

# Feasibility study

Burwell, Reach and Swaffham Prior links

11 April 2022



# About Sustrans

Sustrans is the charity making it easier for people to walk and cycle. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute. Join us on our journey. [www.sustrans.org.uk](http://www.sustrans.org.uk).

Registered Charity No. 326550 (England and Wales) SC039263 (Scotland).

## Our vision

A society where the way we travel creates healthier places and happier lives for everyone.

## Our mission

We make it easier for people to walk and cycle.

## How we work

- **We make the case for walking and cycling** by using robust evidence and showing what can be done.
- **We provide solutions.** We capture imaginations with bold ideas that we can help make happen.
- **We're grounded in communities**, involving local people in the design, delivery and maintenance of solutions.

## What we do



## Contact us

To find out more, please contact ([Andrew.allison@sustrans.org.uk](mailto:Andrew.allison@sustrans.org.uk))

All photos: Nigel Bringham/Sustrans unless otherwise stated.

# Contents

About Sustrans	0		
Executive summary	2		
1. Introduction	3		
1.1 Background to the project		3	
1.2 Purpose of the project		3	
2. NCN principles	4		
3. Guidelines and Standards	7		
General guidance for England		7	
Low Traffic Neighbourhoods		7	
Local Authority Guidance and Policies		7	
LTN 1/20 Cycle Infrastructure Design and its implications for design options.		10	
Healthy Streets		11	
4. Issues with the existing Routes.	12		
	13		
	14		
	15		
5. Design constraints	17		
5.1 Environment Agency		17	
5.2 Ground and Ecology		17	
5.3. Common Land		17	
5.4 Utilities		17	
5.5 Heritage and Historic Environment		19	
6. Route Option Appraisal	20		
6.1 Option 1		27	
			29
			31
			35
			45
			47
			48
			51
7. Potential Usage		55	
9. Land Ownership		57	
9. Ecological assessment		58	
Ecological Baseline Assessment		58	
Anticipated impacts and effects		58	
Recommendations		59	
10. Community engagement		61	
10.1 Evidence of Support		61	
10.2 Audit of Engagement Risk		61	
10.3 Audit of Engagement Opportunity		61	
10.4 Community Engagement Plan		61	
11. Key stakeholder engagement		62	
12. Legal Agreements, Planning Application and other Approvals		63	
Problems likely to arise		63	
13. Construction and Maintenance		64	
14. Cost estimates		65	
15. Business case and policy match		67	
16. CDM and Design Risk		68	
17. RAG Report		69	

# Executive summary

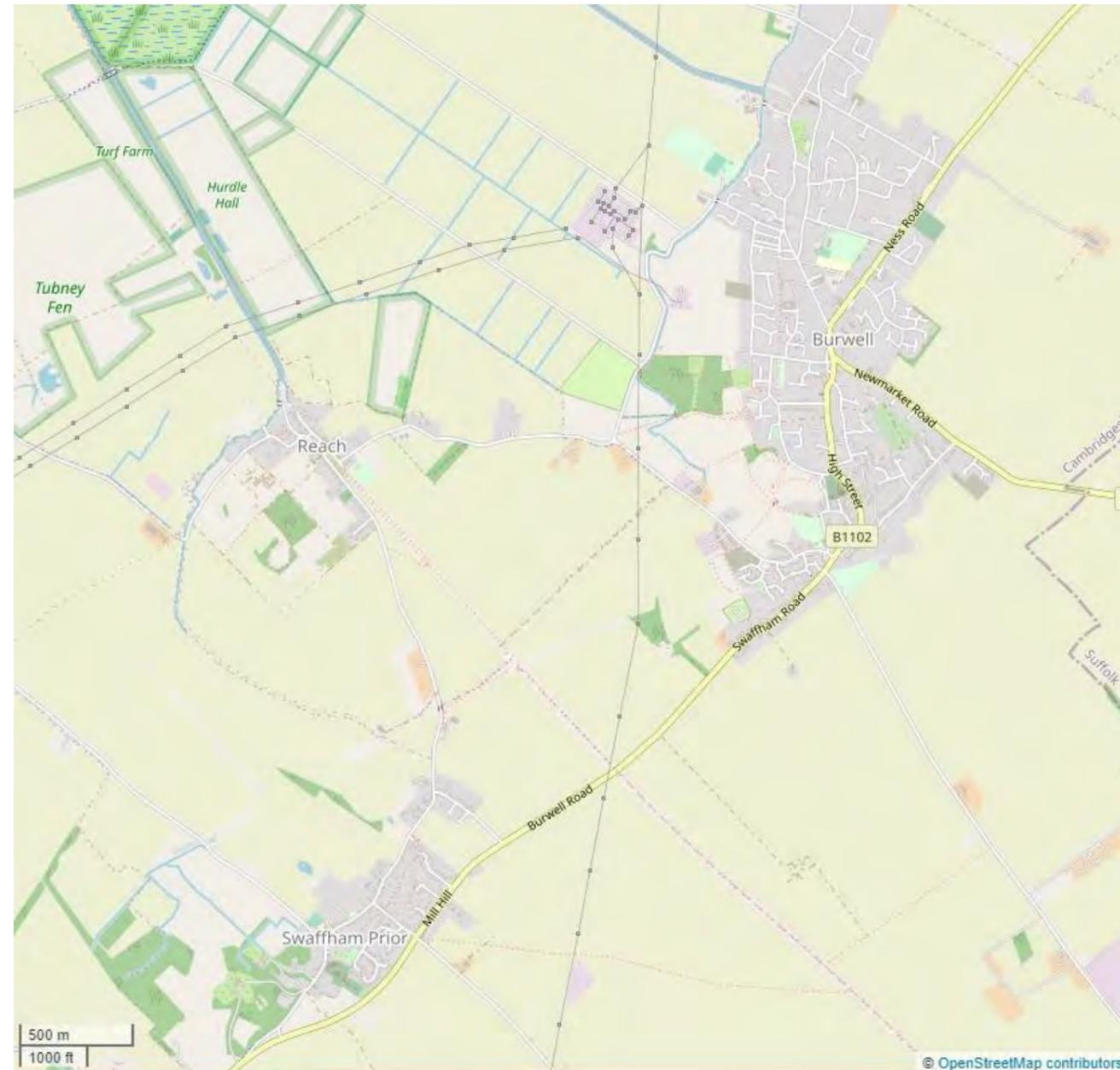
This report looks at potential new walking and cycling routes between Swaffham Prior, Reach and Burwell. Existing links between the communities are dominated by the B1102, which is a major road carrying motorized traffic at volumes and speeds that are likely to be uncomfortable for many people considering walking or cycling.

East Cambridgeshire District Council are keen to provide better facilities for local residents and visitors and Sustrans is keen to provide an alternative to the road used by the existing National Cycle Network. The routes would link in with other existing and planned routes including the Cambridge Greenway to Swaffham Prior, a new link between Burwell and Fordham and the Lodes Way.

The report considers a number of alignments including options that go through Reach and more direct routes that link with Reach. All of the options involve the use of private land and detailed discussions are needed with numerous landowners before any alignment can be finalised. Ecology and heritage are also major factors that need to be addressed and this makes finding a good option particularly challenging.

The report looks in some detail at travel within Burwell and Swaffham Prior. Without good provision from people's doorsteps (or all the way to key destinations) some journeys will remain challenging, however good the provision is between Burwell and Swaffham Prior or Reach.

None of the options is easy and there is a good case for more than one route. There is also a strong case for significant changes within Burwell itself.



© OpenStreetMap contributors

Map showing the study area

# 1. Introduction

Sustrans has been asked to look at options for new walking and cycling routes between Swaffham Prior, Reach and Burwell, in East Cambridgeshire. This request has come from the District Council who are looking to improve local facilities and want to progress plans for routes, so that when funding becomes available they can bid for funding. The objective of the report is to identify the advantages and disadvantages of the various options, so that further consultation can be had with the local community, local employers and landowners to consider the best way forward.

---

## 1.1 Background to the project

There is a well established cycling culture in the area and for many years there has been a shared use path that follows some of the B1102 between Burwell and Cambridge. Provision was extended when works were carried out on the Lodes Way, as part of Sustrans Connect2 project. More recently Cambridgeshire County Council and partners in the Greater Cambridge Partnership have been developing ideas for the Greater Cambridge Greenways including the Swaffhams Greenway between Cambridge and Swaffham Prior.

In addition to this national policies have been giving high priority to walking and cycling, as well as offering the potential for major funding in future.

Sustrans has also been reviewing the National Cycle Network and this review noted that the National Cycle Network is a local asset with incredible reach, connecting people and places across the UK and providing traffic-free spaces for everyone to enjoy.

The review identified that the Network is used by a broad range of people – walkers (for over half of journeys) and people on cycles, as well as joggers, wheelchair users and horse riders – but there is a lot more we can do to make it safe and accessible for everyone. The Network's routes have great potential for improvement. The character and quality varies hugely, and whilst 54% of the Network is Good or Very Good, 46% is Poor or Very Poor.

The review included a vision for a UK-wide network of traffic-free paths for everyone, connecting cities, towns and countryside, loved by the communities they serve.

---

## 1.2 Purpose of the project

- To describe the current problems, obstacles and propensity to walk and cycle in the area.
- To identify at least one high quality route that can be delivered between Swaffham Prior and Burwell.
- To consider ways to link Reach with both Burwell and Swaffham Prior.
- To consider ways to improve links within both communities.
- To rank the route options in terms of benefits and costs and to consider ways to deliver improvements, including timetables and costings.

## 2. NCN principles

### 2.1 Why we have the NCN principles:

The National Cycle Network design principles set out key elements that make the Network distinctive and need to be considered during design of new and improved routes forming part of the Network.

Where the Network is not traffic-free it should either be on a quiet-way section of road or be fully separated from the carriageway.

For a National Cycle Network route on a quiet-way section of road traffic speed and flows should be sufficiently low with good visibility to comply with design guidance for comfortable sharing of the carriageway.

Signs and markings should highlight the Network.

### Principle 1:

#### Traffic-free or quiet-way

Where the Network is not “traffic-free” it should either be on a quiet-way section of road or be fully separated from the adjacent carriageway.

For a National Cycle Network route on a quiet-way section of road the traffic speed and flows should be sufficiently low enough to encourage cycling for all ages and abilities.

It should have good visibility to comply with design guidance to allow for comfortable sharing of the carriageway.

Signs and road markings should highlight the Network.



Figure 1: Safe crossing for all, helping continuity on traffic free routes

Photo: Sustrans

### Principle 2:

#### Wide enough to accommodate all users

Width of a route should be based on the level of anticipated usage, allowing for growth. A minimum width of 3m shall be delivered.

Where it is not possible to deliver this, all other avenues should be fully explored before path widths are reduced.

Physical separation between users should be considered where there is sufficient width and a higher potential for conflict between different users.

Structures should be designed to maximise movement space. A minimum path width between parapets of 4m shall be maintained.



Figure 2: At grade crossing of side road with separation for traffic, cyclists and pedestrians

Photo: Sustrans

### Principle 3:

#### Designed to minimise maintenance

A maintenance plan should be put in place during the development process.

Construction quality should be maximised to minimise future maintenance needs.

New planting should be kept well clear of the path.

Sufficient tree work should be undertaken as part of construction to minimise future issues.

Routes should be managed in a way that enhances biodiversity.



Figure 3: Easily maintained

Photo: Sustrans

Map 0X (Description)

## Principle 4:

### Signed clearly and consistently

Signage should be a mix of signs, surface markings and wayfinding measures.

Every junction or decision point should be signed.

Signage should be part of a network-wide signing strategy directing users to and from the route.

Signage should direct users of the Network to trip generators such as places of interest, hospitals, universities, colleges.

Signage should be used to increase route legibility and branding of routes.

Signage should help to reinforce responsible behaviour by all users.



Figure 4: Clear signing

Photo: Sustrans

## Principle 5:

### Smooth surface that is well drained.

Path surfaces should be suitable for all users, irrespective of age, ability or mobility needs.

Path surfaces should be maintained in a condition that is free of undulations, rutting and potholes.

Path surfaces should be free draining and verges finished to avoid water ponding at the edges of the path.

In, or close to, built-up areas a Network route should have a sealed surface to maximise the number of path users.

Figure 5: Smooth, tarmac surface, accessible for all non-motorised users

Photo: Sustrans



## Principle 6:

### Fully accessible to all legitimate users.

All routes should accommodate a cycle design vehicle 2.8 metres long x 1.2 metres wide.

Any barriers should have a clear width of 1.5 metres.

Gradients should be minimised and as gentle as possible.

The surface should be maintained in a condition that makes it passable by all users.



Figure 6a: Accessible for all (Photo: Sustrans)



Figure 6b: Corridors that provide continuity, that create short-cuts and are away from traffic, in attractive environments

Photo: Sustrans

## Principle 7:

### Feel like a safe place to be

Route alignments should avoid creating places that are enclosed or not overlooked.

Consideration should be given as to whether lighting should be provided.



Figure 7: Safe for all

Photo: Sustrans

---

## Principle 8:

### Enable all users to cross roads safely.

Road crossings should be in accordance with current best practice guidance.

Approaches to road crossings should be designed to facilitate a slow approach speed to a crossing, have enough space for several users to wait safely.

Signalised road crossings should be designed to minimise the wait time for NCN users. Where possible advanced notification systems should be used.

All grade separated crossings should provide step-free access.



Figure 8: Safe crossing for all

(Photo from Fig 10.4 from LTN 1/20)

---

## Principle 9:

### Be attractive and interesting

Network routes should be attractive places to be in and pass along.

Landscaping, planting, artwork and interpretation boards should be used to create interest.

Seating should be provided at regular intervals along a route.

Opportunities should be taken to enhance ecological features.



Figure.9: Attractive and interesting areas

Photo: Sustrans

# 3. Guidelines and Standards

The most relevant guidance is listed on the Sustrans website at <https://www.sustrans.org.uk/for-professionals/infrastructure>. Local Authority Guidance and policies are also relevant. Examples of relevant guidance are given in this chapter.

## General guidance for England

- [Department for Transport LTN 1/20 Cycle Infrastructure Design](#)
- [Highways England CD 195 Designing for cycle traffic](#)
- [Department for Transport Local Transport Notes](#)
- [LCWIP Technical Guidance for Local Authorities \(DfT\)](#)



## Low Traffic Neighbourhoods

- [Sustrans introductory guide to low-traffic neighbourhood design](#)
- [Manual for Streets](#)
- [Slow Streets Sourcebook \(Urban Design London\)](#)
- [Streetscape Guidance \(Transport for London\)](#)
- [Achieving lower speeds: the toolkit \(TfL\)](#)



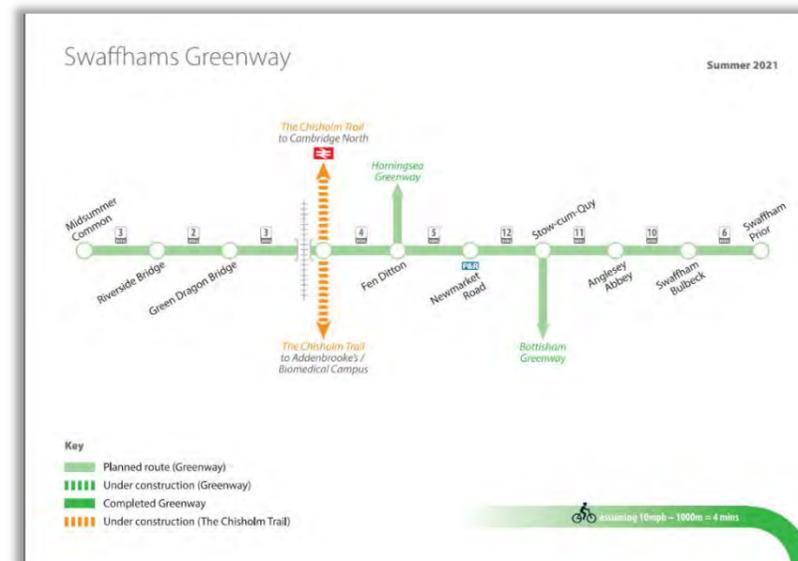
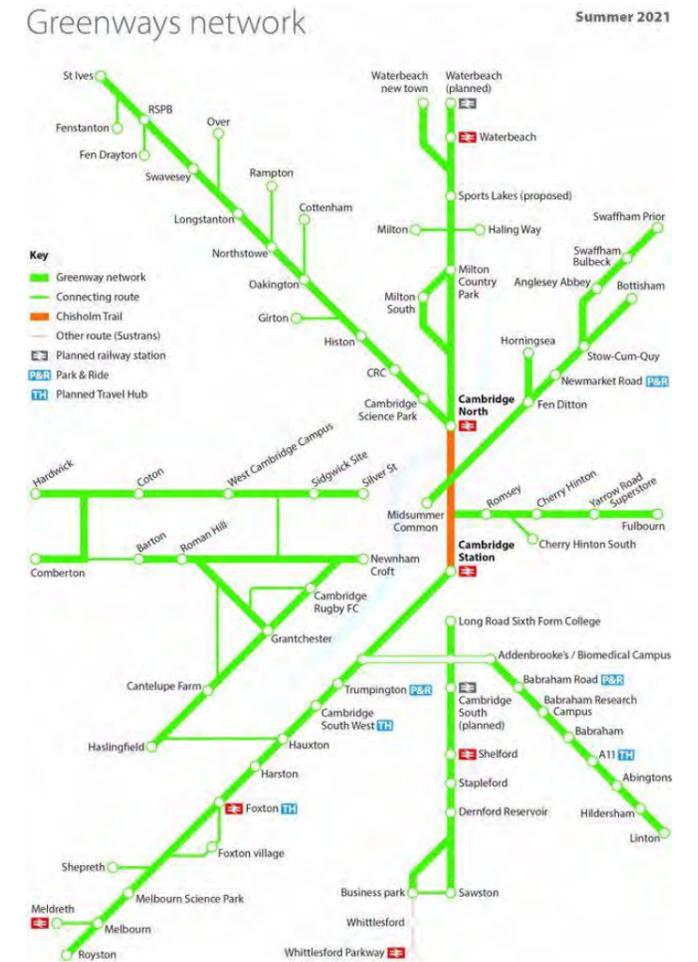
## Local Authority Guidance and Policies

As the Strategic Transport Authority for Cambridgeshire and Peterborough, the Combined Authority published the Local Transport Plan in January 2020. Following the election of a new Mayor the Combined Authority Board has agreed to revamp the plan. The current plan in reference to East Cambridgeshire includes the following:



3.136 New, high-quality infrastructure for pedestrians, cyclists and horse riders – such as high-quality cycleways in Ely and a segregated route to Soham – will also help to make active travel a safer and more attractive option for local journeys within and between our towns and villages. More journeys on foot and by bike will also help to alleviate traffic congestion and improve air quality, whilst allowing those without access to a car – such as teenage children – more independence and opportunity to travel. ...

The Greater Cambridge Partnership is leading on the development of the Greater Cambridge Greenways. The intention is that they “ will make it easier both to travel in a pleasant and sustainable way into and out of Cambridge and to enjoy our countryside for leisure purposes. They will also help to make local journeys such as school and nursery runs safer and easier. In some cases these are new routes, or routes with new sections, whilst others will be based on existing paths”. The Swaffhams Greenway will link Swaffham Prior with Cambridge as indicated below:



The East Cambridgeshire Local Plan sets out future plans for the District and includes the following within section 2.4.1 Spatial Vision:

*” Better cycling and pedestrian facilities and links will be provided, including segregated cycle routes along key routes linking towns and villages.....*

*There will be better access to the countryside and green spaces for local communities which helps to improve people’s quality of life...”*

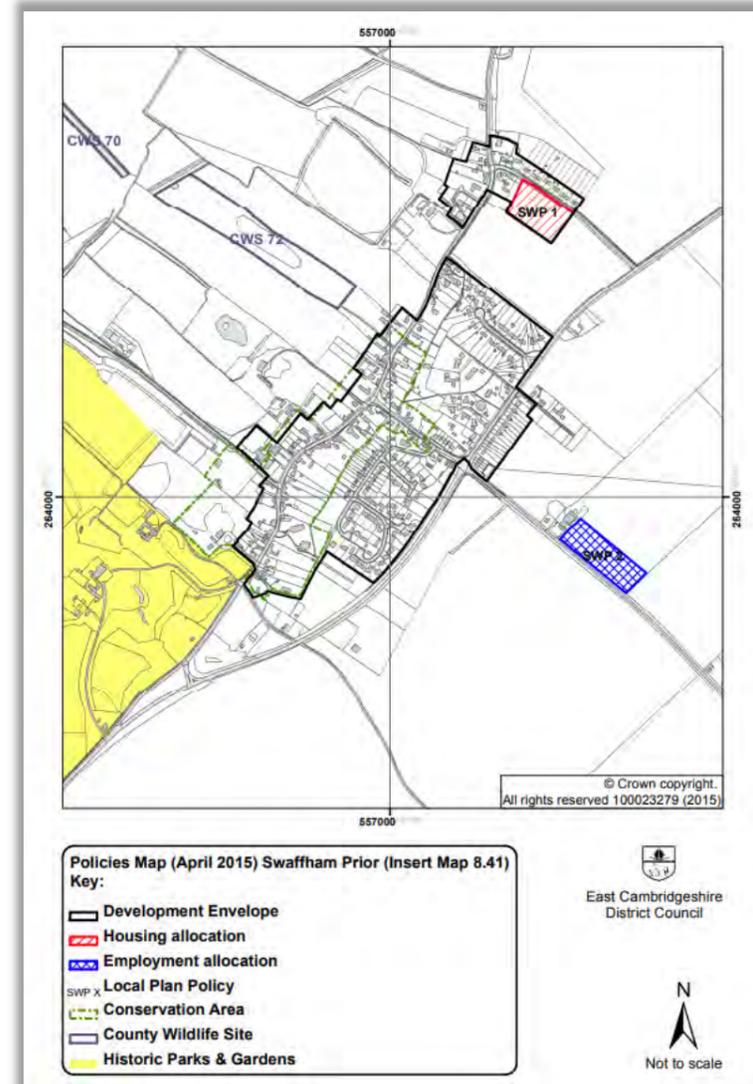


The Local Plan identifies one area for significant housing growth in Burwell and two new potential employment areas:

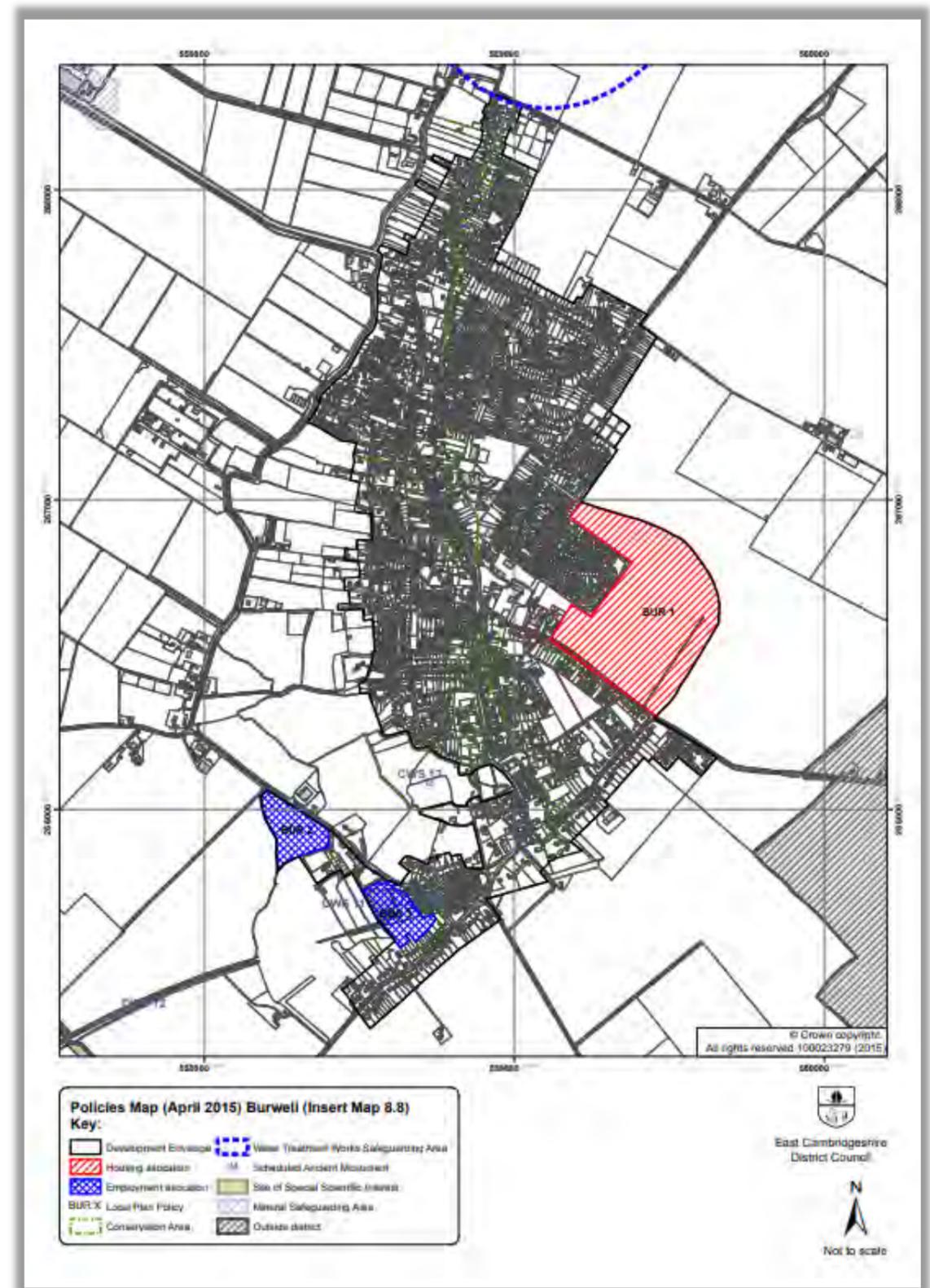
- Land off Newmarket Road of approximately 20ha for 350 dwellings plus open space.
- Land at Reach Road of approximately 2.5ha for employment development.
- The former D.S. Smith site at Reach Road of approximately 3ha for employment development.

All of these sites, as well as existing infrastructure within Burwell are relevant for the links considered within this study.

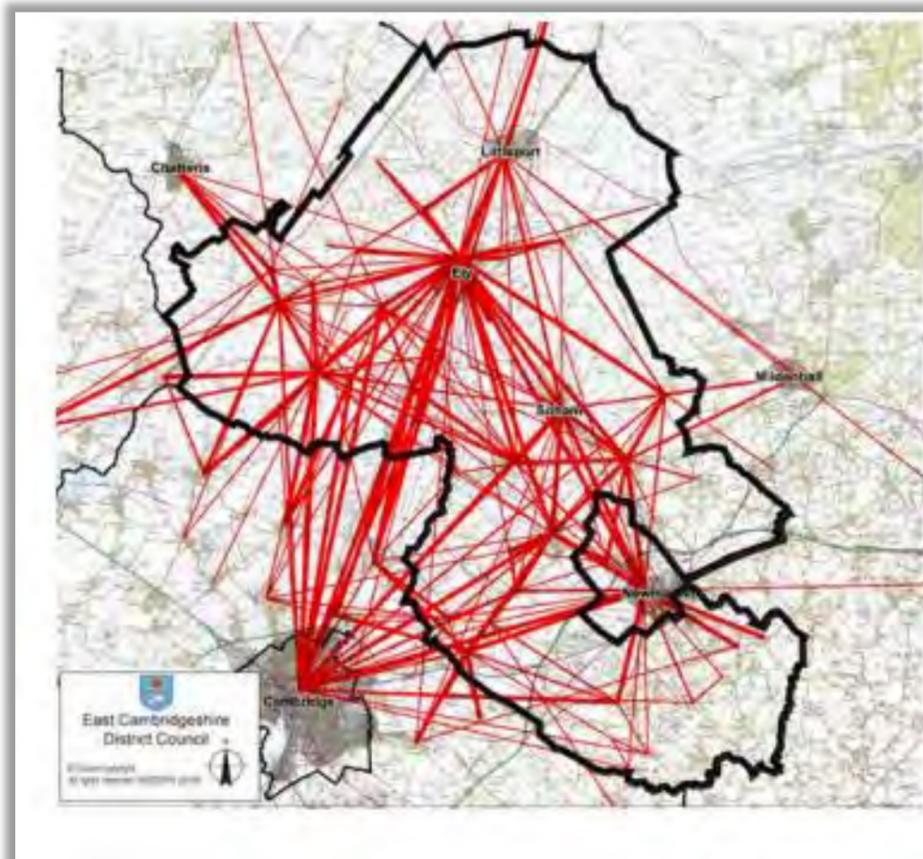
By contrast both Reach and Swaffham Prior are smaller than Burwell and limited growth is anticipated within or on the edge of both settlements.



Extract from Policies Map (April 2015) for Swaffham Prior (above) and Burwell (right).



East Cambridgeshire District Council has produced a Cycling and Walking routes strategy which was informed by public consultation in 2020. It includes information on the responses and an analysis of all the options put forward, such as the many proposed cycle routes as shown below.



*Cycle Route options from East Cambridgeshire Cycling and Walking Routes Strategy,*

The report also shows clear interest and demand for a new route between Fordham and Burwell and is discussed in more detail in Chapter 7.

East Cambridgeshire District Council




## East Cambridgeshire Cycling and Walking Routes Strategy

### Introduction

East Cambridgeshire District Council (ECDC) is committed to improving the East Cambridgeshire strategic cycle/footpath network. Although it is not responsible for delivering cycling and walking infrastructure, the Council understands that it is essential that the appropriate infrastructure is in place to make cycling and walking an attractive and safe alternative to driving.

The Council recognises the health and wellbeing and environmental benefits of cycling and walking. In 2019, the Council passed a 'climate change motion', which declared a climate emergency and encourages modal shift away from vehicles towards cycling and walking which will help the Council to achieve its net zero carbon ambitions.

The District Council Corporate Plan 2021-2023 includes a promise to champion and improve the East Cambs strategic cycle/footpath network and a commitment to prioritise 5 cycle routes for feasibility exploration.

To inform this work a public consultation was held in 2020 asking people to identify new cycling and walking routes which the Council could prioritise to complete gaps in the network, especially those that will encourage more local walking and cycling journeys to access places of education, employment, health care, public transport and essential services.

A list of priority routes has been developed so that the Council has a set of schemes that are ready to submit when funding becomes available.

Via the consultation questionnaire, the Council also asked residents where they would like to walk or cycle to but cannot because the path is in disrepair, there is street clutter obstructing the footpaths or there is insufficient street lighting, or because there is not safe crossing point in the route.

Supporting infrastructure such as cycle parking, adequate signage and promotion of existing routes are also needed to encourage people to cycle and walk.

The Council recognises the importance of providing safe routes for equestrians in East Cambridgeshire. The strategy is focused on strategic not leisure uses. Horse riding is not considered to be a mode of transport used to access the places and services the Council has prioritised and so their provision is **not** included in this particular strategy.

The Active Travel Strategy for Cambridgeshire, being produced by Cambridgeshire County Council (CCC) will consider other means of travel that are not identified as active transport modes, such as e-scooters, mobility scooters and equestrians and the District Council will champion the inclusion of routes for equestrian use in that strategy.

*Introduction to East Cambridgeshire Cycling and Walking Routes Strategy*

## LTN 1/20 Cycle Infrastructure Design and its implications for design options.

The Government set out its ambitions to see a “step change in cycling and walking in coming years” in Gear Change – A bold vision for cycling and walking (Department for Transport, July 2020). The document sets out key design principles, which are the basis for the updated national guidance for highway authorities and designers, given in LTN1/20.

Although LTN 1/20 is issued as guidance its adoption will also be a condition for Government

funding of all local highways investment, as well as new cycle infrastructure.

*“It will be a condition of any future Government funding for new cycle infrastructure that it is designed in a way that is consistent with this national guidance.”*

*“The Department for Transport will also reserve the right to ask for appropriate funding to be returned for any schemes built in a way which is not consistent with the guidance. In short, schemes which do not follow this guidance will not be funded.”* (Extract from Foreword LTN1/20)

LTN 1/20 has therefore been taken as the starting point when considering design options for this scheme. Some of the major implications in relation to the space needed for cycling, to ensure that the guidelines are met are:

- Properly-protected bike lanes, cycle-safe junctions and interventions for low-traffic streets are needed for the whole scheme, with little scope for exceptions.
- Cycle infrastructure should be accessible to everyone from 8 to 80 and beyond.
- On urban streets, cyclists must be physically separated from pedestrians and should not share space with pedestrians.
- Cyclists must be physically separated and protected from high volume motor traffic, both at junctions and on the stretches of road between them.
- Cycle infrastructure should be designed for significant numbers of cyclists, and for non-standard cycles.

LTN 1/20 notes that physical separation of cyclists from motor traffic can be an option in all situations, but may not be necessary at lower speeds and lower volumes of traffic. This is an important factor in scheme design, because measures that reduce

traffic volumes and/ or speeds can change the requirements for provision for cyclists.

LTN 1/20 has many other implications for cycle infrastructure design and maintenance and needs to be read as a whole, to fully understand the required design standards (including the Cycling Level of Service Tool and Junction Assessment Tool). In order to justify expenditure on this scheme the whole scheme has to be to a good standard and there should be no Critical Fails using the Cycling Level of Service Tool, with junctions to a good standard for all movements.

Figure 4.1 of LTN 1/20 (below) shows the appropriate protection from motor traffic on highways, with the aim being that traffic flow, speed and type of separation should fit within the green area.

Speed	Flow (pcu/24 hour) <sup>2</sup>	Provision				(mandatory/ advisory)
		Fully Kerbed Cycle Track	Stepped Cycle Track	Light Segregation		
20 mph <sup>3</sup>	0	Green	Green	Green	Green	Green
	2000	Green	Green	Green	Green	Green
	4000	Green	Green	Green	Yellow	Yellow
	6000+	Green	Green	Green	Yellow	Pink
30 mph	0	Green	Green	Green	Yellow	Yellow
	2000	Green	Green	Green	Yellow	Yellow
	4000	Green	Green	Green	Yellow	Pink
	6000+	Green	Green	Green	Yellow	Pink
40 mph	Any	Green	Yellow	Yellow	Pink	Pink
50+ mph	Any	Green	Pink	Pink	Pink	Pink

The space needed for cycling needs to allow for pedestrians and needs to be separated from motorised traffic by the desired or absolute minimum separation as outlined above, with absolute minimum a last resort.

LTN 1/20 generally recommends that cyclists are segregated from pedestrians but suggests that

*“Shared use may be appropriate in some situations, if well-designed and implemented.”*

The guidance on widths for rural routes is given in Table 6-3, which states that for routes carrying less than 300 pedestrians per hour and less than 300 cyclists per hour the recommended minimum width is 3m. This is the width that has been used throughout for this study. In the villages cyclists need to be segregated from pedestrians and a width of 3m has also been used for a bi-directional cycleway reduced to 2.5m at pinchpoints.

Notes:  
 1. If the 85<sup>th</sup> percentile speed is more than 10% above the speed limit the next highest speed limit should be applied  
 2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow  
 3. In rural areas achieving speeds of 20mph may be difficult, and so shared routes with speeds of up to 30mph will be generally acceptable with motor vehicle flows of up to 1,000 pcu per day

There is limited published data on traffic flows in this area but [DfT data](#) shows an Annual Average Daily Flow of 6436 motor vehicles/ day, in 2018 on the B1102 in Swaffham Bulbeck, which reduced to 5196 in 2020 (although this may have been affected by the pandemic). Pedal cycles are shown as 43 in 2018 and 39 in 2020.

On this scheme there are roads with 60mph and 30mph limits and this is very significant in terms of the spacing needed between cycleways and the carriageway as is shown in Table 6-1:

There are also significant issues with establishing safe crossings of rural roads. Table 10-2 states that for a 60mph road the only suitable crossing suitable for most people is a grade separated crossing, so any crossings of such roads were not initially considered, but this was changed at a later stage, due to the difficulties of other options.

For a 40mph or 50mph road an arrangement whereby one lane is crossed at a time, with a central refuge, is not completely ruled out, but it is considered to not be suitable for all people and “ will exclude some potential users and/or have safety concerns.”

