overall the townscape is important locally.	Overall the site is substitutable but features of the surrounding townscape are not readily substitutable.	Overall, changes to the site and surrounding area without the Proposed Scheme are unlikely.	<b>Neutral Effect</b> The Proposed Scheme will be notable at construction but would be short term and temporary in effect. At operation, changes will be largely imperceptible in the wider townscape causing no effect to layout, density, scale and cultural contribution. Overall, the changes are minor and do not impact wider townscape character and offer only minor changes to localised visual receptors.

**Reference Sources**

Greater Cambridge Landscape Character Assessment (2021) - Prepared by Chris Blandford Associates  
Ordnance Survey Mapping - 1:25,000  
Google Maps Satellite Imagery

**Step 5 - Summary Assessment Score**

**Neutral**

**Qualitative Comments**

The Proposed Scheme will be notable at construction but would be short term and temporary in effect. At operation, changes will be largely imperceptible in the wider townscape causing no effect to layout, density, scale and cultural contribution. Overall, the changes are minor and do not impact wider townscape character and offer only minor changes to localised visual receptors. The impact of the proposed scheme is therefore considered to be **Neutral**.

TAG Historic Environment Impacts Worksheet

Step 2					Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	<b>Potential Known and Unknown Non-designated Archaeological Remains</b> The potential, and therefore the form of archaeological remains, is unknown at this time. A Historic Environment Record office search has not been carried out for this high-level appraisal. There is an unknown potential for archaeological remains associated with the Switham Bulbeck moated site Scheduled Monument to extend beyond the monument extent (possibly into the site) and likely high archaeological survival in land outside of the existing highways boundary (i.e. within areas of limited past disturbance where archaeological survival would typically be higher).	The form of currently unknown buried archaeological remains are of indeterminate importance. However, archaeological remains could be of local to national importance, depending on their nature and extent.	The significance of the form of currently unknown buried archaeological remains could be of Low to Very High significance.	The form of currently unknown buried archaeological remains are of indeterminate rarity. However, the form of archaeological remains could be of common locally to rare internationally.	The proposed scheme aims to make local walking and cycling journeys easier. The proposed greenway follows the existing route connecting Stow-cum-Quay, Anglesey Abbey, Switham Prior, and Switham Bulbeck into Cambridge. The main proposed changes relate to modifying existing carriageways, enhancing and adding landscape along with walkways/toteways, cycleways, relining works, re-surfacing works, and traffic control measures. The proposed scheme will also connect villages along the route to each other, with new and improved signage enabling a direct connection with Cambridge. Within the Switham Prior Conservation Area, it is proposed to enhance the existing road infrastructure of the High Street by resurfacing the existing carriageway and introducing red asphalt surfacing in the center. Additional provisions such as traffic calming measures (speed limit signs) have also been proposed. Within the Switham Bulbeck Conservation Area, shared paths for pedestrians and cyclists and landscaped verge are proposed along the existing carriageway near the Green Bank and Heath Road junction as well as along the Station Road and High Road. In the southern part of the proposed scheme, the works would entail the construction of a new 50m long shared use path with landscaping verge, led into Church Road, Botolph Claydon in the south and to the existing Orchard Street (WSP 8659-WSP-SF-XX-CR-CV-100007, rev. P02, dated 04-11-2022). The pathway includes a 1.0m wide ditch, of unknown depth. The proposed pathway lies outside of the existing highways boundary in what is currently rural fields. In the northern part of the proposed scheme in Switham Bulbeck, the works would entail a slight widening of the highways boundary into what is currently an open park to the southeast of the Switham Bulbeck moated site scheduled monument. The proposed works at this location comprise a new shared use path with adjacent landscaping and a ditch (exact location and depth not currently known).
					<b>Potential Archaeological Remains (possible physical impact)</b> Any improvements requiring below-ground construction or works beyond the existing highway footprint (ie new shared footpath/ditch) has the potential to impact non-designated assets (i.e. potential below-ground archaeological remains). The extent of survival and potential is unknown and would require further detailed assessment.
Survival	The survival of any unknown archaeological remains is unknown at this time.	The survival of currently unknown buried archaeological remains matters on an indeterminate scale but could be from a local to international scale	The significance of survival of currently unknown buried remains is unknown at this time.	The rarity of the survival of currently unknown buried archaeological remains is indeterminate at this stage, but could be from common locally to rare internationally.	Impacts on the survival of potential archaeological remains is unknown at this time.
Condition	The condition of currently unknown buried archaeological remains is indeterminate at this stage but could range from poor to good.	The scale at which the condition of currently unknown buried archaeological remains matter is currently indeterminate, but could be of a local to international importance.	The significance of the condition of currently unknown buried archaeological remains is indeterminate at this time.	The rarity of the condition of currently unknown buried archaeological remains is indeterminate, but could be from common locally to rare internationally.	Impacts on the condition of potential archaeological remains is unknown at this time.
Complexity	11. The complexity of any potential archaeological remains is unknown at this time.	The scale at which the complexity of currently unknown buried archaeological remains matter is indeterminate, but could be from local to international.	The significance of the complexity of currently unknown buried archaeological remains is indeterminate at this time.	The rarity of the context of currently unknown buried archaeological remains is indeterminate but could be from common locally to rare internationally.	Impacts on the complexity of potential remains is unknown at this time.
Context	The context of any potential archaeological remains is unknown at this time.	The context of currently unknown buried archaeological remains is indeterminate.	The significance of the context of currently unknown buried archaeology is indeterminate at this time.	The rarity of the context of currently unknown buried archaeological remains is indeterminate at this time but could be from common locally to rare internationally.	Impacts on the context of potential archaeology is unknown at this time
Period	Data relating to potential archaeological remains is unavailable at this time.	The scale at which the periods represented by currently unknown buried archaeological remains matter are indeterminate at this stage.	The significance of the periods represented by currently unknown buried archaeological remains is unknown at this time.	The rarity of the period of currently unknown buried archaeological remains is indeterminate at this stage but could be from common locally to rare internationally.	The Proposed Scheme will have a neutral impact on the period of the heritage assets.

