Feasibility study

Burwell, Fordham and wider links

11 April 2022

Cover photo credit: Nigel Brigham/Sustrans

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.**

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

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Executive summary

This report looks at potential new walking and cycling routes between Burwell and Fordham. 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 Swaffham Prior and the Lodes Way.

The report considers a number of alignments across a wide area as far as Exning and the edge of Newmarket and as far as Soham. The area is wider than originally expected, because Soham and Exning/ Newmarket are big destinations that may increase the usage of any route and so are worth considering. All of the options involve the use of private land and detailed discussions are needed with numerous landowners before any alignment can be finalised.

The report looks in some detail at travel within Burwell and Fordham. 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 Fordham.

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, Fordham and Soham themselves.

Map showing the study area

1. Introduction

Sustrans has been asked to look at options for new walking and cycling routes between Burwell and Fordham, 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. 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. Despite all of this activity Fordham has been largely left isolated from cycling provision and as it has grown and traffic in the area has grown this has become a bigger issue.

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.

Whilst Burwell is on the National Cycle Network Fordham is not and a link to the Network would raise the profile of the link and cycling locally.

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 Burwell and Fordham.
- To consider if there are merits in incorporating links with Soham or Exning in any new route between Burwell and Fordham.
- To consider ways to improve links within all 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 6: 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 1.2metres 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 : 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

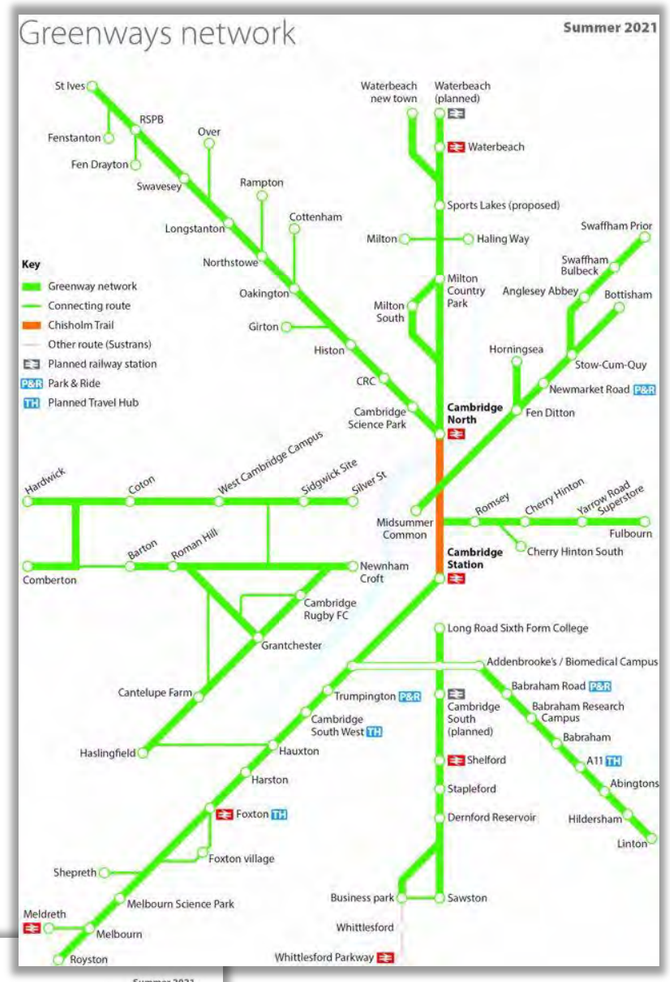
- Sustrans introductory guide to low-traffic neighbourhood design
- Manual for Streets
- Slow Streets Sourcebook (Urban Design London)
- Streetscape Guidance (Transport for London)
- Achieving lower speeds: the toolkit (TfL).

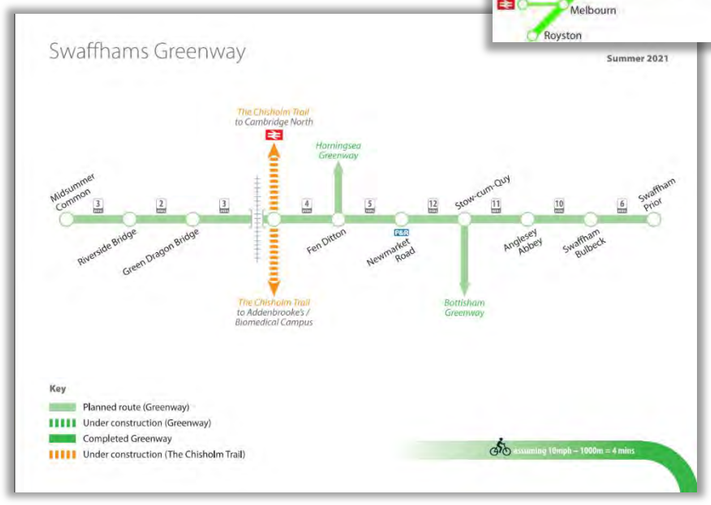
Local Authority Guidance and Policies

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. Sustrans has also produced a study looking at links between Swaffham Prior and Burwell and there is therefore potential to extend the Swaffhams Greenway to Fordham. :





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

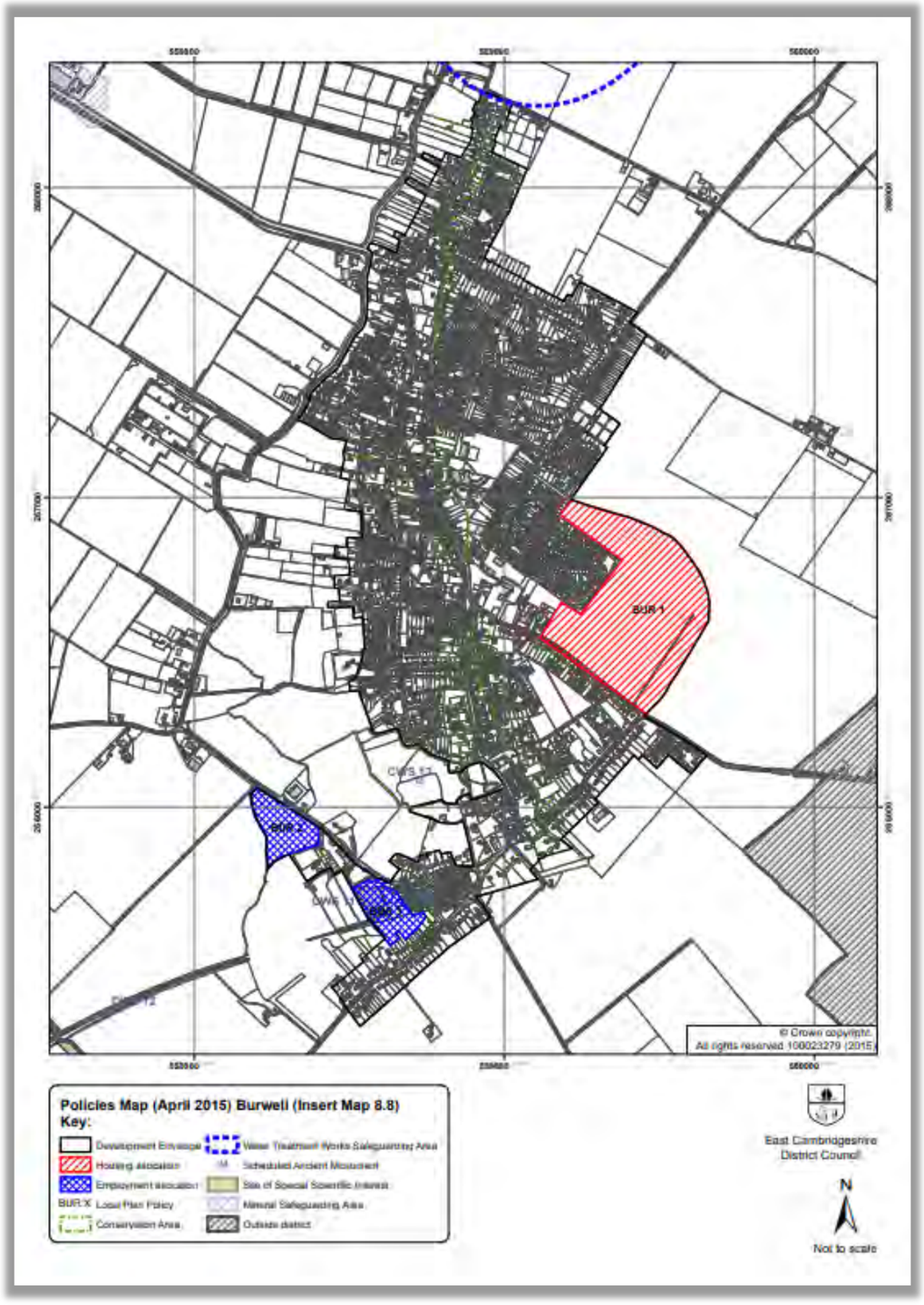
" Better cycling and pedestrian facilities and links will be provided, including segregated cycle routes along key routes linking towns and villages……

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.

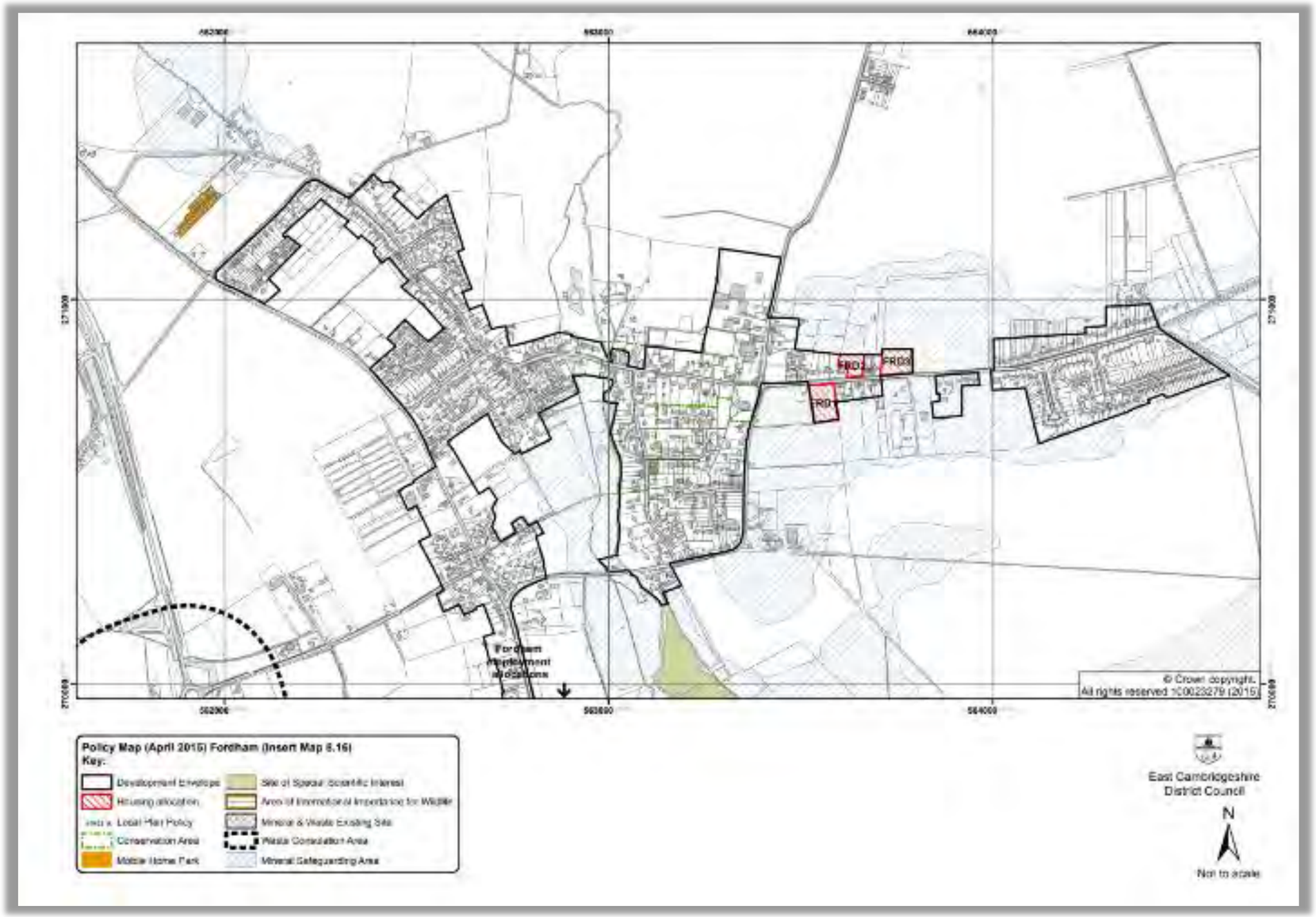
The land off Newmarket Road, as well as existing infrastructure within Burwell are relevant for the links considered within this study.