**Table 6-1: Minimum recommended horizontal separation between carriageway and cycle tracks\***

Speed limit (mph)	Desirable minimum horizontal separation (m)	Absolute minimum horizontal separation (m)
30	0.5	0
40	1.0	0.5
50	2.0	1.5
60	2.5	2.0
70	3.5	3.0

For rural roads the speed limit is generally 60mph or 50mph, which means that any path has to be at least 1.5m from the edge of the carriageway. Paths also have to be kept well clear of hedges, which could be another 2m, so with a 3m wide path that means that at least 6.5m of highway verge space would be needed to construct a new path.



*View of B1102 shared use path*

The photo to the right shows the existing shared use path besides the B1102, which was fitted into the limited space available. This is now no longer acceptable and does not meet current standards. There are no consistent lengths of verge which would be suitable, so use of highway verges is generally not an option without also changing the road.

Uncontrolled crossings of 30 mph roads are considered an option within LTN 1/20 Table 10-2 and so speed limits are a significant factor for the roads around Burwell.

## Healthy Streets

Healthy Streets is a measure of how healthy our environment is. It is a recognition that “ Every decision we make about our built environment, however small, is an opportunity to deliver better places for people to live in and thereby improve their health.” (<https://www.healthystreets.com/what-is-healthy-streets>)

There are 10 evidence based Healthy Streets indicators as shown below and streets can be assessed and given a score, which can be audited.

The expectation is that Local Authorities and designers should aim to improve the Healthy Streets score on their streets and for any new infrastructure an assessment should be made before design work starts and after a scheme has been delivered. To properly assess a street, traffic flow data is needed and the professionals involved should have been trained in the process.

For this study it is premature to conduct Healthy Streets Audits, but as options are developed Healthy Streets audits of the village streets should be completed, with a clear aim to improve the healthy streets score on the streets concerned.



## 4. Issues with the existing Routes.

The existing National Cycle Network route between Swaffham Prior and Burwell follows Swaffham Road and Burwell Road through Reach. These are relatively quiet roads and DfT data from 2009 showed Annual Average Daily Flow of 460 motor vehicles per day on Swaffham Road between Swaffham Prior and Reach. Between Swaffham Prior and Reach the section of route over the old railway bridge is the most intimidating with limited visibility and the constraints of the bridge, but the remainder of the route is attractive. Cyclists also have little advantage over car drivers in that they are using the same facility, so there is little incentive to cycle, if you have concerns about the route, despite the distance being small and easily cyclable.

The biggest issue with the existing National Cycle Network route is the indirect nature of the route. For those not needing to travel via Reach the journey is a significant detour and much further than travelling along the B1102.

The shorter route between Swaffham Prior and Burwell follows the B1102, using a shared use path adjacent to the carriageway. This does not meet current standards in terms of width and segregation from the carriageway and is not continuous from village centre to village centre. It is again likely to be a concern for the less confident cyclists and

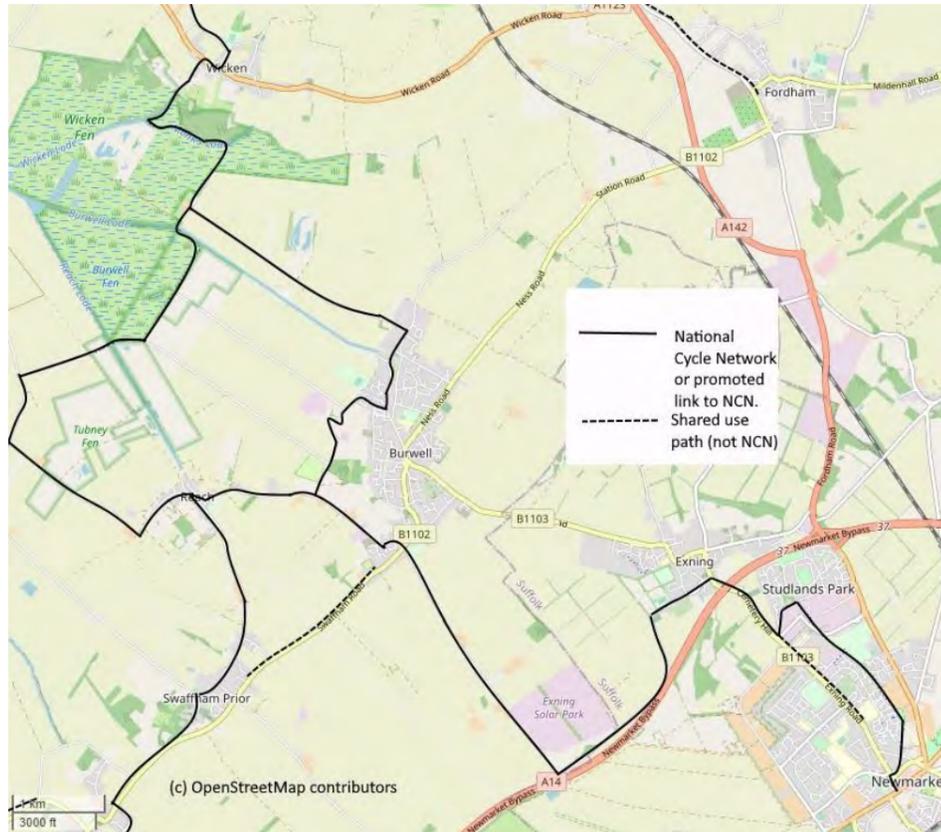


Fig 2. Map showing existing routes

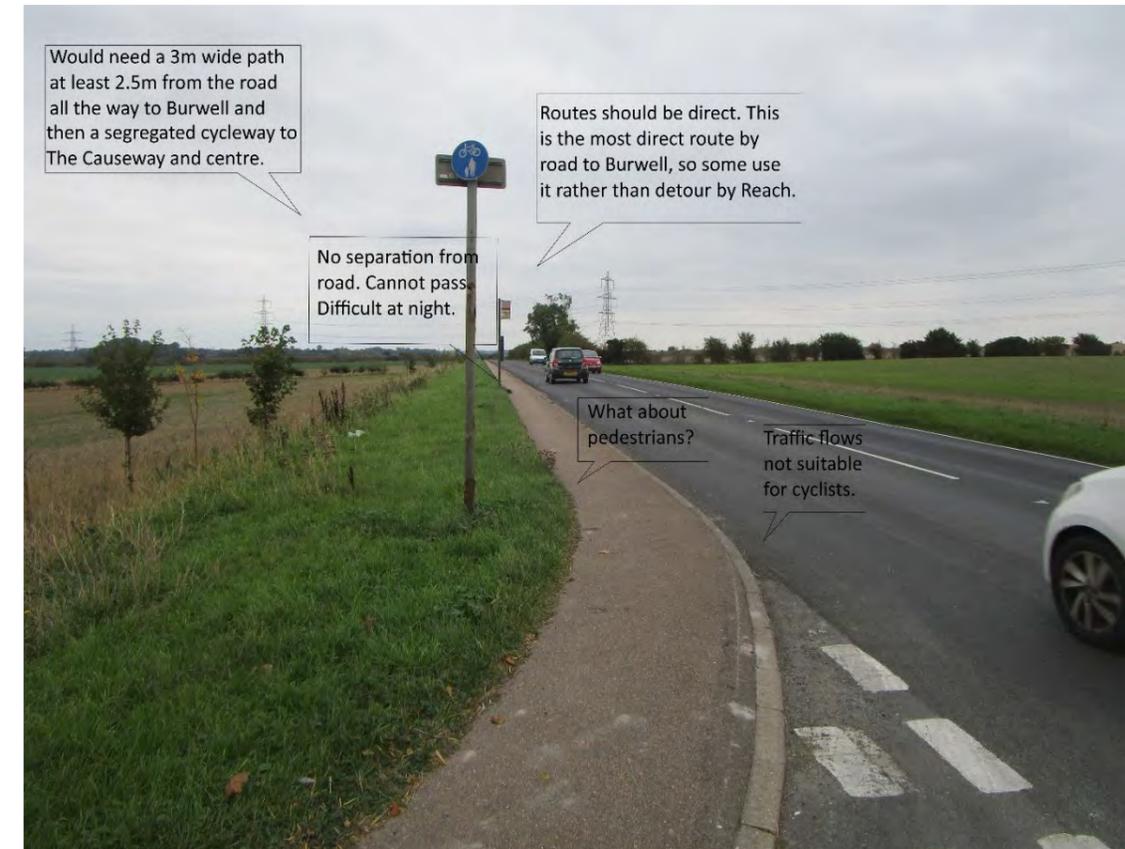
particularly uncomfortable for cyclists facing oncoming traffic at night.

From Swaffham Prior, Reach and Burwell relatively quiet roads lead northwards to link up with the Lodes Way and on to Wicken Fen.

There are therefore problems with all existing options either in terms of directness or quality or simply because they are not complete.

Links beyond Burwell to Fordham and Newmarket are also lacking and are already identified as priorities with an improved link between Burwell and Exning a long term aspiration. A planning application 15/01175 at Newmarket Road, Burwell secured a s106 contribution for a footway and cycleway link from Newmarket Road towards Exning. Suffolk CC have also secured a contribution

from a development in Exning and will manage the delivery of the scheme. A link between Burwell and Fordham being the subject of another feasibility study. All of these links will benefit each other and it is important that all are joined up to give continuous high quality routes.



View towards Burwell from Rogers Road, Swaffham Prior.

Despite the existing shared use path besides the B1102 not meeting current standards it is used by cyclists. Some of the issues for the route are shown on the marked up image below:

Other factors to consider with the existing routes include:

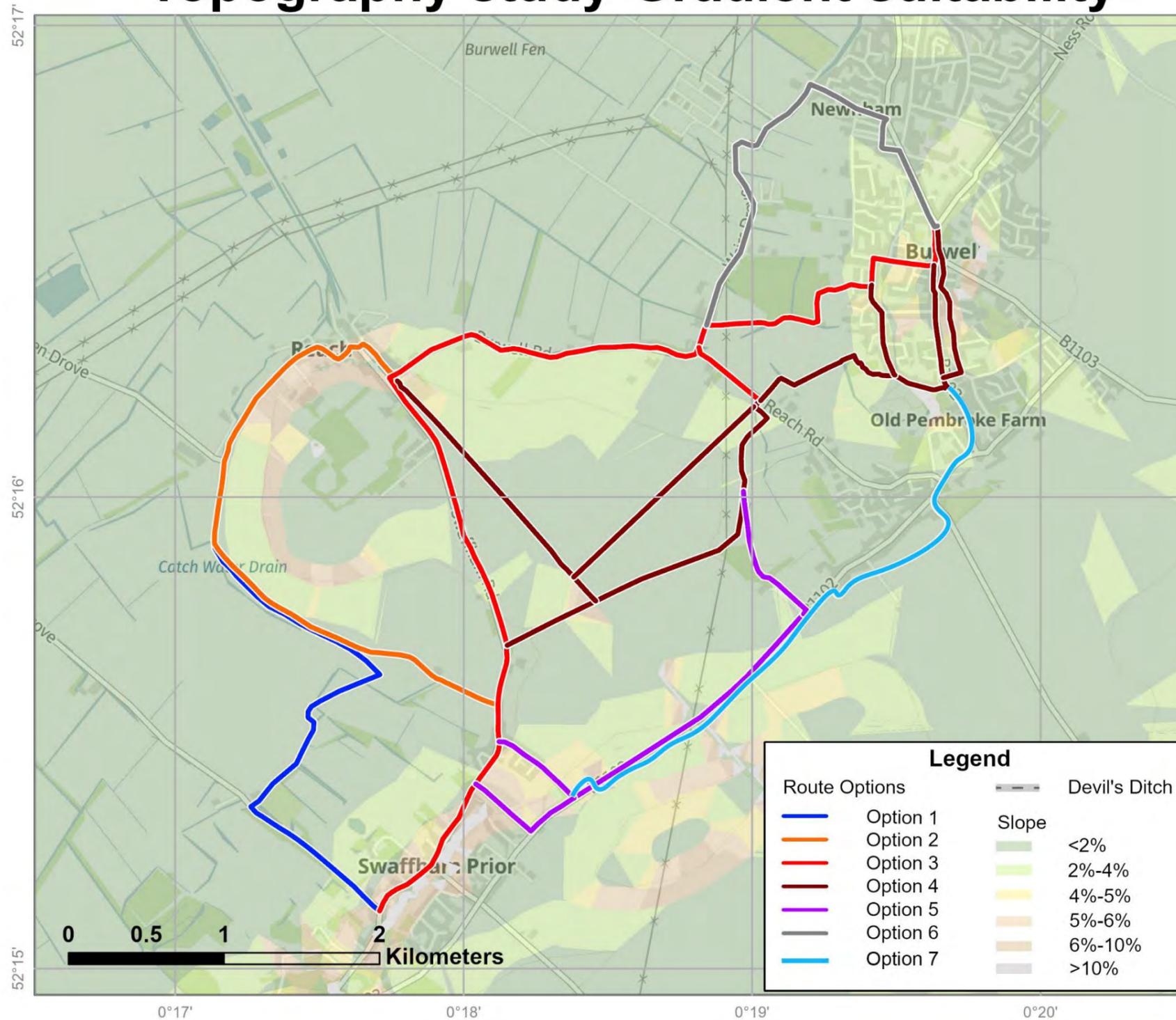
- **Topography.** This can be significant for cycling and whilst the settlements are on higher ground topography is not a major factor in this part of Cambridgeshire.

- **Traffic safety.** There are certainly issues in relation to the B1102.
- **Points of interest.** These are clearly focused on Burwell- a significant destination for local trips.

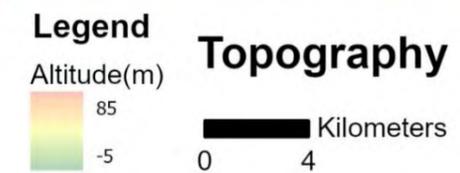
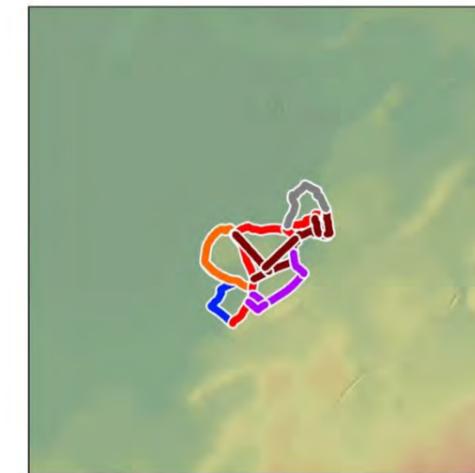
- **Travel time.** Within the study area there is little difference in travel time between driving and cycling, but most trips are by car.

These factors are illustrated on the following pages.

# Topography study-Gradient suitability



N



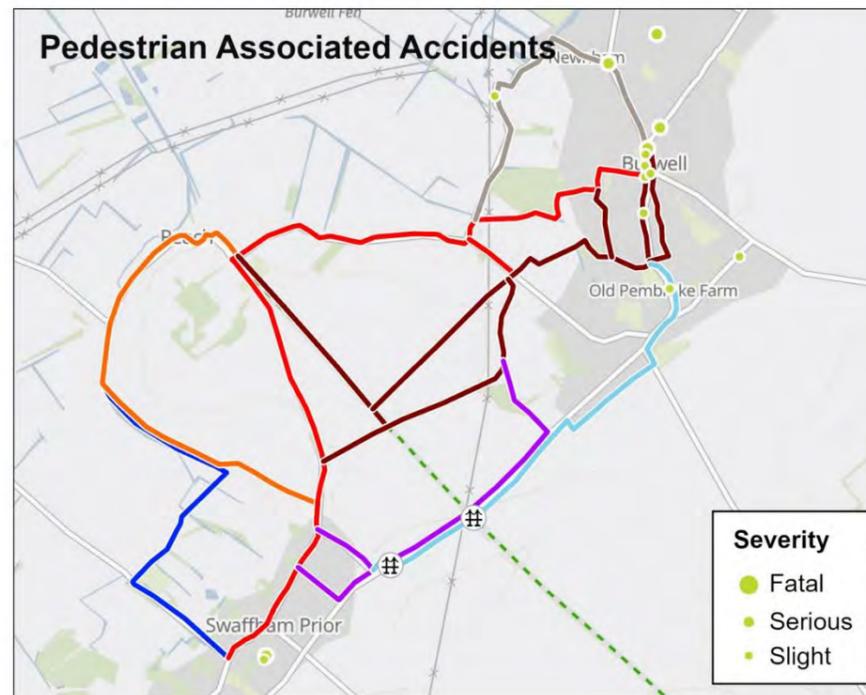
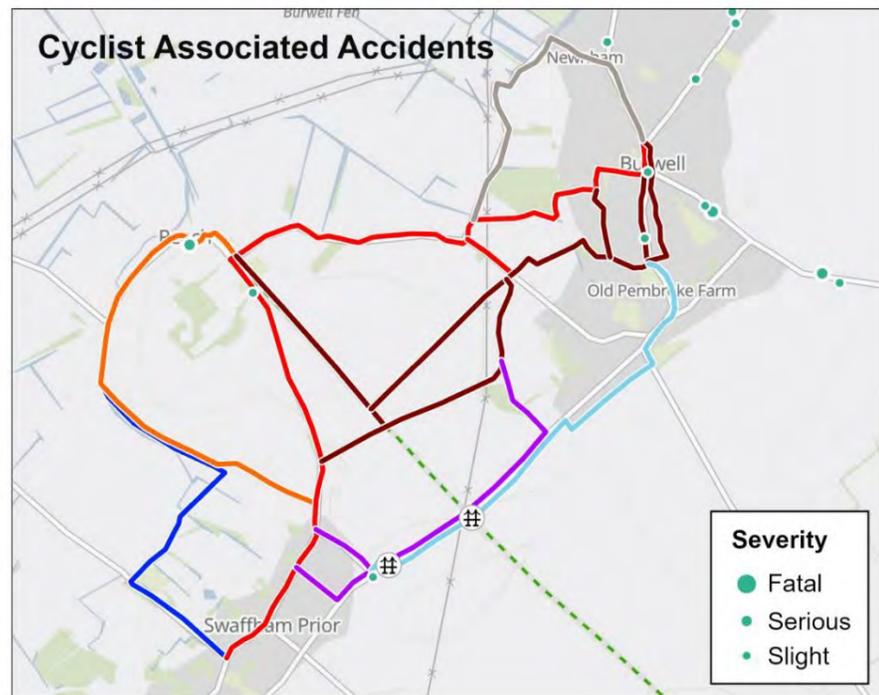
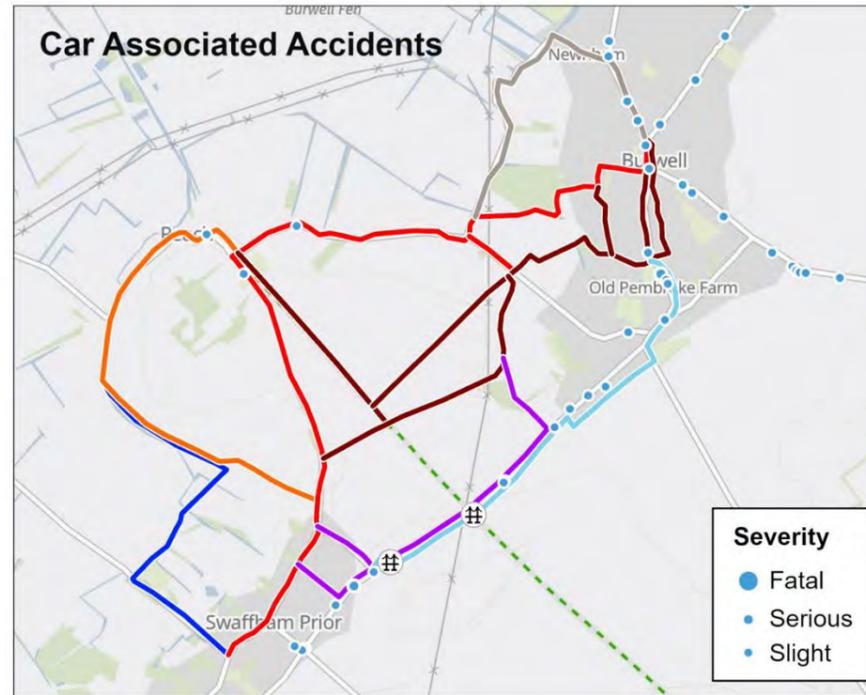
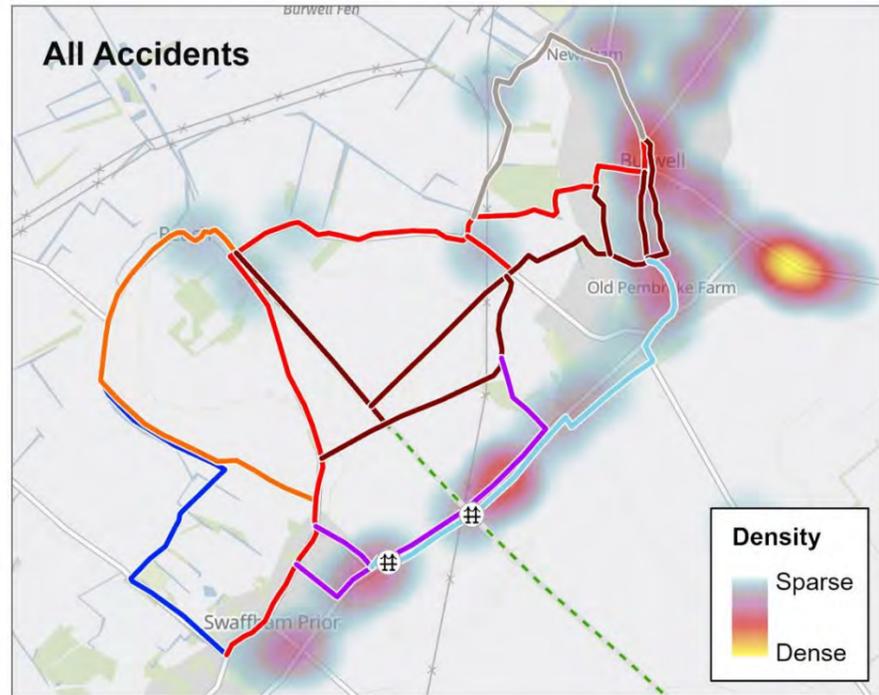
Contains OS data © Crown Copyright and database right 2020

Contains data from OS Zoomstack

Contains Sustrans data © Copyright and database right 2021



# Traffic Safety - Accident Distribution



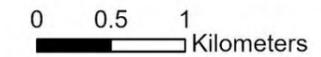
**Legend**

**Route Options**

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- Option 7

**Other Elements**

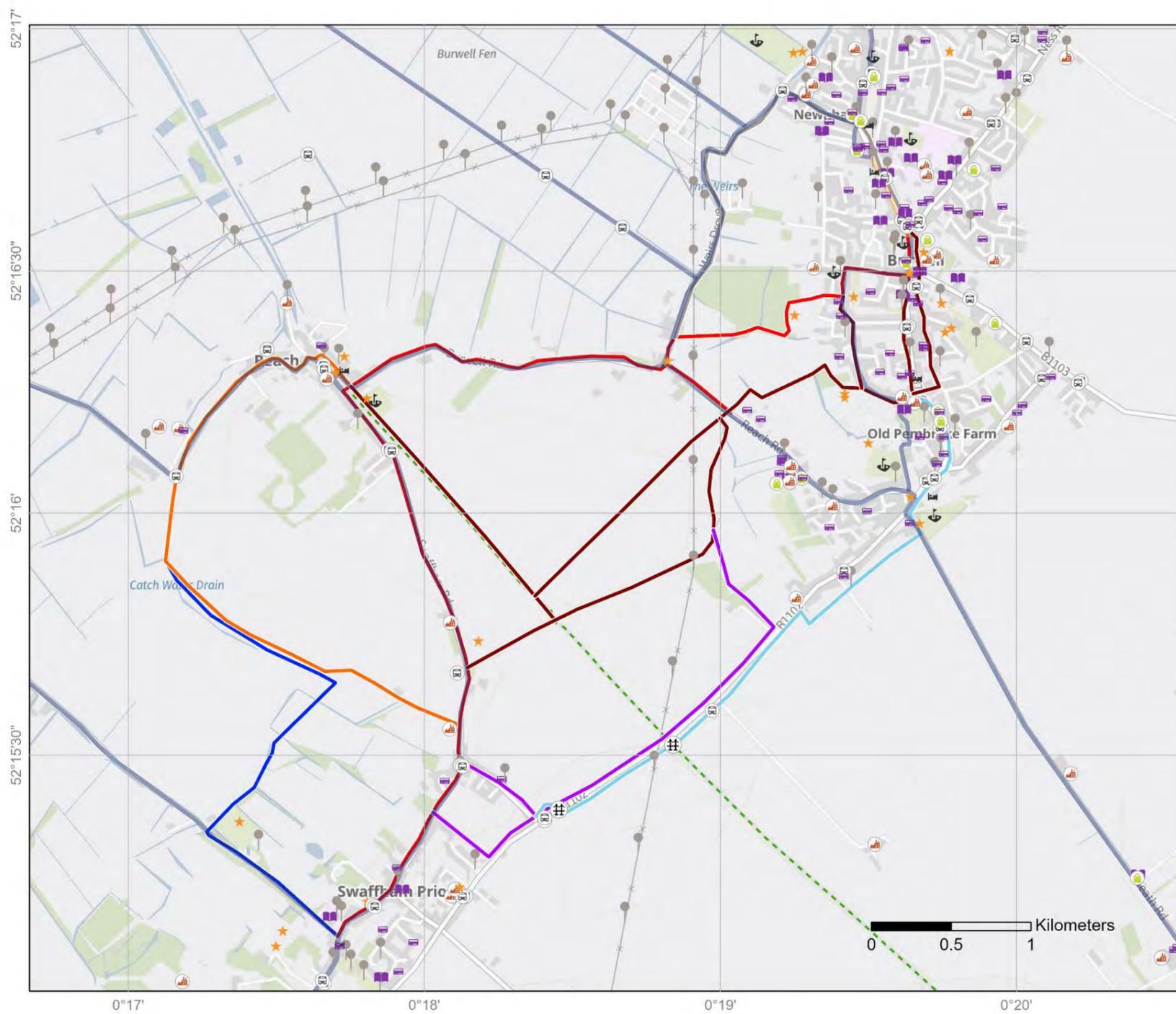
- Devil's Ditch
- New Bridge



Contains OS data © Crown Copyright and database right 2020  
 Contains data from OS Zoomstack  
 Contains Sustrans Data © Sustrans 2022  
 Contains Data from <https://www.cyclestreets.org/>



# Smart Linkage - Points of Interest



**Legend**

**Route Options**

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- Option 7

**Other Elements**

- Devil's Ditch
- New Bridge

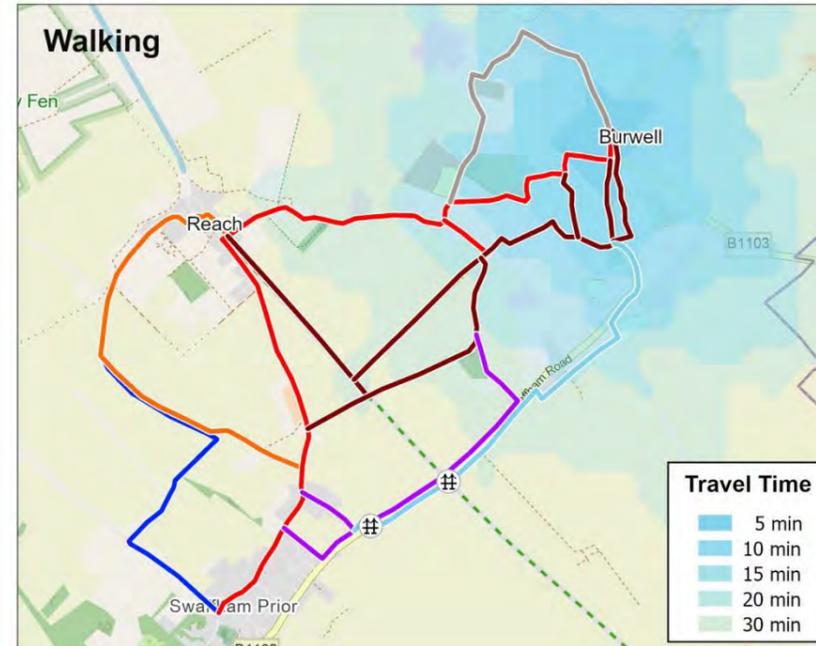
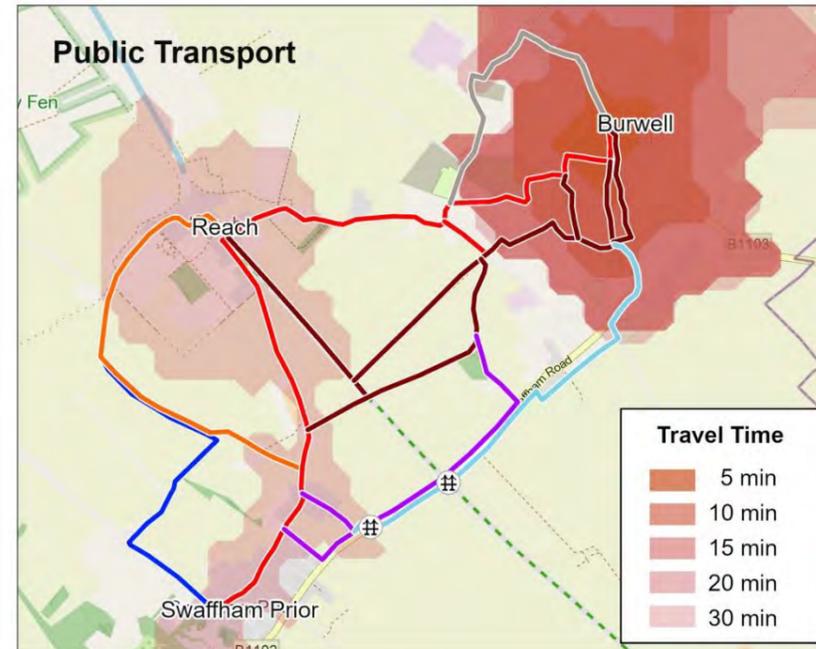
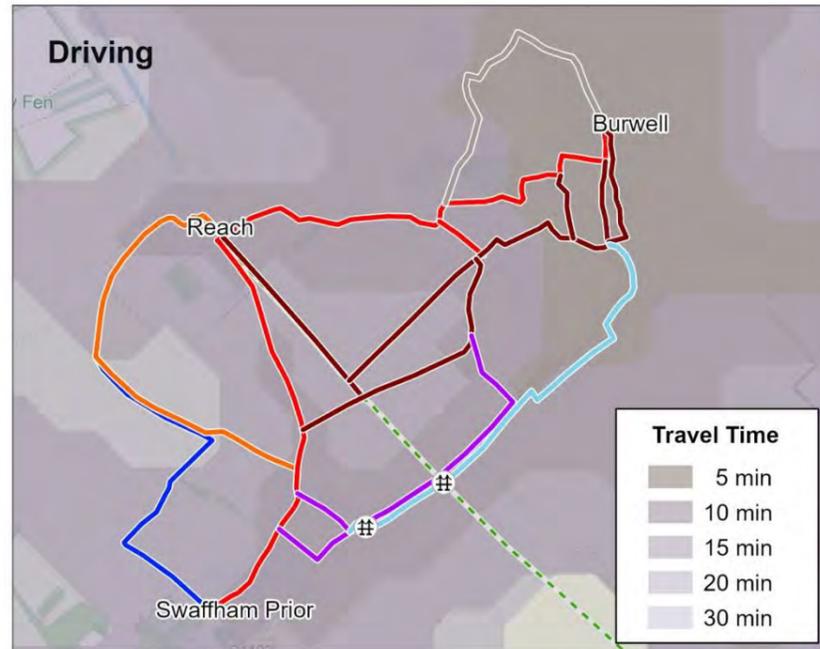
**Points of Interests**

- Accommodation, Eating & Drinking
- Attractions
- Commercial Services
- Education and Health
- Manufacturing and Production
- Public Infrastructure
- Retail
- Sport and Entertainment
- Transport

Contains OS data © Crown Copyright and database right 2020  
 Contains data from OS Zoomstack  
 Contains Sustrans Data © Sustrans 2022



# Travel Time Analysis - Burwell Centered



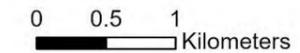
**Legend**

**Route Options**

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- Option 7

**Other Elements**

- Devil's Ditch
- New Bridge

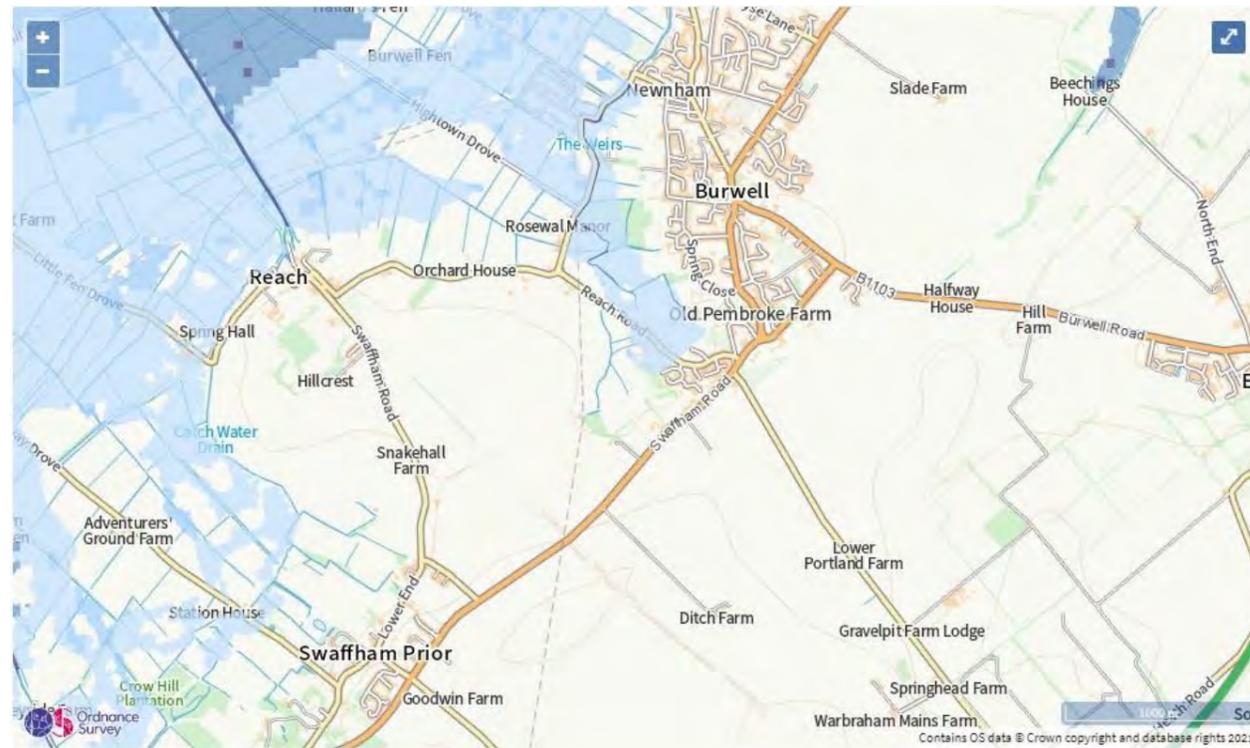


Contains OS data © Crown Copyright and database right 2020  
 Contains data from OS Zoomstack  
 Contains Sustrans Data © Sustrans 2022  
 Contains data from <https://www.cyclestreets.org/>  
 Contains data from TravelTime Docs © 2021 -  
 Documentation built with Hugo using the Material theme



# 5. Design constraints

## 5.1 Environment Agency



Extent of flooding from rivers or the sea  
● High ● Medium ● Low ● Very low

The villages and most route options are away from significant flood risk, but land to the west of Burwell is of very low risk of flooding and this will have to be allowed for in route selection and design.

## 5.2 Ground and Ecology

The land is generally low lying with the villages generally sited on the higher ground on the edge of the Clay from the Fens and chalk from the higher ground. There are some gentle hills including to the south of Reach. A series of Lodes connect the villages along the edge of the Fens with the River Cam and were used to take produce to market. In clay areas drainage will be a challenge and the soft ground of the Fens is notorious for contracting and expanding depending on the moisture content, making path construction challenging. Again this will have to be allowed for in route selection and design.

Ecology is a major constraint with important habitats and this is considered in detail in Chapter 9.