Reference Sources

The Historic Environment Record (HER), the primary repository for information on past investigations and archaeological findspots/features was not consulted. A site walkover was not undertaken and historic maps and other sources were not consulted for this high-level appraisal

Step 5 - Summary Assessment Score

The extent of survival and potential is unknown and would require further detailed assessment.

Qualitative Comments

A full assessment of non-designated heritage assets has not been completed at this stage. The Proposed Scheme has the potential to result in the partial or complete loss of buried heritage assets in areas where ground disturbance is proposed is outside of the existing highway, principally relating to the construction of shared pathways for pedestrians and cyclists tracks along green verge the width and depth of which is varying along the route. Within agricultural fields, any archaeological remains present will be found immediately below the topsoil. The potential to impact buried archaeological remains would be dependent upon the nature of any ground disturbance proposed. Depending on the extent (and depth) of the proposed ground works, it is possible further assessment of archaeological potential will be required.

TAG Historic Environment Impacts Worksheet

Step 2		Step 3		Step 4	
Feature	Description	Scale & matters	Significance	Rarity	Impact
Form	<p><b>Designated heritage assets (possibly physically affected by the scheme) within the proposed scheme extent</b></p> <p>1. Swaffham Prior and Swaffham Bulbeck Local Planning Authority (LPA) Conservation Areas</p> <p>2. Grade II Swaffham Prior House registered park and garden (National Heritage List Entry NHLE ref: 1000366).</p> <p><b>Designated heritage assets (possible setting impact) in the 50m study area</b></p> <p>1. Swaffham Bulbeck moated site scheduled monument (NHLE ref:1012622).</p> <p>There are 6200 moated sites in England built throughout the medieval period, which served as prestigious aristocratic and feudal residences with the provision of a moat intended as a status symbol rather than a practical military defense.</p> <p>4. Grade I listed Registered Park and Garden Anglesey Abbey (NHLE ref:1000611)</p> <p>5. Three Grade II listed buildings within 'Swaffham Prior House' Registered Park and Garden</p> <p>8. Three Grade II listed buildings within Swaffham Bulbeck Conservation Area.</p> <p>7. One Grade I listed building within Swaffham Prior Conservation Area.</p> <p>6. 15 Grade II listed buildings within Swaffham Prior Conservation Area.</p> <p>9. Two Grade II* listed buildings outside Conservation Areas.</p> <p>10. Five Grade I listed buildings outside Conservation Areas.</p>	<p>1. Descriptions 1, 5-10 - The protection of listed buildings and conservation areas is a national concern (Planning (Listed Buildings and Conservation Areas) Act 1969).</p> <p>2. Description 4 - Under the Historic Buildings and Ancient Monuments Act 1953 (ref: 1) Historic England compiles a register of 'gardens and other land' situated in England that appear are of special historic interest. The protection of Registered Parks and Gardens are a national concern and are a material consideration within the planning system.</p> <p>3. Description 3 - The protection provided to scheduled monuments is given under the Ancient Monuments and Archaeological Areas Act 1979.</p>	<p>1. The conservation areas are of High significance.</p> <p>2. Grade II listed Registered Parks and Gardens are of High significance.</p> <p>3. The scheduled monument is of High significance.</p> <p>2, 4 Historic England Register of Parks and Gardens of Special Historic Interest in England, currently identifies over 1,600 sites assessed to be of significance. 62% are Grade II.</p> <p>9. The Grade II* listed buildings are of High significance.</p> <p>4,5,8, 10 The Grade II listed buildings are of Medium significance.</p>	<p>1. There are nearly 10,000 LPA Conservation Areas in England. Although not rare, they are identified by the local authority as having a definite architectural quality or historic interest to merit designation.</p> <p>2, 4 Historic England Register of Parks and Gardens of Special Historic Interest in England, currently identifies over 1,600 sites assessed to be of significance. 62% are Grade II.</p> <p>3. There are around 20,000 scheduled monuments in England (2020).</p> <p>7. Nationally, 2.5% of listed buildings are Grade I, making them rare and of 'more than special interest'.</p> <p>8. Nationally, 5.8% of listed buildings are Grade II*, making them rare and of 'more than special interest'.</p> <p>4,5,8, 10 Nationally, 62% of listed buildings are Grade II, making them less rare but still of national importance.</p>	<p>The proposed scheme aims to make local walking and cycling journeys easier. The proposed greenway follows the existing route connecting Stowcum Quay, Anglesey Abbey, Swaffham Prior, and Swaffham Bulbeck into Cambridge. The main proposed changes relate to modifying existing carriageways, including landscape enhancement comprising new walkways/footways, cycleways, reeling works, re-surfacing works, and traffic control measures. The proposed scheme will also correct villages along the route to each other, with improved signage enabling a direct connection with Cambridge. Within the Swaffham Prior Conservation Area, it is proposed to enhance the existing road infrastructure of the High Street by resurfacing the existing carriageway and introducing red asphalt surfacing in the center. Additional provisions such as traffic calming measures (speed limit signs) have also been proposed. Within the Swaffham Bulbeck Conservation Area, shared paths for pedestrians and cyclists and landscaped verges are proposed along the existing carriageway near the Green Bank and Heath Road junction as well as along the Station Road and High Road. In the southern part of the proposed scheme, the works would entail the construction of a new 50m long shared use path with landscaping verges, led into Church Road, Bottisham in the south and to the existing Orchard Street (WSP: 8658-WSP-SK-00-GM-CV-1000201, rev. P102, dated 04-11-2022). The pathway includes a 1.0m wide ditch, of unknown depth. The proposed pathway lies outside of the existing highways boundary in what is currently rural fields. In the northern part of the proposed in Swaffham Bulbeck, the works would entail a slight widening of the highways boundary into what is currently an open park, approximately 120m to the southeast of the Swaffham Bulbeck moated site scheduled monument. The proposed works at this location comprise a new shared use path with adjacent landscaping and a ditch (exact location and depth not currently known).