Extract from East Cambridgeshire District Council Policies Map 2015

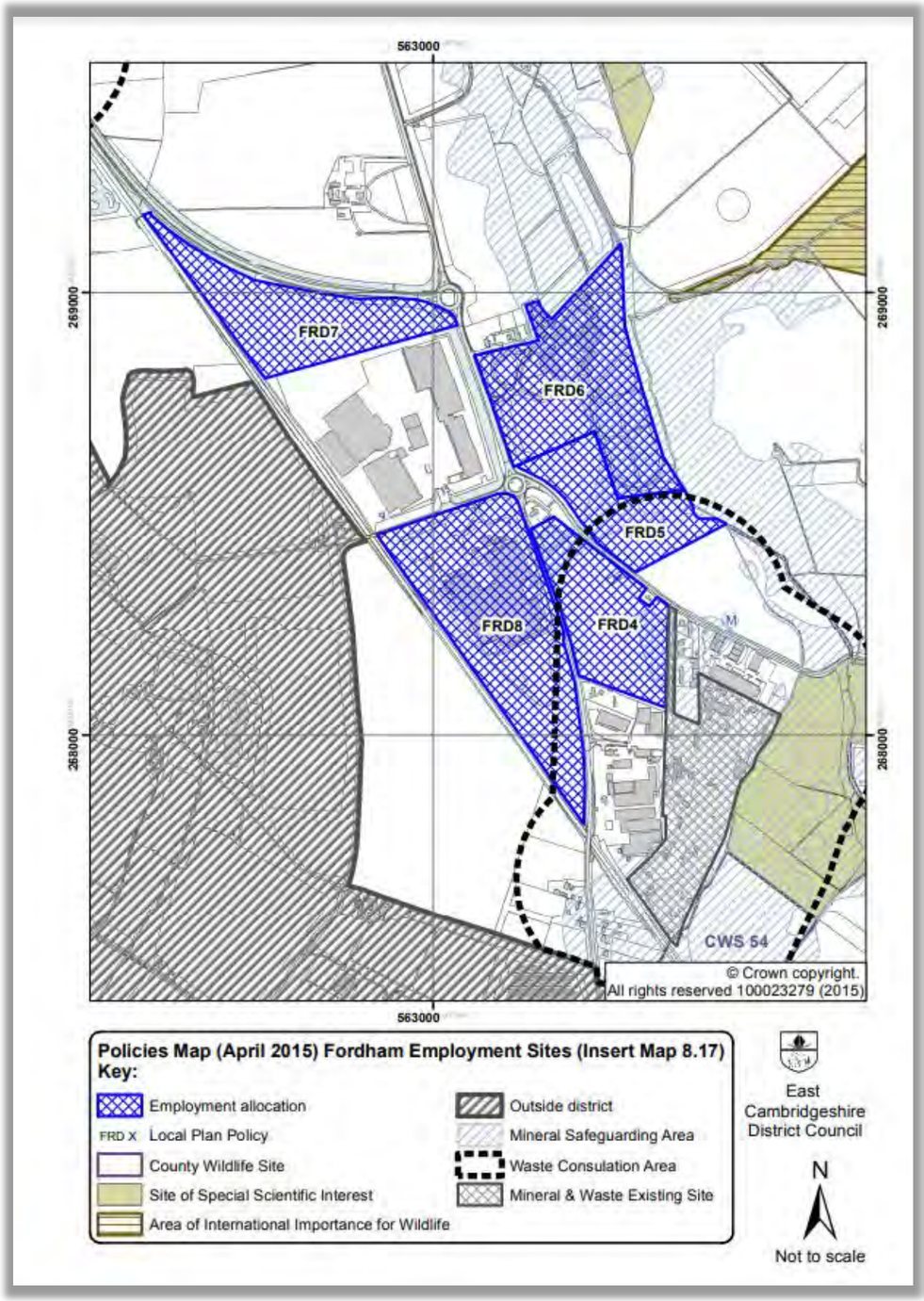
Fordham has very little housing allocation, but major potential employment allocation, which may make a route that enters Fordham from the south more beneficial.

Soham has grown a lot over recent years and more land is allocated for housing and employment. Soham also has a new station, which is the closest point to access trains to/ from Ely, where there are good onward connections. (Newmarket would still be the nearest station and best station for Cambridge trains). Nevertheless there is likely to be increasing demand for links with Soham.

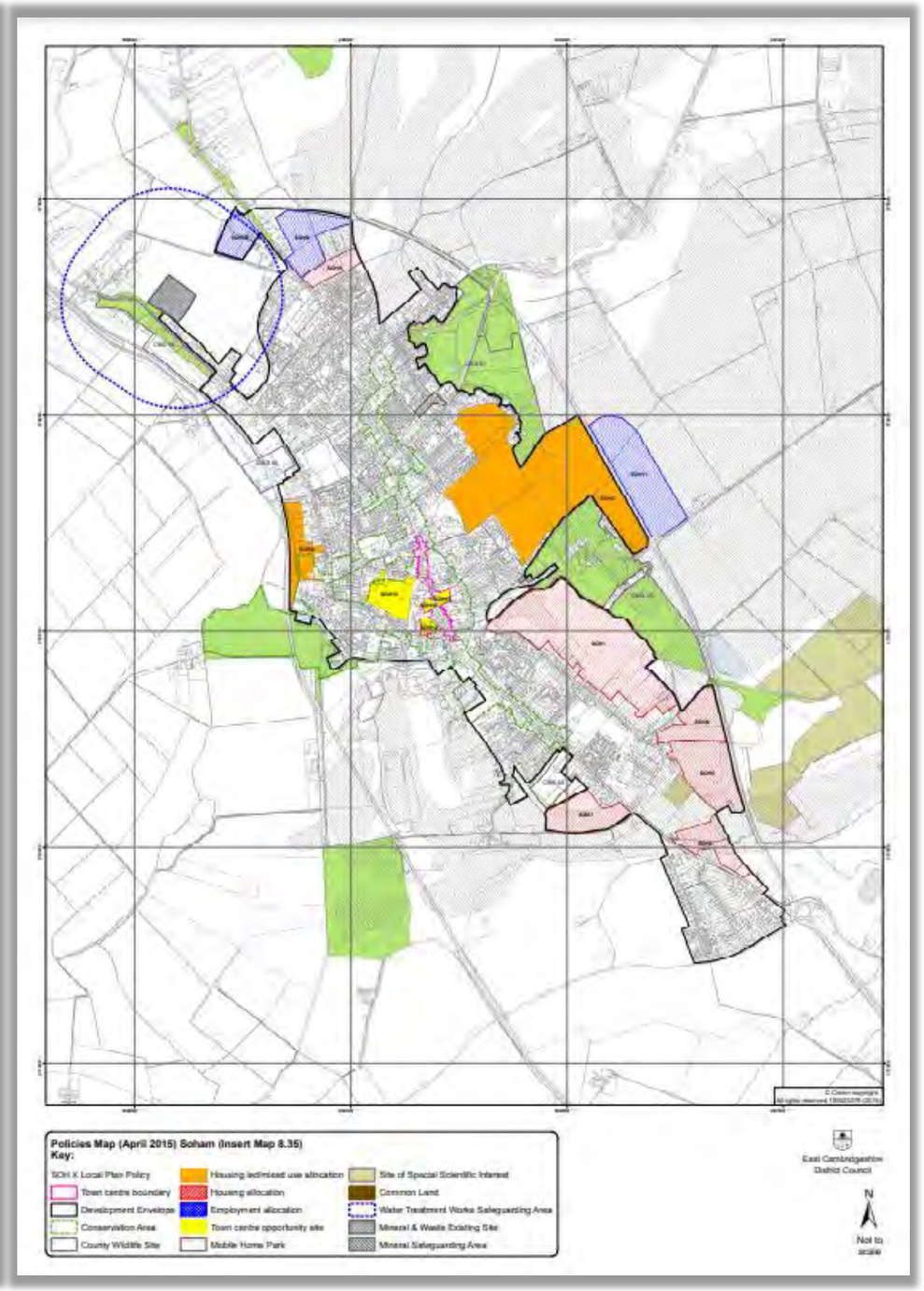


Extract from East Cambridgeshire District Council Policies Map 2015

Soham Station opened in 2022.