## 5.3. Common Land

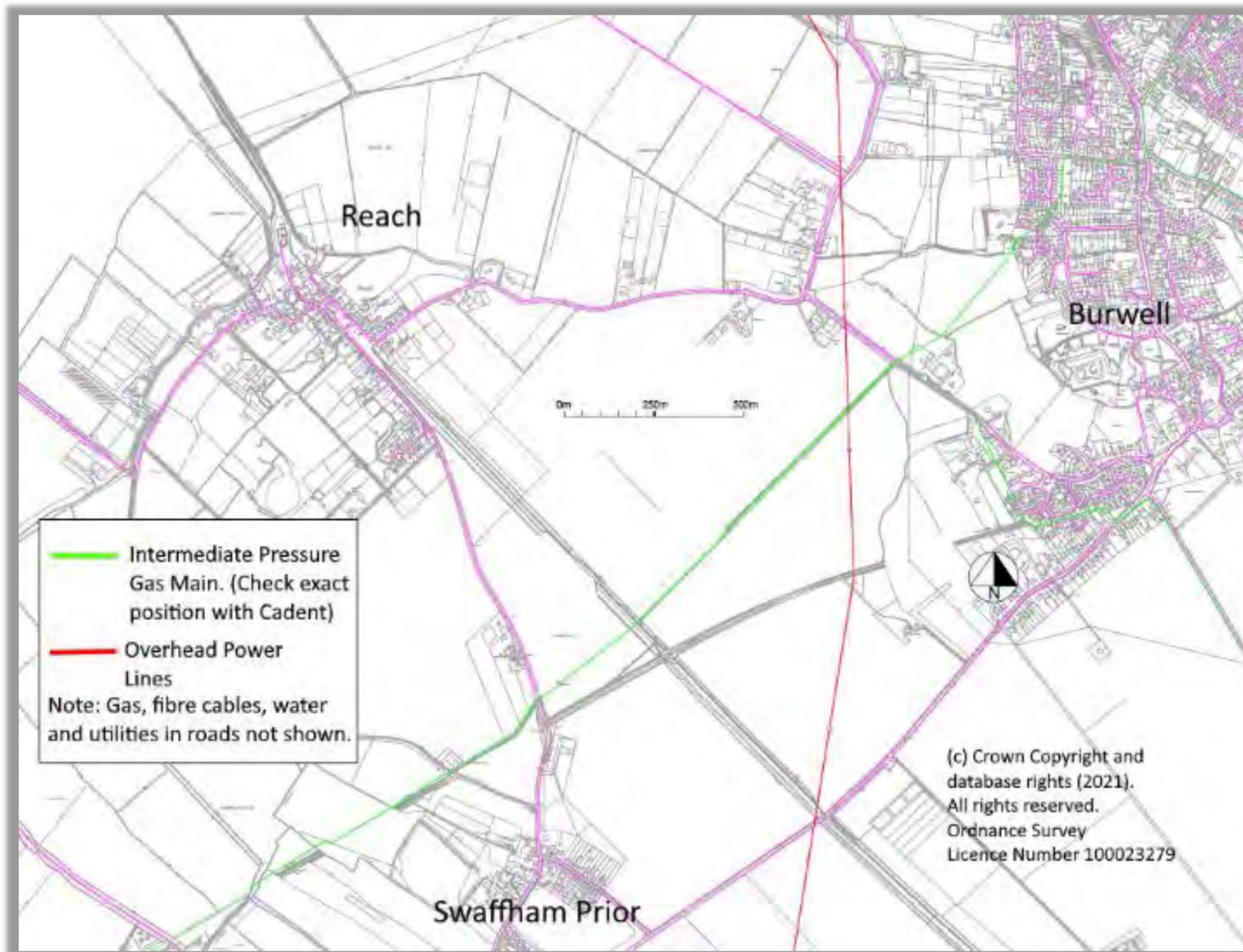
Work on Common Land requires additional consents and consultation. There is no recorded Common Land within this area. (Source <https://magic.defra.gov.uk/MagicMap.aspx> )

## 5.4 Utilities

Utilities searches will need to be carried out as part of any detailed design, but some preliminary searches have been carried out to check whether there is anything major that would influence route choices. Whilst it can be expected that roads in the centre of the villages will have lots of utilities there are also intermediate gas mains pipes in the area and overhead power lines linked with the substation in Burwell. The approximate position of these is shown on the following page, based on information

received from Utility Companies. This information is not complete and further searches will be required as part of detailed design.

There is an intermediate pressure gas main that runs between Swaffham Prior and Burwell and most options for routes will need to cross it or run along the alignment. That will have cost implications and will mean that agreements will be needed with Cadent before any work can be carried out. The overhead power lines are certainly a major factor to consider if any new bridge was needed in the area and will also require special measures when working in the vicinity.



*Plan indicating significant utilities within the study area. Note that services within road corridors are not shown and are numerous.*

## 5.5 Heritage and Historic Environment

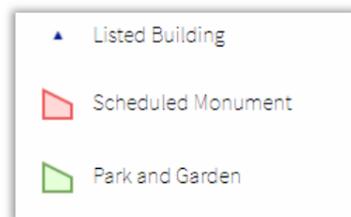
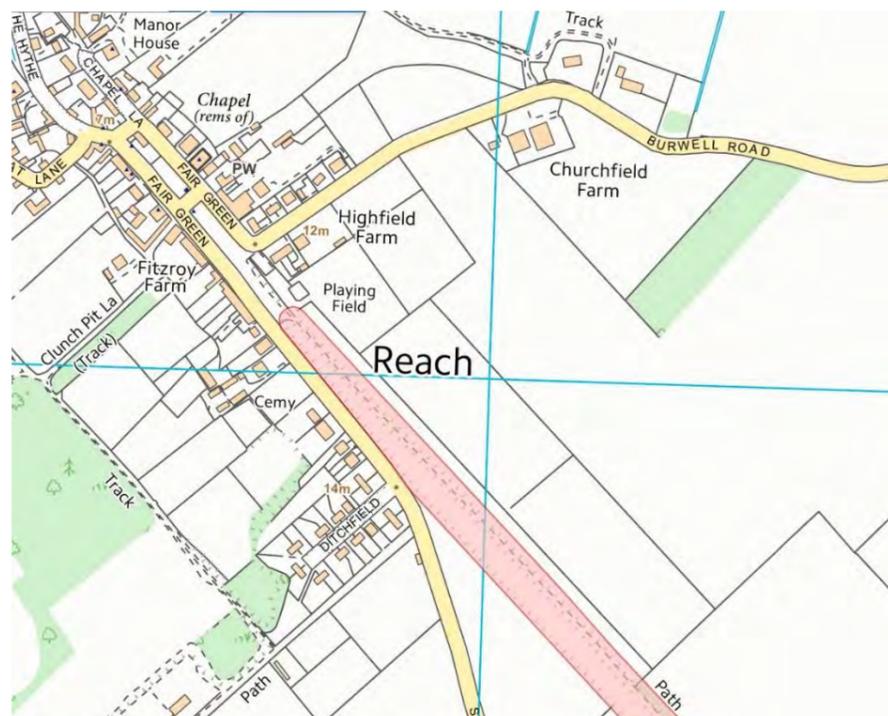
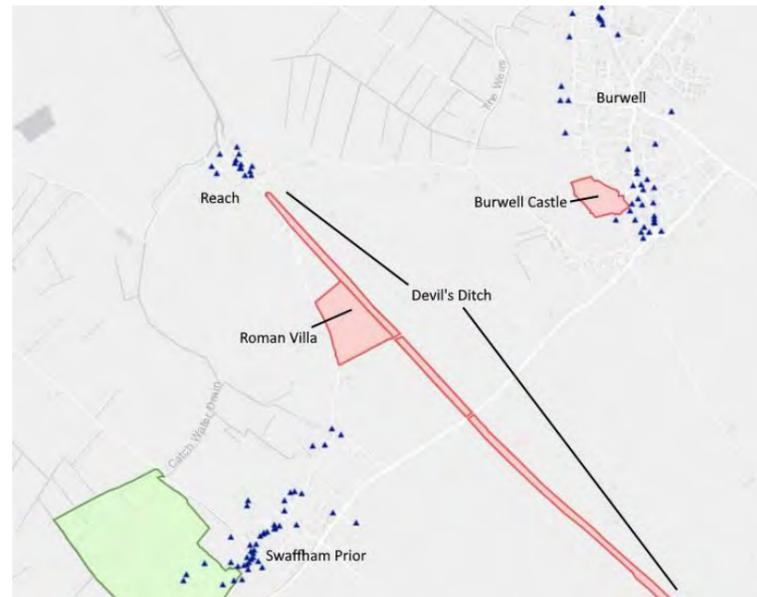
Important heritage and ecological sites are a significant constraint on route choices, with the need to avoid any negative impact on these. Devil's Dyke or Ditch is also a SSSI.

The information from the adjacent plans is from the Historic England records at

<https://historicengland.org.uk/listing/the-list/>

Any works impacting on scheduled monuments will need consent from Historic England and early discussion will be needed with them.

Route selection will need to avoid impacting on scheduled monuments unless there is a very strong case for this.



## 6. Route Option Appraisal

Any route between Swaffham Prior, Reach and Burwell needs to consider all of the residents of Swaffham Prior, Reach and Burwell and this is a big factor in prioritizing the works needed, in choosing the best route alignment and in identifying what links are needed. Realistically it is not possible for one route to be the ideal route for all three villages, because routes need to be as direct as possible and any route that goes between Swaffham Prior and Burwell via Reach would not be direct.

For routes between the villages to work well there also needs to be a good cycling and walking network within the villages and routes need to work well for as many people as possible, within the villages.

For the purposes of the study and in order to compare distances it is normal to select one location in each settlement and measure distances from that point. For Swaffham Prior and Reach (as

relatively small settlements) this is a reasonable position to take. For Burwell the size of the village means that the quality of walking and cycling provision within Burwell will be a big factor in usefulness of any new provision and in usage. The locations shown in the map (bottom left) are:

- A. Junction of The Causeway and Ness Road at the centre of Burwell.
- B. Reach Village Centre.
- C. Station Road/ High Street junction in the centre of Swaffham Prior.

LTN 1/20 4.2.7 states that “To make cycling an attractive alternative to driving short distances, cycle routes should be at least as direct – and preferably more direct – than those available for private motor vehicles”. It is clear that people already consider a route between Swaffham Prior and Burwell via Reach to be too much of a detour and these people will either not choose cycling or will face the unpleasant conditions on the shared path adjacent to the B1102.

Given that the route options between villages start and finish within the villages the works required within the villages are almost the same for all options, so are considered first. Although it is premature to complete healthy streets audits as part of this study Healthy Streets principles should be adopted and healthy streets audits at an early stage may help to decide priorities.

Overview showing the locations chosen for measuring distances.

Within **Swaffham Prior** there are very limited options for any route segregated from traffic – there is not space unless a traffic lane is removed. At the time of survey this was indeed the case whilst pipework was being installed for the village Heat Network. Lane space could be used for a segregated cycleway, if single-way working, controlled by signals, was made permanent or if a one-way system was introduced.

*Roadspace reallocation in October 2021. A segregated cycleway would be possible if similar traffic arrangements were made permanent.*



However even with a one-way system there is not sufficient space for a segregated bi-directional cycleway over the whole length. The areas of greatest constraint are on the High Street near the churches, where the footway on one side is already very narrow and on Lower End near the Beeches, where the highway is constrained between a wall and a ditch over a considerable length. This means that between Rogers End and Cage Hill a one-way system is unlikely to be appropriate. An alternative would be a point closure of the road so that it was access only, whilst remaining a through route for cyclists and pedestrians. This arrangement would mean that the High Street would be one-way and Lower End would no longer be a through route - creating space for a segregated bi-directional

cycleway on the High Street of 2.5m-3.0m width and reducing through traffic on Lower End.

Special arrangements (such as signals) would be needed by 50, High Street/ St Mary's Church, where space is very constrained, but this would also allow footways to be widened enhancing the walking experience considerably. Widths and construction issues would need to be checked in detail over the whole length. The implications for Cage Hill and Rogers Road would also need careful consideration, as well as the implications for bus services, emergency services and parking. Parking restrictions would be needed on the High Street, but access to off-road parking could be accommodated fairly simply.



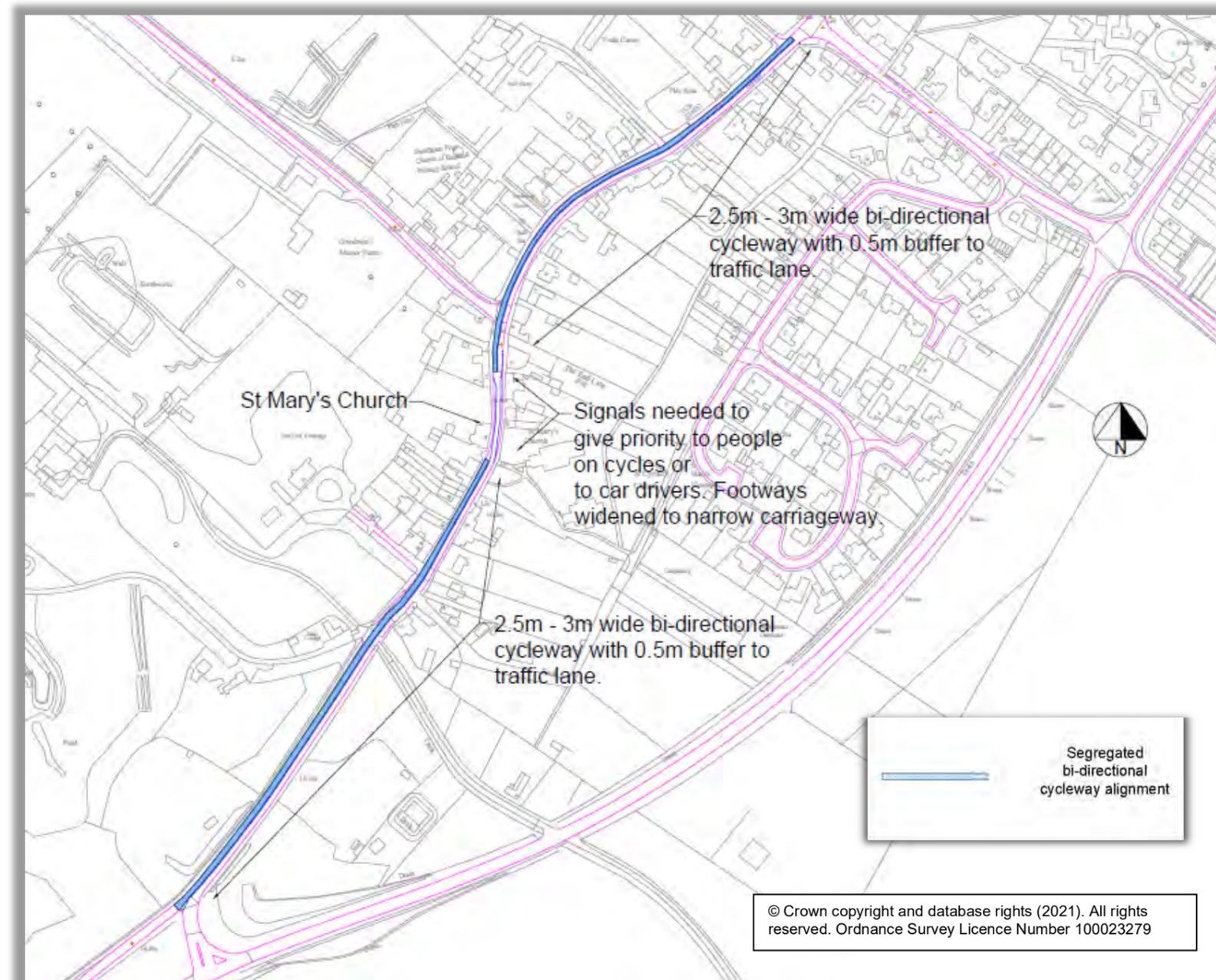
© OpenStreetMap contributors

*One-Way and Point Closure option in Swaffham Prior.*

Given that traffic volumes within Swaffham Prior are generally low it would however be appropriate to mix cyclists with general traffic in both directions in accordance with LTN1/20 Table 4.1, as long as the speed limit is changed to 20mph. This could be done relatively easily, especially given the natural traffic calming due to the nature of the historic road and buildings but on the edges of the village physical calming measures are recommended including speed cushions. A segregated option may be attractive for young families in particular and could link up with the Primary School, so is worthy of further consideration. Extensive community engagement would be needed to consider options and it would be possible to go ahead with parts of the scheme rather than all of it.

In order to check what is feasible within the narrow streets of Swaffham Prior a preliminary design has been prepared using Ordnance Survey mapping and it shows that a segregated route is possible over the length indicated right, subject to special treatment near the churches and subject to detailed design.

No special provision is proposed in **Reach** apart from designating the whole village as a 20mph zone and adding traffic calming, as required.



*Possible one way system with segregated cycleway option for Swaffham Prior, giving an indication of possible widths. Needs detailed design. Any scheme needs to comply with LTN1/20 guidance.*

Within **Burwell** access to all properties should be compliant with LTN1/20 guidelines and that is relatively easy for many roads which are lightly trafficked and can be changed to 20mph roads, but it is a challenge for some of the more major roads.

Traffic in Burwell is dominated by the B1102 and (given that it is a through route) it is difficult to do much about the traffic volumes. This means that a mixed traffic solution for the B1102 in Burwell is unlikely to meet the requirements of LTN1/20.

There is no traffic data for the B1102 in Burwell within the national road traffic statistic (DfT), but there is data for the B1102 between Burwell and Fordham which gives a manual count in 2008 of 6,062 annual average daily flow. A count in 2018 at Swaffham Bulbeck was 6,436, which reduced in 2020 but that may have been covid-19 related. Within Burwell itself the figure is likely to be higher, due to local traffic.

Fig 4.1 of LTN 1/20 suggests that for more than 6,000 pcu/ 24 hours and a speed limit of 20 mph few people will choose to mix with traffic on cycles. This means that the B1102, in Burwell, as it is, should be discounted from any cycle routes. The same would apply to the B1103.

The choice is therefore to either ignore the B1102 and B1103 in Burwell and develop alternative routes, on the understanding that this excludes certain parts of the local community or seek to change the B1102 to make it suitable for use. It should be noted that the B1102 includes the High Street, which is a historical street of varying width, with footways that are almost unusable in places because they are so narrow. It is a poor walking and cycling environment in the heart of the community.

The minimal option for Burwell is to construct a segregated cycleway besides The Causeway between Parsonage Road and the Ness Road

junction. This is needed for a satisfactory link from Reach and Swaffham Prior with the Village College, the Sports Centre, Library and local shops.



*There is space along this section of the Causeway, but lots to consider. On road parking will need to be removed*



*Some lighting and maybe utilities will need moving. Gas mains will need protecting. Detailed design work and consultation with utility companies is needed.*

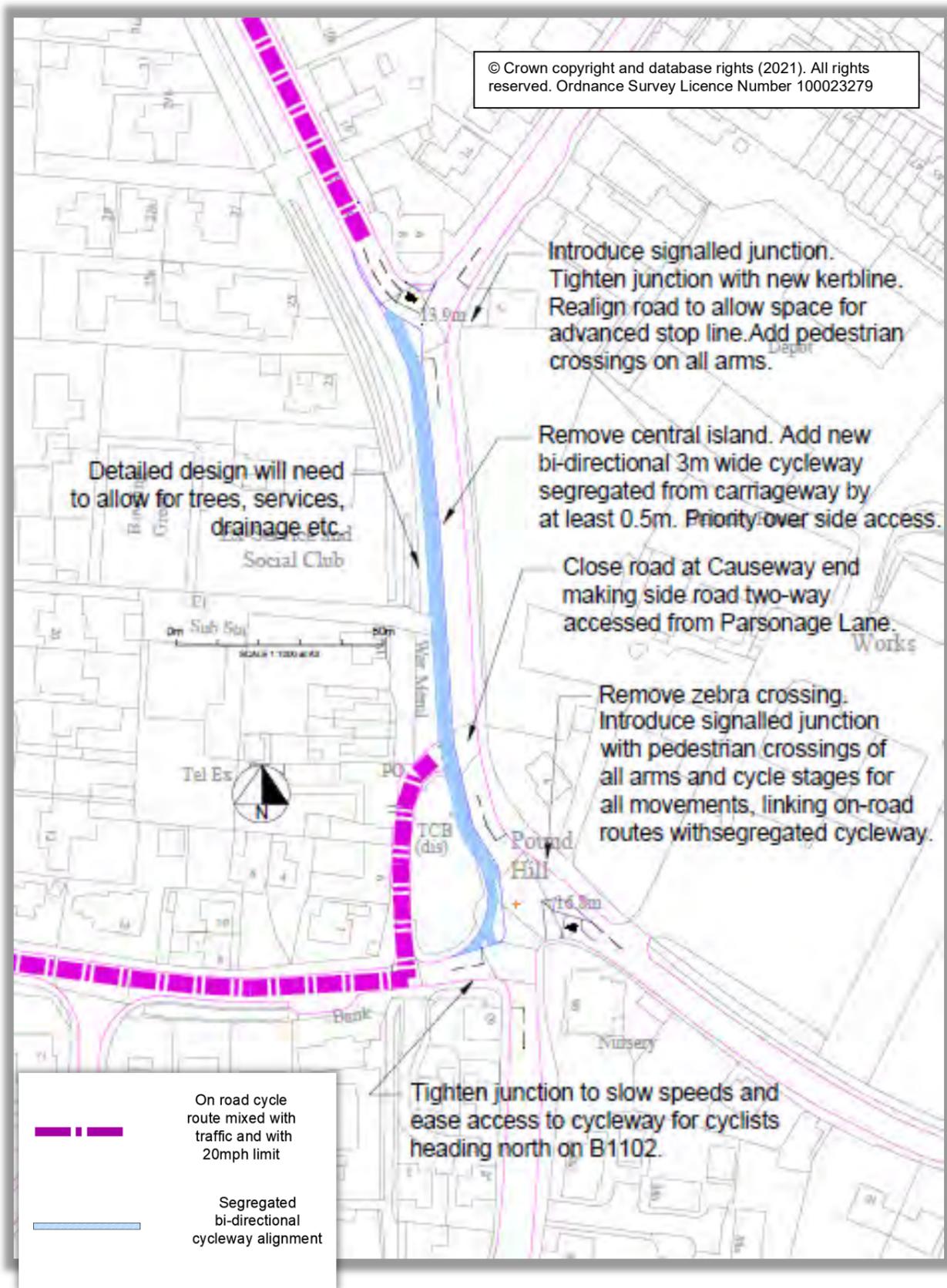


*For the link with Parsonage Road this section of road would need to be made two-way access only.*



*For the link with Parsonage Road access to this area from The Causeway needs to be closed off.*

This section of cycleway along The Causeway should in many ways be the easiest to address, because there is space for a segregated bi-directional cycleway, away from pedestrians and space to maintain existing traffic flows. However this will not be a cheap or easy scheme due to the need for traffic management and the need to protect trees and utilities. Car parking restrictions are also needed. Some details and an image of how the scheme could look are shown on the following page.



View of the Causeway (2021)



View of The Causeway (after changes)

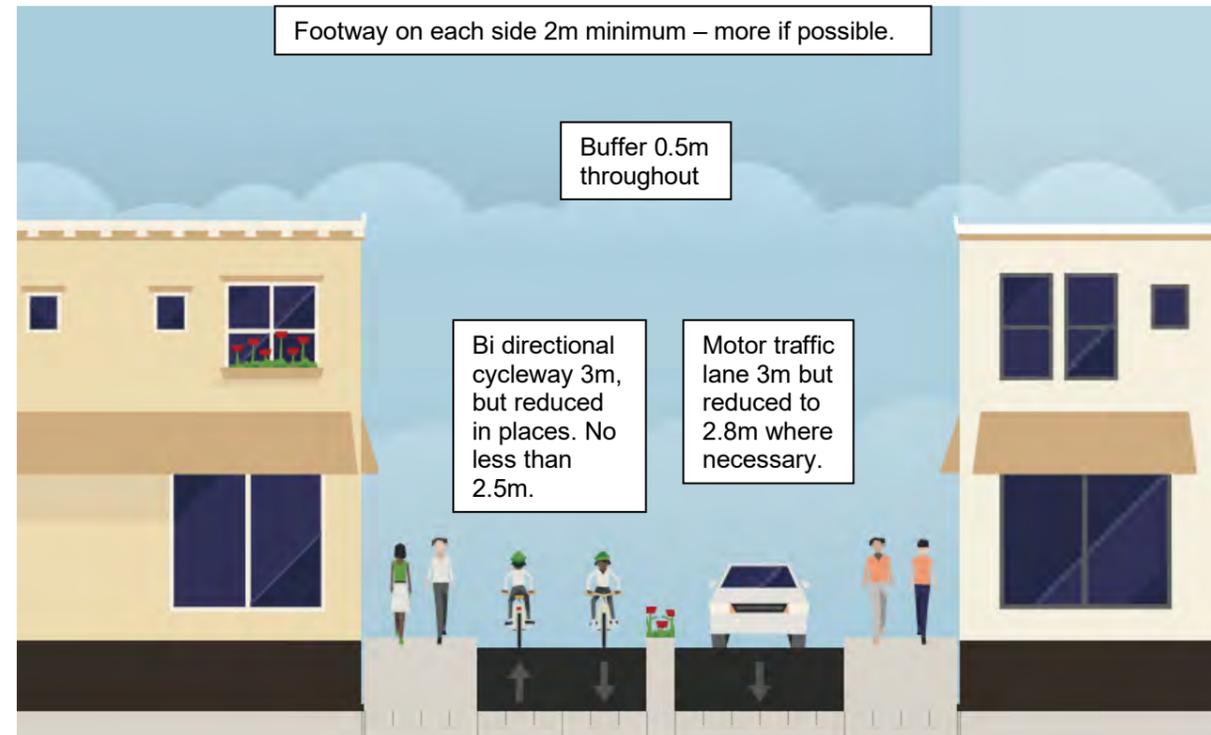


A more comprehensive plan to address the challenge of the B1102 is to reallocate road space along as much of the corridor as possible and establish a segregated cycleway. This would need the introduction of a one-way system. A possible arrangement is shown on the following sheet.

The section (right) shows how most of Burwell could be changed to give a comprehensive network of streets that should be suitable for cycling and comply with LTN 1/20 guidance. Fitting this into the village environment will be challenging and maintaining local access, dealing carefully with the utilities including intermediate pressure gas main, fibre cables etc. means that this will not be cheap and will need careful design and construction.

The big changes from existing are the introduction of a 20 mph zone across the whole village and the introduction of a one-way system on High Street/ Isaacson Road and Newmarket Road with the other lane given over to a segregated cycleway. The way that the one-way system works would need careful consideration (including the direction that it works in), but some preliminary design has been necessary to see if a cycleway can be accommodated using the layout as indicated right.

The preliminary design shows that a one way system should work but space is very restricted on the High Street and on parts of Isaacson Road as well as near the Health Centre on Newmarket Road. It appears that an uninterrupted cycleway should be possible on Isaacson Road and Newmarket Road, but there are three locations where space is so tight that there will need to be alternate way working between the cycleway and motor traffic. It would be expected that the traffic lane should generally operate on a green light, but there should be rapid change over as cyclists approach the single way working section. Details will need to be worked out.



The 3 locations are also locations where footways are very narrow and this gives an opportunity to greatly enhance the walking environment too.

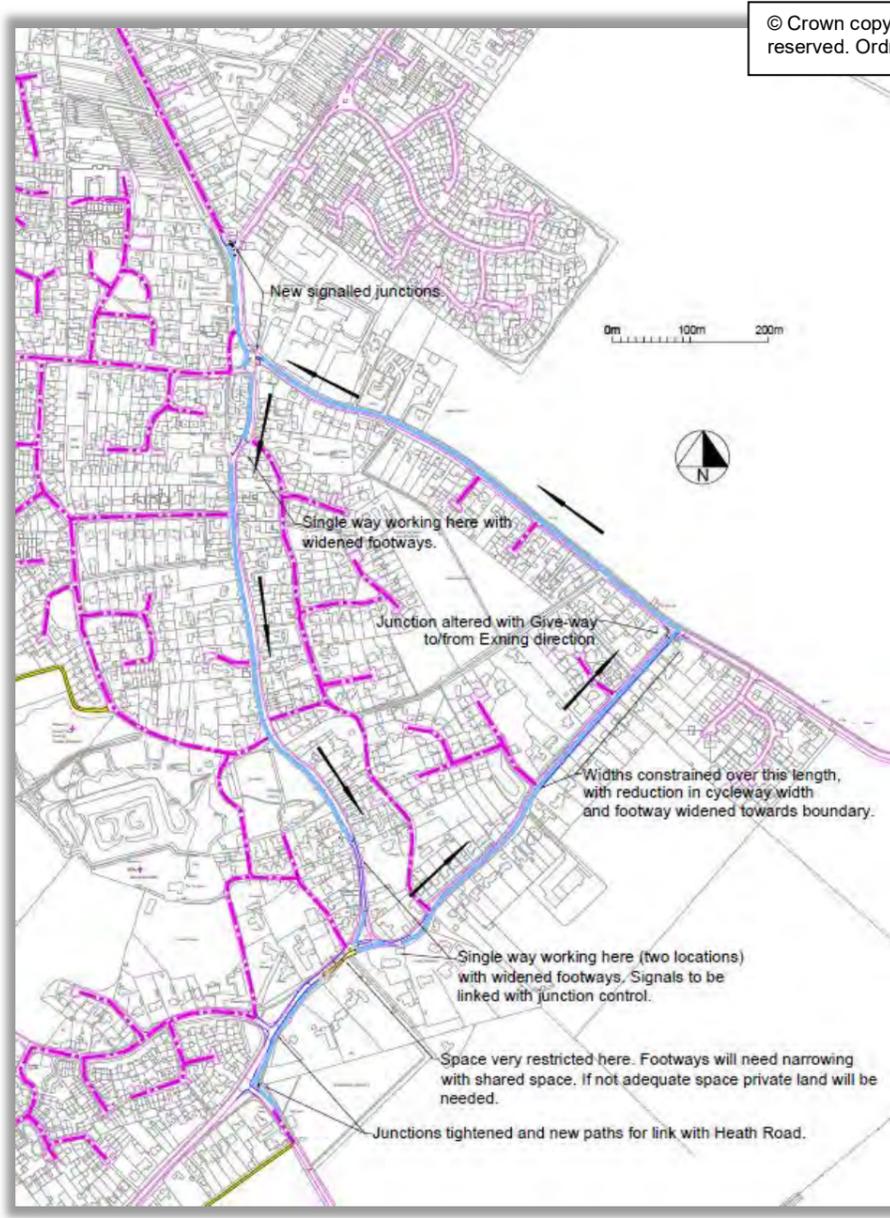
*The one-way system is based on the need to maintain minimum widths for the cycleway and minimum segregation from motor traffic, as above.*

The obvious gap in the network is the area to the south-east of Ness Road, which is also an area of likely development, so it will be really important that new development has good connectivity including high quality links with a Newmarket Road cycleway and Buntings Lane.

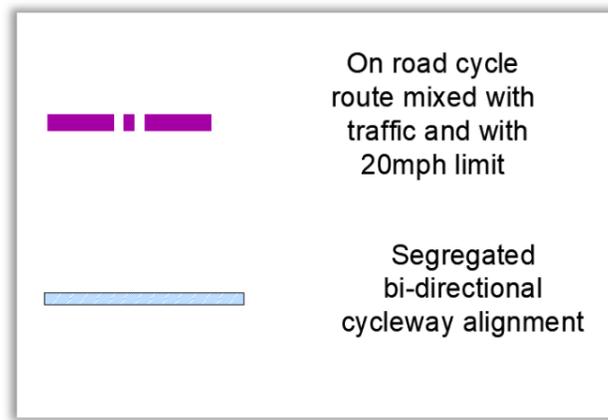
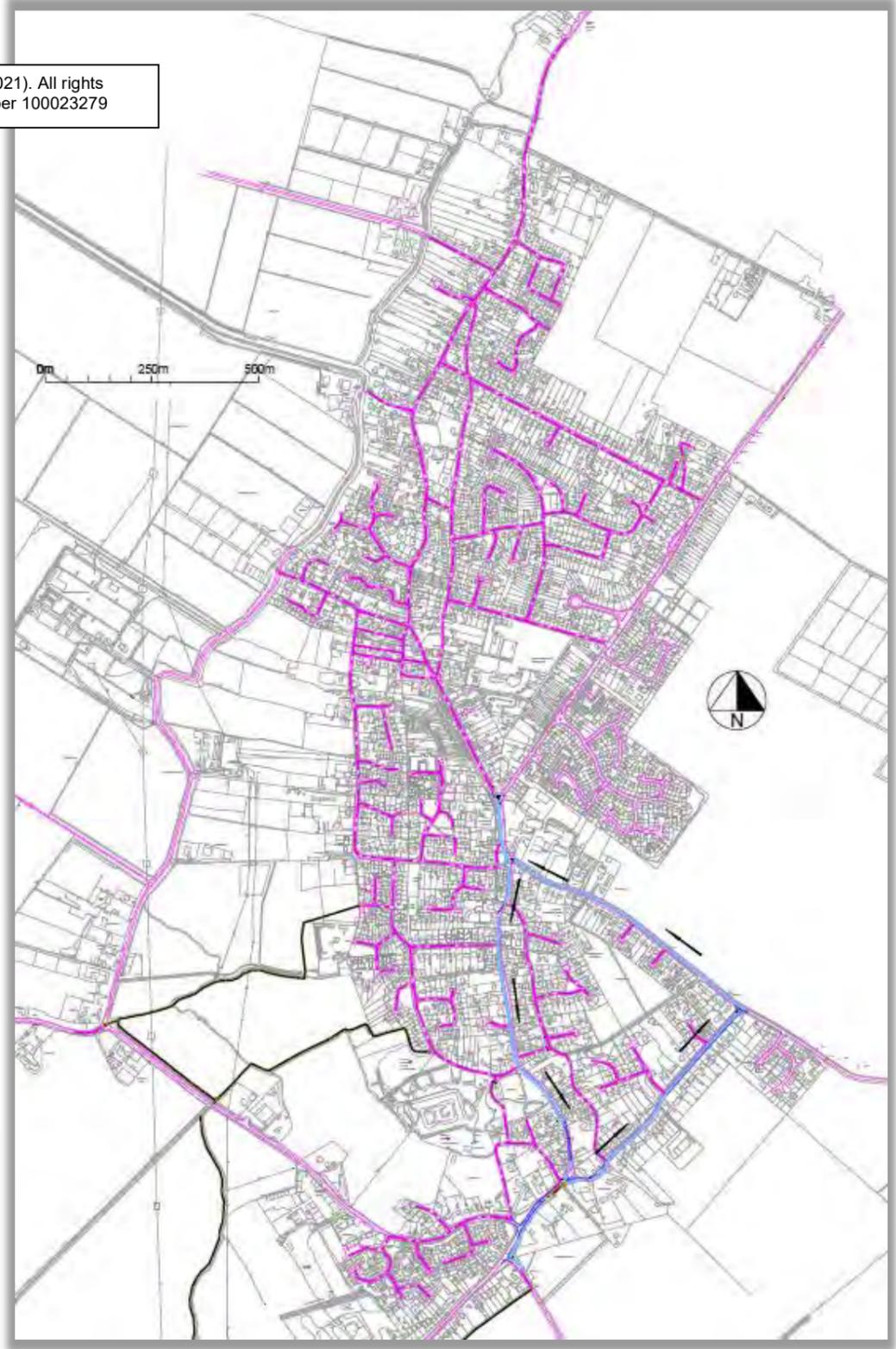
The plans on the following page show an option for one way working that allows a much enhanced experience for walking and cycling on High Street, The Causeway, Isaacson Road and Newmarket Road, links more houses to suitable provision for walking and cycling and greatly improves connectivity to key destinations. The three pinchpoints as highlighted and the junctions provide particular challenges and development of a final design will need careful thought and lots of local engagement.

Plan (left) showing overview of Burwell with one-way system and traffic calming as required for 20mph limits.

Plan (right) showing details of one-way system, including indication of locations with constraints. All subject to detailed design and community engagement.