</p> <p><b>Designated heritage assets (possibly physically affected by the Proposed Scheme)</b></p> <p>1. There will be a direct impact on the two LPA Conservation Areas deriving from the proposed new signage and proposed red asphalt surfacing over the existing carriageways. Such works could have an effect on how the Conservation Areas are understood and appreciated, by changing the visual appearance and character of the areas. There is likely to be a <b>minor adverse</b> effect to the character and appearance of the Swaffham Prior Conservation Area resulting from the proposed scheme, primarily resulting from the proposed red asphalt surfacing across the High Street. It is anticipated that there will be a <b>negligible</b> impact to the character and appearance of Swaffham Bulbeck Conservation Area, as no new surface treatments are proposed, nor are any new road signage proposed to be installed within the extent of the LPA Conservation Area.</p> <p>2. In relation to the historic setting, there would be a <b>neutral</b> effect on the Grade II Swaffham Prior House registered park and garden, deriving from the addition of shared paths for pedestrians and cyclists along with a grass verge bridleway proposed along the edge of the Registered Park and Garden and the existing carriageways along with the proposed road signs located outside of the Registered Park and Garden. These works are proposed outside of the park and garden boundary as such, direct physical impact is not anticipated.</p> <p><b>Designated heritage assets (possible setting impact)</b></p> <p>3. In relation to the setting, there will be a <b>neutral</b> effect on the Swaffham Bulbeck moated site scheduled monument due to the nature of the proposals, which are limited to highway treatments and localised widening of footpaths. No physical works are proposed within the boundary of the scheduled monument, which is located outside of the proposed scheme extent.</p> <p>4. Considering the small-scale nature of the proposal there will be a <b>neutral</b> effect on the Grade II listed Registered Park and Garden 'Anglesey Abbey'.</p> <p>5-10 The nature of the proposals means there is likely to be a <b>neutral</b> effect on the significance of Grade II* and II listed buildings within and outside the conservation areas of Swaffham Prior House and Swaffham Bulbeck, through changes to historic setting. It is anticipated that there will be neutral impact upon these designated heritage assets, as their significance or how they are understood and appreciated would not be affected by the proposals.</p>
	<p>1. The conservation areas are likely to have a good level of survival.</p> <p>2-4 Registered Park and Garden are likely to have a good level of survival.</p> <p>3. The survival of the designated archaeological remains within the scheduled monument is unknown.</p> <p>5-10 The listed buildings are likely to have a good level of survival.</p>	<p>1-10 The survival of designated heritage assets matters on a national scale.</p> <p>11. The survival of currently unknown buried archaeological remains matters on an indeterminate scale but could be from a local to international scale</p>	<p>1-10 The significance of the survival of designated elements of the historic environment is high.</p>	<p>1-10 The survival of the designated elements of the historic environment are common locally but rare nationally.</p>	<p>1-10. It is anticipated that there will be a neutral impact on the survival of these designated heritage assets or their relationship with their setting.</p>
	<p>1. The condition of the conservation areas is unknown.</p> <p>2-4 The condition of the Registered Park and Garden is unknown.</p> <p>3. The condition of the scheduled monument is unknown.</p> <p>5-10 The condition of the listed buildings is unknown.</p>	<p>1-10 The condition of designated heritage assets matters on a national scale.</p>	<p>1-10 The significance of the condition of the designated heritage assets is expected to vary from low to high due to the number and nature of designated historic environment resources.</p>	<p>1-10 The rarity of the condition of the designated heritage assets varies from common locally to rare nationally.</p>	<p>1-10. Considering the nature and scale of the proposed scheme it is anticipated that there will be a neutral impact upon the condition of these designated heritage assets.</p>
	<p>1. The complexity of the conservation areas is unknown.</p> <p>2-4 The complexity of the Registered Park and Garden is unknown.</p> <p>3. The complexity of the scheduled monument is unknown.</p> <p>5-10 The complexity of the listed buildings is unknown.</p>	<p>1-10 The scale at which the complexity of designated heritage assets matters is considered to be national.</p>	<p>1-10 The significance of the complexity of the designated elements of the historic environment is low to high.</p>	<p>1-10. The rarity of the complexity of the designated heritage assets is common locally and rare nationally.</p>	<p>1-10. The Proposed Scheme is not anticipated to impact the complexity of the designated heritage assets. The impact is therefore neutral.</p>
	<p>1-10 Rural</p>	<p>1-10. The context of designated heritage assets matters on a local to national scale.</p>	<p>1-10 The significance of the context of the designated heritage assets is low to high.</p>	<p>1-10 The rarity of the context of the designated heritage assets is common locally but rare nationally.</p>	<p>1. There will be a change to the context of Swaffham Prior Conservation Area arising from the proposed signage and Red Asphalt surfacing likely to result in a slight adverse impact.</p> <p>2-10 The small-scale nature of the proposals means there is likely to be a neutral impact to the context of these designated heritage assets.</p>
Period	<p>1. Early Medieval</p> <p>2. Post-medieval</p> <p>3. Later medieval</p> <p>4. Modern</p> <p>5. Post-Medieval and Modern</p> <p>6. Later Medieval/Post-Medieval and Modern</p> <p>7. Later medieval</p> <p>8. Later Medieval to Modern</p> <p>9. Later medieval and Modern</p> <p>10. Later Medieval, Post-Medieval and Modern</p>	<p>1-10 The period of the designated heritage assets is considered to matter on a regional to national scale.</p>	<p>1-10 The period of the heritage assets does not necessarily affect the heritage significance.</p>	<p>1-10 The rarity of the periods represented by the designated heritage assets is common to towns/capes and villages nationally.</p>	<p>1-10. The Proposed Scheme will have a neutral impact on the period of the heritage assets.</p>

<p><b>Reference Sources</b></p> <p>National Heritage List for England - List of statutorily designated heritage assets.</p> <p>Local Planning Authority website - Conservation Areas data.</p>
<p><b>Step 5 - Summary Assessment Score</b></p> <p>Minor adverse effect on LPA Conservation area</p>