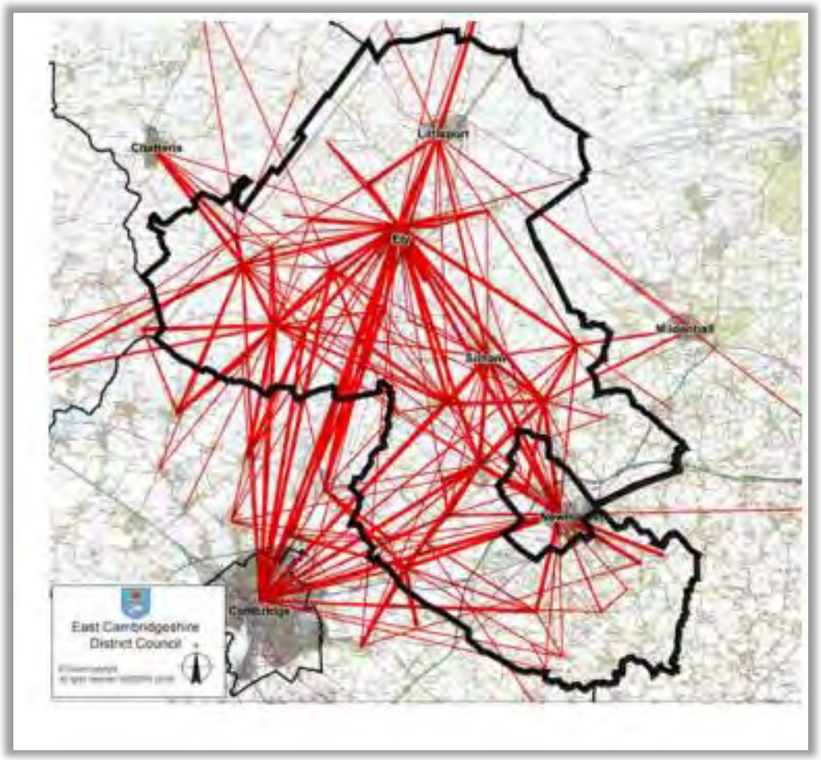


Extract from East Cambridgeshire District Council Policies Map 2015



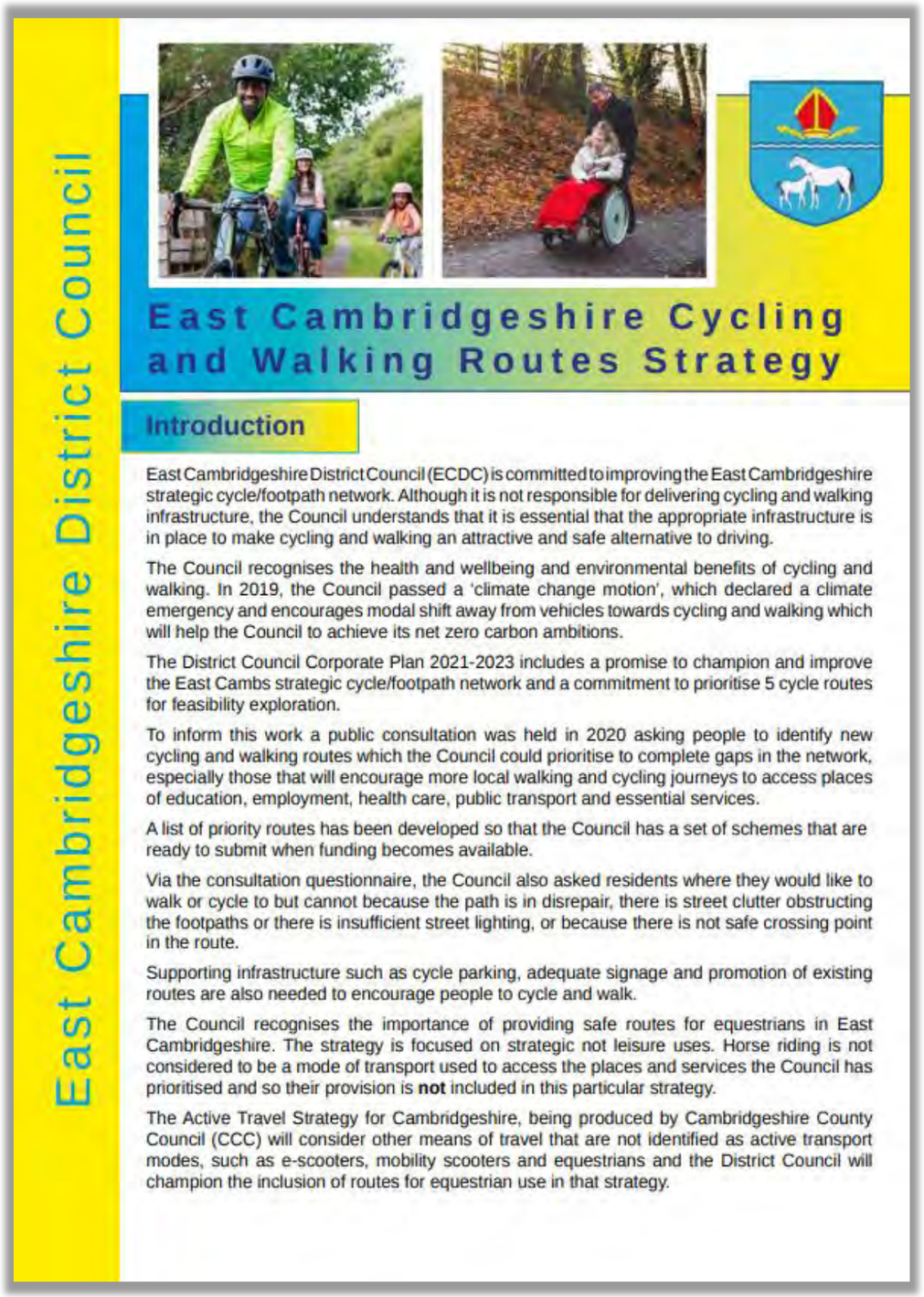
Extract from East Cambridgeshire District Council Policies Map 2015

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.

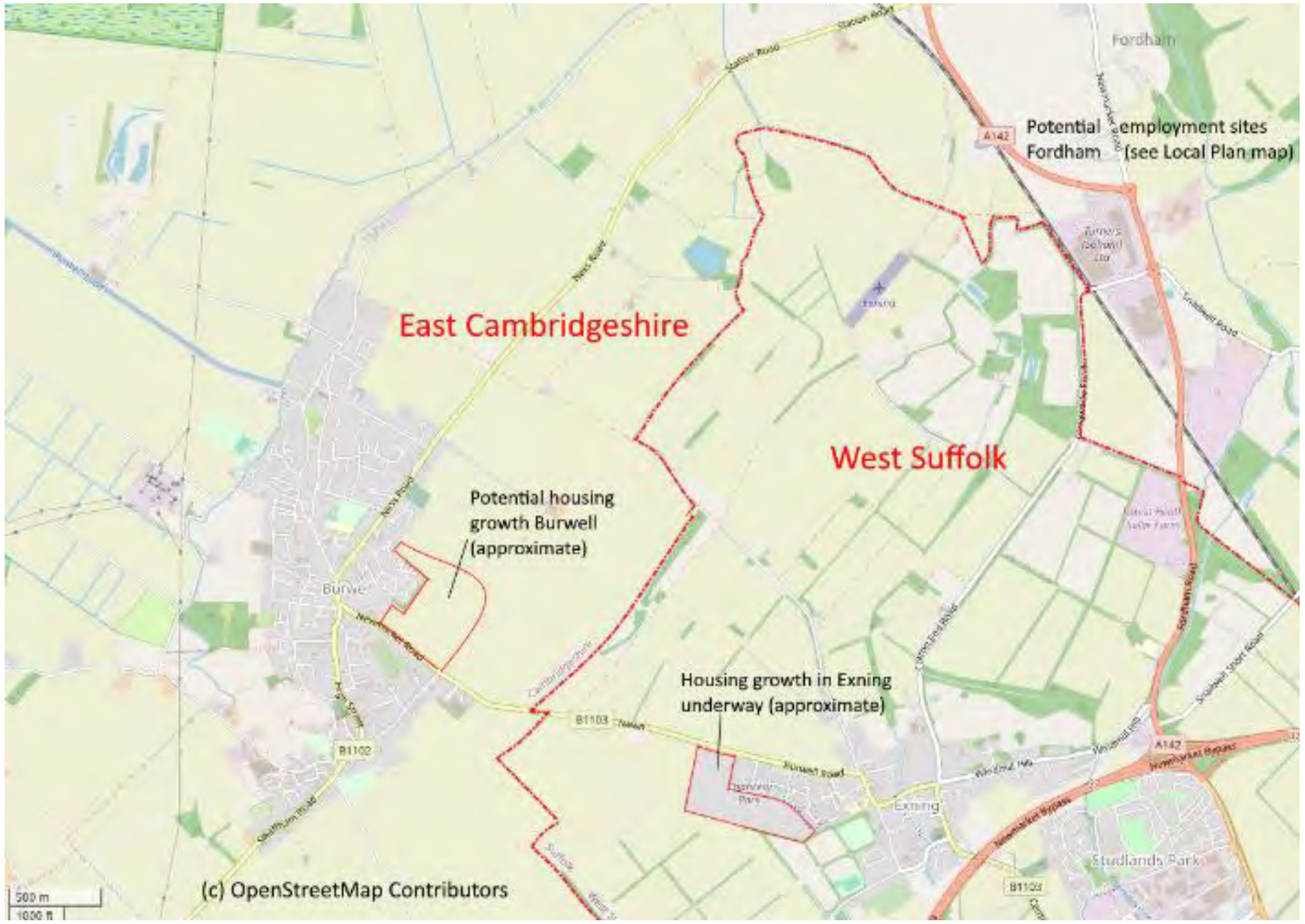
The Active Travel Strategy for Cambridgeshire, being produced by Cambridgeshire County Council (CCC) will consider other means of travel that are not identified as active transport modes, such as e-scooters, mobility scooters and equestrians and the District Council will champion the inclusion of routes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

Introduction to East Cambridgeshire Cycling and Walking Routes Strategy

Exning and Newmarket are in West Suffolk and are therefore not covered by the East Cambridgeshire Local Plan, but nevertheless both Burwell and Fordham have strong links with Exning and Newmarket and it is to be expected that there will be many short trips across the County boundary that could easily be done by bicycle if the appropriate infrastructure is there.

Whilst the County boundary should not be a major factor it is something that will need considering in this study, because Suffolk County Council and West Suffolk Council would need to be closely involved in any infrastructure or route proposals in Suffolk.

Plan showing Burwell and Exning and some of the allocated development sites in the area.



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.

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.

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.

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."

The A142 and the B1102 between Burwell and a point close to the A142 are 60mph roads at present, so crossing provision is a major issue if it is needed.

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.

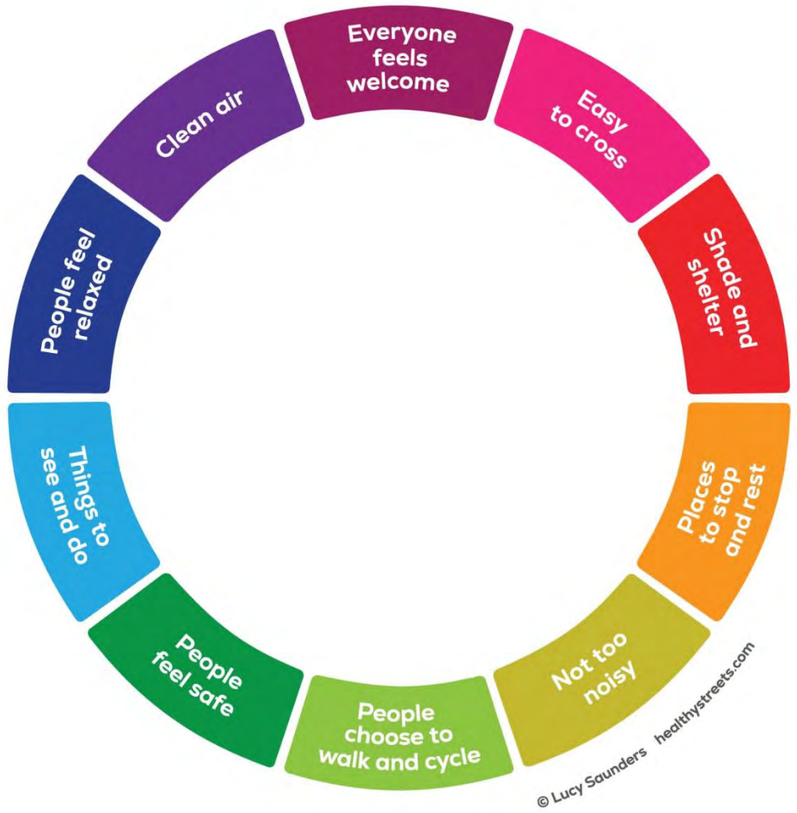
Table 6-1: Minimum recommended horizontal separation between carriageway and cycle tracks*

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.

The photo to the right shows the verge besides the B1102 and it is evident that space is very limited. 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.