© Crown copyright and database rights (2021). All rights reserved. Ordnance Survey Licence Number 100023279

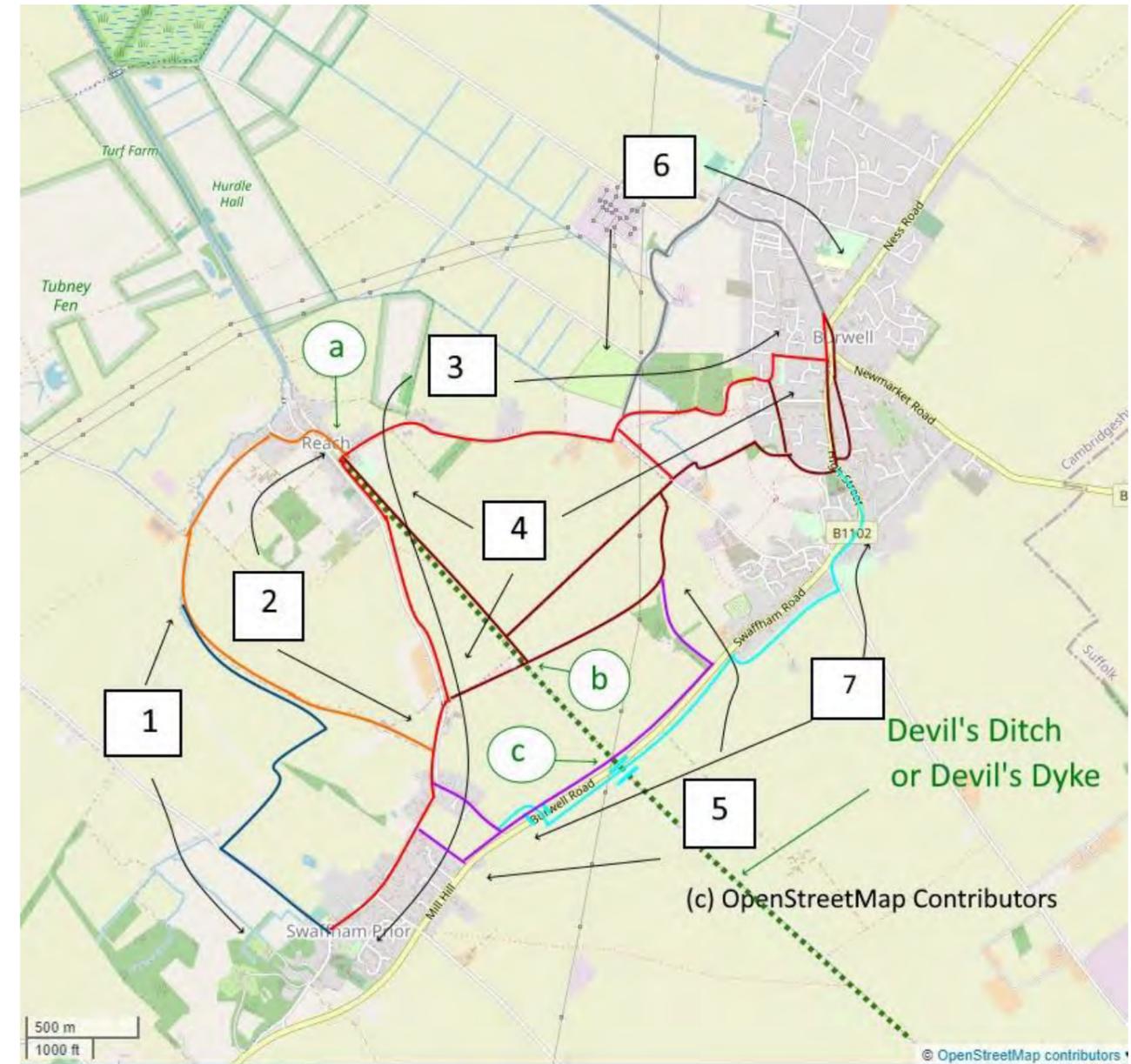


For links between the villages the main route alignments considered are outlined in the plan opposite, with most of the alignments having a number of different possible sub-options. Route options are limited due to the lack of choice in crossing Devil's Ditch or Devil's Dyke, which is a scheduled monument. There are potentially three locations (a, b or c) where a crossing would be feasible as marked on the adjacent plan, so all route options use one of these.

1. This route starts on Station Road, Swaffham Prior and then forms a new route following the Catch Water Drain to link up with Barston Drove and route 2. It is a good route between parts of Swaffham Prior and parts of Reach, but would be a long route between Swaffham Prior and Burwell. An alternative route using Whiteways Drove and Black Droveaway has been ruled, because it is even further and Black Droveaway is in very poor state.
2. This route follows Barston Drove and avoids the sensitive heritage assets along Swaffham Road. The link into Swaffham Prior is a challenge, that is shared with other routes, but the biggest disadvantage of the route is its indirect nature.
3. This route follows existing roads between Swaffham Prior and Reach and between Reach and Burwell. Between Swaffham Prior and Reach the obvious alignment of any off-road route would be to the east of Swaffham Road, but this is an area of sensitive heritage assets which presents challenges. Between Reach and Burwell it would be possible to convert the road to a Green Lane that retained access to properties along the road but that restricted through traffic. Within Burwell works are

needed to link into the village centre in a more direct manner than Option 6.

4. This route follows a disused railway with a link following Devil's Dyke into Reach and further links in to the centres of Burwell and Swaffham Prior. It involves the use of private land. This would need the agreement of landowners, English Heritage and others.
5. This route follows the B1102, where there is an existing facility that would need changing to bring it up to standard. The route is direct, but does not link with Reach and there are challenges in making a direct link with Burwell village centre, as well as with the crossing of Devil's Dyke.
6. The existing National Cycle Network route is attractive, but indirect and entirely on road mixed with traffic.
7. This option was initially discounted because the intention was to try and avoid crossing the B1102 and to avoid challenges due to lack of space at the approach to Burwell on or near the B1102. However due to the major difficulties with the other options that do not cross the B1102 it has been added. It is an expensive option and would need the agreement of Natural England and Historic England for works near and across Devil's Ditch and a lot of private land, but it may be more achievable than other options. It has the benefit of being direct and overlooked.



© OpenStreetMap contributors

Map showing the study area with options

## 6.1 Option 1

This route starts on Station Road, Swaffham Prior, passing the Primary School. The use of Station Road presents the first challenge, because it is too narrow to allow for a segregated cycleway and bi-directional motor traffic flow. Whilst the volume of motorized traffic is low (although there is no data to support this) traffic speeds are too high to satisfy the conditions for mixed traffic in Fig 4.1 of LTN 1/20. Whilst Fig 4.1 proposes a 20mph limit for all mixed traffic routes it does include the following *“in rural areas achieving speeds of 20mph may be difficult and so shared routes with speeds of up to 30 mph will be generally acceptable with motor vehicle flows of up to 1,000 pcu per day.”* For Station Road a combination of 30 mph and 20 mph would therefore be acceptable, but this would need County Council support and County Council [guidance](#) on speed limits states that:

### 20mph speed limit / zone

- Only considered in areas where the mean speed of traffic is 24mph or lower.
- Considered in areas with high traffic calming or other measures that ensure self-enforcement.

### 30mph speed limit / zone

- Will only be introduced in fully developed settlements. Term settlement means 20 properties fronting onto a length of public highway over a distance of at least 600m.

The conditions for a 30mph speed limit cannot be met on Station Road without a change in approach from Cambridgeshire County Council, so it is

recommended that significant traffic calming is added over the whole of Station Road. It is suggested that this should include:

- A gateway feature at or near the point where Whiteway Drove and Station Road join.
- Road narrowings with cycle bypasses at intervals on any wider parts of the carriageway.
- Raised tables near the school and at the High Street junction.
- Road markings.
- The introduction of Vehicle Activated Signs.

The route needs to leave Station Road to follow a new alignment to join up with Barston Drove and the obvious alignment is to follow Catch Water Drain. An alternative via Whiteways Drove and Black Drove is longer and would need major works and is not favoured.



*Black Drove from western approach*



*Black Drove from eastern approach*

There are a number of options for alignment along Catch Water Drain (see following page for one possibility) and the final choice would need to depend on discussions with landowners, in order to satisfy their operational requirements and any security concerns they may have. At some point the route would need to cross the drain and cross an intermediate pressure gas main, as well as linking up with Barston Drove at a suitable point. Where any sections are shared with farm operations the path would need to be built to a suitable standard to withstand the loading of farm vehicles.



*View along Catch Water Drain from Station Road. This is private land and any route that can be agreed would be likely to follow field boundaries and water courses and would need to allow for farm vehicles.*



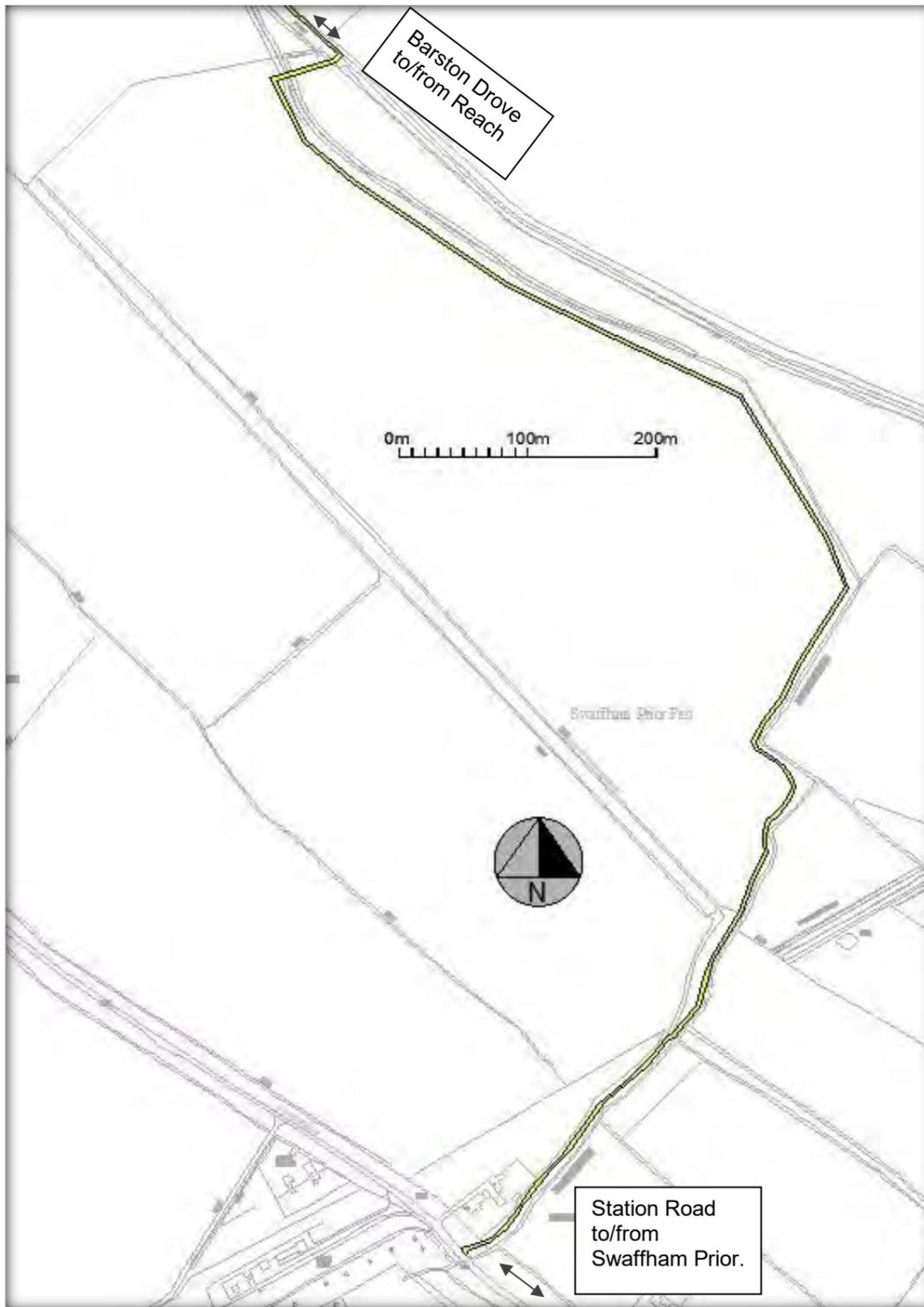
*View towards Catch Water Drain. This is private land and any route that can be agreed would be likely to follow field boundaries and water courses.*



*Barston Drove*

The route would need to continue to Reach using Barston Drove (see Option 2) and to Burwell using Option 3.

The route would need the necessary planning approvals and in order to meet suitable standards it would need to be a minimum of 3m wide with at least 0.5m to any boundary and with a sealed surface.



Indicative possible alignment along Catch Water Drain, subject to agreement with landowners.

© Crown copyright and database rights 2021  
Ordnance Survey 100023279

Option 1	
<b>Comparative Length (Swaffham Prior to Reach)</b>	3.1 km (Station Road/ High St junction to Reach Village Centre), but further if you live in the eastern part of Swaffham Prior.
<b>Comparative Length (Reach to Burwell)</b>	2.85 km (Reach Village Centre to The Causeway/ Ness Road junction)
<b>Comparative Length (Swaffham Prior to Burwell)</b>	5.95 km (Station Road/ High Street junction to The Causeway/ Ness Road junction).
<b>Likely estimated cost</b>	High, but dependent on alignment that is agreed with landowners and on details of traffic calming agreed with Cambridgeshire County Council.
<b>Engineering difficulties</b>	Traffic calming Station Road is challenging given its narrow lane width and rural nature. The new routes would follow existing field edges and difficulties would depend on ground conditions and any agricultural use of the route. One or more bridges are required, but these are relatively short span.
<b>Ecological issues</b>	Minimal for use of existing road, but variable depending on alternative alignments.
<b>Land ownership issues</b>	Needs agreement of at least one landowner for use of land near Catch Water Drain.
<b>Other issues</b>	This route only works as a useful facility in conjunction with parts of Option 3.
<b>Overall</b>	Alignment may be attractive for some users, travelling to or from Reach, but a significant detour for those travelling between Swaffham Prior and Burwell. Due to the limited use in terms of accessing Burwell and the engineering difficulties it is not recommended to pursue this option.

## 6.2 Option 2

Barston Drove is a historical route between Burwell and Reach that is a public byway so has vehicular rights and can be used by cyclists and pedestrians. However the surface is poor in places and it would be difficult to use even on a mountain bike.

The alignment that is more direct than the byway starts off as a public footpath near the Pumping Station on Swaffham Road and serves as an access road to the farm. As such it has a firm base, although does not have a smooth finish. If the alignment were to be used for cyclists agreement would be needed with the landowner to grant rights for cycling and to improve the surface. Near the farm buildings the route would have to cross an intermediate pressure gas main.

Beyond the farm buildings Barston Drove is an attractive grass route between hedges and the grass surface is reasonable. If it were to be promoted as a cycle route it would need a firm sealed surface of at least 3m, which would have to be able to withstand vehicular usage, because of the byway status.

Towards Reach Barston Drove becomes heavily rutted because it is used to access fields from the Reach direction. For this reason any new surfaced path would have to be built to very high standards and an easier option might be to construct a new route along field edges away from the byway. This would need landowner's agreement and again would need a firm sealed surface of at least 3m width.



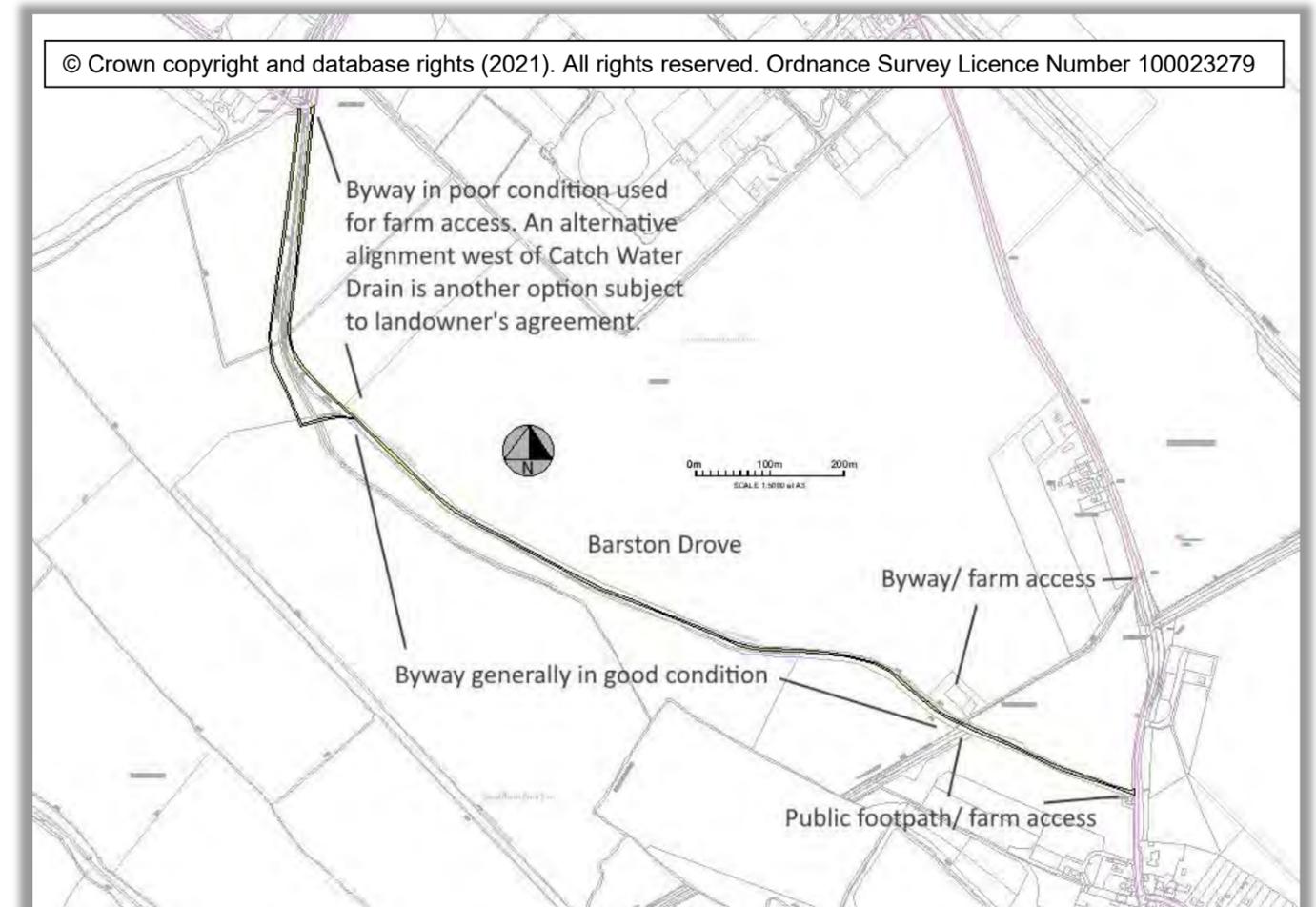
*View of public footpath/ farm access from Swaffham Road.*



*Barston Drove – a section generally in good condition.*



*Barston Drove more rutted as it approaches Reach.*



*Indicative route along Barston Drove subject to landowner's consent and rights of way approval.*



*View from Reach along Catch Water Drain with Barston Drove behind hedge to left.*

Option 2	
<b>Comparative Length (Swaffham Prior to Reach)</b>	3.4 km (Station Road/ High St junction to Reach Village Centre).
<b>Comparative Length (Reach to Burwell)</b>	2.85 km (Reach Village Centre to The Causeway/ Ness Road junction)
<b>Comparative Length (Swaffham Prior to Burwell)</b>	6.25 km (Station Road/ High Street junction to The Causeway/ Ness Road junction).
<b>Likely estimated cost</b>	High, because byway will need to be built to a very high specification due to usage by heavy farm traffic.
<b>Engineering difficulties</b>	The major difficulty will be in ensuring a robust structure, on clay, that will withstand farm traffic and will need minimal maintenance.
<b>Ecological issues</b>	Mostly using existing grass and farm tracks so likely to be relatively low. Need to protect hedgerows.
<b>Land ownership issues</b>	Needs agreement of landowner for use of Drove at Swaffham Prior end in order to permit cycling. Would need landowner's agreement for alternative to byway at Reach end.
<b>Other issues</b>	This route only works as a useful facility in conjunction with parts of Options 2 and 3.
<b>Overall</b>	Alignment may be attractive for some users, travelling to or from Reach, but a significant detour for those travelling between Swaffham Prior and Burwell. Likely to be more appealing than Option 1 for Swaffham Prior residents living east of Station Road, because they would not have to double back on themselves. Due to the limited use in terms of accessing Burwell and the engineering difficulties it is not recommended to pursue this option.

### 6.3 Option 3

This alignment is based on the existing roads – Swaffham Prior High Street, Lower End and Swaffham Road between Swaffham Prior and Reach and Burwell Road and Reach Road between Reach and Burwell. There are a number of ways for the route to join with Burwell and options to be on road or off road.

#### 6.3.1 Within Swaffham Prior

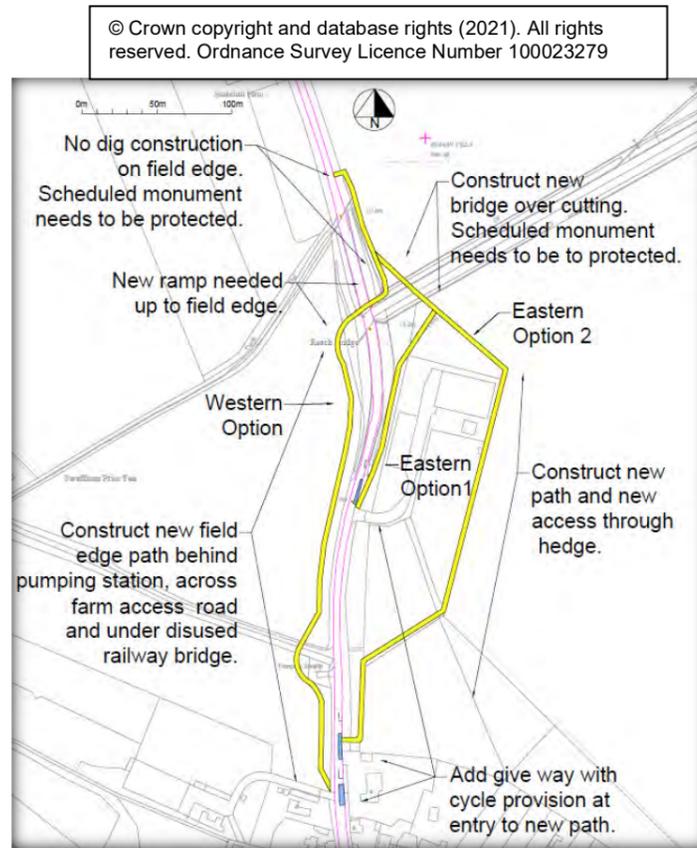
Options within Swaffham Prior are discussed at the start of this Chapter. Options are for a segregated cycleway through some of the village, a route where cyclists are mixed with traffic, some changes to traffic flows or a combination of the above.

#### 6.3.2 Roger's Road Swaffham Prior to railway bridge.

The most challenging part of the route between the edge of Swaffham Prior and the edge of Reach is the section over the railway bridge where visibility is limited and the carriageway is more constrained than elsewhere. This makes this section particularly difficult for pedestrians who have no verge space. On a bicycle it also felt more intimidating than the rest of the route. Despite this the bridge certainly brings benefits in terms of slowing traffic.

If an off-road route were to be constructed along the road corridor the approaches to the bridge would be the priority. An off-road route that avoided the climb over the railway bridge would be attractive and is worth further consideration.

*Off road options subject to landowner's consent and planning approval.*



The above plan shows three options. The existing path that leads to the disused railway on the eastern side is very narrow and constrained by trees. (See photo bottom right). It would be hard to widen it as a route without removing a lot of trees. Eastern Option 2 goes close to farm buildings.

The western option would appear to be the obvious option because it avoids a right turn when leaving the road. It has to be noted that neither route has been surveyed and the landowners have not been consulted. A summary of the pros and cons is adjacent.

The western option links better with Swaffham Prior and is therefore preferred, if an off-road option is to be progressed.

Western route	Eastern routes
Slightly shorter	Slightly further
Could use existing farm access to/ from Swaffham Road.	Needs new route and loss of trees for link with Swaffham Road.
Trees would need to be removed to access route under disused railway.	No need to use railway bridge.
Challenging to get ramp up to field level from disused railway without impacting on scheduled monument or having an inconvenient ramp.	Could cross disused railway with new bridge but footings could not be on scheduled monument.
Could link with existing footways into village.	Footways would need extending, which would be very challenging for the eastern option and may involve loss of hedge.
Needs agreement of one or two landowners, plus agreement to use disused railway.	Needs agreement of one landowner, but goes close to farm buildings. Would also need agreement to cross disused railway.
Impact on ecology will be sensitive for route under railway and for new ramp.	Avoids going under bridge.
Shorter route for single way working for motorised traffic.	Slightly further route and therefore potentially slightly longer delays.
Needs hedge removal at crossing of Barston Drive.	Needs hedge removal at crossing of disused railway.

A disadvantage of any off-road alignment is that it is likely that confident cyclists would continue to use the road, because it would be difficult for any off-road route to be quicker than the on-road route. The off-road alignment is also extremely challenging due to the need to either bridge the railway cutting or ramp up from the cutting without doing any damage to the scheduled monument in the field. This means that eastern and western options are likely to be expensive, difficult to deliver and of limited value. A route that uses the road over the railway bridge is the most realistic option.



*Blind summit at approach to the railway bridge*



*View towards railway bridge from edge of Swaffham Prior*



*Existing narrow path to disused railway to east of road.*

### 6.3.3. Railway bridge to Reach village

As with other sections of the route there is a choice between an off road route and a route on the existing road. There are a number of buildings to the west of Swaffham Road so the obvious alignment for any off-road route would be to the east of Swaffham Road and this could link with one of the off-road options outlined in 6.3.2.

Any new route parallel with Swaffham Road would need landowner's consent for the use of private land and would need heritage and environmental consent. It might be possible to construct a path using no dig techniques and make the case that this would not damage the scheduled monument below, but a lot of work would be needed before hand. This would include a Heritage Impact Assessment and may need a Geophysical Survey before any consent could be granted. The challenges on the approach to Reach are even greater given the status of the Devil's Dyke as a SSSI and the protected nature of the Green in Reach. A more achievable option would be to rejoin the carriageway at the end of the bridge embankment, as indicated previously and continue on road or use the road along the whole length. Any route away from the road will still need detailed discussions with both Historic England and the landowners. It would certainly be of benefit for walkers and could help improve access to the disused railway for people from Reach and Swaffham Prior. However the ecological issues are major and this looks to be very difficult.

The best option for a route on Swaffham Road is challenging, because traffic volumes and speeds are not excessive. Having cycled along the road it felt a comfortable ride and people were also walking, in a relaxed manner, along the road. However at the time there were roadworks in Swaffham Prior which may have reduced traffic levels. It is possible that this position could be made

more permanent by, for instance, a point closure of the road, as suggested for Lower End.



*The road at a quiet time of day (above and below)*



In order for the road to be suitable for use LTN 1/20 recommends that in "rural areas speeds of 20mph may be difficult and so shared routes with speeds of up to 30mph may generally be acceptable with motor flows of up to 1,000 pcu per day". This would be a good solution, but would be contrary to what Cambridgeshire County Council normally do. However they have started introducing lower speed limits on certain rural roads, so to do so in this case would be appropriate.

### 6.3.4. Reach Village

Within Reach Village there are many constraints including the Village Green and Devil's Ditch/ Dyke. Traffic speeds within the village are generally low, due to the layout of historic buildings and roads. A

20mph limit throughout the whole village is recommended.

### 6.3.5. Burwell Road/ Reach Road between Reach and Burwell village edge

The nature of Burwell Road feels different to Swaffham Road. It is of a similar width, but traffic volumes seem to be higher, forward visibility is constrained and the road has centre line markings. Due to the properties adjoining the road a route outside the road corridor would be difficult.

When Reach Fair is held Burwell Road has been coned off with half of the road allocated for people on foot or wheels and the other half of the road for car traffic - signal controlled. This is a temporary arrangement controlled by marshalls and creates a route for walkers and cyclists. However this arrangement does not meet LTN1/20 standards and the width of the road is such that it would not be possible to create a permanent segregated route of adequate width without widening the road. In addition if the road was to be made single way alternate working it would need multiple signal controls and multiple waiting areas either using verge space or field edges. This would be a highly engineered solution for such a rural road and does not seem appropriate.

Alternatives would be to :

- close the road to through traffic (except buses and emergency vehicles).

Closing the road can be considered further, but the disadvantage of this is that there would be an increase in traffic on Swaffham Road. Overall there would be expected to be a reduction in car traffic, as a result of modal shift. If a high quality segregated route was in place between Reach and Burwell and it was significantly shorter than the road route many

would choose to cycle rather than drive. A point closure of the road could be done at any point along the road and would need to be a matter for local consultation. It would be particularly important to understand farming operations to determine the best position. It is also desirable to have space for turning at the point closure, although that may not be essential.

- Accept that the road is the best option for cyclists and change the nature of the road.

The simplest action to change the nature of the road would be to remove the centre-lines and designate it as a 30mph road. In addition some give way points could be introduced to ensure speeds are kept low.

- Seek an alternative alignment for an off road route.

There are no obvious alignments for an off road route that follows the road. A path on field edges to the south could be achieved in places but there are sections that would be very difficult and the reality is that if the alignment is any further than the road or the surface is inferior then some cyclists would continue to use the road. A completely new alignment would have benefits and there is really only one option – Option 4.(See later).

In the light of the above it is recommended that the centre lines on Burwell Road are removed and a 30mph limit established with further consideration given to a point closure of Burwell Road. This should only be done if measures to reduce through traffic in Swaffham Prior and make Swaffham Road a 30mph road are also progressed and could be done as a trial. This option will clearly bring benefits and encourage walking and cycling on Burwell Road, but will have some adverse impact on Swaffham Road, so this will need monitoring and careful consideration.

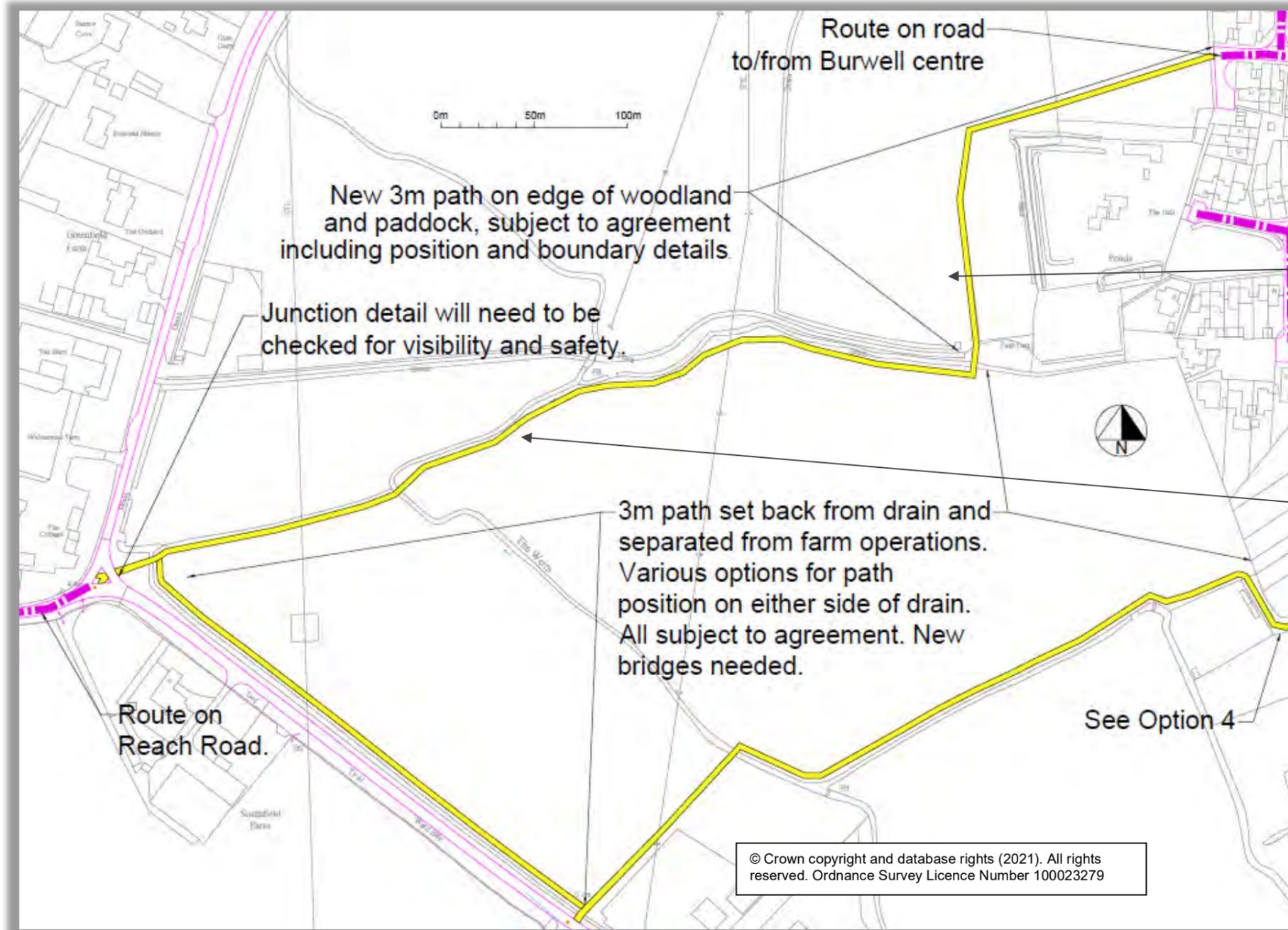
### 6.3.6 Reach Road/ Weirs Drove to Burwell Centre.

It is important that a new direct route is established to link Reach with Burwell centre that avoids the B1102 and the existing long detour via Weir's Drove. This area is prone to flooding and the design will need to consider this, but this is likely to be rare and the benefits of the route are considerable. In

conditions of flood the roads are likely to remain open longer. There is an obvious alignment that links Reach Road with Priory Meadow and Priory Close and this is shown below. Since the route involves an uncontrolled crossing of Reach Road the road should be dedicated as a 30 mph limit in accordance with LTN 1/20 Table 10-2. An alternative southern option that links with Spring Close is also shown below and is considered further

in Section 6.4 Option 4. This alignment does not work as well as the more northerly alignment in terms of a direct route between Reach Road and Burwell Village Centre. Clearly any route is subject to landowner's agreement and there will be sensitive issues to resolve in relation to farm operations, woodland and other habitats and the existing paddock (for the northern option). The onward link between Priory Close (and Spring

Close) and Burwell Centre will need to be on road and most roads are relatively quiet. A 20mph zone should be established for the whole of Burwell. Special arrangements will be needed to provide an alternative to the B1102 and this is considered on the following page.



Plan (left) showing options between Reach Road and the edge of Burwell

### 6.3.7 Burwell Centre

The on road options in Burwell are discussed earlier in the Chapter, where the importance of a good walking and cycling route were emphasised.

The measured route to the centre of Burwell would be Priory Close, Park Road, Parsonage Lane and a new cycleway besides The Causeway.

Option 3	
<b>Comparative Length (Swaffham Prior to Reach)</b>	2.68 km (Station Road/ High St junction to Reach Village Centre).
<b>Comparative Length (Reach to Burwell)</b>	2.78 km (Reach Village Centre to The Causeway/ Ness Road junction)
<b>Comparative Length (Swaffham Prior to Burwell)</b>	5.46 km (Station Road/ High Street junction to The Causeway/ Ness Road junction).
<b>Likely estimated cost</b>	Off road sections likely to be medium-high cost, on road sections low cost and works in Burwell high cost.
<b>Engineering difficulties</b>	Highway works in Burwell and Swaffham Prior will be challenging.
<b>Ecological issues</b>	If disused railway is used in parts this may present some challenges as will route along edge of woodland.
<b>Land ownership issues</b>	Needs agreement of landowners for off road route along Swaffham Road and needs agreement of landowners for route into Burwell.
<b>Other issues</b>	Major implications for improved provision within Burwell will need detailed local engagement. Changing speed limits will be difficult, but a major factor in improving route safety and so needs to be pursued for all roads and road crossings.
<b>Overall</b>	This is an enhancement of an existing route that goes through the centre of Reach so very good for Reach residents but an indirect route between Burwell and Swaffham Prior.