<p><b>Qualitative Comments</b></p> <p>There is one Grade I, two Grade II* and 26 Grade II listed buildings within 50m of the scheme, in addition to one scheduled monument, two registered parks and gardens, and two LPA Conservation Areas within the 50m study area.</p> <p>The Proposed Scheme passes through the Swaffham Prior and Swaffham Bulbeck Conservation Area and outside the boundary of, but immediately adjacent to the Grade II listed Registered Park and Garden 'Swaffham Prior House'. There will be a direct, minor adverse effect on the Swaffham Prior Conservation Area resulting from road surface treatments and new signage.</p> <p>The Proposed scheme also presents opportunities for the enhancement of heritage assets through interpretation (e.g. cycling and walking trails and appropriate traffic sign boards along the route). This could be explored as part of the design stage.</p> <p>The Proposed Scheme, as currently designed, would have a neutral effect on the designated heritage assets within 50m to the proposed route through changes to the setting.</p>
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**TAG Biodiversity Impacts Worksheet**

Step 2		Step 3				Step 4	Step 5
Area	Description of feature/ attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment Score
Eversden and Wimpole Woods Special Area of Conservation (SAC)	<p>Ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods). Designated for Annex II species that are a primary reason for selection of this site:</p> <p>- Barbastelle <i>Barbastella barbastellus</i></p>	<b>International</b>	<p><b>High</b> - Primary species of importance is barbastelle, a species of bat. A colony is associated with trees in Wimpole Woods. The colony uses trees as a summer maternity roost and the wider area for foraging. Flight paths such as hedgerows and other parts of woodland may be used when bats forage outside the SAC.</p>	<p><b>Unknown</b> - The population trend of the colony is unknown as is the extent and availability of offsite habitat.</p> <p>The following document has been published that includes specific restoration targets for the qualifying features of the SAC: <i>European Site Conservation Objectives: Supplementary advice on conserving and restoring site features (Natural England 2019)</i>.</p>	<b>Very high</b> - Internationally important site with limited potential for substitution.	<p><b>Neutral</b> - The Proposed Scheme will not impose any direct or indirect impact on the SAC. The Site is 18km north-east of the SAC which is outside the Core Sustenance Zone (CSZ; a measure of the area on which the bat colony depends for feeding) of the SAC and it is considered unlikely that barbastelle roost on Site. Additionally, the Proposed Scheme will not impact any roosting or foraging habitat for bats of any species.</p>	<b>Neutral</b>
Fenland Special Area of Conservation (SAC)	<p>The Fenland SAC is a network of three wetland sites comprising Woodwalton Fen, Wicken Fen and Chippenham Fen. These consist of habitats including fens and marshes with areas of deciduous woodland, small areas of arable land and inland water bodies including drainage ditches. The Site is 5.5km from the nearest of the three SAC wetland sites, Wicken Fen while Chippenham Fen is 9km distant.</p> <p>The SAC supports Annex I habitats which are the primary reason for the site's designation:</p> <p>- 6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>); and</p> <p>-7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>.</p> <p>The SAC also has Annex II species present but these are not the primary reason for designation:</p> <p>-1149 Spined loach <i>Cobitis taenia</i>; and</p> <p>-1166 Great crested newt <i>Triturus cristatus</i>.</p>	<b>International</b>	<p><b>High</b> - Fenland SAC holds one of the most extensive examples of the tall herb-rich East Anglian type of M24 <i>Molinia caerulea</i> – <i>Cirsium dissectum</i> fen-meadow. It is important for the conservation of the geographical and ecological range of the habitat type, as this type of fen-meadow is rare and ecologically distinctive in East Anglia.</p>	<p><b>Varying</b> - The trend for the target features which are the reason for the SAC's designation vary at each of the three wetland sites.</p>	<b>Very high</b> - Internationally important site with limited potential for substitution.	<p><b>Neutral</b> - The Proposed Scheme will not impact the Fenland SAC as it is 5.4km away and not ecologically or hydrologically connected. Furthermore, the Proposed Scheme is considered to be of a low impact nature in an already urban landscape.</p>	<b>Neutral</b>

Ramsar Sites	<p>The Site is within 15km of two Ramsar Sites which are designated partly for aquatic habitats. These are:</p> <p><b>Wicken Fen 5.4km from the Site</b></p> <p>The Ramsar site is designated for satisfying criteria 1 and 2 of the Ramsar Criteria as it supports peat fens that have not been drained and where traditional management has created <del>with</del> a mosaic of wetland habitats. The site also supports the British Red Data Book plant, fen violet <i>Viola persicifolia</i>, eight nationally scarce plants and 121 British Red Data Book invertebrates.</p> <p><b>Chippenham Fen 9km from the Site</b></p> <p>The Ramsar site is designated for satisfying criteria 1, 2 and 3 of the Ramsar criteria due to supporting a spring-fed calcareous basin mire, rich invertebrate fauna including rare and scarce species and a diverse range of rare and scarce plants. The Site is the stronghold for Cambridge milk parsley <i>Selinum carvifolia</i>.</p>	International	High - Ramsar sites are designated for supporting wetland habitats and species of international importance.	Varying - These Ramsar sites are in varying condition.	Very high - Internationally important site with limited potential for substitution.	Neutral - The Proposed Scheme will not impact the Ramsar sites as it is 5.4km and 9km away and not ecologically or hydrologically connected. Furthermore, the Proposed Scheme is considered to be of a low impact in an already urban landscape.	Neutral
Breckland Special Protection Area (SPA)	<p>The Site is 15.6km south-west of Breckland SPA. The SPA qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:</p> <p>Stone curlew <i>Burhinus oedichenus</i>;  Nightjar <i>Caprimulgus europaeus</i>; and  Woodlark <i>Lullula arborea</i>.</p>	International	High - The SPA has bird species populations of international importance.	Varying - the trend for the target features for which this site is designated is not known.	Very high - Internationally important site with limited potential for substitution.	Neutral - The Proposed Scheme will not impact the SPA as it is 15.6km away and not ecologically or hydrologically connected. Furthermore, the Proposed Scheme is considered to be of a low impact in an already urban landscape.	Neutral