View of B1102 showing limited verge space

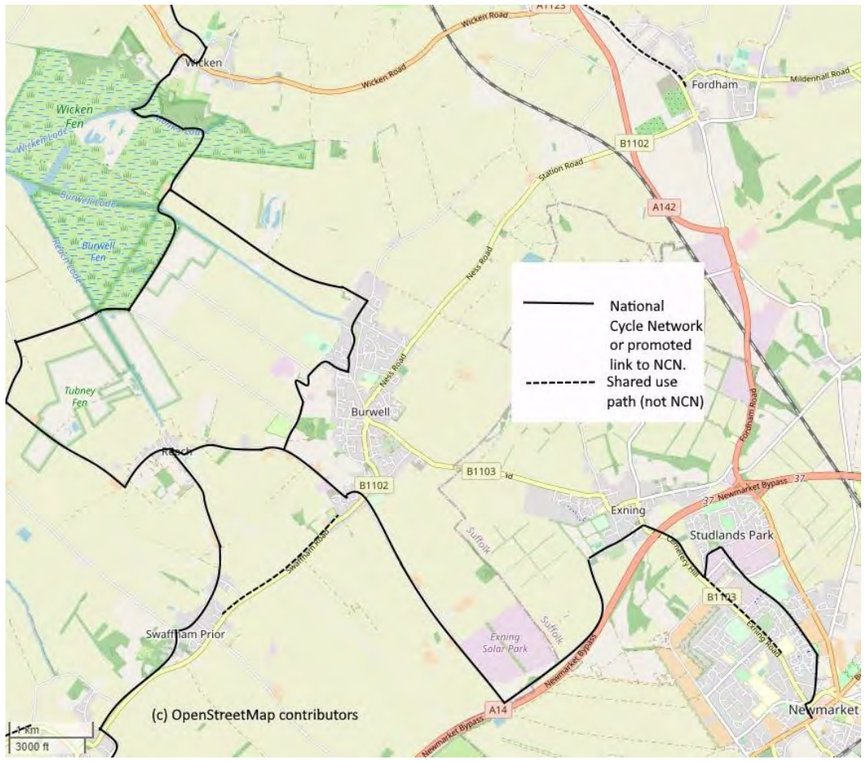


4. Issues with the existing Routes.

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. Similarly the route between Burwell and Exning is very indirect and follows a relatively quiet road. There has been a longstanding aspiration for a direct link between Burwell and Exning that follows the B1103 and Sustrans has prepared a study looking at ways to establish a more direct route between Burwell and Swaffham Prior that avoids the path besides the B1102 which is very narrow and close to fast traffic.

Between Burwell and Exning there are some short lengths of shared use path, but these do not meet LTN 1/20 requirements and there is certainly no complete route that does not involve cycling on the busy road.

Between Burwell and Fordham there is at present no provision for cycling and the road is too busy and fast to expect anyone apart from the most confident cyclists to use. In addition there is no suitable provision for crossing the A142.

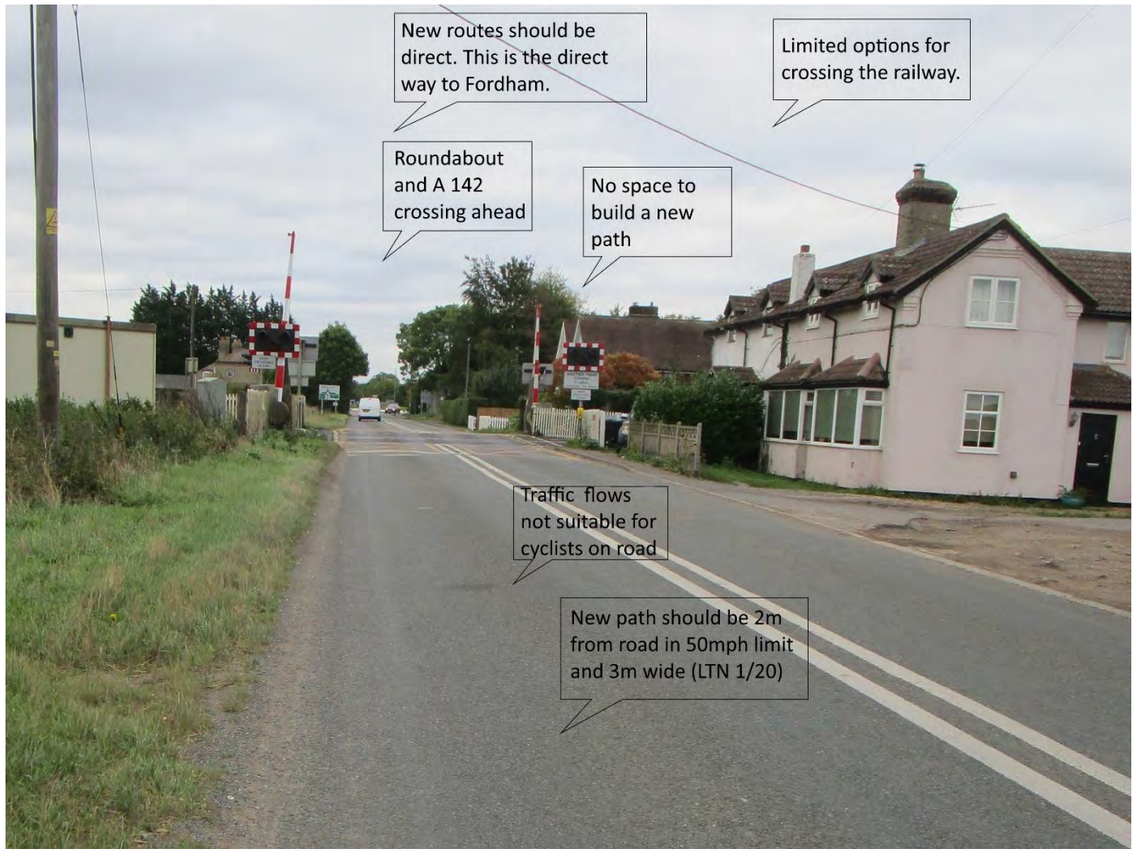


Map showing existing routes

There is a cycle bridge over the A142 to the north of Fordham and although this does not match current requirements it is the best available option if you are travelling between Soham and Fordham. Soham itself also has some cycling infrastructure, but it is not to current standards. The same applies within Fordham itself where there are some lengths of shared use path.

There are therefore problems with all existing options either in terms of directness or quality or simply because they are not complete. It is of course important that new facilities are joined up to give continuous high quality routes and networks.

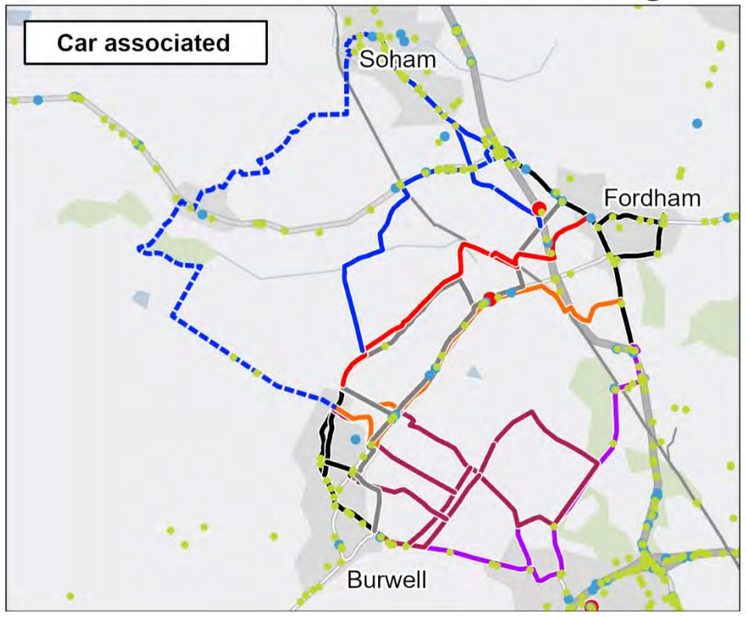
In reality most people at present who want to cycle between Burwell and Fordham will have to use the B 1102 and an example of the issues faced is shown in the marked up image below:

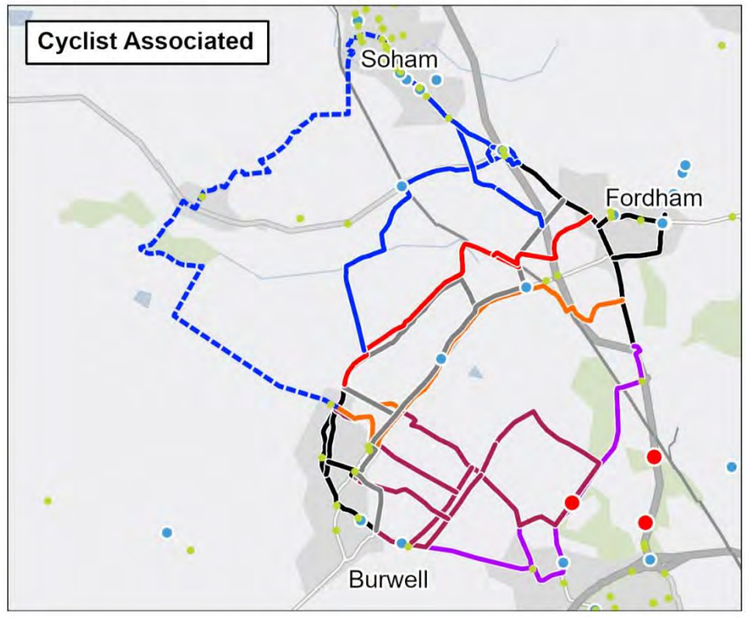


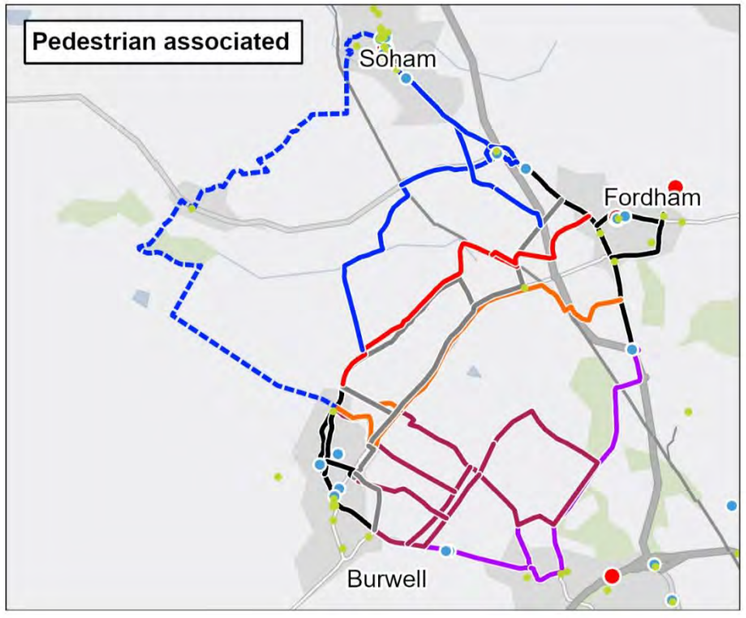
Traffic safety and perceptions of safety are major factors in whether people will choose to cycle or not and there are clearly issues in all the settlements and on the A and B roads. Only the most confident cyclists would consider cycling on the main roads.