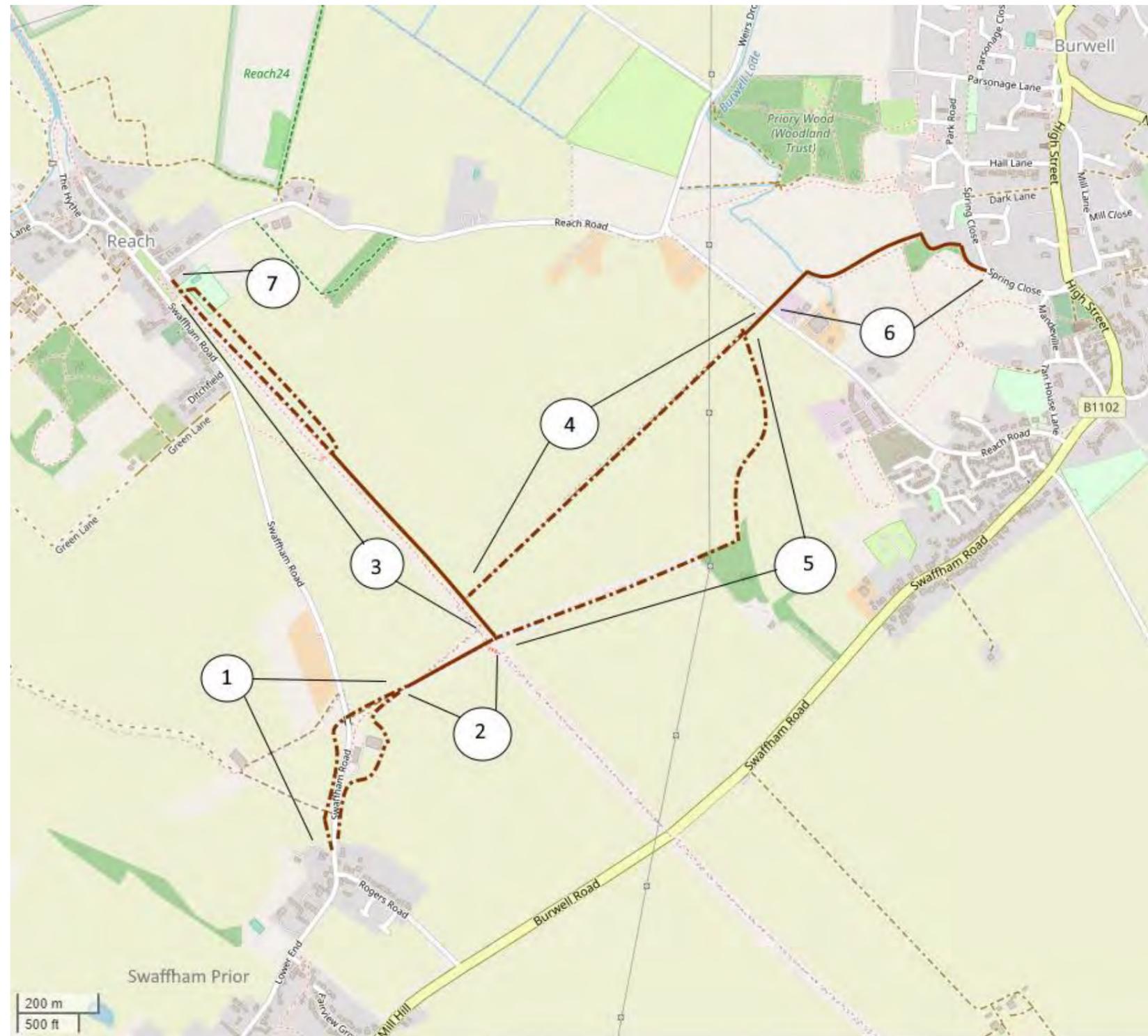
## 6.4 Option 4

Option 4 follows the existing road network through Swaffham Prior where there are options for traffic calming and creating a segregated cycleway (as discussed in 6.3.1 and at the start of the Chapter) and then links with the disused railway that used to run between Cambridge and Mildenhall. The disused railway provides one of the only options to cross Devil's Ditch (or Dyke) and is on a direct alignment between Swaffham Prior and Burwell, so is a good option. A new route is then needed to link the disused railway with Burwell Centre, where it can link with new infrastructure in Burwell as discussed in 6.3.7 and at the start of the Chapter.

The off-road options considered are shown adjacent. Options are very limited in that there is only really one suitable way to cross Devil's Ditch (Dyke) i.e. on the disused railway alignment and there is no certainty that that is achievable due to ecological constraints.

The route and options are considered in the following sections as below:

1. Two options to link Swaffham Road with the disused railway.
2. Route on or adjacent to disused railway. Options relate to the exact position of the path, how it is built, how ecology is protected and enhanced and how a new ramp to field level is formed or how a bridge over the railway cutting can be achieved.
3. New field edge path following Devil's Ditch (Dyke), with two potential alignments for link with Recreation Ground in Reach.
4. The most direct and preferred alignment on field edge and using existing byway.



5. Potentially attractive route following disused railway and field edges alongside drain, but with significant ecological issues.

6. New field edge alignment for crucial link with Burwell to link with road network and provision in Burwell.

7. Link with road network in Reach.

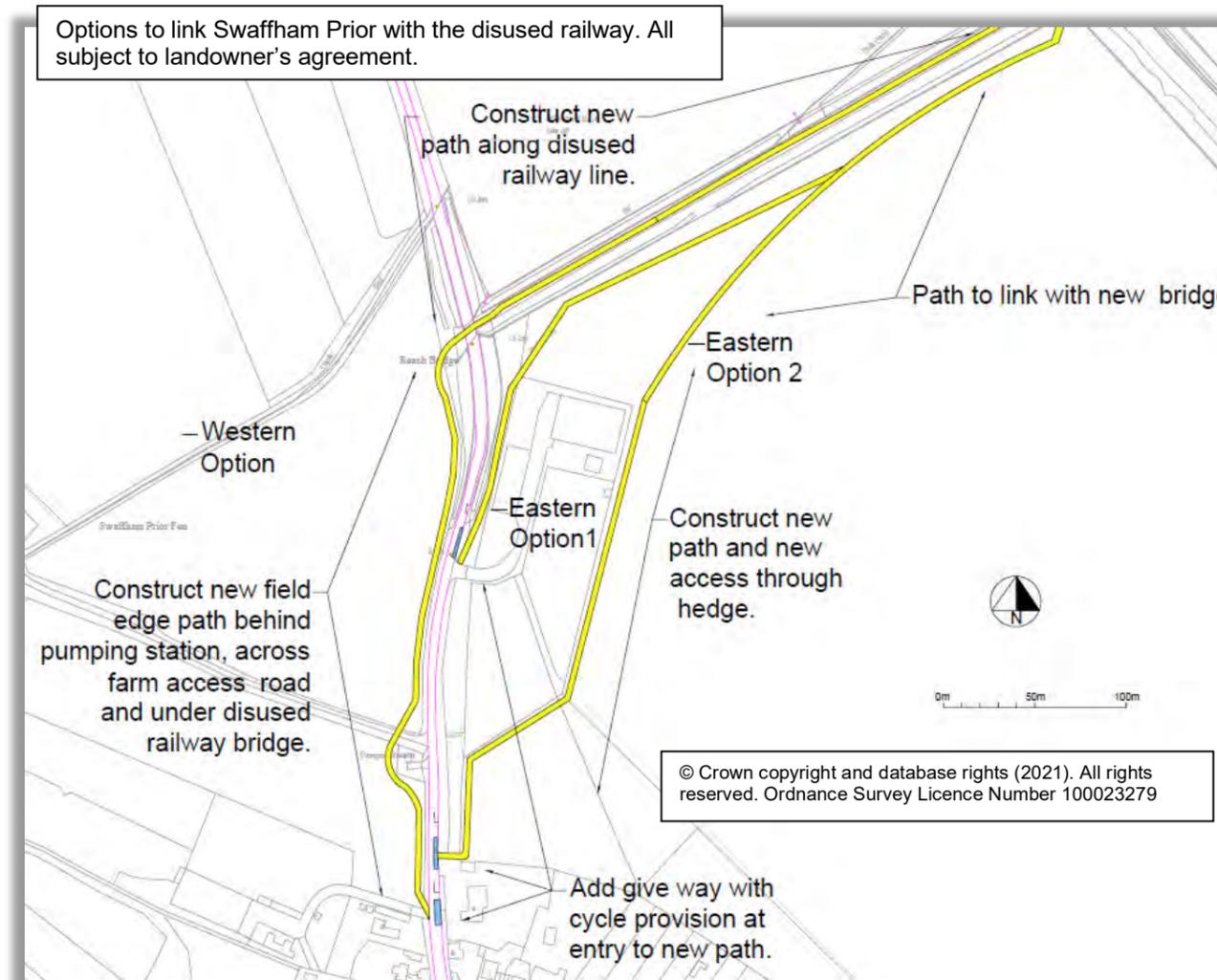
© OpenStreetMap contributors

### 6.4.1. Swaffham Prior to disused railway

The first part of Option 4 from Swaffham Prior village centre is shared with Options 2 and 3 and is discussed in Option 3. Option 3 also includes an alignment that uses or crosses the disused railway, but then follows Swaffham Road. Option 4 needs to use the disused railway corridor to cross Devil's Ditch/ Dyke and should not impact on the scheduled monument in the same way that Option 3 does.

If the disused railway is to be used a new route to link with the disused railway would be good because the existing path is narrow and is confined between trees, the road and buildings and has only footpath rights. However it may be that this is the only realistic option and if so it would need major changes to make it suitable for use on foot, bicycle and for wheelchair users.

From a route users and accessibility point of view the obvious alignment is to the west as indicated adjacent. It would make use of the existing railway bridge, could link with existing footways and open up access to the very attractive railway corridor which is only accessible at the moment to the most agile. However if use of the disused railway trackbed proves too difficult one of the two eastern options will be needed. Both of these options have an impact on hedges and trees and will need arboricultural assessments and discussions with the landowner. East and west options will need to be considered in detail, bearing in mind landowner preferences, ecological impact and other considerations, but given the concerns about using the disused railway one of the eastern options may be needed. It should be noted that all options have impacts on hedges and use of existing fields and the route under the disused railway bridge is overgrown and will need clearing back. The Eastern options will also impact on highway verge so that the footway can be extended for pedestrians.



View showing narrow access to public footpath from Swaffham Road.



View showing narrow path. Lots of vegetation would need clearing back for a 5m corridor.



View showing disused railway bridge, with Swaffham Road going over the bridge.



There is no clear route along the disused railway under the railway bridge (see above) and a route will need to be found that meets landowner's requirements and minimises ecological impact.



View towards Swaffham Road showing existing field edge path. There is a ramp down to the disused railway trackbed nearby that would need widening and regrading to make it compliant with Equality Act requirements.

## 6.4.2 Disused railway.

Many disused railways have been converted to other uses including the St Ives to Cambridge Guided Busway which has a shared use path adjacent to it. The attraction of disused railways is not only in their attractive nature with varied habitats, but that they have gentle gradients and include existing crossings of roads, rivers and other features. The disadvantage of many disused railways is that they have become fragmented or cannot easily be adapted to link with the locations that people want to access.

This section of disused railway includes :

- Gentle gradient.
- Existing crossing of Swaffham Road and Devil's Ditch (Dyke).
- Attractive route with interesting embankments.
- A firm base with no obvious major drainage issues.

On the negative side though the disused railway includes:

- No public access along much of the formation.
- Route lost within Burwell with housing and other buildings on the alignment, so no obvious direct link with Burwell Centre.
- Difficult access from the foot of the cutting to access field edges and other paths.
- Ecology that presents major challenges for construction and access.

*View along disused railway from road bridge where there is no official route (below).*



*View along disused railway between ramp and Devil's Ditch (Dyke) where the route is a public footpath. (Below).*



*View along disused railway towards Devil's Ditch (Dyke) where a new ramp up to field level on the left is needed.*



The ecological issues are major and are discussed in detail in Chapter 9. It is possible that a suitable alignment can be found along the trackbed, including possibly a boardwalk in sensitive locations, but this may not be possible and will need careful study and design. For this reason alternatives have been considered, although every option will have some impact on ecology. Realistically it seems that the most likely alternative to using the disused railway former trackbed would be to cross the disused railway at an angle with a very long span bridge from field edges. A possibility for the bridge would be a suspension bridge, which would of course have a significant visual impact and Natural England may consider the impact on the S.S.S.I. too much in any case. The bridge specification would depend on users, but the deck would need to be at least 4m wide. If the route were to be designated for horse usage the width and parapet heights would need to be increased.



*An existing ramp on a railway path in Worsley, Greater Manchester. A similar ramp is required, although it would need to be wider.*

A significant challenge for a route along the disused railway is the need to ramp up to field edge. This can be avoided at one end if the disused railway bridge is used, but to link with fields to the east of Devil's Ditch/ Dyke a new ramp will be needed. This will impact on the ecology of the bank. Options include an earthwork ramp or a steel structure.

For a route along the disused railway corridor the major issues to resolve are:

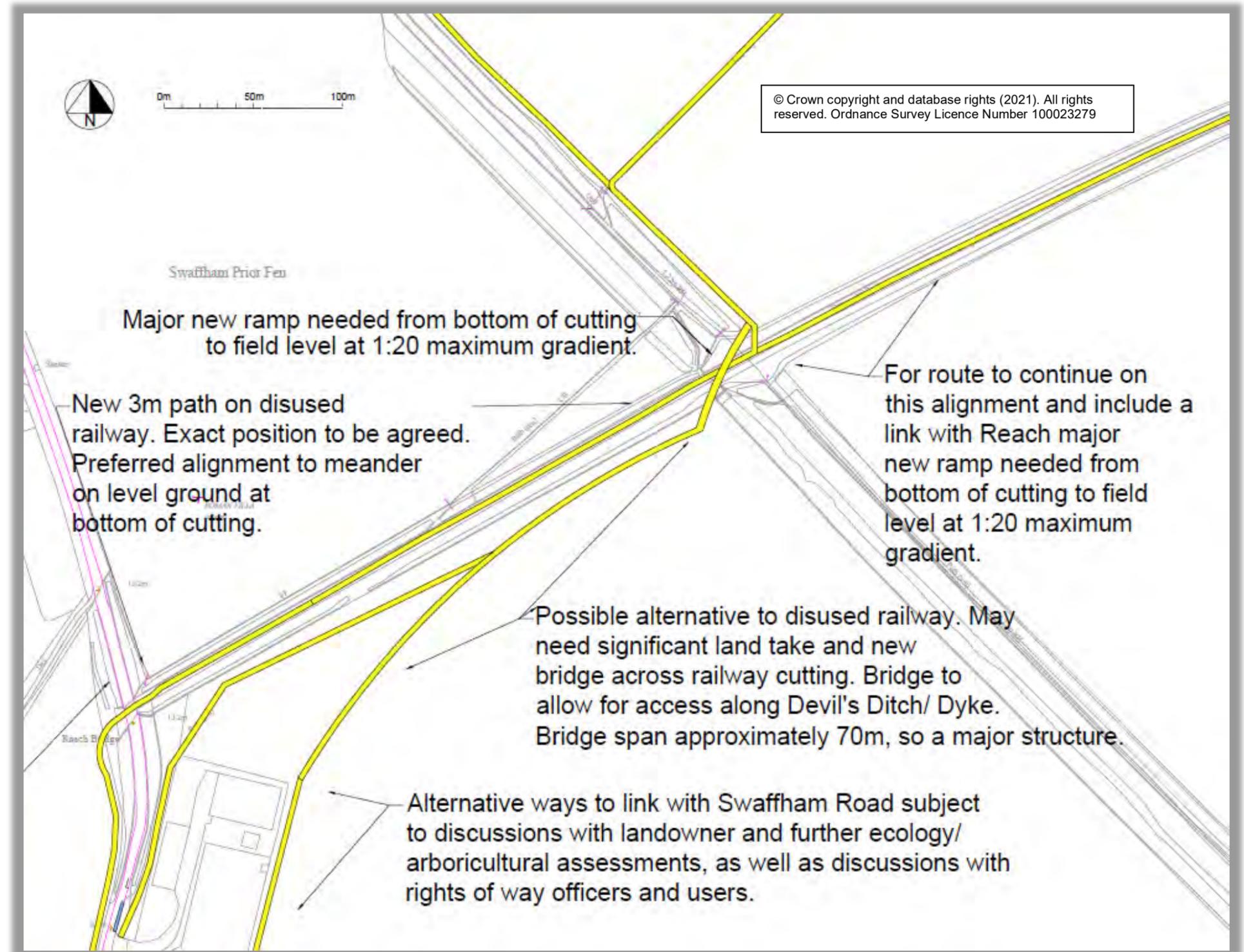
- Agreement of landowner/ landowners.
- Exact alignment of path.
- Ecological issues.
- Position and details of a ramp or ramps or a new bridge. Ramps should be in line with the disused railway and will need to be approximately 100m long.

- An additional challenge for ramp construction will be where to win the material that may be needed to form the ramp. Normally this would be obtained from elsewhere on the railway formation and will need to be discussed with landowners. It may be possible to gain material from construction sites nearby.

*Photo: Sustrans*

Options for this section of route are shown adjacent. This is a crucial area and will need careful consideration and more studies, as well as discussions with landowners and interest groups. There are significant risks in progressing this route, (which is an excellent alignment for a route between Swaffham Prior and Burwell), because the cost of further studies will be high and there is no guarantee that the route can be progressed. Even if agreement can be reached for a route the construction and compensation costs are likely to be very high too.

The route needs also to be considered in its entirety linking back into Swaffham Prior.



*Plan showing options in the vicinity of the disused railway.*



Any new bridge would have to span between the two fields if this could be done in a way that did not have an unacceptable impact on the ecology and heritage of the area. Bridge span indicated by grey arrows.



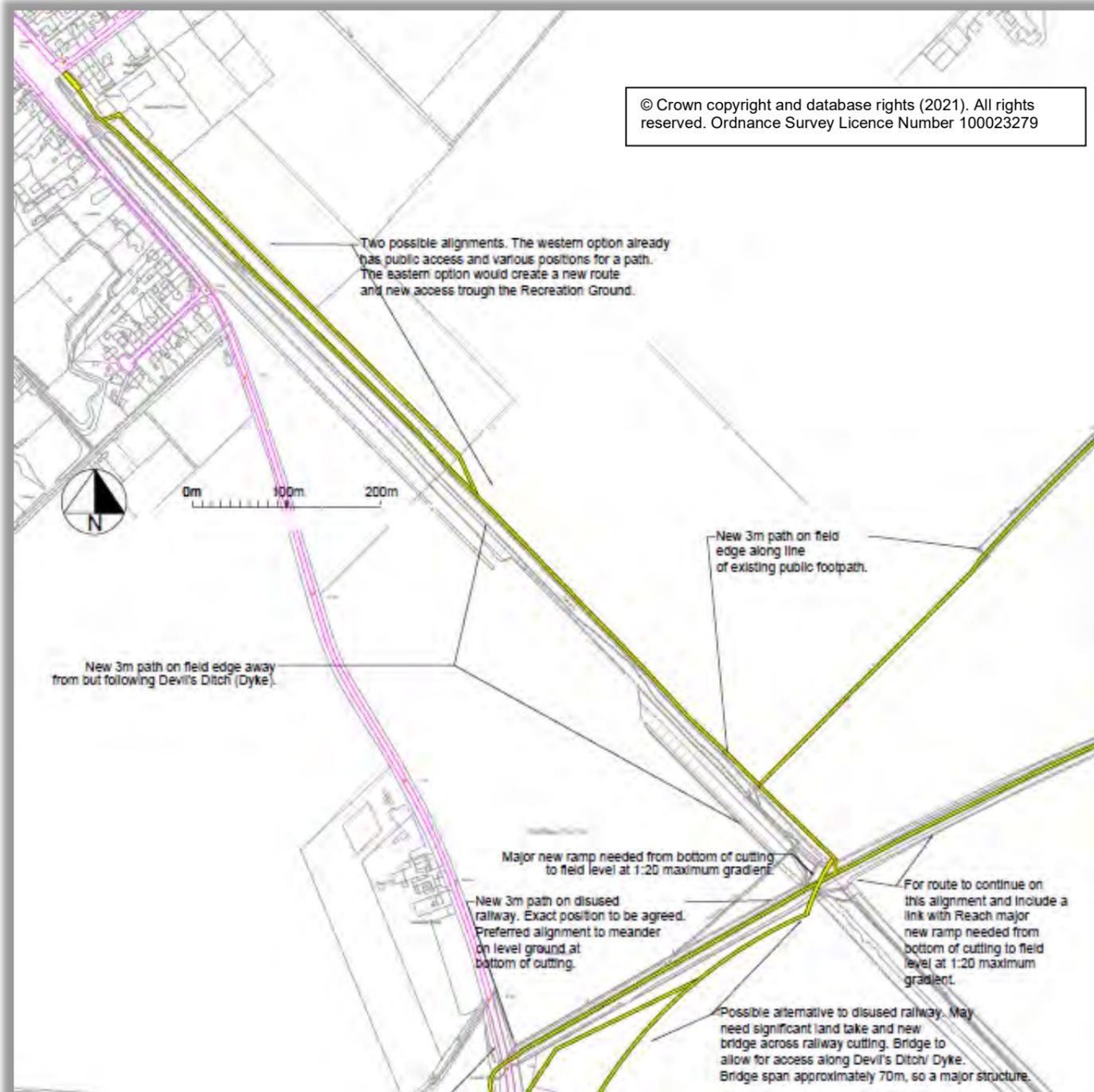
### 6.4.3 Field Edge link with Reach.

The disused railway works well as a direct route between Swaffham Prior and Reach, but bypasses Reach, so a new link with Reach is considered to access the new path. The question as to whether the link is needed is discussed further in 6.4.7. The obvious alignment is a route following Devil's Ditch

(Dyke) that works well as a link, but the route would need to keep away from the scheduled monument itself. There is a narrow path on top of the Dyke, which would not be suitable for shared use even if it could be surfaced. A route to the west would be very difficult too because of the scheduled monument (Roman Villa) to the west, but a route to

the east could work well. The suggestion is that this follows natural boundaries and nearer to Reach there are two possible alignments as shown on the plan below. The exact alignment and fencing or hedge will be dependent on discussions with landowners and on ecological considerations.

*View along foot of Devil's Ditch (Dyke) towards Reach. A field edge path could be fenced off from the field or separated by a new hedge.*



*View south from Reach showing an existing worn path between the foot of Devil's Ditch (Dyke) and a tree belt. The exact position of any new path would be a matter for consultation, considering ecological and other factors.*



*View along outer tree belt towards Reach Recreation Ground.*



It is possible that a good quality path to the east of Devil's Ditch (Dyke) will reduce pressure on the Ditch (Dyke) itself and bring ecological benefits, although the overall position would depend on the location of the path.

#### 6.4.4 Field edge path and byway

Although the disused railway continues east of Devil's Ditch (Dyke) the alignment disappears after a while and crosses an open field before being lost as a result of housing developments.

A more direct way to link the railway path at Devil's Ditch (Dyke) and less ecologically sensitive way to link with Burwell Centre is to follow field edge paths and an existing byway as indicated in the plan below, so this is recommended. This alignment is

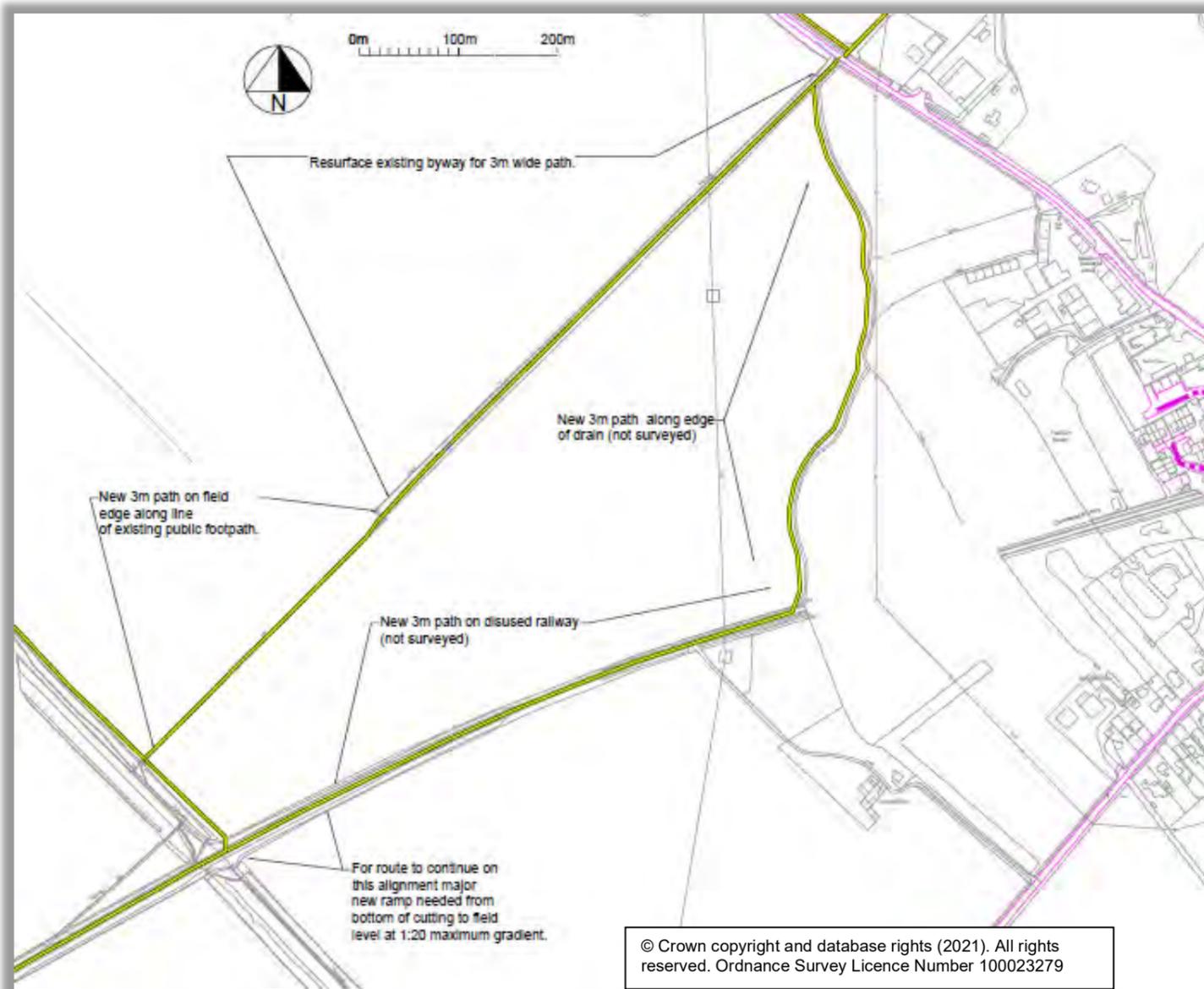
the same as used by an intermediate pressure gas main, which will cause complications and there should be early discussion with Cadent Gas on this. The plan also shows a possible longer alignment using more of the disused railway.

Landowner's agreement will be needed for the field edge paths, but the use and surfacing of the Byway will need to be agreed with the highway authority, Cambridgeshire County Council, as well as Cadent. The County Council are likely to have concerns

about maintenance and construction will need to be very robust and able to withstand farm traffic. Cadent will expect the gas pipe to be protected.

Fencing or new hedges may be required for the field edge paths.

*View along field edge towards disused railway with Devil's Ditch (Dyke) to the right. The new ramp from up from the disused railway will need to tie in with any new field edge path.*



*View along the public footpath/ field boundary towards the Byway. A new path will need to be wider than the existing.*

*The Byway when visited was in reasonable condition, but is showing some signs of damage due to farm traffic and surfacing it will be a major job.*



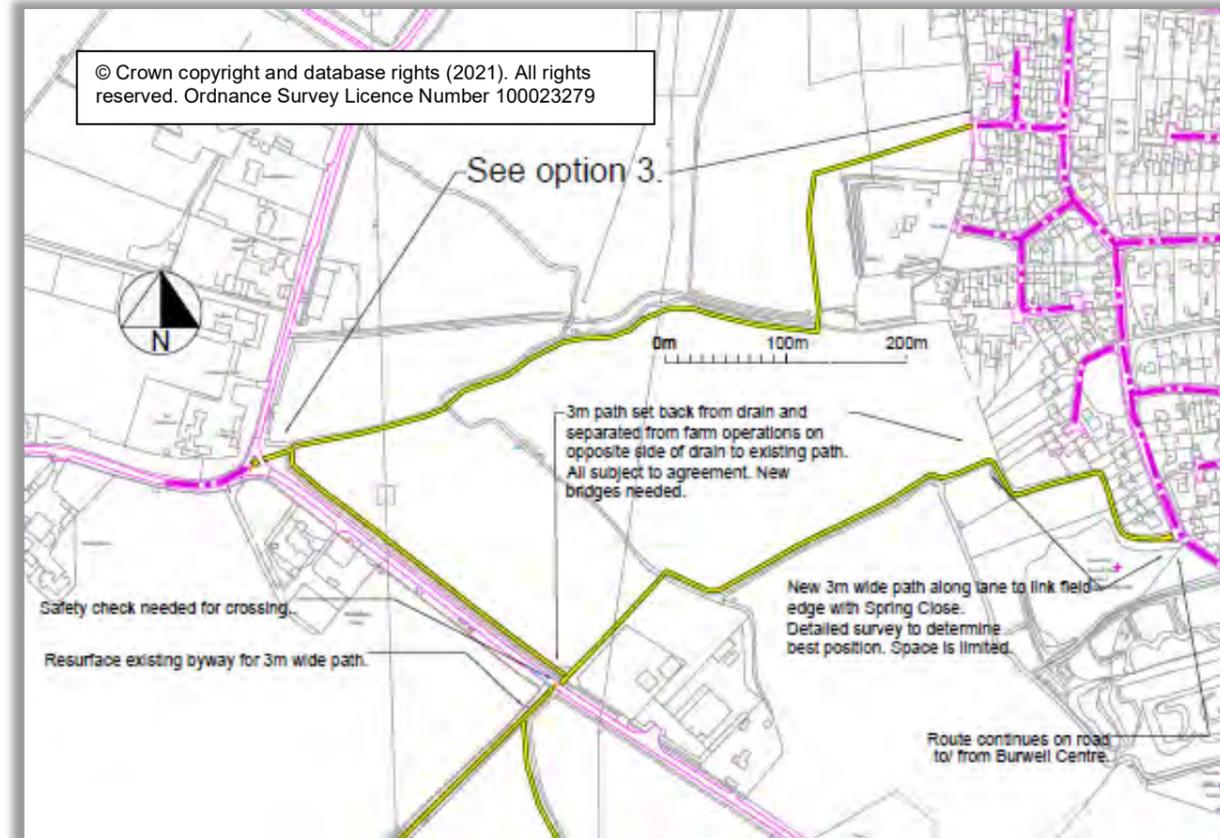
### 6.4.5 Disused Railway continuation.

To the east of Devil's Ditch (Dyke) the disused railway is clearly private and it was not surveyed. Nevertheless it is expected that it will be in similar condition to the section west of Devil's Ditch (Dyke) and it is an obvious way to continue the route, if the ecological constraints can be addressed. However as mentioned in 6.4.4 the alignment is not continuous and it would be necessary to follow field boundaries along a drain for continuity. This is shown on the plan in 6.4.4 and would be a good alternative to the byway route, subject to the ecological issues being resolved. The main disadvantages compared to the alignment outlined in 6.4.4 are that a second major ramp would be needed so that the disused railway can be accessed in both directions from the field edge (for the link with Reach), the route is further than the route outlined in 6.4.4. and there are ecological constraints.

For these reasons it is considered that the byway alignment is the better route, but landowner requirements or maintenance concerns about the Byway may tip the balance the other way.

### 6.4.6 Link with Burwell

For the route to succeed it needs to have a new direct link with Burwell and the issues are similar to those considered in 6.3.6. , including concerns about flooding and the need for Reach Road to be designated as a 30mph road. The main difference is the starting points of the two routes, meaning that the two options favour different links. The route that best aligns with this Option is clearly the southern option of the two indicated on the plan (right). This alignment follows the route of a public footpath, but needs to be on the opposite side of a drain to the public footpath, because there is not enough space on the line of the public footpath. The route will need landowner's agreement, as well as the



agreement of Cadent gas (where it interfaces with an intermediate pressure gas main) and will need appropriate boundary treatment as required.

The route joins the public road network at Spring Close. Space is constrained and the works will need careful detailing with a possibility of using Castle land, which would bring other challenges.

*The first section of route follows security fencing from Reach Road.*

*A new bridge would be needed to access a new route on the opposite side of the drainage ditch.*



*Space is too constrained along the line of the public footpath. An additional constraint in the area is a gas main that can be dealt with, but needs to be allowed for.*



*The preferred route would be on the opposite side of the drain to the existing public footpath, due to the limited space along the line of the public footpath.*



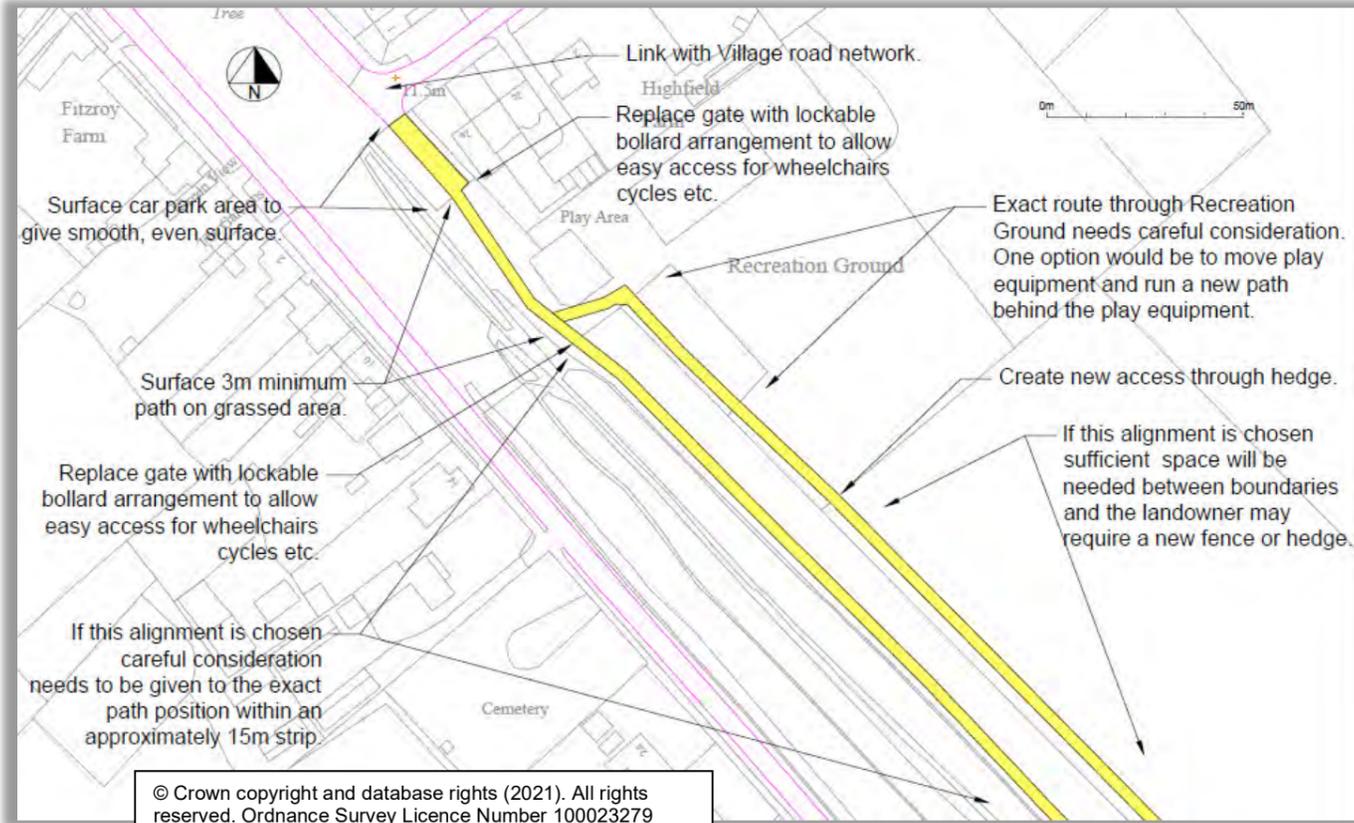
*Existing lane that runs between the castle and housing. Due to the number of trees "no dig" construction is likely to be needed and a detailed survey will be needed. At bends the design will need to consider ways to slow cyclists and/ or improve visibility. The width may have to be less than 3m in places.*

### 6.4.7 Link with Reach

The details of the link with Reach will depend on the alignment chosen for a route that follows Devil's Ditch (Dyke), but both will need to join the village road network at the entrance to the Recreation Ground, where arrangements will need to be carefully worked out.