Sites of Special Scientific Interest (SSSI)	<p>There are three SSSIs within 2km of the Site, these are:</p> <p><b>Wilbraham Fens 0.37km from the Proposed Scheme.</b> The site is a large area of fen and neutral grassland with associated scrub and open water communities.</p> <p><b>Devil's Dyke 1.2km from the Proposed Scheme.</b> The Devil's Dyke holds one of the best and most extensive areas of species-rich chalk grassland in the county and a similarly extensive area of chalk scrub grading into woodland to the east.</p> <p><b>Stow cum Quy Fen 1.45km from the Proposed Scheme.</b> The SSSI possesses floristically rich calcareous loam pasture. In addition, a number of pools formed on Chalk Marl are present and these support a range of aquatic plants including some uncommon species.</p>	National	Medium- Various SSSIs consisting of grassland and scrub and wetland habitats.	<p><b>Varying</b> - The target features for these three SSSIs are all in varying condition.</p> <p><b>Wilbraham Fens</b> There are four units within this SSSI. Unit 1 is in unfavourable-declining condition, units 2 and 3 are in favourable condition and unit 4 is in unfavourable - recovering.</p> <p><b>Devil's Dyke</b> There are seven units within this SSSI. Units 1 and 3 are in favourable condition and units 2, 4, 5, 6 and 7 are in unfavourable-recovering condition.</p> <p><b>Stow cum Quy Fen</b> There are three units within this SSSI, all units are in unfavourable-recovering condition</p>	High - Statutory Designated Sites.	<p><b>Neutral</b> - Although the closest SSSI Wilbraham Fen - is only 0.37km from the Site, it is not ecologically connected due to the A14 presenting a barrier to any direct or indirect effects.</p> <p>Furthermore, the Site is within an urban landscape and so will not support the habitats which these SSSIs are designated. The Proposed Scheme is considered to be of a low impact to biodiversity.</p>	Neutral
Hedgerows (including potential Important hedgerows)	<p>It is unknown whether any hedgerows will be impacted by the Proposed Scheme, however it is considered unlikely.</p> <p>Further surveys would need to be undertaken to determine if any 'Important Hedgerows' under the Hedgerows Regulations 1997 will be impacted by the Proposed Scheme.</p>	Local	High - Hedgerows are an important landscape feature and provide habitat connectivity and high value to a range of wildlife.	Declining - The lengths of managed hedgerow decreased by 6.1% in the UK between 1998 and 2007. Abundance and distribution of hedgerow trees is declining, as recognised by the Countryside Survey 2000. Old and mature hedgerows are uncommon in Cambridge. Hedgerows are listed as a Priority Habitat within Cambridge.	Medium - A Local value habitat with limited potential for substitution.	Minor Negative - Currently until further surveys have been undertaken it is uncertain if any of the hedgerows are 'Important Hedgerows'. It is however considered unlikely that any hedgerows will be removed for the Proposed Scheme.	Slight Adverse
Bats	<p>All species of bats recorded within the UK are protected from killing, injury and disturbance and their roosts protected from damage or destruction under the Conservation of Habitats and Species Regulations 2017 (as amended). Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Multiple bat species such as soprano pipistrelle <i>Pipistrellus pygmaeus</i> and brown long eared bat <i>Plecotus auritus</i> are also Species of Principal Importance (SPI) in accordance with the Natural and Rural Communities (NERC) Act 2006.</p> <p>Habitats present within the Site, comprising hedgerows, mature trees and scrub, provide suitable habitat for foraging, commuting and roosting bats.</p> <p>Further survey is required to determine whether there are any trees suitable to support roosting bats within, and adjacent to, the Site.</p>	National	Medium - All species of bats recorded within the UK are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) as well as the Wildlife and Countryside Act 1981 (as amended). There are additionally multiple SPI bat species.	Varying - Species dependant- Some bat species' populations have decreased in England and some have increased.	High - All bats are protected under the Conservation of Habitat and Species Regulations 2017 (as amended).	<p><b>Minor Negative</b> - The Proposed Scheme is not anticipated to impact any entire hedgerows or lines of trees. Furthermore the Site is a narrow linear route and so would not fragment habitat if it were crossed. Therefore the Proposed Scheme will result in no impacts to foraging or commuting bats.</p> <p>Further surveys will be required to determine whether any individual trees require felling for the Proposed Scheme which provide suitable roosting bat habitat, until these surveys have taken place the magnitude of impact for roosting bats is assumed as minor negative.</p>	Slight Adverse