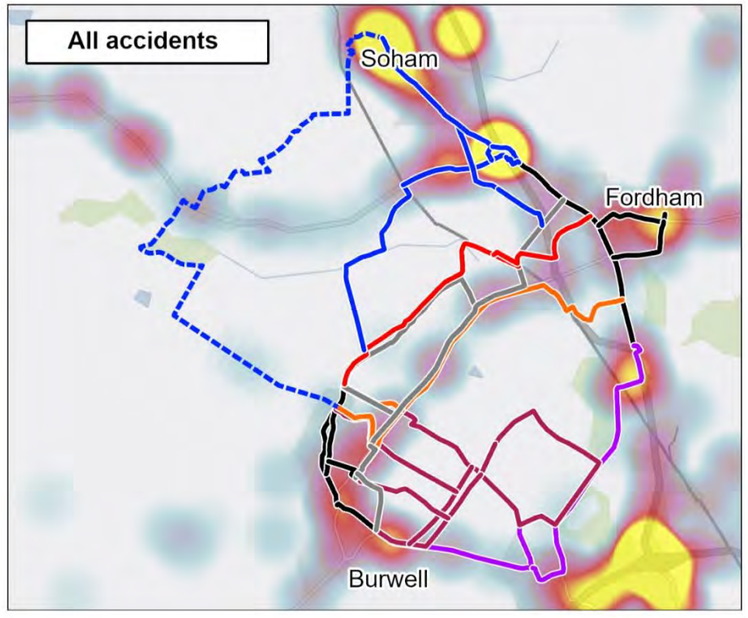
A manual traffic count in 2008 showed just over 6,000 motor vehicles in a day on the B1102 to the west of Cockpen Road with just 12 pedal cycles. A manual count on the A142 in 2019 showed just over 16,600 motor vehicles in a day on the A142 just north of the Newmarket Road junction with just 5 pedal cycles. Between 2008 and 2019 traffic on the A142 had increased by 20% so traffic levels on the B1102 are likely to be well above 6,000 motor vehicles per day now.

Traffic safety - Accident distribution









N

Legend

Route options
- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- *Burwell-Soham route via Wicken*
- *Village Works*

All accidents Density
- Sparse
- Dense

Accident severity
- Fatal
- Serious
- Slight

0 2 4 Kilometers

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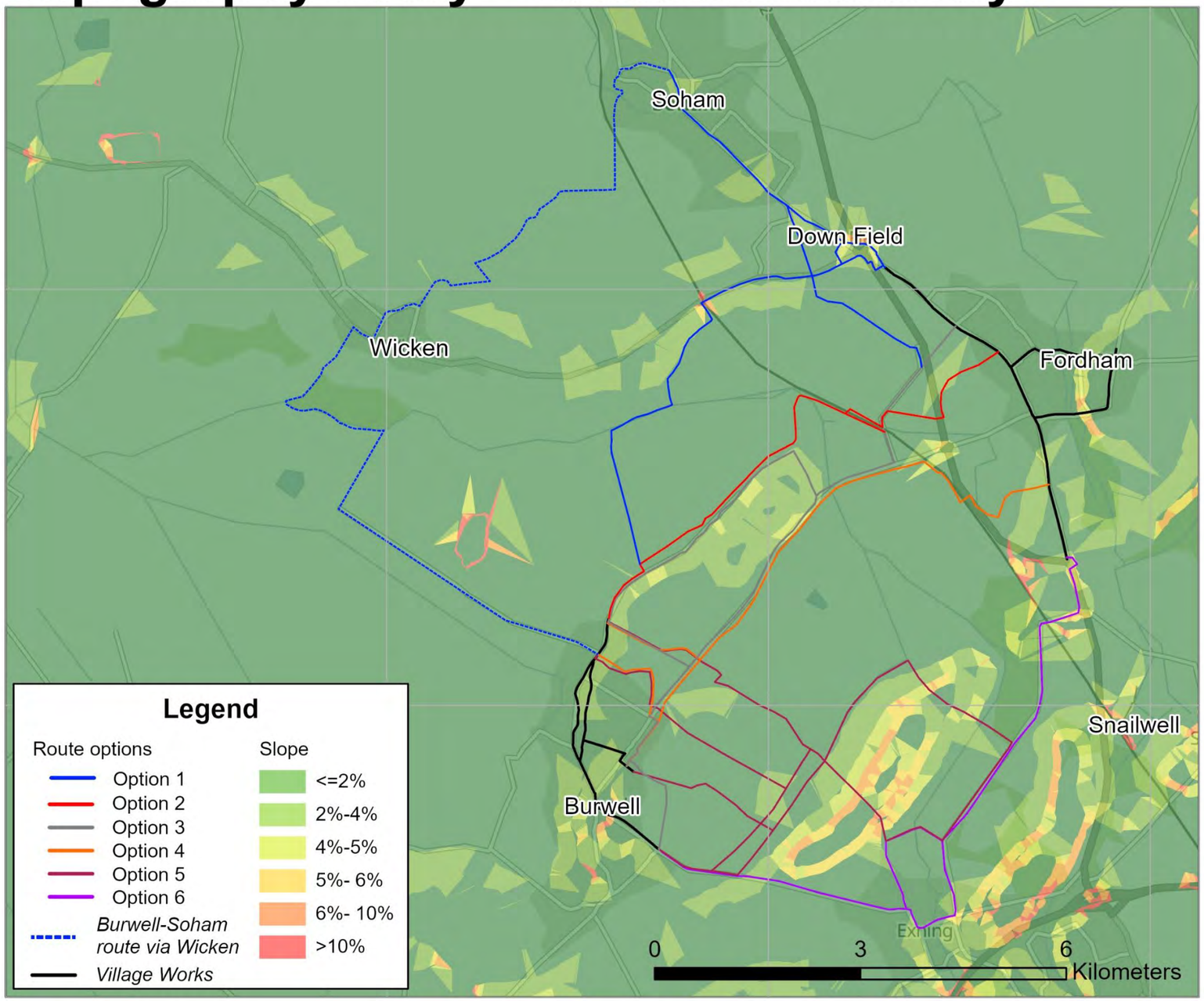
Topography study - Gradient suitability



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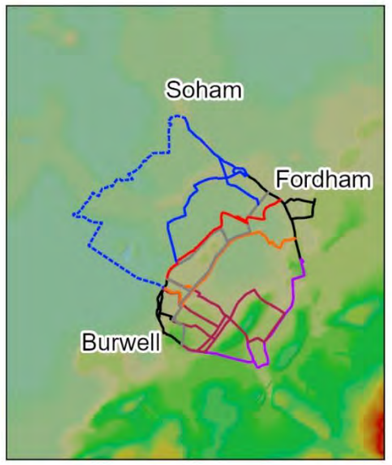

Legend
Altitude (m)
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Topography

0 2 4
Kilometers

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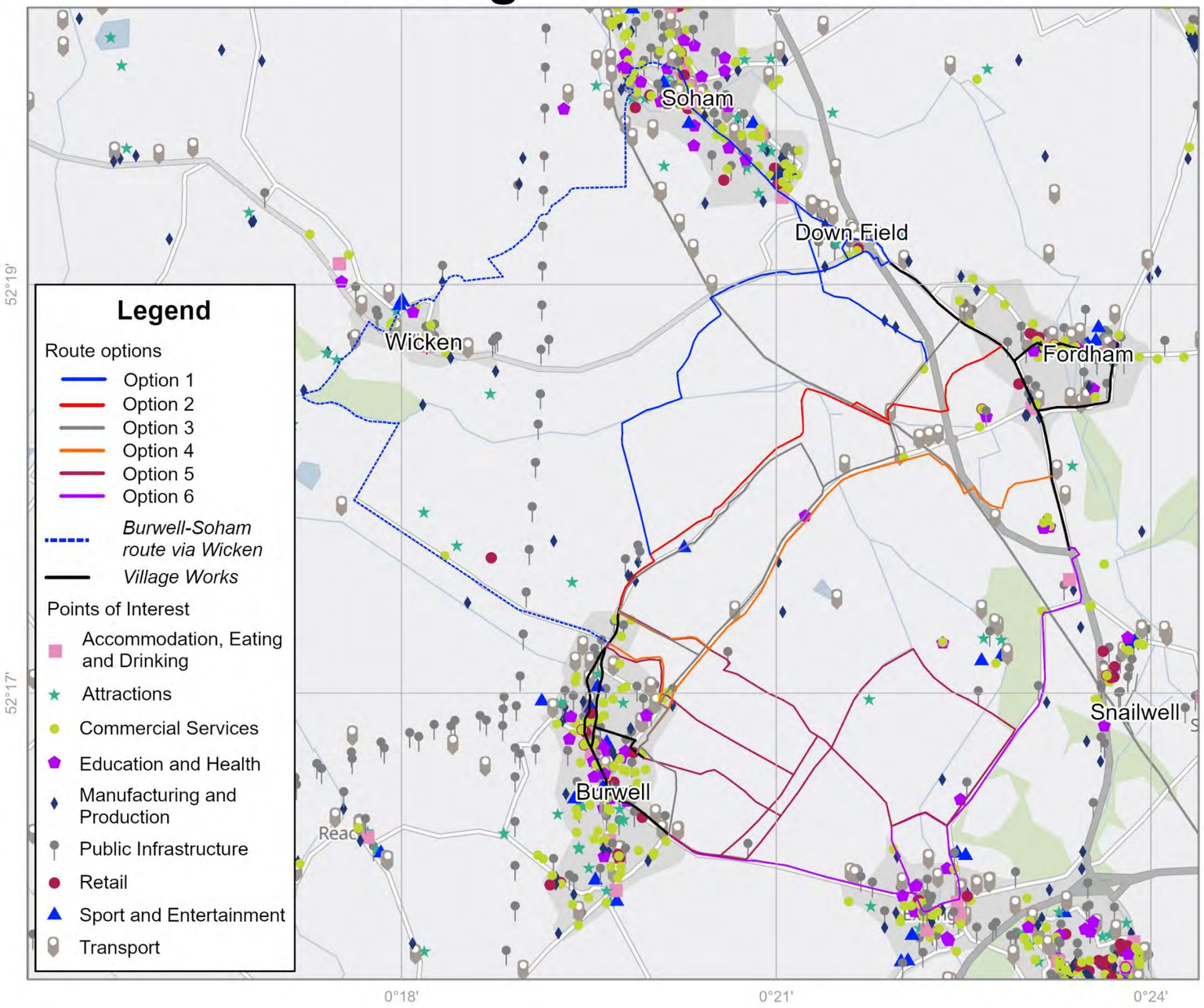
Smart linkage - Points of Interest



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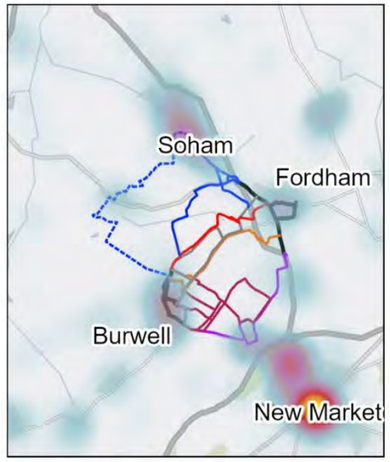