*A new path could be built along the hedge line and play equipment moved, but there are other options.*



*View showing car park that needs resurfacing and gate where new access is needed.*

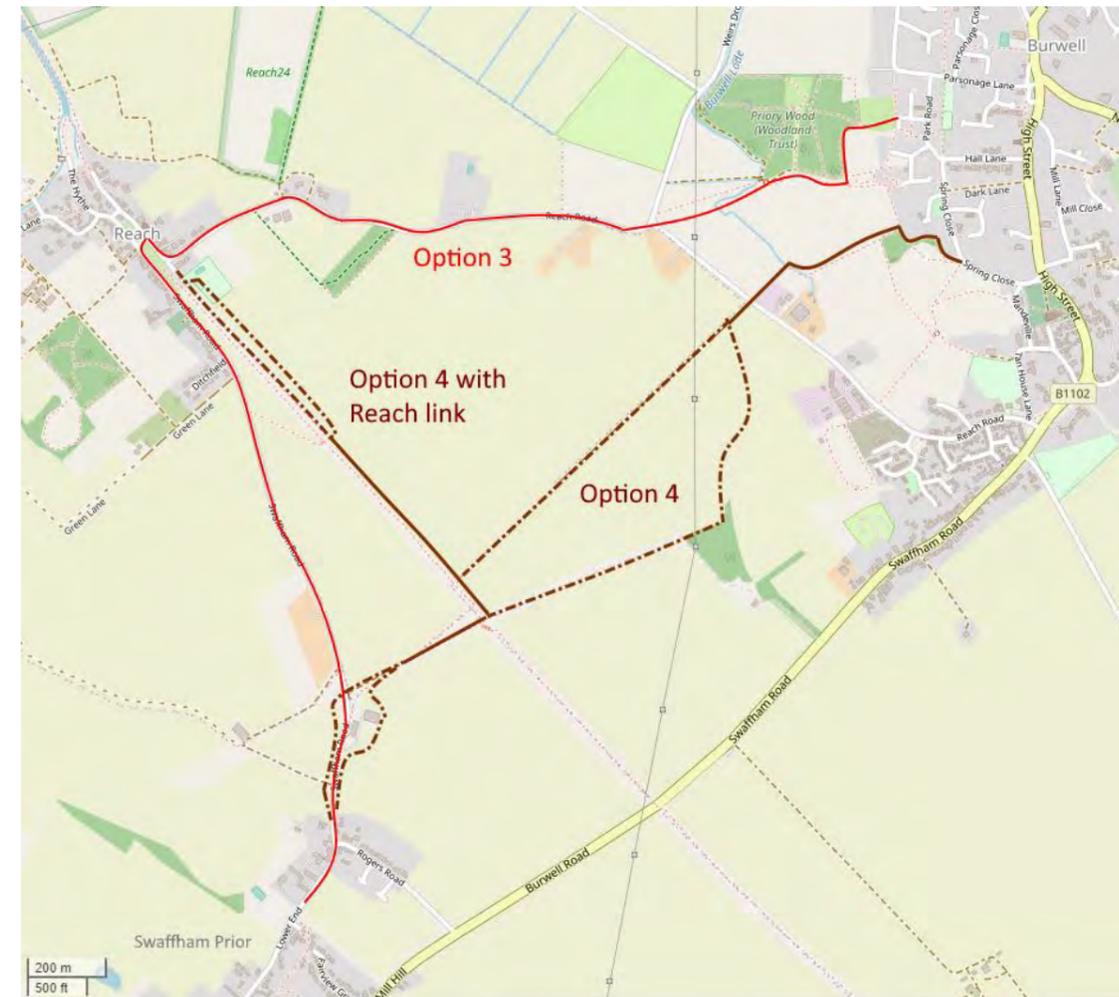


*View showing grassed area where new path is needed and gate where new access would be needed for one of the options.*

Although a link with Reach is an obvious part of Option 4 the question does have to be asked as to whether the link is definitely needed. After all if Option 3 were completed to a good standard it would be considerably shorter for Reach residents than any alignment following Option 4, as can be seen on the map below. The quality of the route will also be a major factor because if the on road sections for Option 3 are not satisfactory some will not use that alignment. By contrast there is also the factor that the link with Option 4 will be quite remote and that may put off some people from using it, especially in the dark.

The merits or otherwise of including the link with Reach in Option 4 are also influenced by the alignment of Option 4 – the more southerly option that follows the disused railway for longer would be a big detour for Reach residents travelling to and from Burwell.

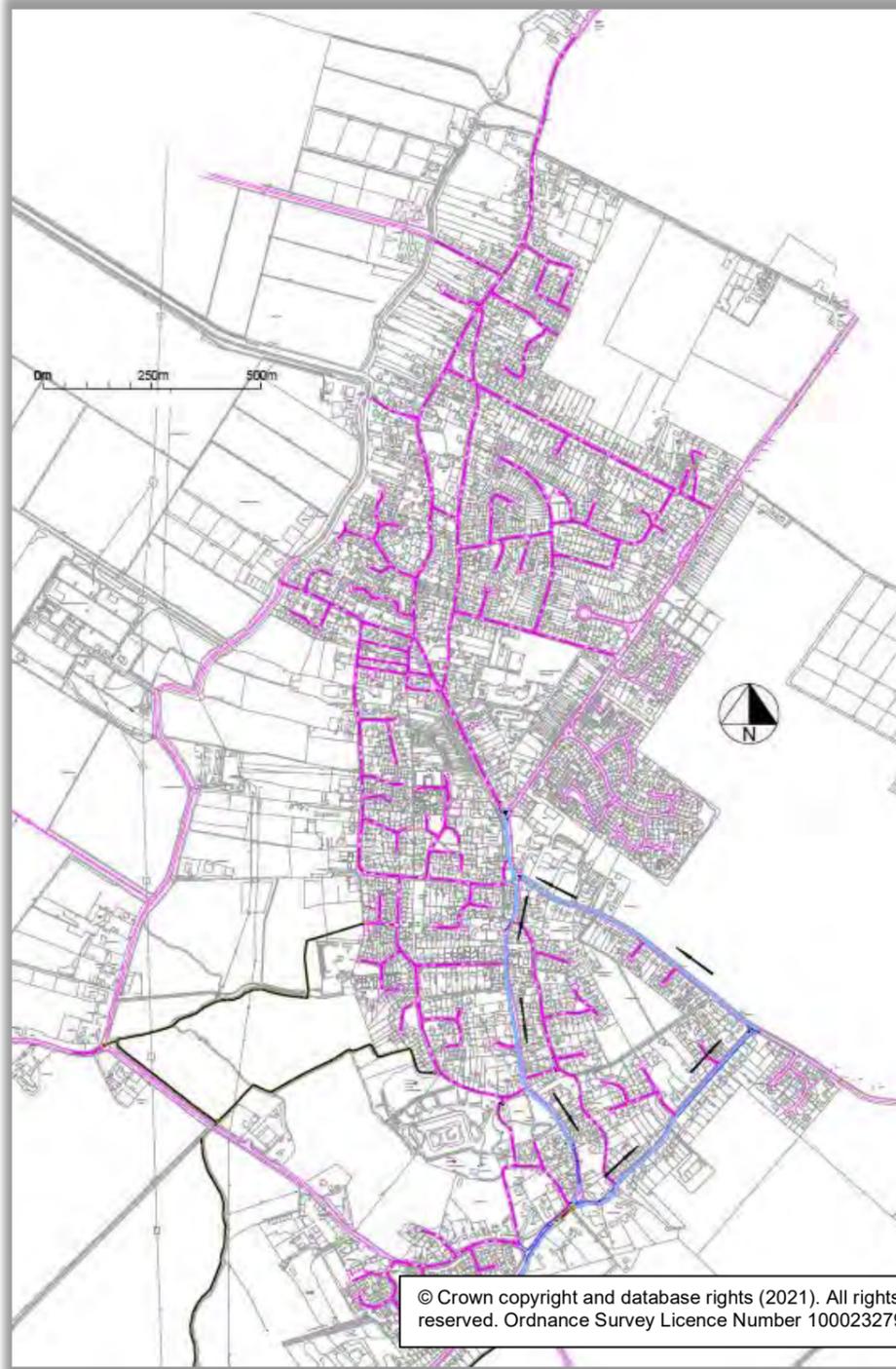
The need for the Reach link is therefore not something that should be taken for granted, but needs to be considered in the light of decisions relating to other options.



### 6.4.8 Within Burwell

The requirements for linking with all parts of Burwell are the same as outlined in 6.3.7. The whole of Burwell should be designated as 20 mph and in order to address the whole of Burwell it will be necessary to undertake major works on the B1102 and

B1103. The plan as discussed in more detail in 6.3.7 is as below, showing the proposed one-way system. Good links within Burwell are essential for the success of links with Swaffham Prior and Reach.



Option 4	
<b>Comparative Length (Swaffham Prior to Reach)</b>	2.92 km (Station Road/ High St junction to Reach Village Centre).
<b>Comparative Length (Reach to Burwell)</b>	3.71 km (Reach Village Centre to The Causeway/ Ness Road junction) by Byway route
<b>Comparative Length (Swaffham Prior to Burwell)</b>	4.25 km (Station Road/ High Street junction to The Causeway/ Ness Road junction).
<b>Likely estimated cost</b>	Off road sections likely to be high cost, particularly if a new bridge is needed. On road sections low cost and works in Burwell high cost. Biodiversity nett gain costs are also likely to be very high and may require large amounts of land.
<b>Engineering difficulties</b>	The major difficulties are likely to be in forming the new ramp or ramps between the disused railway trackbed and the adjoining field edges in a location very close to a scheduled monument and a SSSI or the installation of a major bridge over the railway cutting if this is necessary. The works on highway are also challenging. In addition extra protective measures will be needed for the intermediate pressure gas main that follows and crosses the route.
<b>Ecological issues</b>	The disused railway and works near to Devil's Ditch (Dyke) and near to the Castle in Burwell are expected to be the most sensitive and will need a lot of work and careful design to come up with a solution that works. It is likely to be necessary to obtain additional land near the disused railway to compensate for any loss of habitat and to enhance biodiversity.
<b>Land ownership issues</b>	Needs agreement of landowners for use of disused railway and access to the disused railway and agreement of landowners for route into Burwell.
<b>Other issues</b>	Major implications for improved provision within Burwell will need detailed local engagement. Reach Road needs to be designated as 30 mph for uncontrolled crossing and this will present some challenges, but will bring safety benefits.
<b>Overall</b>	This is a good direct route for travel between Burwell and Swaffham Prior, but less beneficial for Reach residents. There are options for linking with Reach, which include Option 3. Ecology likely to be a very major challenge, which makes progressing this option risky.

## 6.5 Option 5

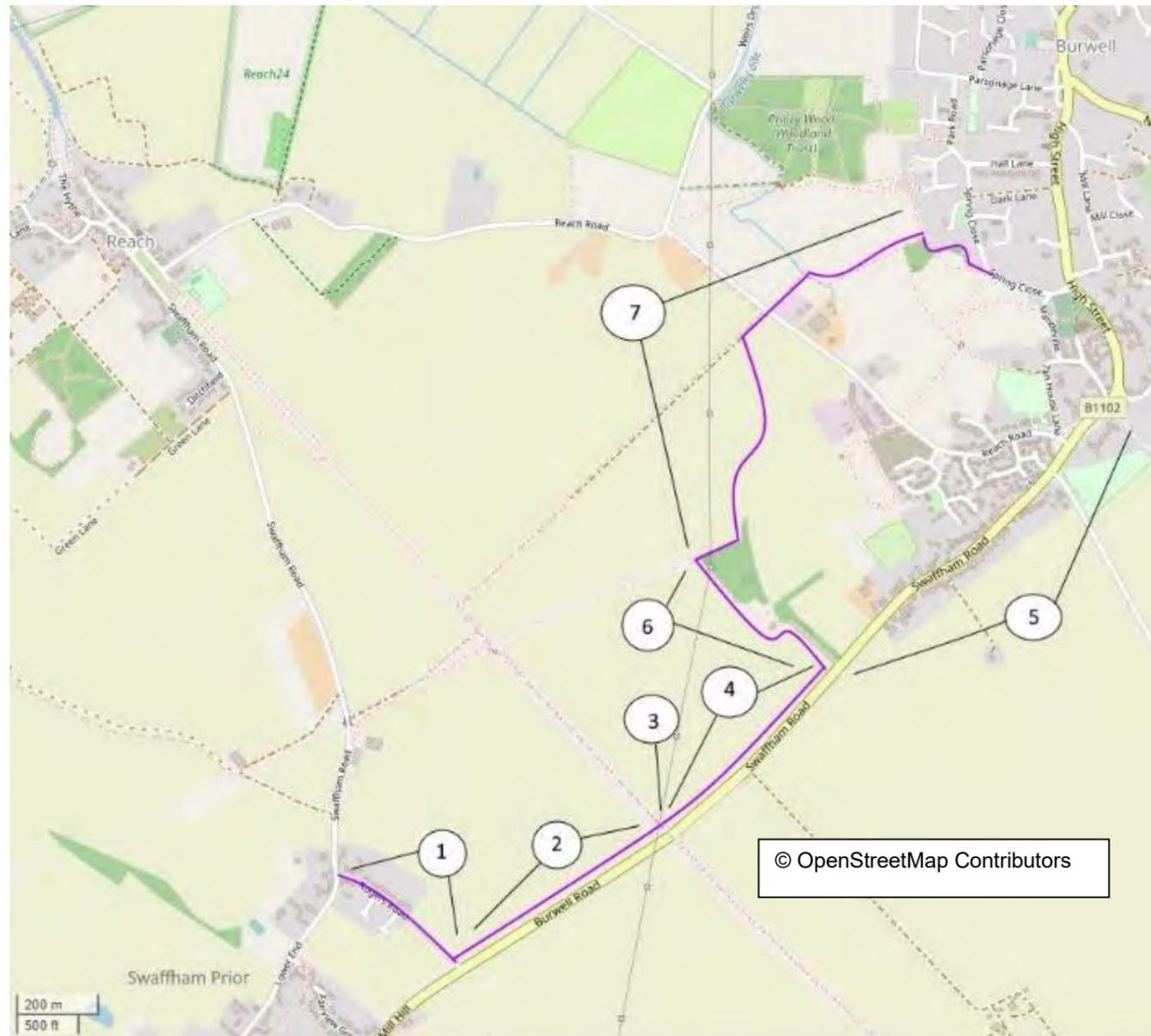
Option 5 is based on the existing route, which follows the B1102 and which was not built to current standards.

The alignment is considered as below:

1. The existing route uses Rogers Road. If this route is to be developed the minimum provision on Roger's Road would need to

be a 20 mph limit and an enhanced and revised detail at the junction with the B1102 for those joining and leaving an off-road facility.

2. The existing route uses a narrow path adjacent to the carriageway. This means that there is no separation from the fast moving traffic adjacent and if you meet someone coming in the opposite direction or want to pass someone this is a difficult manoeuvre. At night if you are cycling



towards Swaffham Prior there is a significant risk of being dazzled by car headlights.



View towards Burwell of B1102

For a 60 mph road the desired separation between cycleway and carriageway is 2.5m with an absolute minimum of 2m. This means that the existing path is a serious problem and should really be closed and moved to a position at least 2.5m from the carriageway i.e. on the adjacent field edge. This however presents a problem at point 3.

3. Where the B1102 crosses Devil's Ditch (Dyke) the scheduled monument and SSSI has been severed. Ordnance Survey mapping suggests that there may be 12.5m of highway width available and the current carriageway takes up 6.4m, so it might be possible to move the carriageway across to create the space needed for approximately 6m needed for 2m minimum segregation, 3m path and 0.5m minimum segregation from the boundary. However moving the carriageway would be extremely challenging and probably impossible without the addition of retaining structures, which would have a major negative impact on the scheduled monument and SSSI.

This option has therefore been ruled out, leaving the only way to deliver a route that would meet LTN 1/20 standards being to bridge over the Devil's Ditch/ Dyke. The exact clearance required would need to be agreed with ecology and heritage experts, but the minimum clearance would need to be about 3m due to the need to cross over a public footpath. This would therefore need ramps of at least 60m long (minimum), which may not be considered appropriate in a heritage setting. A further issue with this option would be that there are high voltage overhead power lines in the area and any bridge would not be permitted if it went too close to the overhead lines and even if it was permitted there would be serious restrictions regarding construction.



View across the B1102 towards Devil's Ditch (Dyke) with the existing narrow path in front and overhead lines above.

4. The issues with the existing path besides the B1102 are the same on the Burwell side of Devil's Ditch (Dyke) as they are on the Swaffham Prior side. This again means that the existing path is a serious problem and should really be closed and moved to a position at least 2.5m from the carriageway i.e. on the adjacent field edge. This however presents a problem at point 3 and also over section 5.



View along B1102 towards Burwell

5. As the B1102 enters Burwell traffic volumes remain high, but the speed limit drops to 30mph. At this speed a segregated cycleway would only need to be separated from the carriageway by 0.5m. However space is very constrained with a typical highway width being about 12m, which does not leave enough space to maintain existing carriageway space and existing footways and form a new cycleway. In an urban area or the village centre it might be possible to suggest a one-way system or partial road closure to create the necessary space, but in this location it is hard to see how that would work. Realistically it is very hard to see how an LTN 1/20 compliant route could be established over this length of road and this option has been discounted.



View along B1102 at approach to Burwell, where the path is no longer signed as shared use and space is limited.

6. In order to establish a new route between the village edge and village centre a new field edge path would need to be created. This would need landowners agreement and could link Swaffham Road with the disused railway.

7. This route is considered in 6.4.5, 6.4.6 and 6.4.8. It is achievable subject to landowner's agreement and obtaining the appropriate consents.

### Option 5

<b>Comparative Length (Swaffham Prior to Reach)</b>	<u>No Route (Station Road/ High St junction to Reach Village Centre).</u>
<b>Comparative Length (Reach to Burwell)</b>	<u>No route (Reach Village Centre to The Causeway/ Ness Road junction)</u>
<b>Comparative Length (Swaffham Prior to Burwell)</b>	<u>4.55km (Station Road/ High Street junction to The Causeway/ Ness Road junction).</u>
<b>Likely estimated cost</b>	<u>Off road sections likely to be medium-high cost, with major bridge structure high cost and works in Burwell high cost.</u>
<b>Engineering difficulties</b>	<u>The major difficulties are likely to be in making a crossing of Devil's Ditch (Dyke) with a new bridge in a challenging location. The works on highway in Burwell are challenging.</u>
<b>Ecological issues</b>	<u>Any works near to Devil's Ditch (Dyke) are expected to be very sensitive and difficult.</u>
<b>Land ownership issues</b>	<u>Needs agreement of landowners for use of land besides B1102 and for access to the disused railway and agreement of landowners for route into Burwell.</u>
<b>Other issues</b>	<u>No option for linking with Reach.</u>
<b>Overall</b>	<u>This is an obvious route and the existing route, but it would be extremely difficult or impossible to upgrade it to modern standards and it is not recommended to progress this.</u>

## 6.6 Option 6

The grey route as indicated right is a variation on Option 3 (the red route) and is the existing on road National Cycle Network route. Whilst generally quiet there can be some lorry traffic associated with the electrical substation or other activities. It should be designated as 30 mph and 20mph in the village and as such would be a satisfactory route but it is very indirect and as such is not a priority route.



Option 6 is the grey route.

© OpenStreetMap Contributors

Option 6	
<b>Comparative Length (Swaffham Prior to Reach)</b>	Option 3 not relevant option 6
<b>Comparative Length (Reach to Burwell)</b>	3.48 km (Reach Village Centre to The Causeway/ Ness Road junction)
<b>Comparative Length (Swaffham Prior to Burwell)</b>	6.16 km (Station Road/ High Street junction to The Causeway/ Ness Road junction).
<b>Likely estimated cost</b>	Low cost minimal works.
<b>Engineering difficulties</b>	Introducing lower speed limits may be challenging.
<b>Ecological issues</b>	Very little if on existing roads.
<b>Land ownership issues</b>	Existing roads so no issues.
<b>Other issues</b>	Distance from Reach Road to Burwell Village Centre is 2.08km using Option 6 and 1.38 km using Option 3, so a major detour – 50% further.
<b>Overall</b>	This is a minor change to an existing route that does not have the benefits of a more direct route into Burwell and it has therefore been discounted. It can remain as an interim route until there is a better alternative.

## 6.7 Option 7

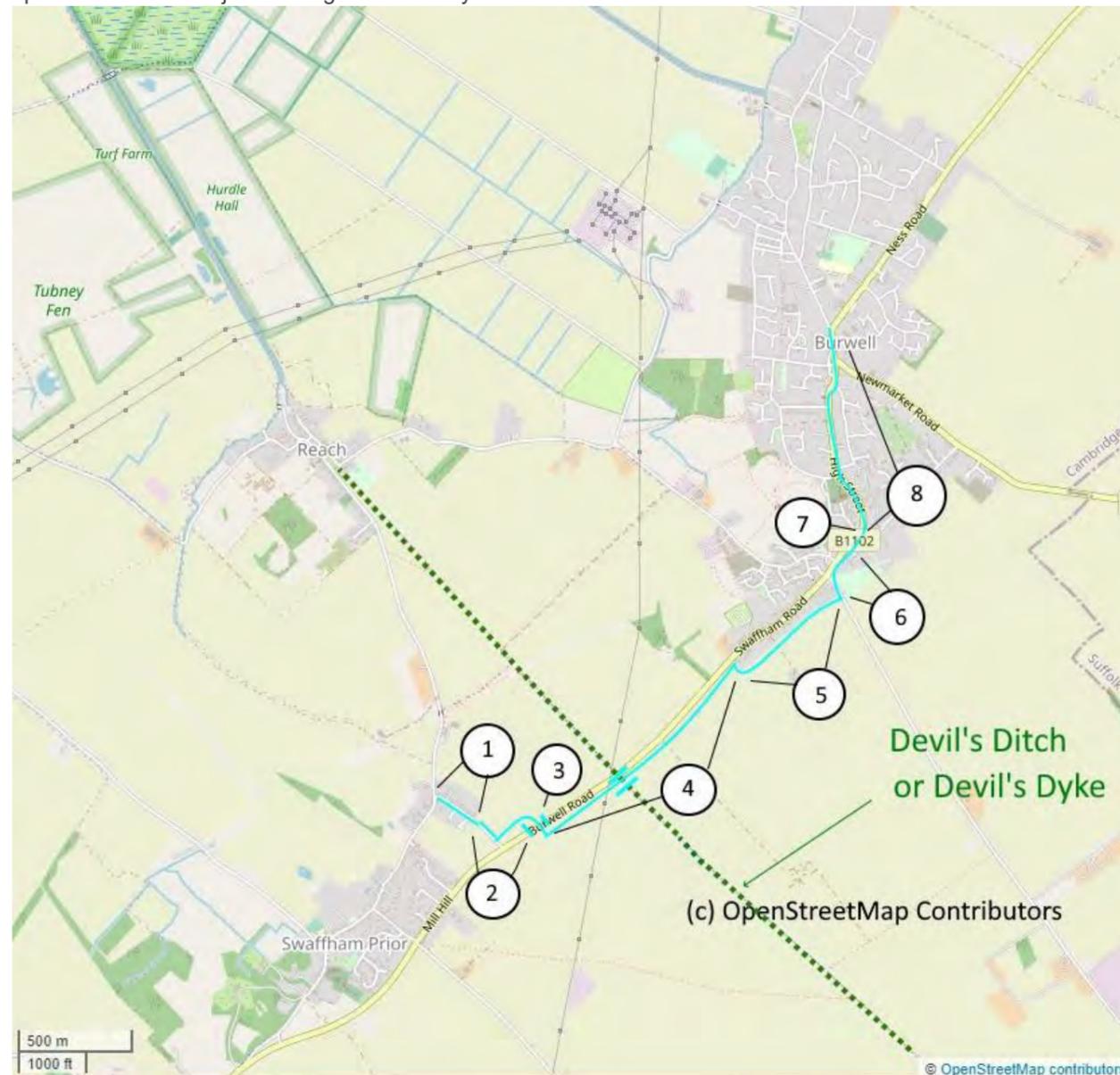
Option 7 has been added at a late stage and no ecological assessment has taken place. The route was not given serious consideration initially because it was considered undesirable to cross the B1102 in an area with national speed limit, the crossing of Devil's Ditch appeared extremely difficult and space was limited at the approach to Burwell. The route is also very remote from Reach. This is an expensive and difficult option but given that other options also have major challenges or are very

indirect this is an option now worthy of further consideration. The alignment is considered as below:

1. The existing route uses Rogers Road. If this route is to be developed the minimum provision on Roger's Road would need to be a 20 mph limit.



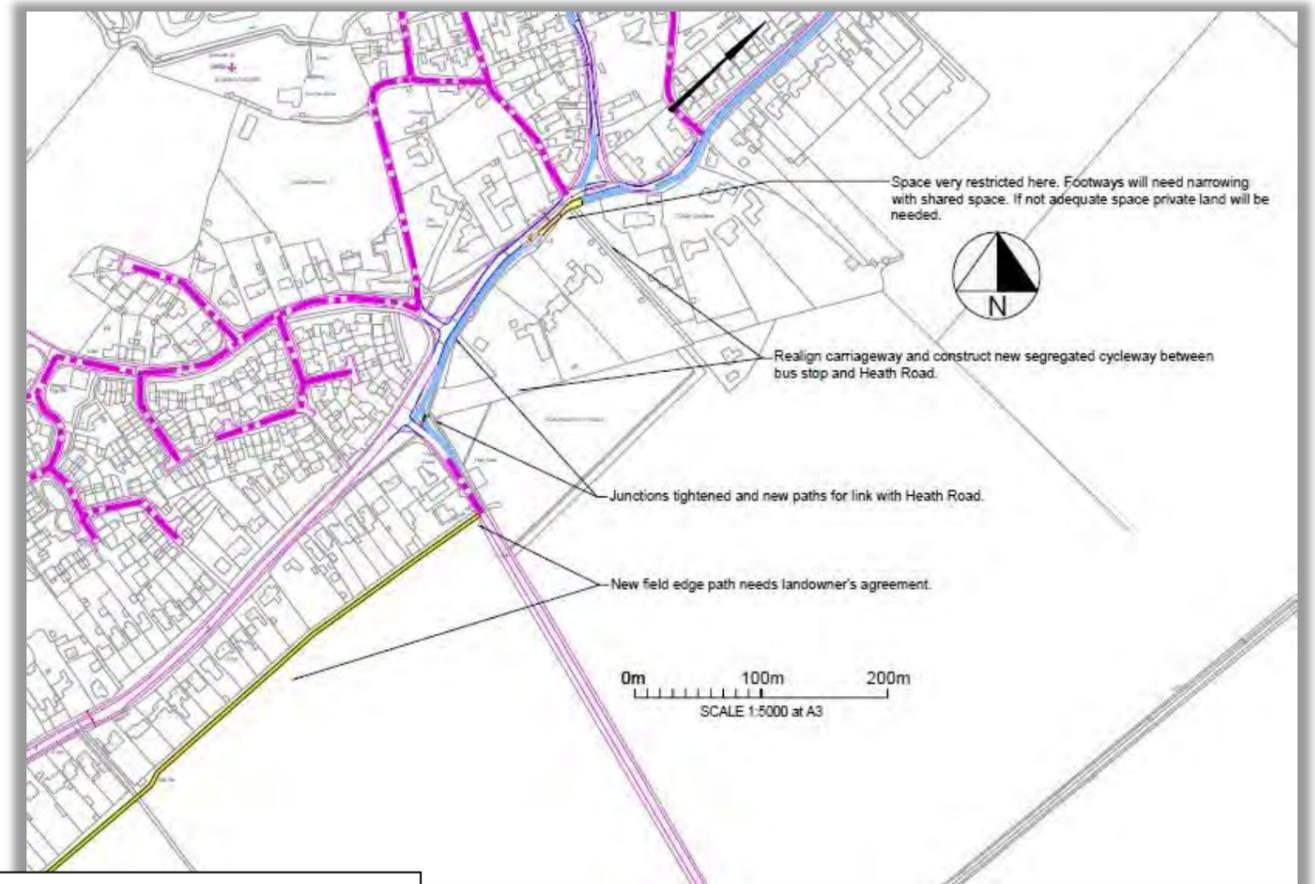
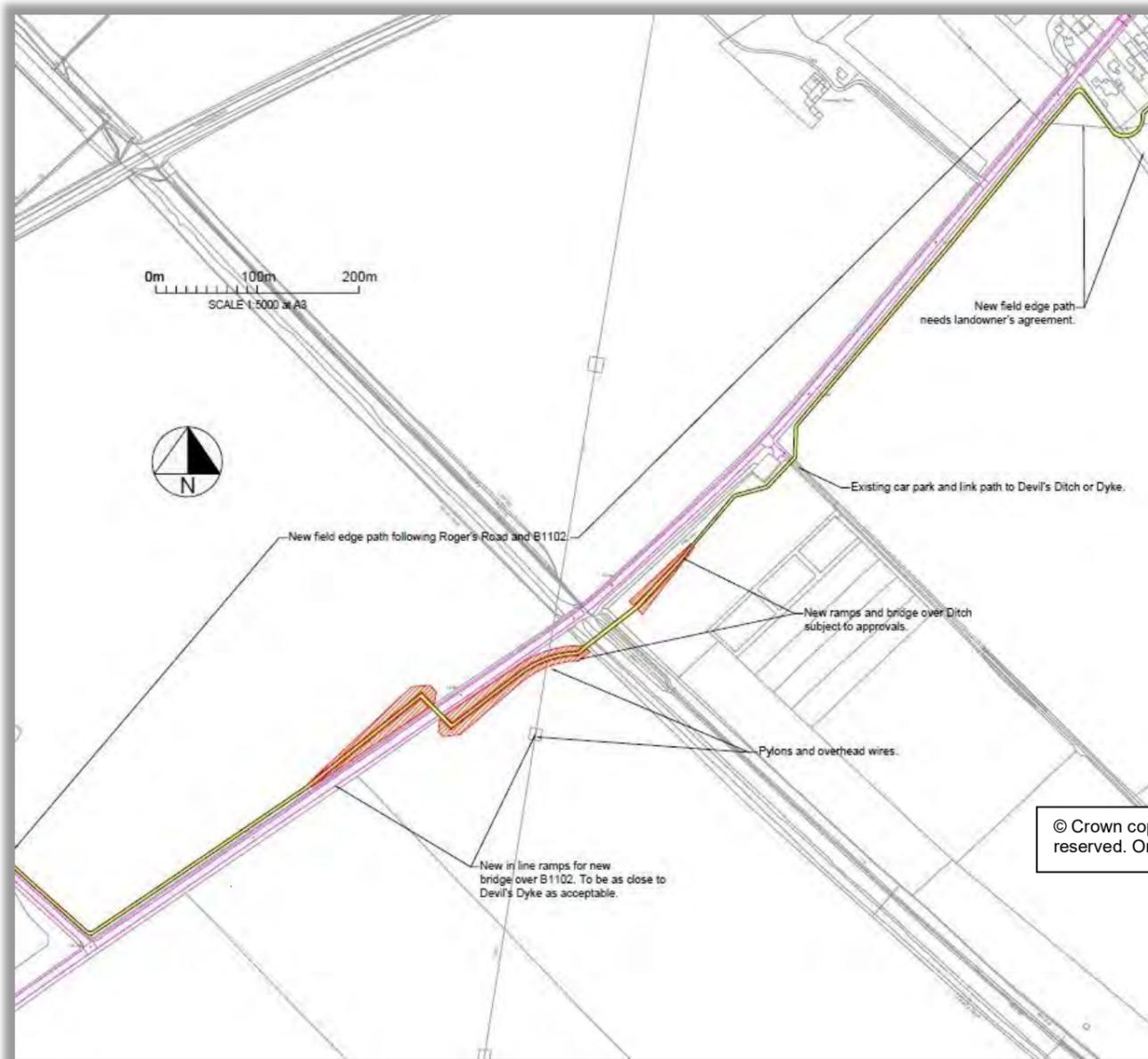
View towards Burwell of B1102



2. The existing route uses a narrow path close to the carriageway. For a 60 mph road the desired separation between cycleway and carriageway is 2.5m with an absolute minimum of 2m. This means that the existing path is a serious problem and should really be closed and moved to a position at least 2.5m from the carriageway i.e. on the adjacent field edge. The new path needs to continue all the way from the edge of the village on Roger's Road to the new bridge at 3, with a major new ramp in the field edge. An earthwork ramp is recommended, but this will need considerable land take. Ideally the material for the ramp should be won locally with this being an opportunity for habitat creation.
3. Due to traffic speeds on the B1102 a new bridge is needed to cross the road. The exact clearance requirements will need to be checked with Cambridgeshire County Council and ramps need to be in-line with the direction of travel. It has been assumed that 140m will be adequate for ramps with a maximum gradient of 1:20 and this will need checking and topographical surveys.

4. In order to cross Devil's Ditch/ Dyke it has been assumed that a bridge will be needed, but even that may be unacceptable. If a way to cross cannot be agreed with Natural England and Heritage England the route will have to be ruled out as an option. A crossing on the opposite side of the road has been discussed in 6.5 for Option 5 and in that case the option was ruled due to the expected difficulties of getting approval for a crossing from Natural England and Heritage England, combined with the additional major challenges of working right under the overhead power lines. These conditions are slightly easier on the south-east side of the B1102 where there is more space to avoid the overhead wires and where the Ditch/ Dyke is wider with less need for high ramps under the overhead wires. Nevertheless there are considerable health and safety issues that would need to be addressed and if the option is to progress early discussions will be needed with National Grid to clarify their requirements, which are likely to mainly relate to clearances above the ramp and working practices.

The exact clearance over the Ditch/ Dyke would need to be agreed, but the minimum clearance would need to be about 3m due to the need to cross over a public footpath and it is desirable to cross the public footpath as near to the road as possible because it climbs as it goes away from the road. The bridge could be used as a viewing point of the Ditch/Dyke and this will need to be allowed for in the design. (See following page).



© Crown copyright and database rights (2021). All rights reserved. Ordnance Survey Licence Number 100023279

Plan showing possible routing at entrance to Burwell to link up with one-way system and new provision there.

Plan showing possible routing near Devil's Dyke or Ditch

Photos showing

Left - View from Ditch towards Burwell with B1102 behind hedge.

Centre - View in opposite direction with footpath rising up to right.

Right - View across ditch from B1102.



5. Space is very restricted on Swaffham Road and any route along there to a suitable standard would be likely to have a major impact on properties and gardens, so a field edge path along the rear of the properties is recommended. This could be set away from the properties with appropriate hedging/ screening and would also need to be separated from the adjoining farm land.



View along Swaffham Road (above) showing lack of space for new provision and view from Heath Road along field edge at rear of properties along Swaffham Road (below).



6. The route would rejoin the road network at Heath Road opposite the Recreation Ground entrance. Traffic calming and a 20mph limit on Heath Road would be required. It is also recommended that a footway is extended to the Recreation Ground entrance and a cycleway is

extended partially along the road as far as space allows. The Heath Road and Reach Road junctions are excessively wide and these will need to be tightened up to slow speeds and improve crossings for pedestrians. A cycleway needs to be built on highway verge from Heath Road besides the B1102 to the existing bus layby, where space becomes very constrained. In order to accommodate a segregated facility some verge space will need to be taken on both sides of the road, the bus laybys will need to be removed and the north western footway will need to be reduced to 2m. It should be possible to accommodate a 6m carriageway and a short section of shared space at least 3m in width from the bus stop to Isaacson Road, but space is very limited.

7. The most constrained location of the whole route is at the junction of Swaffham Road, High Street, Isaacson Road and Mandeville and a detailed survey will be needed, including utilities searches. If there is not sufficient space to maintain minimum widths space will be needed from a private garden and there may be impact on some major trees.