Badgers <i>Meles meles</i>	<p>Badgers are offered protection under the Protection of Badgers Act 1992.</p> <p>Suitable habitat has been identified within the Site using satellite imagery. Hedgerows and grassland, including arable field margins, provide suitable habitat for foraging badgers and suitable locations for sett construction.</p> <p>A badger survey for the Proposed Scheme has not yet been undertaken.</p>	Local	Low - Badgers are protected under the Protection of Badgers Act 1992. Badgers a common species within the county.	Unknown - The county trend for this species is not known within Cambridgeshire. However, nationally badgers have shown a significant increase in numbers (c.88% since the 1980s).	Low - badger are a species of medium biodiversity value on a national and local level.	Minor Negative- A badger survey has not been undertaken of the Site, and further surveys have been recommended to identify whether there are any badgers within suitable habitat within the Proposed Scheme. Suitable sett building habitat has been identified on Site using satellite imagery and therefore should badgers be found to be present on Site there is potential for them to be impacted.	Slight Adverse
Water vole <i>Arvicola amphibius</i>	<p>Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Additionally water vole are a SPI in accordance with Section 41 of the NERC Act 2006.</p> <p>Open Source maps indicate that there are two drainage ditches which the Site crosses and an additional drainage ditch which runs adjacent to a section in the centre of the Site. The potential for these ditches to provide habitat for water voles is not known and further surveys will be needed to confirm this.</p>	Regional	Medium - Water voles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Additionally water vole are a SPI in accordance with Section 41 of the NERC Act 2006.	Declining - According to the National Water Vole Database and Mapping Project (McGuire and Whitfield, 2017).	High - Water vole is a species of high biodiversity value.	Minor Negative - the Proposed Scheme has the potential to impact the terrestrial banks of the ditches. A survey will be undertaken, and a mitigation strategy for the Proposed Scheme based on the findings of these surveys may be required.	Slight Adverse
Otter <i>Lutra lutra</i>	<p>Otters are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Additionally otter are a SPI in accordance with Section 41 of the NERC Act 2006.</p> <p>Open Source maps indicate that there are two drainage ditches which the Site crosses and an additional drainage ditch which runs adjacent to a section in the centre of the Site. The potential for these ditches to provide habitat for water voles is not known and further surveys will be needed to confirm this.</p>	Regional	Low -Otters are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Additionally otter are a SPI in accordance with Section 41 of the NERC Act 2006.	Increasing - According to research by the Wildlife Trust and the Cambridgeshire Mammal Group in 2022 otter populations are increasing nationally and have been increasing in Cambridgeshire since 1990.	High - Otter is a species of high biodiversity value.	Minor Negative - the Proposed Scheme has the potential to impact the terrestrial banks of the ditches. A survey will be undertaken, and a mitigation strategy for the Proposed Scheme based on the findings of these surveys may be required.	Slight Adverse
Birds	<p>All wild birds and their nests, whilst in use, are protected under the Wildlife and Countryside Act 1981 (as amended).</p> <p>Habitats identified using satellite imagery on and adjacent to the Site comprising hedgerows, trees and arable fields, provide suitable habitat for common and widespread nesting birds.</p>	Local	Low - All wild birds and their nests, whilst in use, are protected under the Wildlife and Countryside Act 1981 (as amended). Habitats on Site are suitable for common and widespread bird species.	Varying - Species dependent - some bird species are in significant decline nationally and locally within Cambridgeshire.	Low - Land within and adjacent to the Site is likely to support a diverse range of breeding and wintering bird species of local importance.	Neutral - Through the implementation of suitable precautionary measures such as undertaking vegetation clearance outside the nesting bird season, the Proposed Scheme should result in negligible impacts to breeding birds because of negligible habitat loss predicted. There would be no operational impacts on completion of works.	Neutral
Barn owl <i>Tyto alba</i>	<p>Barn owl are a Schedule 1 species under the Wildlife and Countryside Act 1981 (as amended) and protected from disturbance during nesting.</p> <p>Further survey is required to determine whether trees within and adjacent to the Site are suitable for nesting barn owl.</p>	Regional	High - Barn owl is a Schedule 1 species.	Increasing- The 'State of the UK Barn Owl population - 2021' report suggests an overall rise in nesting occupancy of known barn owl nest locations across the UK. Cambridgeshire has a significant local population.	Medium - Barn owl are of medium biodiversity value on a National and Local level.	Neutral - It is anticipated that minimal trees will be removed and further survey will determine whether barn owls are present. Should they be found to be present, mitigation will be focused on avoidance strategies. No collision risk to barn owls once the Proposed Scheme is operational as the Proposed Scheme will be designed to support non-motorised users only.	Neutral

Reptiles (common and widespread species)	<p>Native widespread reptile species (adder <i>Vipera berus</i>, common lizard <i>Zootoca vivipara</i>, grass snake <i>Natrix helvetica</i> and slow worm <i>Anguis fragilis</i>) are protected from killing and injury under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Additionally all reptiles are SPI in accordance with Section 41 of the NERC Act 2006.</p> <p>Reptiles, such as grass snake, slow worm and common lizard, may be present in low numbers in suitable habitat such as grassland and hedgerow margins. There is no suitable habitat for adder within the Site.</p>	<b>Local</b>	<b>Low</b> - Native widespread reptile species (adder <i>Vipera berus</i> , common lizard <i>Zootoca vivipara</i> , grass snake <i>Natrix helvetica</i> and slow worm <i>Anguis fragilis</i> ) are protected from killing and injury under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Additionally all reptiles are SPI in accordance with Section 41 of the NERC Act 2006. The reptile species which may be present on Site are however common and wide spread within Cambridgeshire.	<b>Varying</b> - Species dependent - numbers of grass snake and slow worm are in general decline nationally, but fairly common in Cambridgeshire.	<b>Medium</b> - reptiles are a species of medium biodiversity value on a national and local level.	<b>Neutral</b> - minimal habitat is due to be removed for the Proposed Scheme. Through the implementation of precautionary works during the construction phase, the Proposed Scheme would have only negligible effects on reptiles. The negligible effects include that the potential killing/injury of any reptiles on Site will be avoided.	<b>Neutral</b>
Amphibians (Great Crested Newt <i>Triturus cristatus</i> )	<p>Great crested newts (GCN) are protected under the following legislation:  - Annex II and IV of the Habitats Directive  - Conservation of Habitats and Species Regulations 2017 (as amended) (Schedule 2)  - Wildlife and Countryside Act 1981 (as amended) (Schedule 5).</p> <p>GCN are also listed as SPI in accordance with Section 41 of the NERC Act 2006.</p> <p>There are no ponds on Site however the use of satellite imagery has identified possible terrestrial habitat for GCN comprising grassland and hedgerow margins. There are two ponds within 250m of the Site. It is unknown whether these ponds are suitable for GCN, or whether there is suitable terrestrial habitat for GCN within 250m of these ponds within the Site.</p>	<b>Local</b>	<b>Medium</b> - GCN are protected under the Habitats Directive, Conservation of Habitats and Species Regulations 2017 (as amended), Wildlife and Countryside Act 1981 (as amended) and are an SPI in accordance with Section 41 of the NERC Act 2006	<b>Declining</b> - The GCN population has declined over much of their European range (Froglife 2001), however, they are widespread across England and Wales. A significant proportion of the national population is found within Cambridgeshire and Peterborough, with the largest UK (possibly largest European) population near Peterborough.	<b>High</b> - GCN are of high biodiversity value on a local and national level.	<b>Minor negative</b> - minimal habitat is due to be removed for the Proposed Scheme. Impacts should be neutral on completion of the Proposed Scheme, but there is a low level of risk through the construction phase, however harm to GCN is considered highly unlikely according to the Natural England Rapid Risk Assessment Tool for GCN due to the minimal amount of potential GCN habitat that will be impacted by the Proposed Scheme.	<b>Slight Adverse</b>
Amphibians (Other amphibians)	<p>There is likely suitable terrestrial habitat on Site for other common amphibian species additionally to GCN including the common toad, which is a SPI in accordance with Section 41 of the NERC Act 2006.</p> <p>There are two ponds within 250m of the Site. It is not known whether there is suitable terrestrial habitat within 250m of these ponds within the Proposed Scheme extent. Additionally, the ponds are not separated from the Proposed Scheme by any major barrier such as a dual carriageway or major water course. Potential terrestrial habitat includes hedgerows, tree lines and grassland.</p>	<b>Local</b>	<b>Low</b> - Some common and widespread amphibian species within the UK including the common toad are SPI in accordance with Section 41 of the NERC Act 2006.	<b>Varying</b> - Species dependent	<b>Low</b> - Amphibians (with exception of GCN) are of low biodiversity value.	<b>Neutral</b> - minimal habitat is due to be removed for the Proposed Scheme. The implementation of precautionary works during the construction phase will ensure effects of the Proposed Scheme on amphibians would be negligible.	<b>Neutral</b>
Hedgehog ( <i>Erinaceus europaeus</i> )	Habitats on Site include hedgerows which offer valuable habitat to hedgehogs. This species is a SPI in accordance with Section 41 of the NERC Act 2006.	<b>Local</b>	<b>Low</b> - This species is a SPI in accordance with Section 41 of the NERC Act 2006, this species is however common within Cambridgeshire.	<b>Declining</b> - According to the State of Britain's Hedgehogs 2022 report by the Peoples Trust For Endangered Animals and the British Hedgehog Preservation Society, Hedgehogs are declining nationally.	<b>Low</b> - Hedgehog are a species of low biodiversity value on a national and local level.	<b>Neutral</b> - The Site is narrow, linear which is mostly urban. The hedgerows within the Site act as boundaries and are not expected to be removed.	<b>Neutral</b>