Legend **POI Density**

Density

Sparse

Dense

0 2 4 Kilometers

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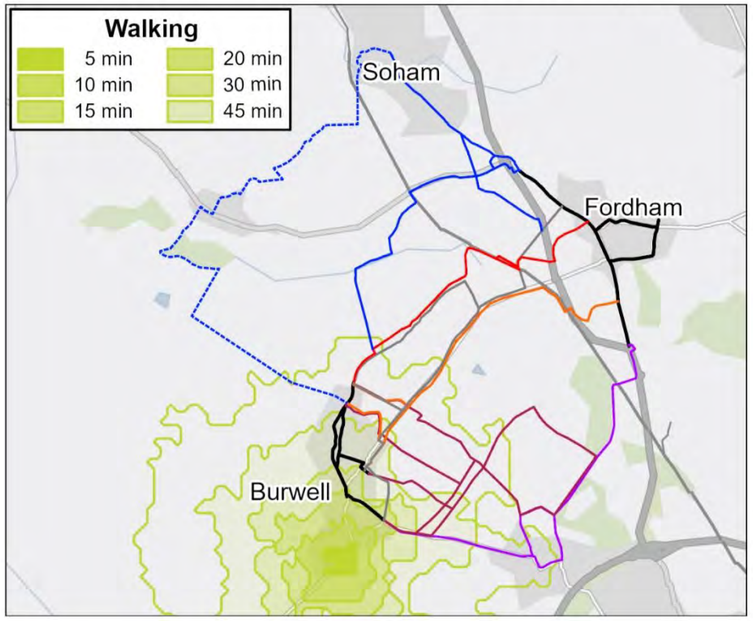
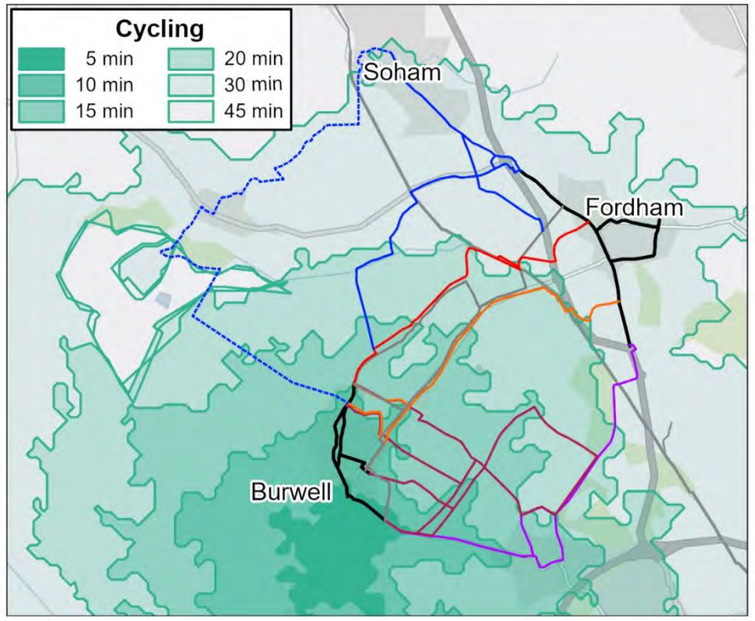
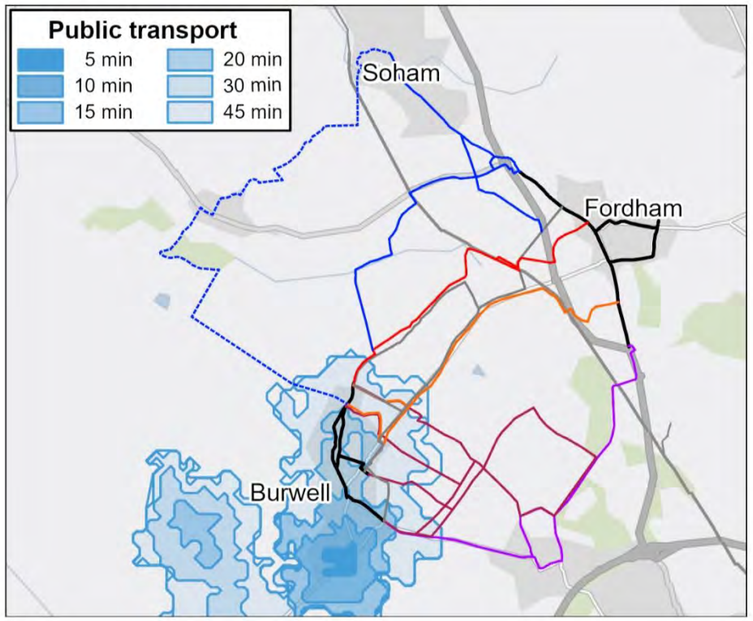
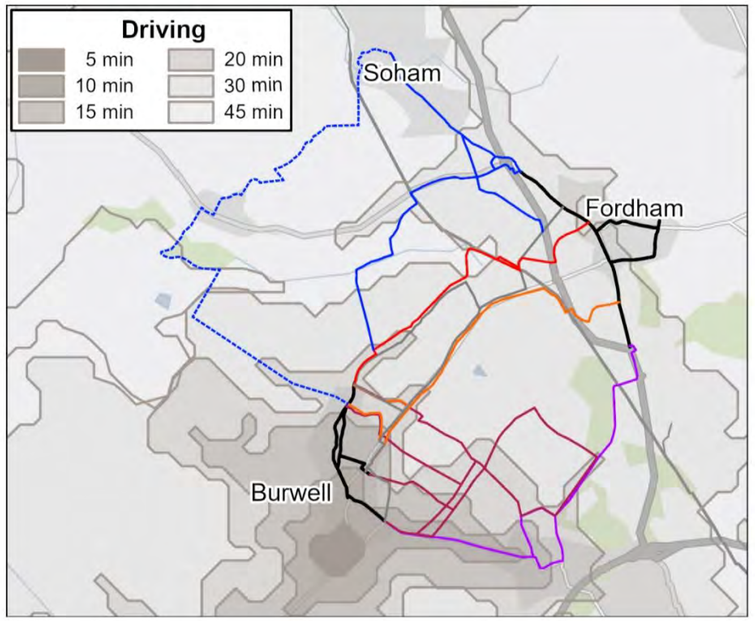
Travel time analysis - Burwell centered









N

Legend

Route options

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- *Burwell-Soham route via Wicken*
- *Village Works*

0 2.5 5 Kilometers

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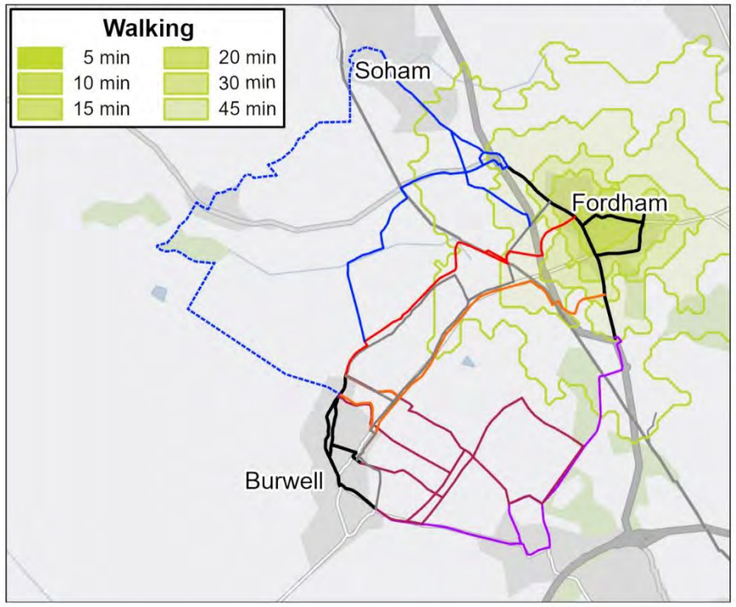
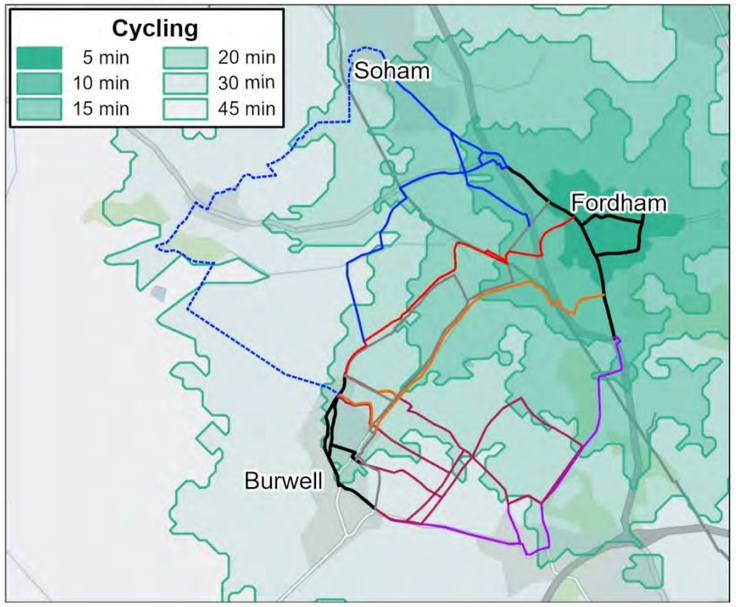
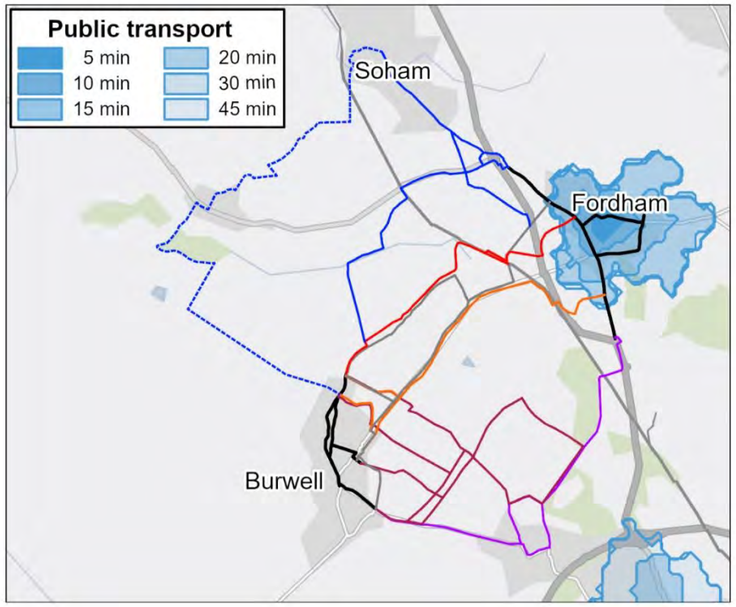
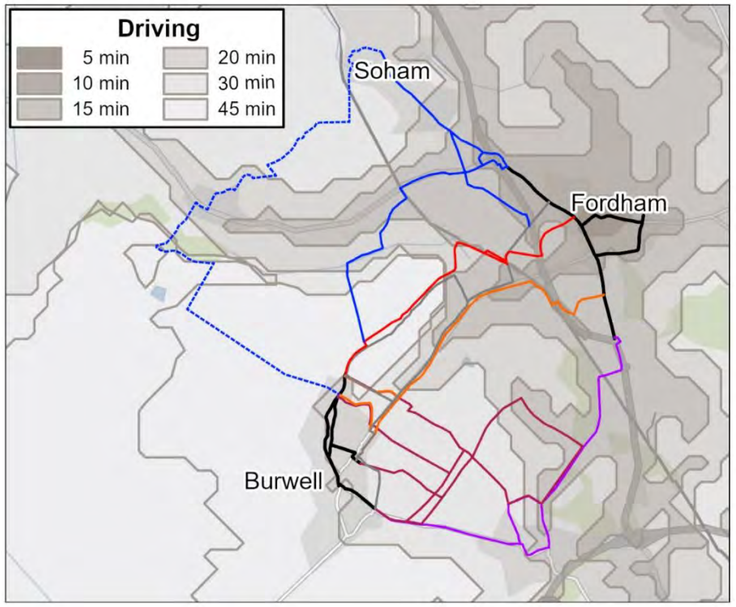
Travel time analysis - Fordham centered