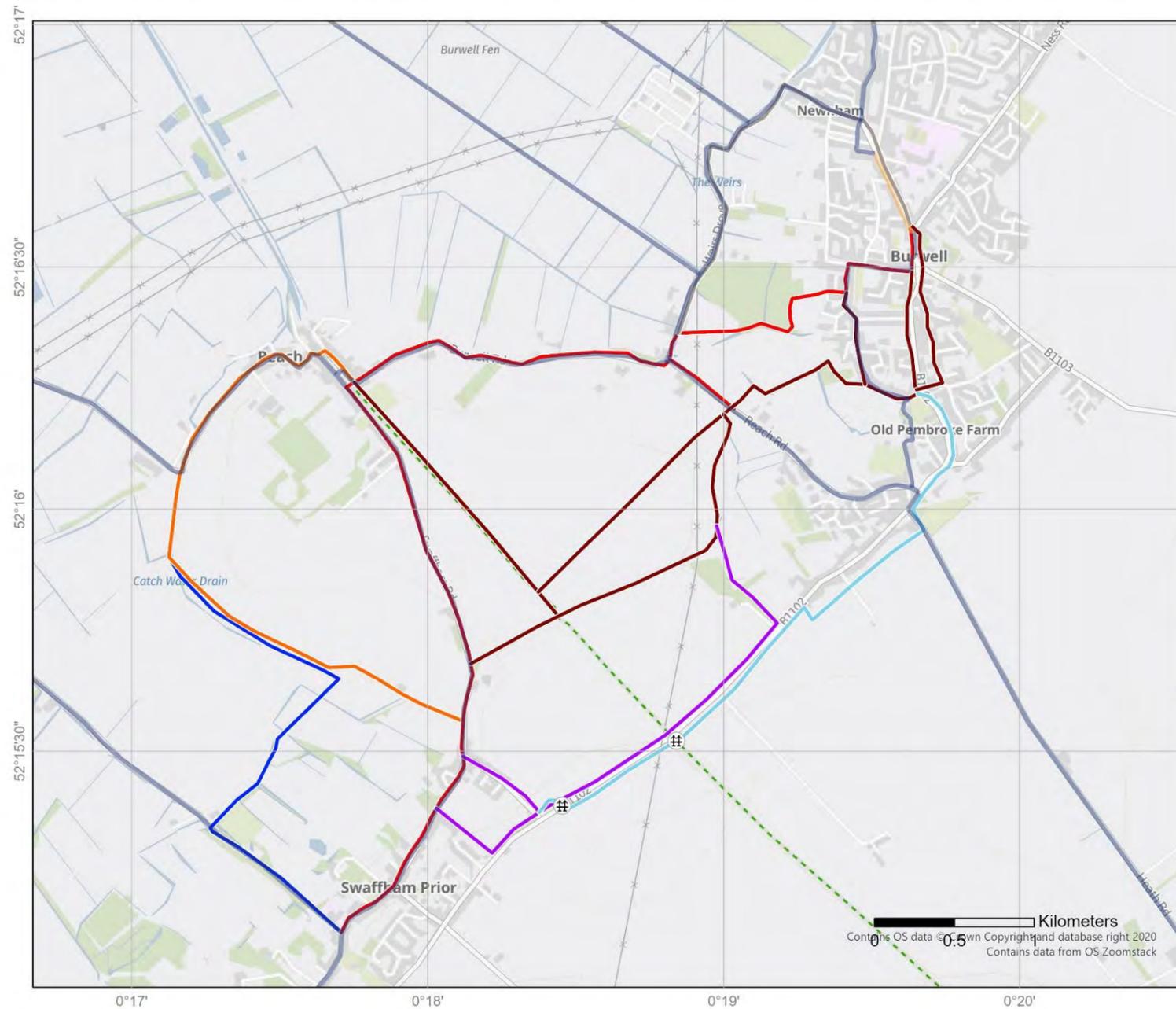
View of constrained location (7)

8. The route along the High Street and Causeway is dependent on the reallocation of roadspace and the introduction of one-way systems as outlined at the start of the Chapter.

Option 7	
<b>Comparative Length (Swaffham Prior to Reach)</b>	<u>No Route (Station Road/ High St junction to Reach Village Centre).</u>
<b>Comparative Length (Reach to Burwell)</b>	<u>No route (Reach Village Centre to The Causeway/ Ness Road junction).</u>
<b>Comparative Length (Swaffham Prior to Burwell)</b>	<u>4.14km (Station Road/ High Street junction to The Causeway/ Ness Road junction). (Approximately same length as by car).</u>
<b>Likely estimated cost</b>	<u>Off road sections likely to be high cost, with two major major bridge structures and works in Burwell high cost.</u>
<b>Engineering difficulties</b>	<u>The major difficulties are likely to be in making a crossing of Devil's Ditch (Dyke) with a new bridge in a challenging location. The new road bridge is also a major structure but should be more standard than the work at Devil's Ditch/ Dyke. The works on highway in Burwell are challenging.</u>
<b>Ecological issues</b>	<u>Any works near to Devil's Ditch (Dyke) are expected to be very sensitive and difficult and will need Natural England agreement. No ecological assessment has been done for this route. It is mostly arable land away from watercourses so works near the Devil's Ditch SSSI are likely to be the major issues.</u>
<b>Land ownership issues</b>	<u>Needs agreement of landowners for use of land besides Roger's Road and B1102 and to the rear of properties on Swaffham Road, Burwell. If there is not sufficient space, there may be an impact on a private garden in Burwell.</u>
<b>Other issues</b>	<u>No option for linking with Reach. Heritage England consent needed for works at Devil's Ditch (Dyke) and National Grid agreement needed for works near overhead pylons.</u>
<b>Overall</b>	<u>This is a difficult route, but if agreement can be reached for the route to cross Devil's Ditch or Dyke it appears to be less risky than Option 4 and, in that case, should be deliverable.</u>

6.7 Overview and Recommendations for Progress.

# Swaffham Prior - Reach - Burwell Route Options



**Legend**

**National Cycle Network**

- Traffic-Free
- On-Road

**Route Options**

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- Option 7

**Other Elements**

- Devil's Ditch
- New Bridge

Contains OS data © Crown Copyright and database right 2020  
 Contains data from OS Zoomstack  
 Contains Sustrans Data © Sustrans 2022



	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Notes
<b>Comparative Length (Swaffham Prior to Reach = 2.68km by road)</b>	3.10km	3.40km	2.68km	2.92km	n/a	n/a	n/a	Station Road/ High Street junction to Reach Village Centre
<b>Comparative Length ( Reach to Burwell = 3.61km by road)</b>	2.85km	2.85km	2.78km	3.71km (Byway route)	n/a	3.48km (with Option 3)	n/a	Reach Village Centre to The Causeway/ Ness Road junction
<b>Comparative Length (Swaffham Prior to Burwell = 4.10km by road)</b>	5.95km	6.25km	5.46km	4.25km (Byway route)	4.55km	6.16km (with Option 3)	4.14km	Station Road/ High Street junction to The Causeway/ Ness Road junction
<b>Likely estimated cost in villages</b>	High	High	High	High	High	High	High	Costs are the same for all options in regards to works needed in Swaffham Prior, Reach and Burwell, with the vast majority of costs in Burwell for traffic calming and roadspace reallocation. For Option 7 additional works would be needed in Burwell, although these would be beneficial even without Option 7.
<b>Likely estimated cost between villages</b>	Medium to high off road construction with poor ground conditions and farm traffic.	Medium to high off road construction with poor ground conditions and farm traffic.	Medium. Low costs on road but new paths needed near Burwell.	High and more depending on whether link to Reach is built.	High with possible need for major bridge.	Low	High with two major bridges	Cost assumed to be higher where there is farm traffic and for any structures.
<b>Engineering difficulties</b>	Would need to accommodate farm traffic. Maintenance could become a significant issue.	Would need to accommodate farm traffic. Maintenance could become a significant issue.	Introducing 30mph limits to rural roads may present procedural challenges.	Gas main issues, plus a new ramp for the disused railway or a major bridge are the most obvious challenges.	Very difficult to work in the vicinity of Devil's Ditch(Dyke).	Introducing 30mph limits to rural roads may present procedural challenges.	Difficult to work in the vicinity of Devil's Ditch (Dyke) and overhead pylons.	Further work is needed to assess fully the engineering difficulties.
<b>Ecological issues</b>	Opening up new access along watercourse may cause disturbance.	Existing byway so likely to be minimal impact.	Where using existing roads minimal impact. Need to avoid disused railway. Routes near water will need further surveys. New route into Burwell by woodland could present issues.	Some hedge removal. Opening up the railway bridge, surfacing the disused railway and adding a new ramp by a SSSI and County Wildlife site or a major bridge in the same area. Possible issues near watercourses nearer Burwell. The cost and risks of agreeing works are major challenges for the route.	Very difficult to cross Devil's Ditch (Dyke) due to limited space and SSSI.	Existing road so no impact.	<u>Ecological surveys not done</u> , but the route crosses Devil's Ditch or Dyke, which will raise major issues.	Ecological surveys focused on Options 3 and 4, as these were thought to be the most likely to progress. The difficulties with option 4 have brought Option 7 into play and further ecological studies are needed for this, with the first point of focus being Natural England (and Historic England).
<b>Land ownership issues</b>	Agreement essential and this will be the major influence on exact route alignment, engineering difficulties, ecological issues and costs.	Although mostly Byway one section of Public footpath needs agreement. Off byway option needs agreement.	On road sections existing. Agreement essential for new link with Burwell.	Agreement essential for route along disused railway or close to it and beyond. There are limited options and a choice about whether to link with Reach or not.	Agreement essential with little choice.	Existing road so no issues.	Agreement essential with little choice. Major landtake needed for new bridges. Possible issue in Burwell where space is very restricted and land may be needed from a private garden. This needs more detailed surveys and design.	It is assumed that landowners would be compensated for their loss of land and all works would be designed to ensure that they fitted with the operational needs of landowners. The Local Authority does have powers to acquire land or to create rights of way, but it is hoped that this will not be needed.
<b>Comments</b>	Discounted due to length of Swaffham Prior to Burwell route.	Discounted due to length of Swaffham Prior to Burwell route.	Design land negotiations, ecological studies and community engagement to be progressed.	Potentially the best alignment but ecology makes progressing this risky. Further ecological studies, design, land negotiations and community engagement would be needed, but at high cost and with no guarantee of approval being reached.	Discounted due to major difficulties of getting an LTN 1/20 compliant route.	Useful as an interim route, but discounted as long term option due to length of detour.	Potentially a good route that would be useful for many journeys. Major issues with ecology and heritage would need addressing. This is an expensive option. <u>If to be progressed needs more ecology work.</u>	Efforts to be focused on Options 3, 4 and 7, with careful consideration as to whether Option 4 needs to include the link with Reach. There are similar challenges regarding Devil's Ditch (Dyke) for Options 4 and 7 so early discussions with Natural England and Heritage England are recommended before progressing far with either option.

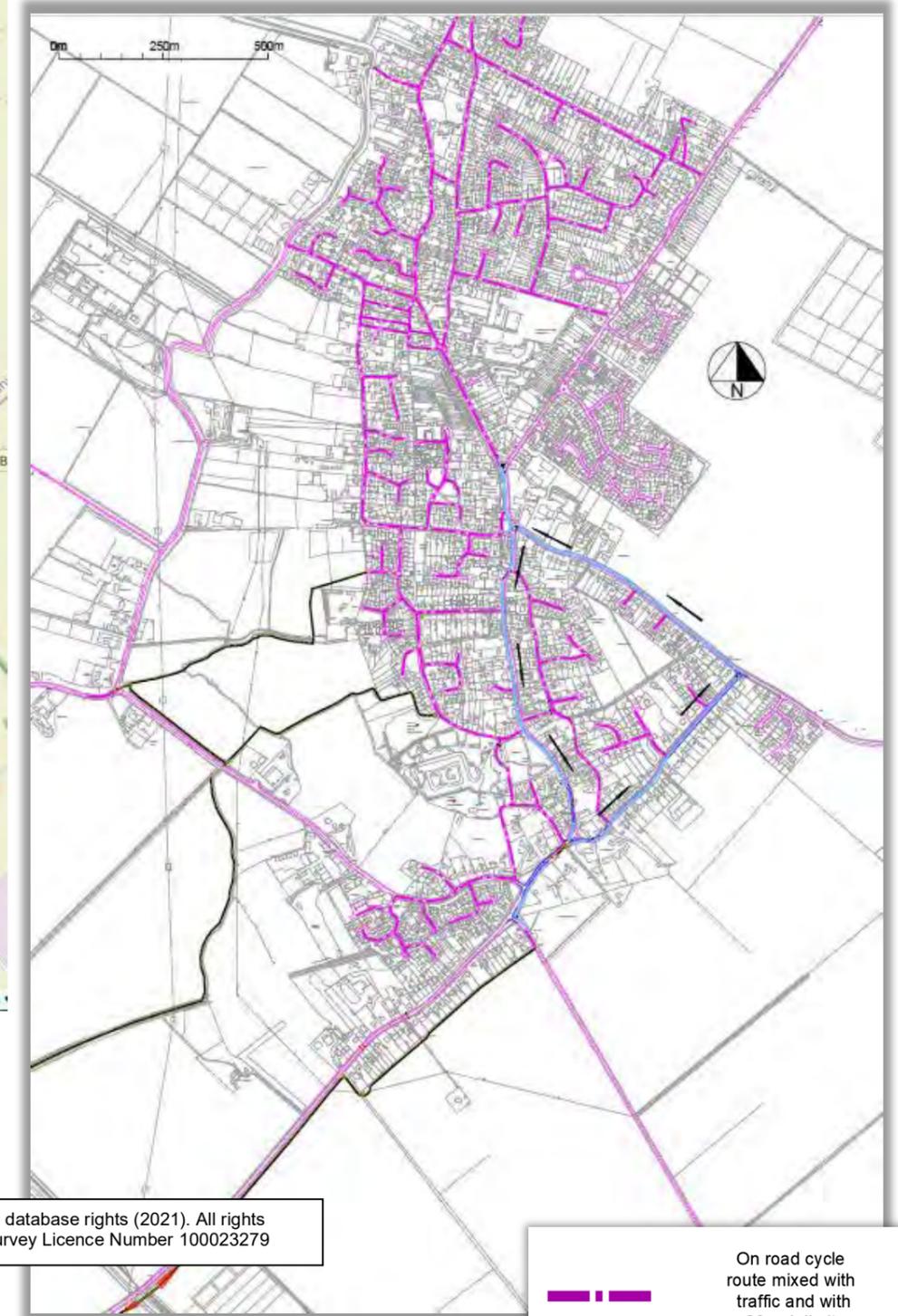
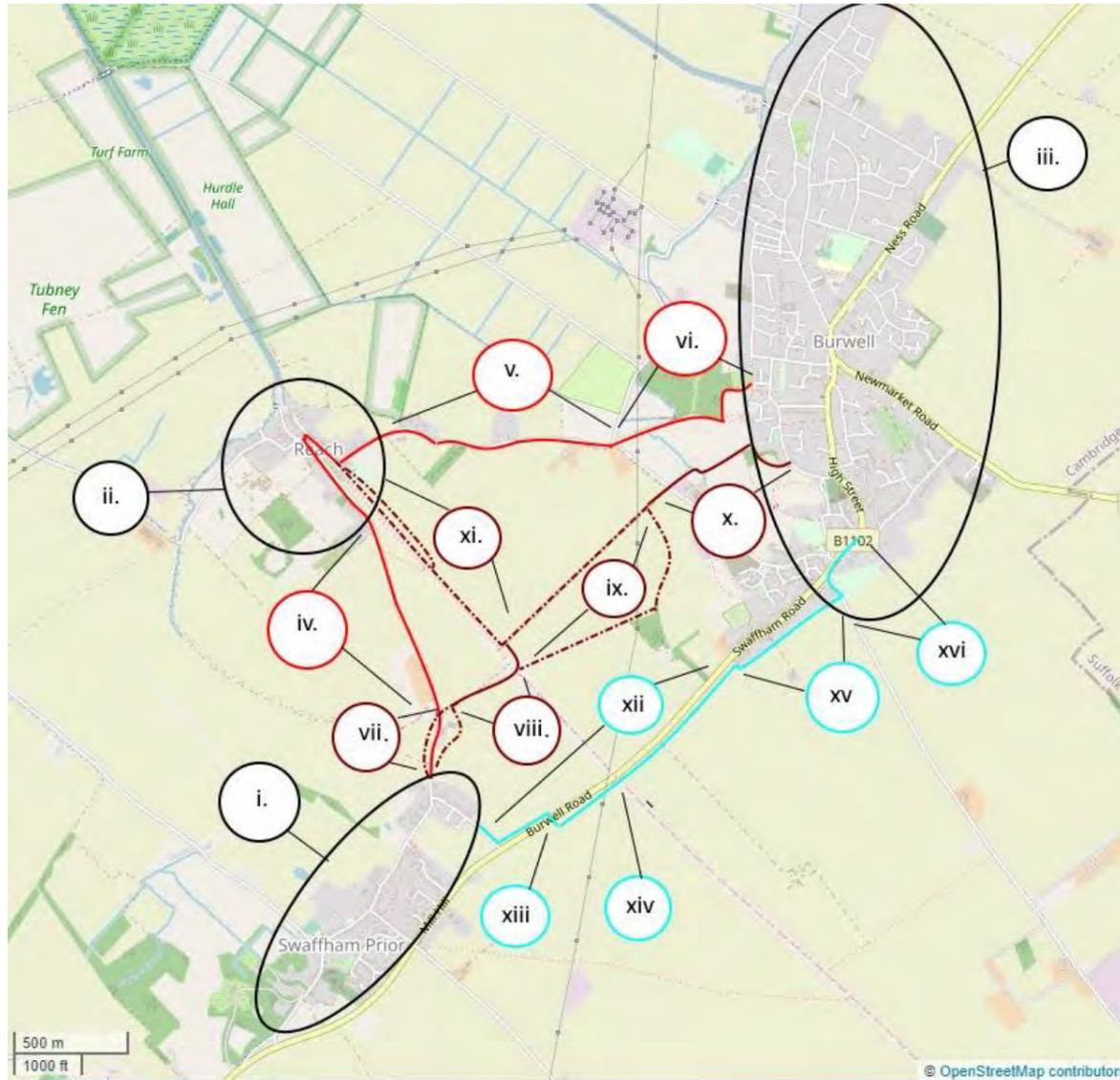
Based on the analysis of options the following are recommended to be progressed:

i. 20mph limit in Swaffham Prior with optional implementation (subject to consultation) one or both of:

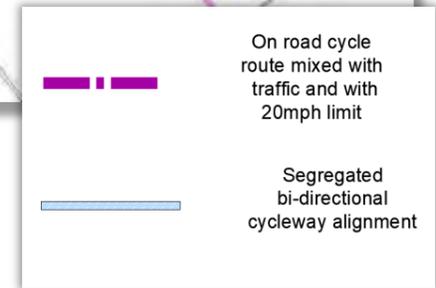
- One way system, some widened footways and segregated cycleway in High Street.
- Point closure of Lower End.

ii. 20mph limit in Reach village.

iii. 20mph limit across Burwell and introduction of segregated cycleway on the B1102 part of The Causeway, along with (subject to consultation) the introduction of one-way, some widened footways and segregated cycleways on High Street, Isaacson Road and Newmarket Road. Proposals for Burwell are shown right. These are major and would be costly and challenging to deliver but have big potential benefits and are needed if maximum benefits are to be gained from new links beyond Burwell. For Option 7 the works need to extend to Heath Road although this would be beneficial even without Option 7.



© Crown copyright and database rights (2021). All rights reserved. Ordnance Survey Licence Number 100023279



- iv. 30mph limit on Swaffham Road should be linked to works in Swaffham Prior (i).
- v. 30mph limit, removal of centre-line markings and point closure of the road, possibly as a trial, including 30mph on Reach Road to Burwell.
- vi. New direct field edge route to link Reach Road with Priory Close. New route will need landowner's agreement and discussions should start as soon as possible to find a good alignment, check ecological constraints and agree accommodation works and compensation. Needs speed limit change on Reach Road to 30mph maximum.

**Then either Option 4 or Option 7, subject to consultation and feedback from Natural England, Historic England and National Grid.**

#### Option 4

- vii. Options for new off-road link between Swaffham Road and the disused railway corridor to only be progressed if the ecological constraints can be addressed. New route will need landowner's agreement and discussions should start as soon as possible to find a good alignment and agree accommodation works and compensation. Only worth progressing if an onward route can be agreed with Natural England and others. This needs detailed work including ecology, arboricultural work and discussions with landowners.

- viii. New path on or near disused railway needs landowners agreement, planning and other consents. Habitat loss will be a major concern and this will have to be addressed. Major ramp or major new bridge to be designed to check that a good alignment is achievable near to Devil's Ditch (Dyke).
- ix. Field edge route along footpath and Byway or alternative along disused railway. Byway route is preferred, but any route will need landowner's agreement and discussions should start as soon as possible to find a good alignment and agree accommodation works and compensation. Discussions also need to be progressed with Cambridgeshire CC regarding the use of the byway and with Cadent in regard to the gas main that follows the byway.
- x. New direct field edge route to link Reach Road with Spring Close. New route will need landowner's agreement and discussions should start as soon as possible to find a good alignment, check ecological constraints and agree accommodation works and compensation. Cadent will need to be included in discussions due to the need to cross a gas main.
- xi. Optional link with Reach. This is considered to be an attractive option, but not essential, subject to what is achieved with (v).

#### Option 7

- xii. New path needed in field edges following Roger's Road and the B1102. The existing path is not to a suitable standard and can be removed.
- xiii. Major new bridge needed to cross the B1102 in high speed area. This will need major ramps on each side of the B1102 and considerable amounts of land. Earthwork ramps are recommended which will need to be parallel and in line with the B1102 and gently graded.
- xiv. New crossing of Devil's Ditch or Dyke close to the B1102 and overhead pylons. Details to be agreed but the assumption is that a bridge will be needed and agreement will be needed with Natural England, Historic England and National Grid.
- xv. New path in field edges behind properties following Swaffham Road with suitable screening and fencing.
- xvi. New paths and reallocation of roadspace needed for new link from Heath Road to Burwell High Street, where space becomes very constrained.

**Progress of all options will need community engagement as outlined later. Option development will clearly also be dependent on the funds available and this is also discussed later.**



*Burwell Church is visible in the distance looking along the disused railway. This is an attractive direct option, but there are many potential issues with this, particularly ecology. There are also issues with crossing Devil's Ditch or Dyke near the B1102, so more work is needed to study all the options and implications. It is recommended to have early discussions with Natural England, Historic England and National Grid, before committing major funding to detailed studies of the ecological impact of any works.*

## 7. Potential Usage

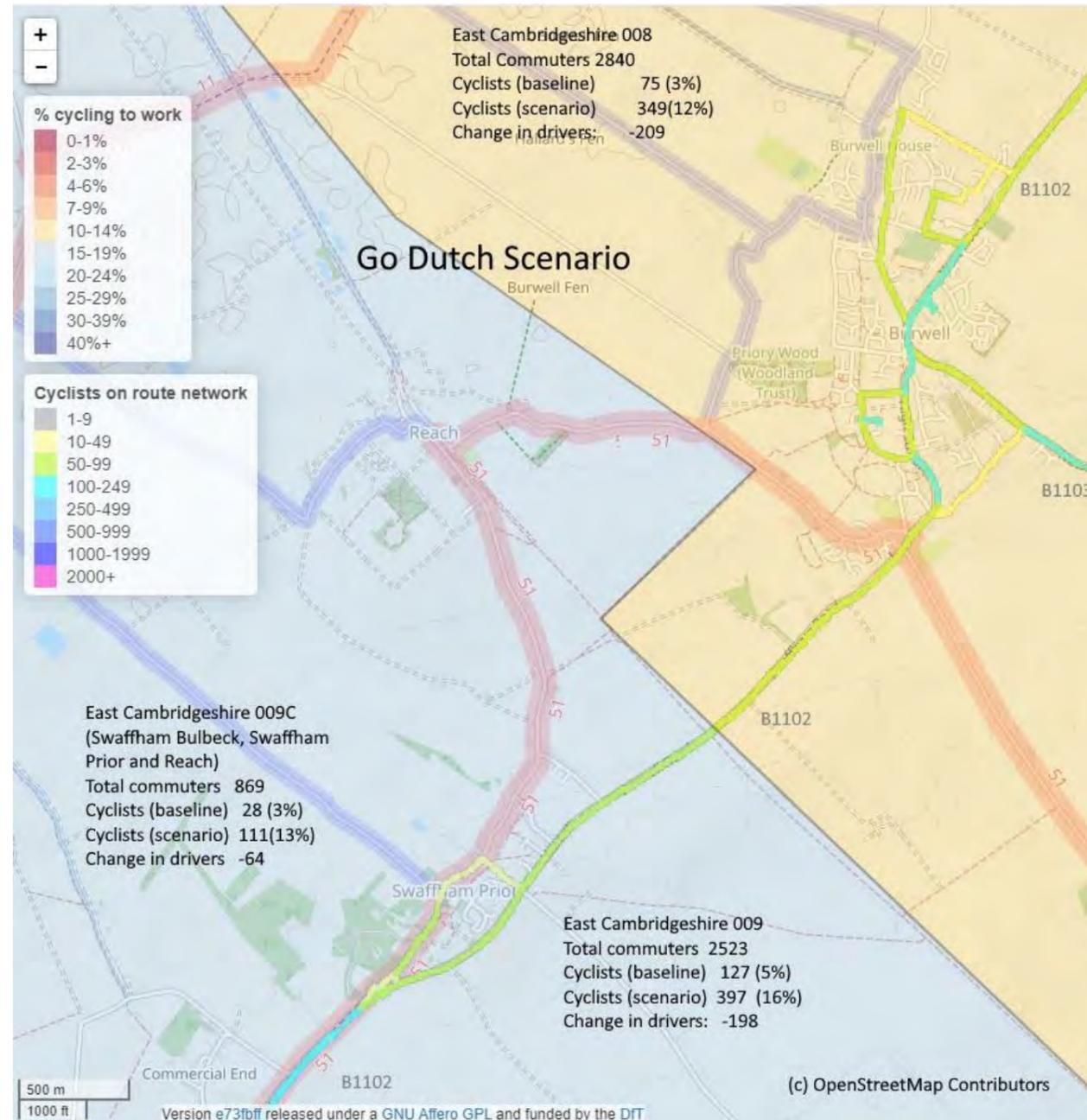
There is little data on actual cycle usage between these communities, but some indication can be got from various modelling tools. The [Propensity to Cycle Tool](#) has been used to get an idea of potential usage. The tool was designed to assist transport planners and policy makers to prioritise investments and interventions to promote cycling. It answers the question: “where is cycling currently common and where does cycling have the greatest potential to grow?”, but it has to be used with care.

The tool uses census data to get information on local populations and local modal shares of journeys to work and school by bike and uses mapping data to get information about trip distances and geography. The tool is focused on journeys to work and school, because this is the data that is collected, so it does not allow for leisure and other activities.

The tool uses various scenarios such as “Go Dutch” whereby it assumes that the infrastructure and modal share are similar to a Dutch case, adding in factors for hilliness, which will deter usage. For East Cambridgeshire’s case there is no reason to see why Dutch levels of cycling could not be achieved. The tool also uses an “Ebike” scenario, which assumes that the use of Ebikes and Dutch style infrastructure will significantly increase the range and number of cycle trips, so for instance cycling between Burwell and Cambridge would be much more likely than at present.

Under the “Go Dutch” scenario as indicated right the tool highlights a number of interesting issues:

1. The tool assumes that cyclists between Burwell and Swaffham Prior will cycle along the B1102 since this is the most direct route and the tool assumes people will choose



the most direct route. The tool assumes that the route will be brought up to “Dutch” standards throughout, but this study has shown that this is extremely difficult to do. The tool has not considered Option 4 (as an alternative to the B1102) because it does not exist at present. If Option 4 is completed it therefore needs to be as direct as the B1102 route, to get maximum usage and would then feature in the tool.

2. The tool shows the importance of the main roads within Burwell and the study has suggested ways to bring some of the B1102 and B1103 up to “Dutch” standards. The section of the B1102 north-east of The Causeway junction is highlighted as being of great importance, as has been mentioned previously in this study. However the study has also highlighted that there is no obvious way to bring this up to “Dutch”

standards at present, which means that development in the area has to produce new high quality “Dutch” style provision.

3. The tool shows that realistically the numbers cycling via Reach will be low; that is not surprising given the population of Reach, but nevertheless for those residents good cycling infrastructure will be important.

The numbers shown in this map are numbers of people rather than trips and are for commuting trips only. The tool provides separate figures for school and for the Ebikes scenario. The figures obtained from [www.pct.bike](#) are collated below:

Scenario	Usage on most direct route between Swaffham Prior and Burwell
Go Dutch Commuters	50-99
Go Dutch School trips	224
Ebikes Commuters	100-249

It should be noted that commuting trips are a low proportion of all trips and commuting patterns have changed since the start of the Covid-19 pandemic. Nevertheless the tool shows the potential for increased usage including a big potential increase in school trips, presumably based on large numbers cycling to Bottisham Village College and potentially also to Cambridge. It also shows significant potential increases in commuting trips, particularly with the Ebike scenario.

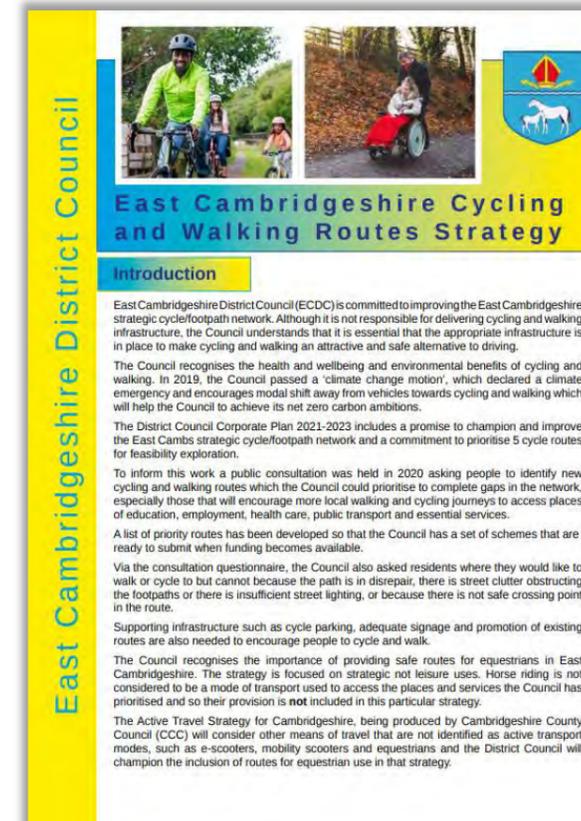
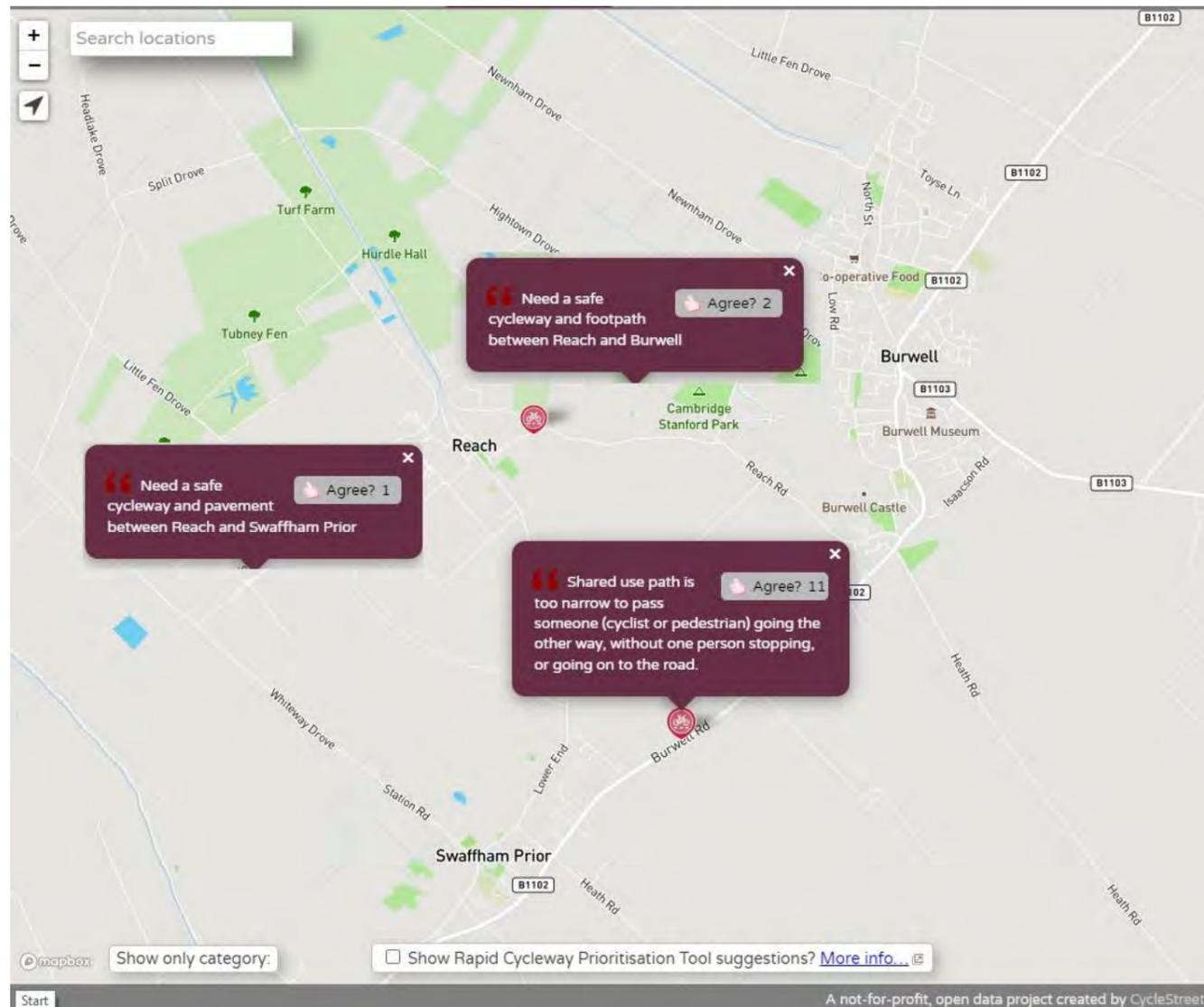
Whilst the tool does not allow for attractiveness it is likely that if a very attractive and direct “Dutch” style route is developed (that for instance follows the disused railway) it will attract significant leisure users and walkers in addition to the figures above.

Other ways of assessing potential demand include on-line tools such as Widen My Path, however the number of entries on this in this area is low. Nevertheless it is useful check to ensure that issues raised have been considered in this study.

An extract from Widen My Path is shown below with comments added in for ease of viewing. This does show concern about the narrow path between Burwell and Swaffham Prior.:

Another on-line tool that has recently been developed may in future contain more data on the area, but it is limited at present. See <https://www.cyipt.bike/rapid/cambridgeshire-and-peterborough/m.html>

As mentioned earlier East Cambridgeshire District Council has conducted surveys as part of the Cycling and Walking Routes Strategy. The full report is at <https://www.eastcambs.gov.uk/sites/default/files/agendas/Cycling%20and%20Walking%20Routes%20Strategy%20webAC.pdf>



In total 309 cycle routes were proposed. There was a lot of demand/ interest in new routes in this vicinity, but mostly from Burwell to locations where there is no infrastructure at all, such as Burwell to Fordham. There were 10 proposals for a new Burwell to Cambridge route which is relevant for this study. Many responses showed a strong demand for leisure routes. These are not picked up by the Propensity to Cycle analysis of journeys to work or school.

## 9. Land Ownership

The most complicated part of the development of any new route is likely to be the need to get landowners' agreement. Time and funding needs to be allocated for this and if necessary the Local Authority needs to be willing and able to use Statutory Powers to deliver the proposed routes. This should however be a last resort and the aim should be to build good relationships with all landowners.

Sustrans has done some research on land ownership in the area and has identified that, as expected, there are multiple land owners. The number of individual parcels of land in the area is indicated adjacent. Some landowners may own a number of parcels and the people farming land may not be the landowners. Landownership data is widely available from the Land Registry at <https://www.gov.uk/search-property-information-land-registry>, but Sustrans considers that ownership details should be kept confidential until discussions have been had with the landowners concerned. Sustrans is providing information on land ownership to East Cambridgeshire District Council separately to this report, but this is unlikely to be complete or to tell the whole picture, as to who the key people are who need to be contacted. Indeed it is likely that Parish and District Council Officers and Councillors may already know many of the key landowners and this may be the best place to start.

It may be useful to note that Cambridgeshire County Council is a major landowner in this area with their County Farms Estate and that can be seen at <https://maps.cambridgeshire.gov.uk/?tab=maps> under Public Sector Assets/ Rural Assets. Cambridgeshire County Council also hold records of



the extent of highway land including the recorded widths and positions of rights of way.