Brown hare <i>Lepus europeus</i>	The Site is adjacent to open arable farmland and fields, which offer valuable habitat to brown hare. This species is a SPI.	<b>Local</b>	<b>Low</b> - This species is a SPI in accordance with Section 41 of the NERC Act 2006, this species is however common and widespread within Cambridgeshire.	<b>Declining</b> - brown hare have been in decline for the last 100 years, by 80% according to the Hare Preservation Trust, 2022. The species is however common and widespread in Cambridgeshire (Cambridgeshire Mammal Group, 2016).	<b>Low</b> - brown hare are a species of low biodiversity value on a national and local level.	<b>Neutral</b> - The Site is narrow, linear which is mostly urban. The Proposed Scheme will not impact suitable arable and grassland habitat.	<b>Neutral</b>
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#### Summary Assessment Score

Slight Adverse

#### Qualitative Comments

Overall the Assessment Score is "slight adverse" due to potential effects to hedgerows, bats, badgers, otter, water vole and GCN, largely due to small areas of habitat to be removed to facilitate the Proposed Scheme, and potential effects on watercourses. Mitigation proposals should be developed which may include the following enhancement measures:

- Pollution control measures;
- Wildlife planting, to include areas with wildflowers;
- Bird and bat boxes; and
- Invertebrate hotels.

Further surveys have been recommended which could affect the assessment score and/or require specific mitigation. However a precautionary approach has been applied to the assessment scores and therefore further surveys would be more likely bring the assessment score down to Neutral, rather than increase it to Moderate Adverse.