N

Legend

Route options

- Option 1
- Option 2
- Option 3
- Option 4
- Option 5
- Option 6
- *Burwell-Soham route via Wicken*
- *Village Works*

0 2.5 5 Kilometers

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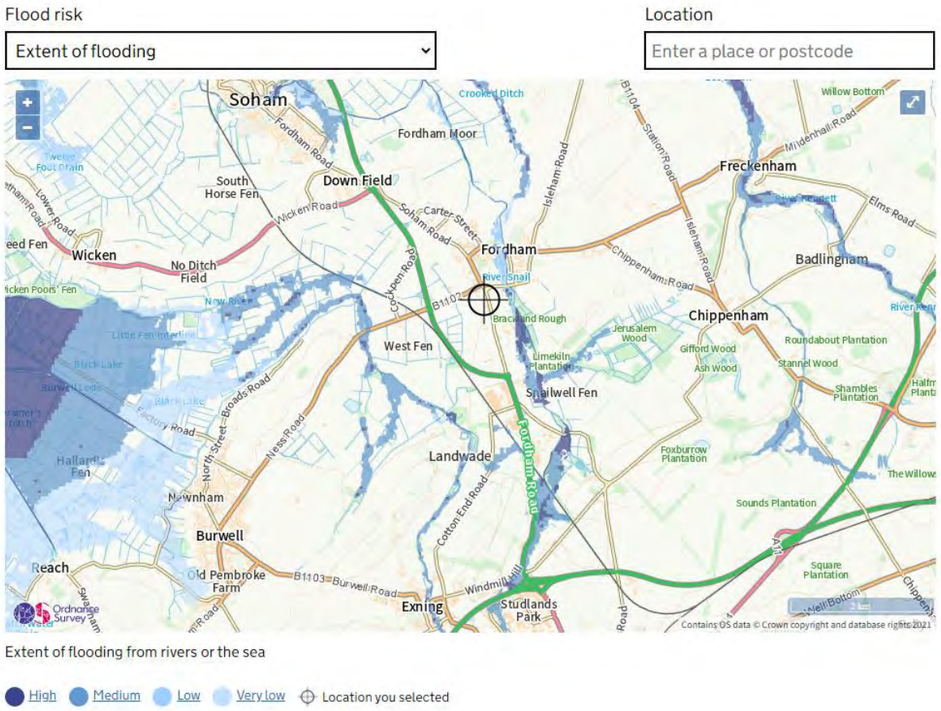
5. Design constraints

5.1 Environment Agency



Extract from Environment Agency Map

The villages and most route options are away significant flood risk, but the river corridors have some risk rising to high in places and this will have to be allowed for in route selection and design.

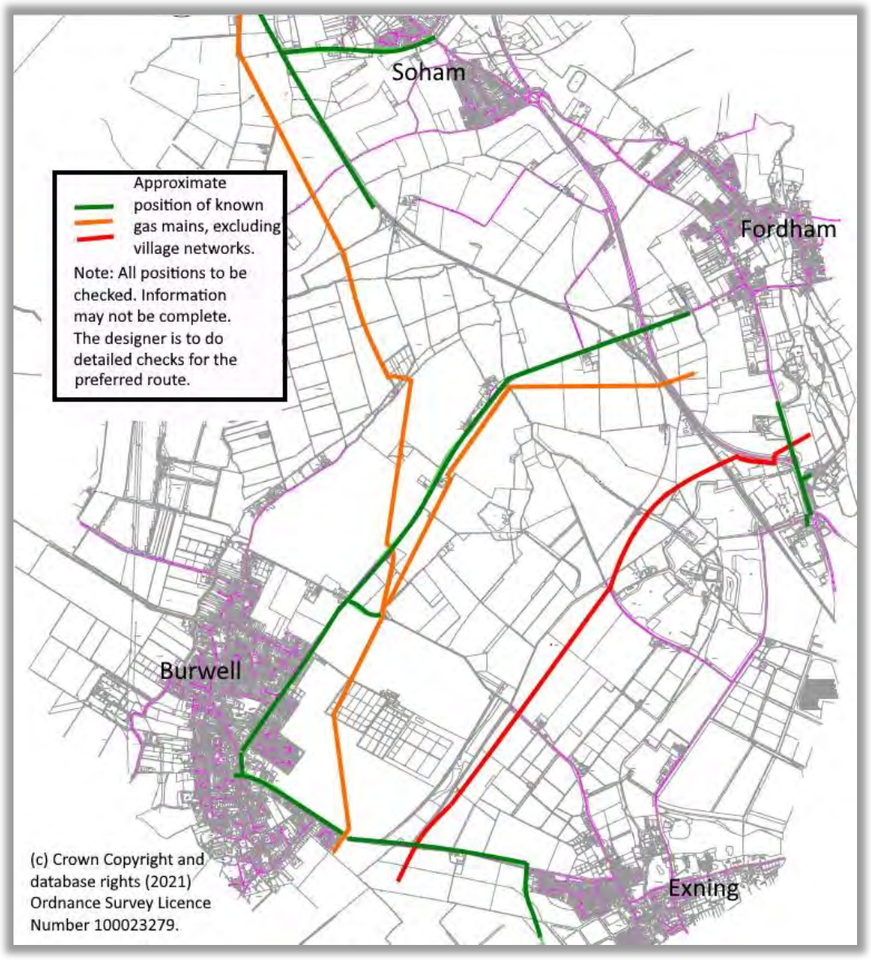
5.2 Ground and Ecology

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 towards Exning. 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 an important factor and is addressed in detail in Chapter 9.

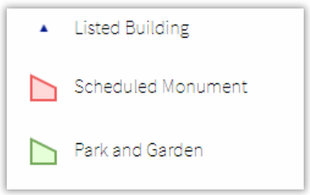
5.3 Utilities

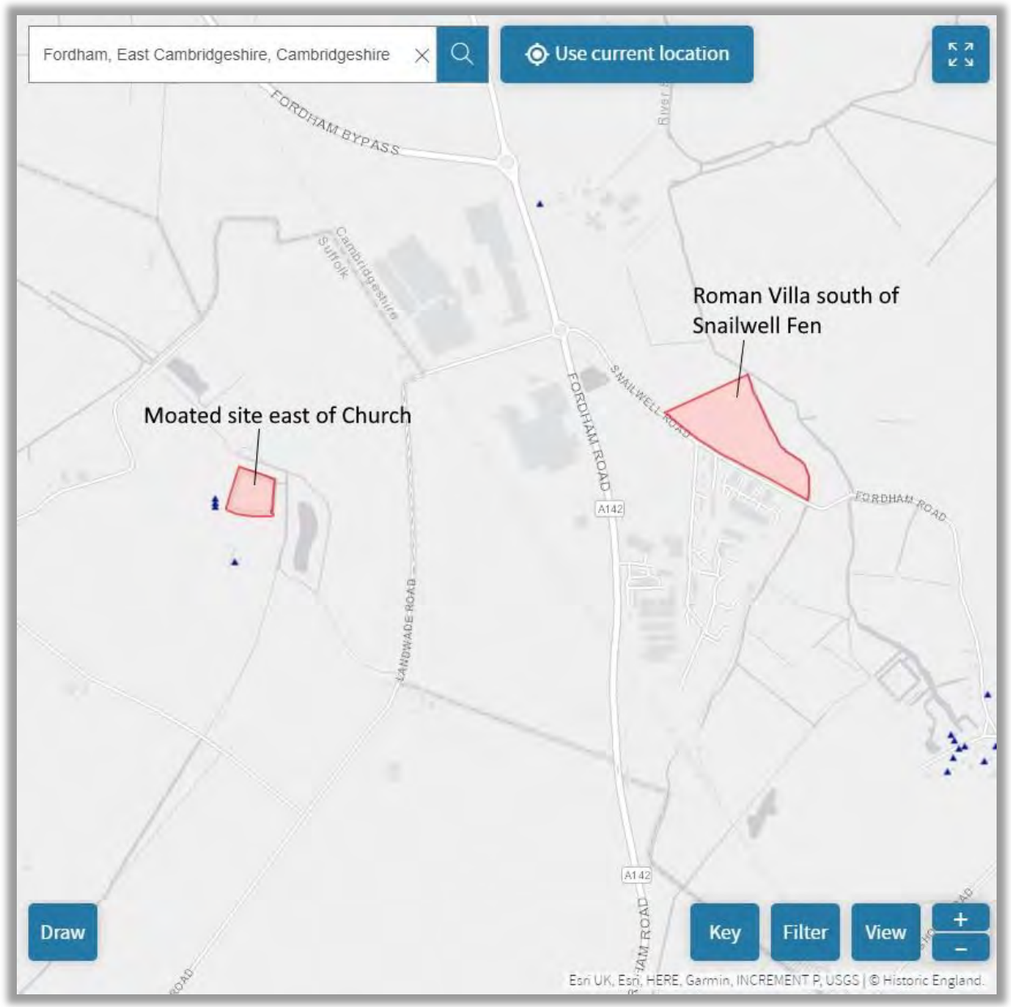
There are overhead pylons in the vicinity and all villages have utilities within the road network that will need careful attention. There is also a considered network of intermediate and high pressure gas mains in the area which will need to be carefully protected. Some of these follow road alignments and could be close to new paths. Any works in the vicinity of gas mains will need to be agreed with those responsible with implications for the type of construction and construction methods. Examples of the gas mains are indicated below. This is not a complete picture, but helpful for this study.



5.4 Heritage and Historic Environment

Important heritage and ecological sites can be a significant constraint on route choices, with the need to avoid any negative impact on these. A search of the Historic England website does not however reveal any major monuments in the area, apart from those shown below to the south-west and south of Fordham. There are numerous listed buildings such as those with the blue triangles on the plan below, but it would be highly unusual for any new path proposal to impact on an existing building.





Extract from Historic England map

5.5 Common Land

Common land requires additional consents for works. There is no designated Common Land within this area. There are Commons in Soham. (Source https://magic.defra.gov.uk/MagicMap.aspx)

5.6 Roads, road and rail crossings

The requirements of LTN 1/20 have been considered in Chapter 3. The expectation is that where cyclists are using roads mixed with other traffic, traffic volumes and speeds must be low. This imposes considerable constraints on design, particularly in relation to the B roads and A roads. Given traffic volumes on these roads a segregated solution is needed there and special provision is needed for crossing the roads and both of these have significant space requirements.

In order to cross the A or B roads a parallel crossing, a signaled crossing or a bridge is needed. Highway engineers are reluctant to have new signaled crossings where speeds are high, so the location of crossings needs to be carefully chosen, if the need for a new bridge is to be avoided.

Bridges themselves have limited options, primarily because of the need for lengthy ramps that are suitable for all and because of the need for good access to the bridges. Topography can be a constraint, but in this area roads are generally at or close to the level of surrounding land.