Where developments have or are taking place the developers have to declare their land ownership

and this can provide some useful information and the planning process can be a good way of obtaining agreement for new provision on private land.

*Plan showing parcels of land in the area.*

# 9. Ecological assessment

## Introduction

### *Scope and limitations of ecological assessment*

The likely ecological constraints for route options R3 and R4 have been assessed by Green Environmental Consultants in December 2021<sup>1</sup> and are summarized below. Option 7 was added later so has not been assessed, but it also has to cross Devil's Dyke SSSI. A Preliminary Ecological Appraisal in line with CIEEM (2017) guidelines<sup>2</sup> was undertaken including walkover assessments of both routes from public footpaths and highways. Some features situated on adjacent land, such as agricultural drains, could not be closely inspected. As this project is in feasibility stages and the design has not been finalised this should not be considered to be a comprehensive assessment but allows comparison of the ecological impacts of the different routes and identifies any major constraints for the proposal.

### *Viability and Risk Assessment*

No barrier to route creation have been identified in association with Route Option 3 (R3).

**Development of Route Option 4 (R4) is significantly constrained by sites of national and county ecological importance, there is a high likelihood that these represent a barrier to progress of R4.**

A boardwalk or bridge would be required to avoid impacts on Devil's Dyke Site of Special Scientific Interest (SSSI) and Burwell Disused Railway Line County Wildlife Site (CWS), see Plate 1. This would

apply major costs and risk to this option. This approach would also require detailed consultation with Natural England and the local wildlife trust. Protected species may be present along both route options and will have associated costs for survey and mitigation, but these are not considered likely to be prohibitively high.

R4 will require a greater level of Phase 2 surveys than R3. Both will require further assessment with respect to badgers, bats, great crested newts, plants and water vole. A dedicated reptile survey would be required where R4 intersects with Burwell Disused Railway Line CWS, along with a more intensive plant and habitat assessment.

Owing to the large number of sub-options being assessed, a biodiversity unit calculation using the Defra 3.0 metric has not been undertaken comparing the two routes. Based on habitats (including hedgerow) within the routes being of moderate condition and that each route would occupy a 5m construction corridor, R3 would require significantly less off-site mitigation compared to R4.

As habitats of very high distinctiveness are present along Route Option 4 (e.g. lowland calcareous grassland), it is possible that the loss of these habitats could not be mitigated for, which would then prevent the scheme from achieving a 10% net gain. A 10% net gain will be mandatory for all schemes requiring planning consent beyond November 2023. This would therefore further undermine the viability of R4.

## Ecological Baseline Assessment

### *Designated Nature Conservation Sites*

Cycleway Swaffham Prior to Burwell Cambridgeshire: Options 3 and 4.

Devil's Dyke Special Area of Conservation (SAC) (a site of international importance to nature conservation) is located approximately 3.6km south of the two route options, as its closest point.

Devil's Dyke SSSI, which is subject to statutory protection is located within 380m of Option 3 at its closest point. Option 4, crosses the SSSI (at NGR: TL 57559 65258).

Four non-statutory local wildlife sites were identified within 1km of the proposal (see Figure 1). The eastern and western option of Route 3 crosses the western boundary of Burwell Disused Railway Line CWS. The western section of Route Option 4 also crosses this CWS. The eastern section of Route Option 4 would be located along the boundary of Spring Close CWS. Swaffham Prior Meadow CWS and Pauline's Swamp CWS are 0.25km west and 0.5km east of R3 and R4 respectively.

### *Habitats*

Route 3 is principally located along existing highway. Within the village of Swaffham Prior, the proposals coincide with broadleaved woodland, managed grassland, and private gardens. To the north, where improved access to bypass the existing bridge is a possibility, the habitats are more rural and include areas of neutral grassland, cereal and non-cereal crops, lowland calcareous grassland and dense scrub. Land use as the route approaches and passes into the village of Burwell include a mosaic of arable fields bounded by ditches and hedgerows, with areas of woodland associated with Priory Wood (a Woodland Trust site) and areas of managed public park (Priory Meadow) and road verge with scattered trees.

R4 is more rural and incorporates areas of arable land (including not supporting cereals), managed

grassland, dense scrub, lowland calcareous and neutral grassland. Areas of broadleaved woodland are also present to the east, where the proposed route meets Spring Close, on the south-western edge of Burwell.

### *Legally protected species*

Suitable habitat has been identified along both routes for great crested newt, nesting birds, commuting, foraging and roosting bats, reptiles (R3 and R4 where located within the sections of disused railway line) and badger. Ditches crossed by both route options were suitable for water vole, with protected plant species anticipated within the boundary of Burwell Disused Railway Line CWS and Devil's Dyke SSSI.

### *Notable species*

Suitable habitat has been identified for hedgehog along both routes. With two nationally declining butterfly species recorded within Burwell Disused Railway Line CWS (crossed by both route options).

## Anticipated impacts and effects

### *Designated Nature Conservation Sites*

Green Environmental Consultants raised no comment regarding potential effects on SAC. Based on the author's experience the likelihood of likely significant adverse effects on designating habitats within Devil's Dyke SAC is low.

Green Environmental Consultants have determined that R4 would have a significant adverse effect on protected habitats within Devil's Dyke SSSI, with alternative route options located along Burwell Disused Railway Line CWS leading to severe

<sup>1</sup> Green, J (2021) Green Environmental Consultants:1540/1 Version: V1: Preliminary Ecological Appraisal Proposed

<sup>2</sup> CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

damage and partial destruction of designated habitats within this site (major significant adverse effect).

R3 would likely have a significant minor adverse effect on designated areas of species rich neutral grassland at the western end of Burwell Disused Railway Line CWS, if the route were to be off-road.

#### *Habitats*

R3 will principally lead to the loss of habitat of low ecological value (arable land), exceptions to this include where the route passes through existing areas of neutral grassland to the west, including Burwell Disused Railway CWS (if the route were to be off-road) and Priory Wood to the north-east.

Construction of R4 where it crosses Devils Ditch SSSI and Burwell Disused Railway CWS will lead to the loss of species rich calcareous/chalk grassland, see Plate 2. Areas of grassland within the SSSI boundary are of very high ecological value, with those within the CWS being of high ecological value. The remaining habitats along the proposed route are principally of low to moderate ecological value.

Owing to the large number of sub-options being assessed, a biodiversity unit calculation using the Defra 3.0 metric has not been undertaken. Based on habitats (including hedgerow) within the routes being of moderate condition and that each route would occupy a 5m construction corridor, R3 would require significantly less off-site mitigation compared to R4. It should be noted that the costs of biodiversity offsetting is highly variable at the time of writing as this is an emerging market but offsetting units can cost between £15,000 and £40,000 per unit.

As habitats of very high distinctiveness are present along Route Option 4 (e.g. lowland calcareous grassland), it is possible that the loss of these habitats could not be mitigated for, which would then prevent the scheme from achieving a 10% net gain. A 10% net gain will be mandatory for all schemes requiring planning consent beyond November 2023. This would therefore further undermine the viability of this scheme. As an indication, the loss of lowland calcareous grassland as part of the sub-option of R4 running north parallel to Devil's Dyke (c.700m length) would lead to the loss of approximately 6.2 habitat units. Allowing for full compensation and delivery of 10% net gain this would add an additional c.£100,000 – £273,000 to the cost of the scheme alone.

#### *Legally protected species*

Both route options have potential for impacts that would contravene current legislation in relation to great crested newt, protected plant species, nesting birds and badger (see Plate 4). The impacts on great crested newts are likely to be more avoidable as part of R3. Both schemes proposed works within 8m of existing ditches, so could contravene current legislation relating to water voles. Similarly, R4 options located within Burwell Disused Railways CWS could lead to a breach of legislation relating to reptiles without appropriate construction controls being in place.

Trees with bat roosting potential were identified by the assessment, removal of these without further assessment may lead to contravention of current legislation. No lighting is currently proposed and potential impacts of any lighting on foraging and commuting bats can be avoided through good design in accordance with industry guidelines. The

removal of scrub and therefore impacts upon existing bat flight lines will need to be assessed.

#### *Notable species/assemblages*

Hedgehogs may be disturbed, injured, or killed during the construction works of the proposed routes. Construction within the boundary of Burwell Disused Railway Line CWS could lead to the loss, or damage of locally notable plant species, as well as lead to the loss of two nationally declining butterfly species, see Plate 3.

## Recommendations

#### *Further survey and assessments to ensure compliance with statutory legislation*

The PEA must be updated at the detailed design phase to include any additional works areas, access or storage to assess potential risks to species with statutory controls. This will confirm which additional surveys are necessary to ensure compliance with statutory legislation. Based on the outline route options Green Environmental consultants have recommended walkover surveys for badgers for both routes and further surveys for water vole (where path is proposed within 8m of existing ditches), checks for bat roosts in trees, protected plant species (where either route passes within the boundary of Devils Dyke SSSI, or Burwell Disused Railway Line CWS). A presence/likely absence survey for reptiles where R4 would pass through Burwell Disused Railway Line CWS would also be required.

Based on the authors experience, a great crested newt survey of waterbodies within 250m of R4, and off-road sections of R3 is recommended.

If either option is to be progressed it is strongly recommended that Natural England are consulted, both with respect to scoping out likely significant ecological effects on Devil's Dyke SAC, and to discuss their requirements with respect to detailed assessment where direct impacts on Devil's Dyke SSSI are anticipated (i.e. Route Option 4). Consultation with Bedfordshire, Cambridgeshire and Northamptonshire (BCN) Wildlife Trust is also strongly recommended at the start of the next design stage, as adverse ecological impacts on Burwell Disused Railway Line CWS have been identified with respect to Route Option 4 and Route Option 3 if it were to leave the existing road.

#### *Further surveys and assessments to ensure compliance with planning policies*

The PEA must be updated at the detailed design phase to include any additional works areas, access or storage to assess potential risks to species and habitats protected through the planning process (such as habitats and species of principal importance<sup>3</sup>). This will inform the need of any additional species/habitat surveys.

It is recommended that an invertebrate scoping survey (focused on butterflies) is commissioned with respect to where R3 and R4 interact with Burwell Disused Railway Line CWS.

The updated PEA will need to be combined with the findings of further assessments to enable the production of a comprehensive Ecological Impact Assessment (EclA) for the preferred route.

A Biodiversity Net Gain scheme (following the most current Defra Metric) will be required based on an updated assessment of the detailed design.

<sup>3</sup> As listed for the Natural Environment and Rural Communities Act 2006

*Indicative costs for further surveys and assessments to ensure compliance with planning policies*

It is estimated that further survey and reporting costs necessary to support a future planning application would be in the region of £50 - 60,000 + VAT. Depending upon when they were instructed it would likely take between 10 -12 months to gather all the necessary ecological survey information to support a planning application.

It is not possible to be able to give BNG mitigation costs at this stage, but they are likely to be significant (e.g. several £100,000).

*Additional considerations for detailed design*

The detailed design, including the location of temporary access points, storage and works compound should:

- Avoid works within the boundary of Devil's Dyke SSSI + surrounding 15m buffer. Review opportunities for a bridge, or boardwalk (using micro-piles) which would span over the SSSI.
- Minimise works within the boundary of Burwell Disused Railway CWS + 10m buffer. R4 sub-options located along the base of the CWS should be discounted.
- Minimise habitat loss, particularly in the most ecologically notable habitats.
- Maintain a 5m buffer between works and the toe of ditch banks to protect water vole habitat.
- Avoid fencing and lighting where possible, or design for minimal impacts on wildlife if essential.

- Include biodiversity enhancements such as bat and bird boxes, appropriate planting/seeding of re-instated habitat and any biodiversity net gain requirements.

*Protected Species Licences which may be required.*

Mitigation licences may be required for bats, badgers and water vole for both routes if found to be present, and avoidance through design can't be applied. Potential impacts to great crested newts can be mitigated via the application of a district licence or precautionary methods of works.

*Construction and Environmental Management Plan (CEMP)*

A CEMP must be prepared that includes protection measures;

- Retained trees, hedgerows and watercourses/ditches
- Badgers (R4), notable plants (R3 and R4), reptiles (R4 where located within Burwell Disused Railway CWS), great crested newts, nesting birds and hedgehogs across both routes
- Any other measures recommended in further habitat and species assessments

*Landscape and Ecological Management Plan (LEMP)*

A LEMP must be produced to protect and enhance habitats and species populations along the route for a minimum of 30 years and must include detailed information on the funding and responsibilities for implementation to ensure compliance

**Figure 1 – Wildlife Site Plan.** Focused on section between Burwell (to south-west) and Swaffham Prior (north-east)



**Plate 1 –** Standing within Burwell Disused Railway Line CWS at the Devil's Dyke junction. Bank down which the route will have to traverse is on the left. To minimise ecological impacts bridge, or boardwalk would be required across this gap.



**Plate 2 –** Lowland Calcareous grassland meadow created next to the Devil's Dyke (right side). Alignment of a sub-option for Route 4.



**Plate 3 –** View along Burwell Disused Railway Line CWS. Nationally rare plants and declining species of butterfly occupy habitats along the base and banks of the cutting.



**Plate 4 –** human and possibly badger path over hedge bank into Spring Close from the footpath.

# 10. Community engagement

Community engagement will be essential for delivery of the project. East Cambridgeshire District Council have already seen that there is a demand for the route as part of their Cycling and Walking Route Strategy, but engagement will need to be taken to another level now that the details of any work are becoming clearer.

Sustrans has not undertaken Community Engagement as part of this study, but this is clearly a high priority to progress the proposals.

## 10.1 Evidence of Support

Initial contact has been made with Reach, Swaffham Prior and Burwell Parish Councils. A summary of the Burwell Parish Council response is:

- The Council believes the infrastructure to be very poor.
- We believe that there is a high demand for cycling in Burwell.
- The main improvement would be joined up cycleways to Exning / Newmarket, Cambridge, the New Soham railway station.

## 10.2 Audit of Engagement Risk

At present we envisage that the major risks are likely to be:

- Landowners who do not want the route because of security or other concerns.

- Members of the community in Swaffham Prior, Reach or Burwell who may not want changes to the street environment.
- Businesses in Swaffham Prior, Reach or Burwell who may have concerns about access to their properties.
- Those with an interest in the disused railway and Devil's Ditch (or Dyke) who are sensitive about changes of use, heritage and habitat loss.
- Wildlife Organisations and members who are concerned about habitat loss along any part of the route.
- The owners of properties near Burwell Castle who may object to the new access provision there.
- Footpath, byway and bridleway users who may object to surfacing works and/ or changes in the number and types of users.

## 10.3 Audit of Engagement Opportunity

The works in Burwell and Swaffham Prior stand to bring benefits for the whole community and there needs to be extensive engagement across the communities including with schools, clubs and residents groups as well as the Parish Councillors, District and County Councillors.

Whilst the disused railway and any new crossing of Devil's Ditch (or Dyke) will undoubtedly be a sensitive issue there may be good opportunities to increase biodiversity in the area, as well as improving access.

## 10.4 Community Engagement Plan

At this stage there has not been Community Engagement, although Sustrans regards this as vital for the success of the proposals.

The early stages of community engagement will need to start with the Parish Councils and the District and County Councils and be directed by the wishes of the elected members, but this will need to be handled delicately, so that relations with landowners are not damaged. Given the huge challenges involved in crossing Devil's Ditch (or Dyke) it makes sense to have discussions with Natural England and Historic England at a very early stage and to engage local wildlife and heritage interests, if one of the options that involve a new route across the Ditch (or Dyke) is to be progressed. Landowners should know at a very early stage what is being proposed and need to understand that nothing is finalised yet and their wishes will of course be taken into account, but they also need to be aware of the ecological issues and constraints that this imposes.

A community engagement plan might include:

- Presenting at Council meetings etc.
- The completion of Healthy Streets Audits for the villages. This can help engagement in the wider issues.
- Attendance at Reach Fair and other events that draw in people from a long way around.
- Consultation meetings or events outside the immediate area, such as linking up with Swaffham Greenway activities and events at Wicken Fen.
- In-depth discussion with landowners.
- Meetings with wildlife and heritage groups.
- On-line consultation and poster, leaflet campaign.
- Consultation meetings in Burwell, Reach and Swaffham Prior.
- Events in Burwell, Reach and Swaffham Prior .
- Walk through of proposals.
- Meetings with businesses and staff and staff surveys.

# 11. Key stakeholder engagement

All key stakeholders should be engaged at this stage. This can be informal discussions that can give an indication of likely acceptance of the scheme and likely issues that will need to be examined more carefully at Detailed Design.

Key Stakeholders might include:

- Burwell Parish Council
- Reach Parish Council
- Swaffham Prior Parish Council
- Local Public Rights of Way Team
- Greater Cambridge Partnership
- Cambridgeshire County Council
- Combined Authority
- British Horse Society
- CamCycle
- Historic England
- Natural England
- National Trust
- Disability Groups

## 12. Legal Agreements, Planning Application and other Approvals

All of the options will need planning approval for the off highway construction works and will need highways approval and the appropriate orders for highway works.

Where new routes are not following appropriate rights of way or public highway legal agreements are likely to be needed with the landowner. These will need to grant rights for users and allow for construction and maintenance of new paths. The signatory for the legal agreements will need to be agreed at an early stage in discussions between East Cambridgeshire District Council and Cambridgeshire County Council and budgets will need to be provided. There will also need to be consideration as to when and how statutory powers might be used if there is no progress in negotiations with landowners, but the aim should be to avoid this if possible.

It is not possible to say at this stage exactly how much land will be needed or where exactly paths should be positioned. They will need to be positioned to suit landowners' requirements such as farm operations. For instance where a path follows a ditch or drain, space may need to be left to allow access for clearing the drain, without damaging the path. It is to be expected that many landowners will require new fences or hedges to demarcate boundaries and maintenance of these will need to be agreed. Where there are hedges or fences there should be a space of at least 1m between the edge of the hedge or fence and the path edge, so the minimum width required for any new route is likely to be 5-6m. Where there are new ramps they will

require significantly more space and may also need land, where material can be dug to form earthwork ramps. Ecology requirements and the need to protect trees may also increase the width required and, if horses are to be allowed for, an even greater width will be needed. In addition it is important to consider how a path and other features will be constructed and maintained. Space will need to be allowed for a site compound for construction and access routes and rights will need to be agreed for construction and maintenance vehicles and plant. All of these are matters that a skilled negotiator will need to consider, whilst developing a good understanding with landowners of the issues that are priorities for them.

Until discussions with landowners have progressed it is too early to be discussing planning details with the planning authority, but at the appropriate time pre-app discussions should be undertaken with the relevant local Authority to understand the issues that might come with an application and to inform the work likely to be needed at the Detailed Design stage.

Cambridgeshire County Council will need to be closely involved in discussions about highways matters including rights of way, road crossings, re-allocation of roadspace and changes to traffic flows.

An important part of the planning process is the consideration of options that this study forms part of and it will be important that there is further community engagement to help the planning process.

---

### Problems likely to arise

The planning process can be slow, but the lengthiest process may be in obtaining the necessary heritage and ecology consents that will be a requirement of any planning application, so these processes should start as soon as possible in the design stage and should not be left until the end.

For the planning process there may be objections to new paths, but with good design and community engagement this should not be a barrier to planning approval.

# 13. Construction and Maintenance

Any works on the highway will need traffic management and will need suitable facilities for construction or maintenance staff and a site compound for equipment and materials storage.

Within Swaffham Prior the extent of work is unclear, but the works will have similarities with the works carried out for the Heat Network. Roads are likely to have to be closed as through routes or made one-way alternate working. A possible location for site compound and facilities could be near the play area on the High Street.

Within Burwell careful planning will be needed:

- Traffic calming throughout the village will need to be done in stages with traffic management and site facilities moving as works progress.
- The segregated cycleways could be done in four stages. It would be possible to construct the segregated cycleway nearly to completion and then allow motorised traffic to use the cycleway while the next phase is being built and traffic is diverted. It would also be desirable to implement point closures before these works take place.
  - The Causeway, where an obvious location for site compound and facilities would be the Ex Service and Social Club Car Park.
  - The High Street, where a closure as a through route would mean traffic diverting via Isaacson Road and Newmarket Road. A possible location for site compound and

facilities would be the Gardiner Memorial Hall.

- Isaacson Road, where a closure as a through route would mean traffic diverting via the High Street and Newmarket Road. A possible location for site compound and facilities could be on part of the new development site on Newmarket Road depending on the timing of works.
- Newmarket Road, where a closure as a through route would mean traffic diverting via the High Street and Isaacson Road. A possible location for site compound and facilities could be on part of the new development site on Newmarket Road depending on the timing of works.

For Option 4 at least two site compounds are likely to be needed on either side of Devil's Ditch/ Dyke. Possible locations and work areas would be:

- For construction of the route from Swaffham Road and along the disused railway access could be from the agricultural land to the west of the railway bridge accessed off Barston Drove and a site compound and facilities could be in this area. This assumes that the disused railway can be used and be accessed under the existing railway bridge. If the disused railway is not an option a site compound and facilities to the east of Swaffham Road would be needed. Vehicular access would have to be through the village presumably via Rogers Road. An alternative option depending on the agreed alignment would be a site compound to the east of Swaffham Road.

- For construction of the route from Devil's Ditch/ Dyke into Burwell a site compound off Reach Road near the junction with the Byway would allow access along the Byway and into Burwell. Any site compound would need to keep clear of the gas main in the area. A temporary crossing of the field ditch to the east of Reach Road would be needed or the proposed new bridge in this area could be designed and installed to allow access for construction and maintenance.

For Option 2 a site compound off Reach Road nearer to the route alignment would work in a similar way to the compound off Reach Road for Option 4 and if both Option 4 and Option 2 are progressed one compound may be adequate for both.

For Option 7 the new bridge over the B1102 will need a closure of the road, but the aim should be that all major works are carried out well away from the highway and the bridge can be lifted into place relatively quickly. There will need to be good access to both sides of the B1102 for the road bridge where the ramp construction will need considerable land take. There will also need to be good access to both sides of Devil's Dyke or Ditch for the crossing of that feature, where the ramps will be shorter than for the road bridge. A site compound off Roger's Road would be a good option as well as another compound nearer to Burwell perhaps near the existing Devil's Dyke car park.

## 14. Cost estimates

At this stage costs are very approximate, based on estimated costs/ m or estimated unit costs. The highway works have the highest range of costs, because little is known about the construction of the existing carriageway or the services within the highway. Traffic management can also be a highly variable cost.

For the field edge path construction the major issues are the users of the path, with the need for much more substantial construction for farm vehicles than for people on foot or cycles and also the engineering complexities, which are unclear at present.

Item	Item description	Unit	Low cost per unit	High cost per unit	Quantity	Low total cost	High total cost	Notes
Option 1	2.5km byway and new farm access	Linear m	£170	£230	2500	£425,000	£575,000	Includes Reach to Burwell as Option 3
Option 1	Burwell Road calming	Item	£20,000	£50,000	1	£20,000	£50,000	Details unknown. 30mph limit and/or point closure
<b>Option 1</b>	<b>Total</b>					<b>£445,000</b>	<b>£625,000</b>	
Option 2	2.4km byway and new farm access	Linear m	£170	£230	2400	£408,000	£552,000	Includes Reach to Burwell as Option 3
Option 2	Burwell Road calming	Item	£20,000	£50,000	1	£20,000	£50,000	Details unknown. 30mph limit and/or point closure
<b>Option 2</b>	<b>Total</b>					<b>£428,000</b>	<b>£602,000</b>	
Option 3	0.8km New field edge and woodlands edge path	Linear m	£170	£230	800	£136,000	£184,000	Field edges to west of Burwell.
Option 3	Swaffham Prior to Reach calming	Item	£20,000	£50,000	1	£20,000	£50,000	Details unknown. 30mph limit.
Option 3	Burwell Road calming	Item	£20,000	£50,000	1	£20,000	£50,000	Details unknown. 30mph limit and/or point closure
<b>Option 3</b>	<b>Total</b>					<b>£176,000</b>	<b>£284,000</b>	
Option 4	2.4km field edge, disused railway and byway	Linear m	£170	£230	2400	£408,000	£552,000	Costs for ramp may escalate.
Option 4	New bridge over railway cutting if needed.	Item	£1,200,000	£2,500,000	1	£1,200,000	£2,500,000	No design done yet. Assume £300,000 for biodiversity nett gain but figure unknown at present.
Option 4	1.1km new path, for Reach link	Linear m	£170	£230	1100	£187,000	£253,000	Can be excluded subject to consultation.
<b>Option 4</b>	<b>Total</b>					<b>£1,195,000</b>	<b>£3,305,000</b>	High total includes bridge. Low total without bridge, but with £300,000 for biodiversity net gain.
<b>Options 5 is not considered deliverable so has not been costed. Option 6 is an existing route and has not been costed.</b>								
Option 7	2.1km new field edge path	Linear m	£170	£230	2100	£357,000	£483,000	Needs adequate land so that works can be done without major traffic management on B1102.
Option 7	New bridge over B1102	Item	£1,200,000	£2,500,000	1	£1,200,000	£2,500,000	Assume some savings in having two bridges built at same time close to each other.
Option 7	New bridge over Devil's Ditch or Dyke	Item	£1,200,000	£2,500,000	1	£1,200,000	£2,500,000	Should be a simpler structure than the road bridge but in a more challenging location and with potential for more of a feature bridge, so assume costs similar at this stage.
Option 7	0.3km new path roadspace reallocation.	Linear m	£500	£1000	300	£150,000	£300,000	Needs detailed design and utilities searches.
<b>Option 7</b>	<b>Total</b>					<b>£2,907,000</b>	<b>£5,783,000</b>	Bridge costs are the major element.

## Village Costs

(Applies to all options)

The costs of works in the villages are high and will be disruptive, but will be hugely beneficial in terms of the walking and cycling environment. These works would be a valuable investment in the local communities and are needed for all options and even if none of the options are completed.

The main costs are for Burwell, which is appropriate given the bigger population and the much more serious traffic issues faced within Burwell than that within both Reach and Swaffham Prior.

Item	Item description	Unit	Low cost per unit	High cost per unit	Quantity	Low total cost	High total cost	Notes
Burwell 20 mph	Raised tables or similar	Item	£15,000	£30,000	40	£600,000	£1,200,000	Assumed one per 100m over 4km. Needs detailed design.
Burwell The Causeway	Segregated cycleway.	Linear m	£500	£1000	150	£75,000	£150,000	Services unknown. Needs detailed survey.
Burwell one way	Segregated cycleway	Linear m	£500	£1000	2000	£1,000,000	£2,000,000	High quality finishes likely to be needed and complex design including signals.
<b>Burwell</b>	<b>Combined</b>	<b>Total</b>				<b>£1.7 million</b>	<b>£3.4million</b>	<b>Needs detailed design to get more accurate costing.</b>
Swaffham Prior Lower End Point closure	Bollards and legal work	Item	£20,000	£30,000	1	£20,000	£30,000	Considerable increase for bus gate if required.
Swaffham Prior High Street one way	Segregated cycleway	Linear m	£500	£1000	700	£350,000	£700,000	High quality finishes likely to be needed and complex design including signals.
Swaffham Prior additional speed limit works	Tables and legal orders	Item	£30,000	£75,000	1	£30,000	£75,000	Details unknown at this stage
<b>Swaffham Prior</b>	<b>Combined</b>	<b>Total</b>				<b>£0.4 million</b>	<b>£0.85million</b>	<b>Needs detailed design to get more accurate costing.</b>
<b>Reach</b>	<b>Speed limits and calming measures</b>		<b>£30,000</b>	<b>£75,000</b>	<b>1</b>	<b>£30,000</b>	<b>£75,000</b>	<b>Details unknown at this stage</b>

# 15. Business case and policy match

An AMAT (Active Mode Appraisal Toolkit May 2019 version) analysis has been done using various scenarios and data from the Propensity to Cycle Tool as referenced in Chapter 7, for links between Swaffham Prior and Burwell. Population numbers

make it harder to do this for links with Reach and this has not been done. The costs of Option 3 are significantly lower than Options 4 and 7 but usage will be expected to be lower. This assumes Go Dutch scenario, so high quality infrastructure everywhere. The toolkit shows as expected that the greatest benefits related to costs (BCR) will come from the work in the villages, where the numbers of trips changed can be expected to be the highest.

For the link between Swaffham Prior and Burwell the BCR is much weaker if there are high additional costs for a new bridge or bridges. Costs and type and extent of works are uncertain for this option and further analysis needs to be done when costs are clearer. The bridge costs are major and there is scope for big variation in costs dependent on the design, access arrangements etc. The

compensation costs for biodiversity net gain are also major and unclear at this stage.

Item	Item description	Capital	Annual maintenance	Usage change	Notes on usage	AMAT BCR
<b>Option 4 Edge of Swaffham Prior to edge of Burwell and edge of Reach</b>	High Cost with bridge and link with Reach	£3,300,000	£165,000	25 before 375 after	Based on Propensity to cycle 2011 census figures with assumption of journeys to work approx. 50% of trips. Based on Propensity to Cycle Go Dutch figures with assumption that journeys to work approx. 20% of trips. Cross checking with potential school trips from tool.	0.72
	Low Cost without bridge but with link with Reach	£1,200,000	£60,000	As above	As above	1.97
<b>Option 7 Edge of Swaffham Prior to edge of Burwell and Reach</b>	High Cost	£5,800,000	£290,000	As above	As above	0.41
	Low cost	£2,900,000	£145,000	As above	As above	0.82
<b>Burwell</b>	Whole village scheme as outlined high cost	£3,400,000	£170,000	375 before 1745 after	Based on Propensity to cycle 2011 census figures with assumption of journeys to work approx. 20% of trips. Based on Propensity to Cycle Go Dutch figures with assumption that journeys to work approx. 20% of trips. Cross checking with potential school trips from tool.	2.68
	Whole village scheme as outlined low cost	£1,700,000	£85,000	As above	As above	5.37
<b>Swaffham Prior and Reach</b>	Segregated cycleway in Swaffham Prior, speed limits and calming measures high cost	£925,000	£46,000	67 400	Based on Propensity to Cycle 2011 census figures for Swaffham Prior, Reach and Swaffham Bulbeck and 28 commuters by cycle. Assume figure for Swaffham Prior and Reach is 20 and 30% of trips. Based on Propensity to Cycle Go Dutch figures for Swaffham Prior, Reach and Swaffham Bulbeck and 111 commuters by cycle. Assume figure for Swaffham Prior and Reach is 80 and 20% of trips.	2.44
	Segregated cycleway in Swaffham Prior, speed limits and calming measures low cost	£430,000	£22,000	As above	As above	5.21

# 16. CDM and Design Risk

At this early stage of the project construction is likely to be some way off but the Client and Designer have responsibilities to minimise risk even at this early stage.

The Construction Design and Management Regulations (2015) assign duties to the Client and to the Designer and at this stage East Cambridgeshire District Council is the Client and Sustrans is the designer.

As the project progresses the Client will need to appoint a team to deliver the project in accordance with the Regulations and that will mean allowing sufficient time for the project and giving top priority to health and safety.

In considering the options Sustrans has sought to minimise risk, at this stage, but this will need to be an ongoing process taken on by the future project team and led by the Client.

<b>Designer</b>	Sustrans	
<b>Client</b>	East Cambridgeshire D.C.	
<b>Author</b>	NB (Sustrans)	
<b>Date</b>	31/03/21	
<b>Risk ID number</b>	<b>Description</b>	<b>Response</b>
1	<b>All construction works carry risk. Is work necessary?</b>	Clear need for new facilities, because existing do not comply with standards such as LTN 1/20 and on road route is a significant diversion.
2.	<b>Works under disused railway bridge.</b>	Opening up the disused railway bridge and using it as a construction route carries risks to the users of the road above and from any falling items. A check needs to be done with Cambridgeshire County Council on the structural condition of the bridge and any risks. Prior to any works goalposts and other protective measures would need to be installed. Using the bridge could be avoided with a compound to the east of Swaffham Road, but that has access issues due to gradients, so careful consideration needs to be given to construction access in this area.
4.	<b>Works on slopes near Devil's Ditch/ Dyke.</b>	Route using the disused railway has to ramp up from the disused railway cutting which brings risks of slippages or falls. Use of the ramp to be minimised by accessing it from both sides, if possible, but design details will need to allow for adequate widths and gentle gradients. Avoiding the need for ramp construction by installation of a new bridge has potential benefits.
5	<b>Works near roads carry risks.</b>	Road closures and traffic management will be needed in the villages, but between villages the recommendation is to avoid the major roads. However this is clearly not possible for Option 7 which follows the B1102, where careful arrangements will be needed for access to work areas and where there needs to be sufficient land for safe working away from the highway.
6	<b>Installing major bridges has risks</b>	It will be important that there is sufficient land for safe working conditions near bridges and good access to the bridge locations from both sides. A road closure would be needed for installation of a new road bridge.
7.	<b>Works in rural areas carry risks, including waterways and farm activities.</b>	Sufficient land needs to be agreed for safe working and maintenance and contractor to be alerted to all potential risks, by designer as project progresses. Time of year will be important for rural works and this needs to be considered early so that there is a suitable timetable.
8.	<b>Gas mains and electricity supplies are in the area.</b>	Utility search has revealed gas mains that follow and cross the alignment of Option 4 so special measures will be needed to protect the pipe and construction workers. Additional land may be beneficial to avoid the gas pipe where possible.
9	<b>The route crosses under overhead wires.</b>	Safe working arrangements will need to be made with National Grid and local electricity suppliers. Any new crossing of Devils Ditch near the B1102 will need to be designed to minimise risks associated with overhead wires nearby and a safe working plan will need to be agreed.
10	<b>Inadequate provision made for site compounds and facilities.</b>	Early consideration has been given to this and it needs to be a key task as part of land negotiations.
11.	<b>CDM needs to be considered in choosing preferred options.</b>	There are very few options due to the constraints imposed by Devil's Ditch/ Dyke, but the details of any route along and across the disused railway have a number of options and CDM as well as ecology and landowner's requirements all need careful ongoing consideration.
12.	<b>Community Engagement Risks</b>	Risk Assessments will need to be completed and acted upon for events and activities.
13.	<b>Design and surveying risks</b>	Risk Assessments will need to be completed and acted upon for site visits, surveys and design work.

# 17. RAG Report

<b>Project title</b>	Burwell, Reach and Swaffham Prior Feasibility Study	<b>Date RAG report initiated</b>	15/12/21	<b>Project Manager</b>	AA	
<b>Client</b>	East Cambridgeshire D.C.	<b>Date of current edition</b>	31/03/22	<b>RAG Author</b>	NB	
Risk ID number	Description	Assigned to:	Date assigned:	Current situation (RAG)	Potential mitigation	Mitigation risk (RAG)
1	Route uses private land and agreement cannot be reached with all landowners in time to deliver project.	ECDC	15/12/21		Skilful negotiations with landowner or use of statutory powers.	
2	Reallocation of roadspace on The Causeway in Burwell not agreed and traffic calming measures with speed limit changes not agreed so route not LTN 1/20 compliant in Burwell.	ECDC / CCC	15/12/21		High level of community engagement needed to come up with solutions.	
3	Route may use byways, footpaths or bridleways and County Council agreement not obtained for works.	ECDC / CCC/	15/12/21		High level of community engagement and engagement with all users needed to come up with solutions.	
4.	Failure to get Historic England consent for works near Scheduled Monuments.	ECDC	15/12/21		Early and ongoing engagement with Historic England needed.	
5	Failure to get Natural England and planning consent for work near SSSI, County Wildlife Site and along disused railway.	ECDC	15/12/21		Design and route alignment will need to be very carefully done to obtain agreement, with additional land likely to be needed for beneficial work.	
6.	Failure to get agreement to close Reach Road/ Burwell Road to through traffic.	ECDC/CCC	15/12/21		High level of community engagement needed to come up with solutions. Consider trial scheme.	
7.	Reallocation of road space on Newmarket Road, High Street, Isaacson Road, Burwell and one way systems not agreed.	ECDC / CCC	15/12/21		High level of community engagement needed to come up with solutions or this aspect of scheme dropped leaving significant numbers of Burwell residents with poor access.	
8	Disused railway bridge cannot be used for structural or other reasons.	ECDC/CCC	15/12/21		Seek alternative alignment or address structural problems.	
9.	Maintenance plan cannot be agreed.	ECDC/CCC	15/12/21		Needs to be agreed and required standards set at an early stage.	
10.	Funding not obtained.	ECDC	15/12/21		Ensure scheme is to LTN 1/20 standards, has good BCR and has all necessary consents, to improve chances of funding.	
11.	Planning consents not obtained.	ECDC	15/12/21		Undertake pre-app discussions and ensure all issues addressed.	