## TAG Water Environment Impacts Worksheet

Description of study area/ summary of potential impacts	Key environmental resource	Features	Quality	Scale	Rarity	Substitutability	Importance	Magnitude	Significance
Study area: Surface water and groundwater features located within c.500m of the Site and/or hydraulically connected to the Site have been considered.	Rivers (Bottisham Lode, Quoy Water, Swaffam - Bulbeck Lode & tributaries)	Water supply	Bottisham Lode - Quoy Water and Swaffam - Bulbeck Lode are main rivers and tributaries to the Cam. They are performing at 'Moderate' WFD status. Unlikely to be source main source of water supply.	Local	Low	Limited potential for substitution	Medium	Negligible	Insignificant
Potential impacts:  - Potential increase in surface water flood risk, although much of the route follows existing roads and cycle paths - Some pollution risk from construction and operation activities		Transport and dilution of waste products	Medium- Failed WFD chemical status for priority hazardous substances, also both have 'poor' status for phosphates. Likely to receive runoff and drainage from agricultural fields.	Local	Low	Cannot be substituted	Medium	Slight Adverse - Construction activities and runoff may worsen water quality. Operational use should have a negligible impact, however there is potential from some pollution (e.g. litter).	Insignificant
		Biodiversity	Moderate/ Ecological elements. Wilbraham Fens SSSI connected within buffer, but upstream. Ditch creation as part of the project.	Regional	High	Limited potential for substitution	High	Negligible	Insignificant
		Aesthetics	Heavily modified	Local	Low	Limited potential for substitution	Low	Negligible	Insignificant
		Cultural Heritage	Quoy Hall (Grade II) and Angelsy Abbey (Grade II*) associated with Quoy Water. Swaffam Bulbeck Moat.	Local	Medium	Cannot be substituted	Medium	Negligible	Insignificant
		Recreation	Public Rights of Way associated with watercourses.	Local	Medium	Limited potential for substitution	Medium	Negligible	Insignificant
		Value to economy	Low - Mainly adapted for drainage	Local	Low	Limited potential for substitution	Low	Negligible	Insignificant
		Conveyance of flow and material	Swaffam Bulbeck Lode has discharge controlled by a lock into River Cam.  Low gradients of watercourse may result in slow flows.  Straightened channels and drainage ditches may aid conveyance.	Local	Low	Limited potential for substitution	Low	Negligible	Insignificant
		Floodplain	The route is largely in Flood Zone 1 but crosses points of Flood Zone 3 and runs in proximity to large areas of Flood Zone 3. The Proposed Scheme is unlikely to impact flood plain storage.	Regional	Low	Limited potential for substitution	Medium	Negligible	Insignificant
		Biodiversity	Moderate/ Ecological elements. Wilbraham Fens SSSI connected within buffer, but upstream.	Regional	High	Limited potential for substitution	High	Negligible	Insignificant
		Aesthetics	Site is mostly located in a rural area.	Local	Low	Limited potential for substitution	Low	Negligible	Insignificant
* Increased pollution risk to Groundwater * Modifications to groundwater conditions (locally) including alterations to groundwater level and flow * Reduction of groundwater recharge (locally) to superficial and bedrock aquifers due to increased hard surface areas	Groundwater (superficial aquifers)	Water supply (groundwater level and flow)	Groundwater Source Protection Zone (SPZ) at Swaffham Prior at approx NGR TL 57163 64132. The public water supply (PWS) at Swaffham Prior is anticipated to target the underlying Principal Chalk aquifer (which be hydraulically connected to superficial deposits). It is unclear at this stage if private (licensed and unlicensed) abstractions exist in proximity to the Proposed Scheme, due to the limited extent of the superficial deposits it is unlikely they are targeted as superficial aquifers (River Terrace Deposits and Peat)	Local	Low	Limited potential for substitution	Medium	Slight (Adverse) - localised impacts expected where changes in groundwater level and flow may occur as a result of alternation to groundwater recharge	Insignificant
		Groundwater quality	Located within a Nitrate Vulnerable Zone. Superficial River Terrace Deposits designated Secondary A Aquifers - provide limited / local supply	Local	Low	Limited potential for substitution	Medium	Slight (Adverse) - localised impacts due to scheme development activities i.e. resurfacing	Insignificant
	Groundwater (bedrock aquifers)	Principal Aquifer/Water supply (groundwater level and flow)	Groundwater Source Protection Zone (SPZ) at Swaffham Prior at approx NGR TL 57163 64132. BGS Hydrogeological Map Sheet 14 identifies PWS at approx location specified and network of observation boreholes between Swaffham Bulbeck and Swaffham Prior. At this stage, no additional information/data is provided on yields/supply. Based on the geology of the area the PWS will target the Principal Chalk aquifer (West Melbury Marly Chalk / Zig Zag Chalk Formations). No drinking safeguard zone (groundwater) is specified for the area. It is unclear at this stage if private (licensed and unlicensed) abstractions are present and targeting Principal Chalk aquifer(s) (West Melbury Marly Chalk and Zig Zag Chalk Formations of the Grey Chalk Subgroup).	Regional	Medium	Cannot be substituted	High	Negligible - no significant impact expected on water supply, groundwater level and flow	Insignificant
		Groundwater quality	High and High & Medium groundwater vulnerability zones designated along length of the Proposed Scheme attributed to the West Melbury Marly Chalk and Zig Zag Chalk Formations (Grey Chalk Subgroup). Soluble rock risk identified (assigned to Chalk) for Stow Cum Quoy and north along the B1102 towards Lode. Medium - High groundwater vulnerability assigned to localised areas where superficial deposits are present specifically where minor watercourses exist  Cam and Ely Ouse Chalk Groundwater Waterbody (ID GB40501G400500) overall Poor WFD status.	Regional	Medium	Cannot be substituted	High	Slight (Adverse) - Chalk exposed at surface. Localised impacts on groundwater recharge due to increased impermeable areas. Localised impacts on groundwater quality due to increased sedimentation risk as a result of proposed development activities i.e. resurfacing	Insignificant
	Groundwater (superficial and bedrock aquifers)	Transport and dilution of pollutants	At this stage no records of formal infiltration based drainage have been provided. Informal infiltration may occur on highway ditches that are assumed to be unlined.	Local	Low	Cannot be substituted	Low	Slight (Beneficial) - runoff quality may increase due to a modal shift to green modes of transport.	Insignificant
		Value to economy	No known commercial uses.	Local	Low	Cannot be substituted	Low	Negligible	Insignificant
		Biodiversity including GWDTE (Groundwater Dependent Terrestrial Ecosystems)	Site of Special Scientific Interest (SSSI) south of Stow cum Quoy approx 500m south of Proposed Scheme. No direct impact anticipated but the Proposed Scheme does sit wthin SSSI Impact Risk Zone. It is unclear at this stage if the SSSI is considered groundwater dependent. Baseflow provided to major watercourses	Regional	High	Limited potential for substitution	High	Negligible	Insignificant

## Reference Sources

OS Mapping, MAGIC GIS Portal, British Geological Survey, Historic England and Environment Agency's Catchment Data Explorer

## Summary Assessment Score

Neutral - Slight Adverse (Groundwater)

Negligible (Surface Water)

## Qualitative Comments

Localised impacts (specifically groundwater quality) to groundwater receptors i.e. abstractions, superficial and bedrock aquifers due to increased sedimentation risk / discharge during construction activities. Currently, there is limited data relating to the presence of private (licensed and unlicensed) water supplies and depth to groundwater table. Principal bedrock aquifer (West Melbury Marly Chalk Formation and Zig Zag Chalk Formation) is exposed at surface and will be intercepted by the Proposed Scheme. Increased impermeable surface area may result in localised impacts on reduced recharge to major/minor aquifers, although impacts are not expected to be significant. At this stage it is assumed that no intrusive works likely to extend below the groundwater table (superficial and bedrock geologies), are anticipated.

Review of the Environment Agency's Flood Map for planning reveals that the route is largely with in Flood Zone 1 with a couple of crossing points in Flood Zone 3. The Surface Water Flood Map shows very low flood risk (<0.1% Annual Exceedance Probability (AEP)), with some areas of low-medium flood risk (0.1% - 3.3% AEP) on Colliers Lane north-east of Stow Cum Quoy. The majority of the route follows existing roads and cyclepaths so the change in impermeable area is likely to have a negligible impact on flood risk. There are no new crossings of rivers and ditches, these crossing will take place on existing structures and there is unlikely to be a need of any modifications. Construction activities and change of use may have a slightly adverse impact on water quality.





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