Railway crossings are potentially even more challenging than road crossings. New at-grade crossings are highly likely to be unacceptable to Network Rail and changes to existing level crossings are also extremely difficult. New bridges will need to be in line with Network Rail requirements and as with road bridges will need long ramps.

For the purposes of this study it has been important to check that there is sufficient space for ramps. It has been assumed that ramps will need to be at least 120m long and should be in line with the direction of travel to minimise deviation from the most direct route.

Any new bridge should be able to accommodate a 3m path with a minimum of 0.5m to boundaries so should be at least 4m wide. Where horse riders are to be accommodated greater widths may be needed in addition to higher parapets. In general it has been assumed that 3m shared paths are appropriate in the rural area, but where segregated paths are leading to a bridge there should be space for a segregated route over the bridge and a minimum width of 5.5m would be needed.

In general space for a wide bridge is not an issue, but the width is a factor in costs.

Between Burwell and Fordham it is necessary to cross the following:

- The Ely-Bury St Edmunds railway.
- The A142 Fordham bypass.

For some options it may also be necessary to cross the A1123 (for access to Soham) and the B1102 (for access to parts of Burwell). Due to the layout of Burwell it is possible that a new crossing of the B1102 may be needed outside the existing village envelope, so either changes would be needed to speed limits or another new bridge would be needed.

For this study the road and rail crossings are a major constraint on route options and will be a major factor in the cost of any scheme.

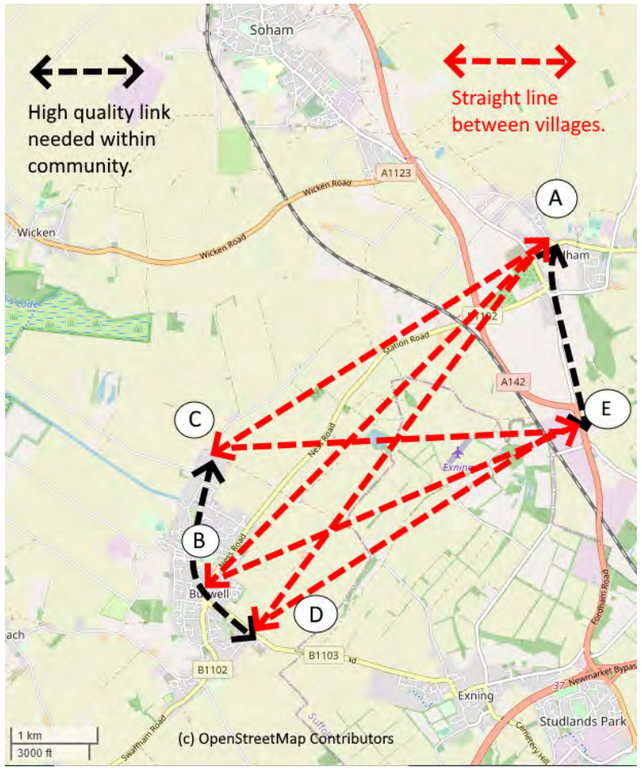
The A 142 is a particularly difficult road to cross on foot or bike due to the high speeds and steady flow of traffic.

6. Route Option Appraisal

Any route between Burwell and Fordham needs to be useful for all of the residents of Burwell and Fordham and this is a big factor in prioritizing the works needed, in choosing the best route alignment and in identifying what links are needed.

For routes between the villages to work well there needs to be a good cycling and walking network within Burwell and within Fordham and routes need to be as direct as possible from start to destination, for as many people as possible.

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 Fordham (as a relatively small settlement) this is a reasonable position to take, but the main employment site at Fordham is some way south of Fordham itself so that also needs to be considered. For Burwell the orientation of the village in relation to Fordham means that the village centre may not be the best location to measure distances from. The study therefore looks at 3 different points within Burwell and 2 in Fordham (bottom left).The locations shown are:



Map showing locations used for Route Appraisal

A. Junction of Carter Street and Sharman's Road, Fordham.

B. Junction of The Causeway and Ness Road at the centre of Burwell.

C. Junction of North Street and Howlam Balk at the north of Burwell.

D. Junction of Newmarket Road and Isaacson Road at the south-east of Burwell.

E. A142 midway between roundabout and Landwade Road in the centre of the employment and growth area to the south of Fordham.

An example of an issue that needs to be considered is that a direct route between D and A would be useful for residents in the very south of Burwell, but would be a significant detour for residents from the north of Burwell and not so useful. In this case a new link would be needed from C and B to the route to reduce the detour and make the route useful for more Burwell Residents.

This study considers various ways to link the two communities but all options assume that there is a good link between C, B and D and that there is a good link between A and E, so these links are considered first with the inter-village links considered later.

Within Burwell and Fordham (including between Fordham village and the employment centre) 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. In addition Healthy Streets principles should be adopted and healthy streets audits at an early stage may help to decide priorities.

For instance 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.

Within Fordham the nature of the B1102 is very different to the situation in Burwell, but traffic volumes in Fordham on the B1102 are also a significant issue. In addition for Fordham the former A142, which is now bypassed remains a road where speeds and traffic volumes are an issue.

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.

A 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 to introduction of a one-way system. A possible arrangement, for Burwell is shown on the following sheet, with Fordham considered later.

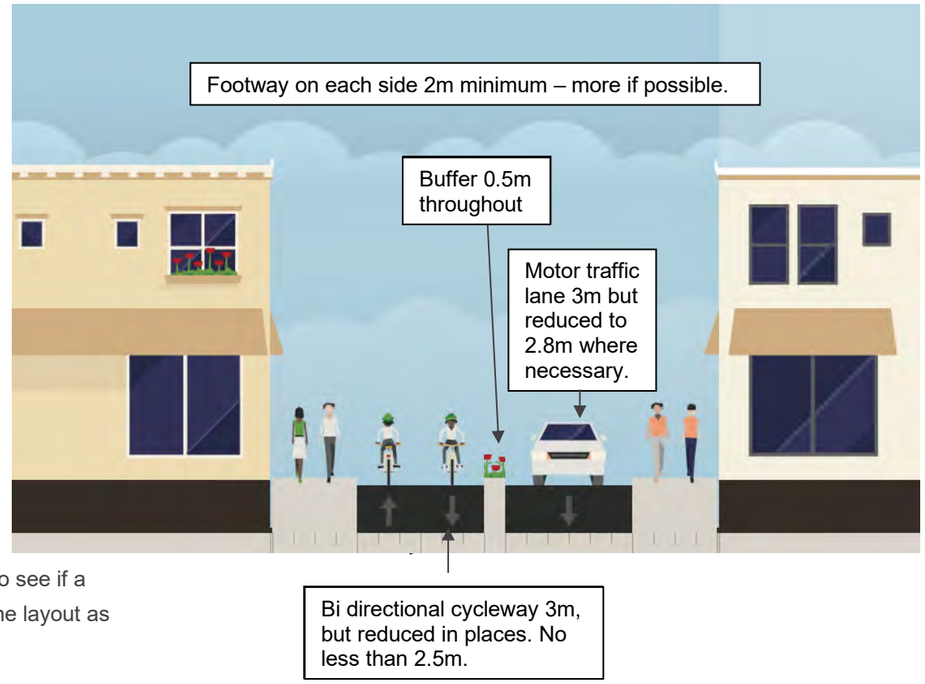
No major changes are needed where speeds and traffic volumes are low as seems to be the case here in Burwell.

The plan (far 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.

The big changes from existing are the introduction of a 20 mph limit 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.

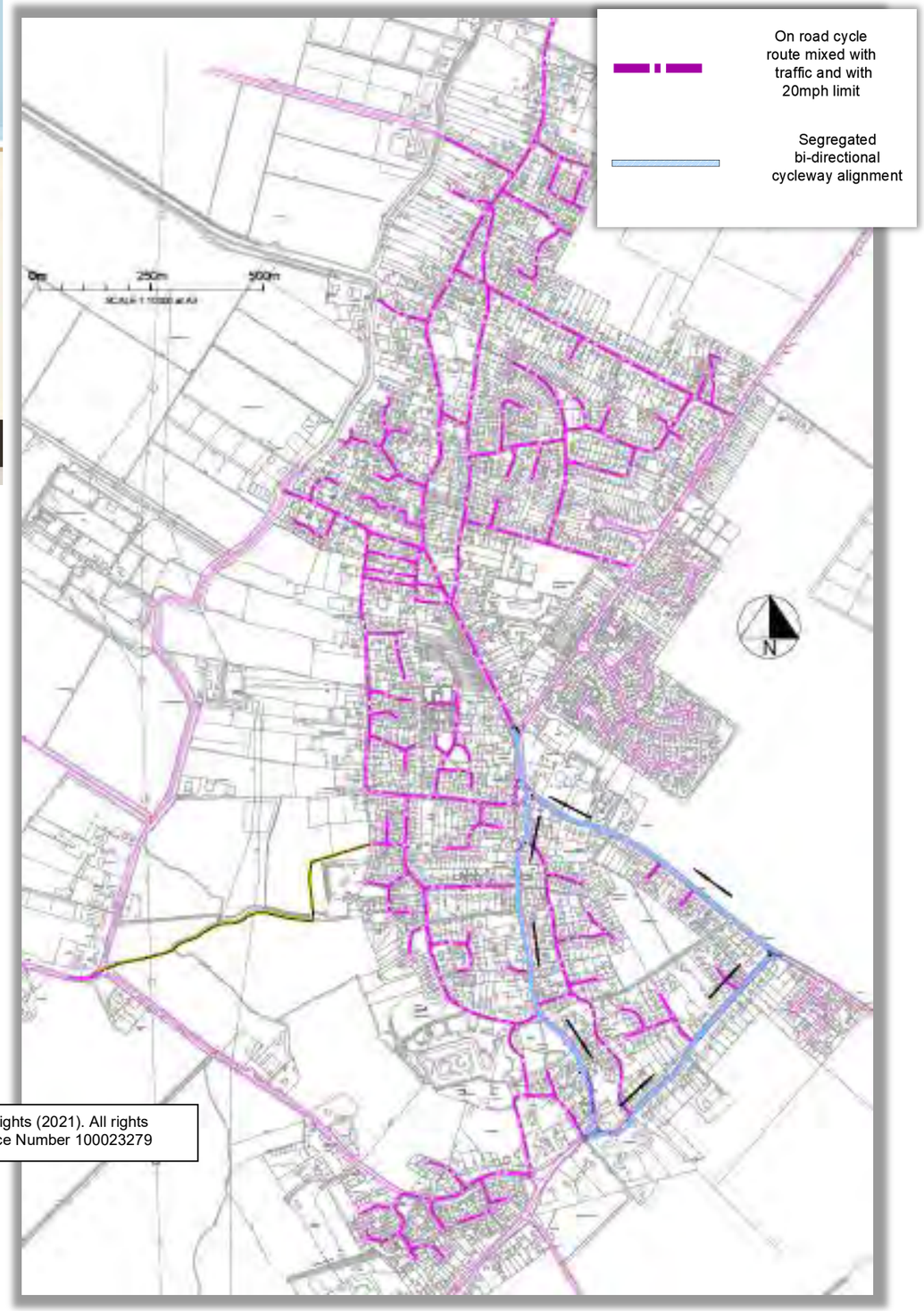
The preliminary design shows that a one way system should work but space is very restricted on the High Street and on parts of Isaacson Road, as well as near the Health Centre on Newmarket Road. It appears that an uninterrupted cycleway should be possible on Isaacson Road and Newmarket Road, but there 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.



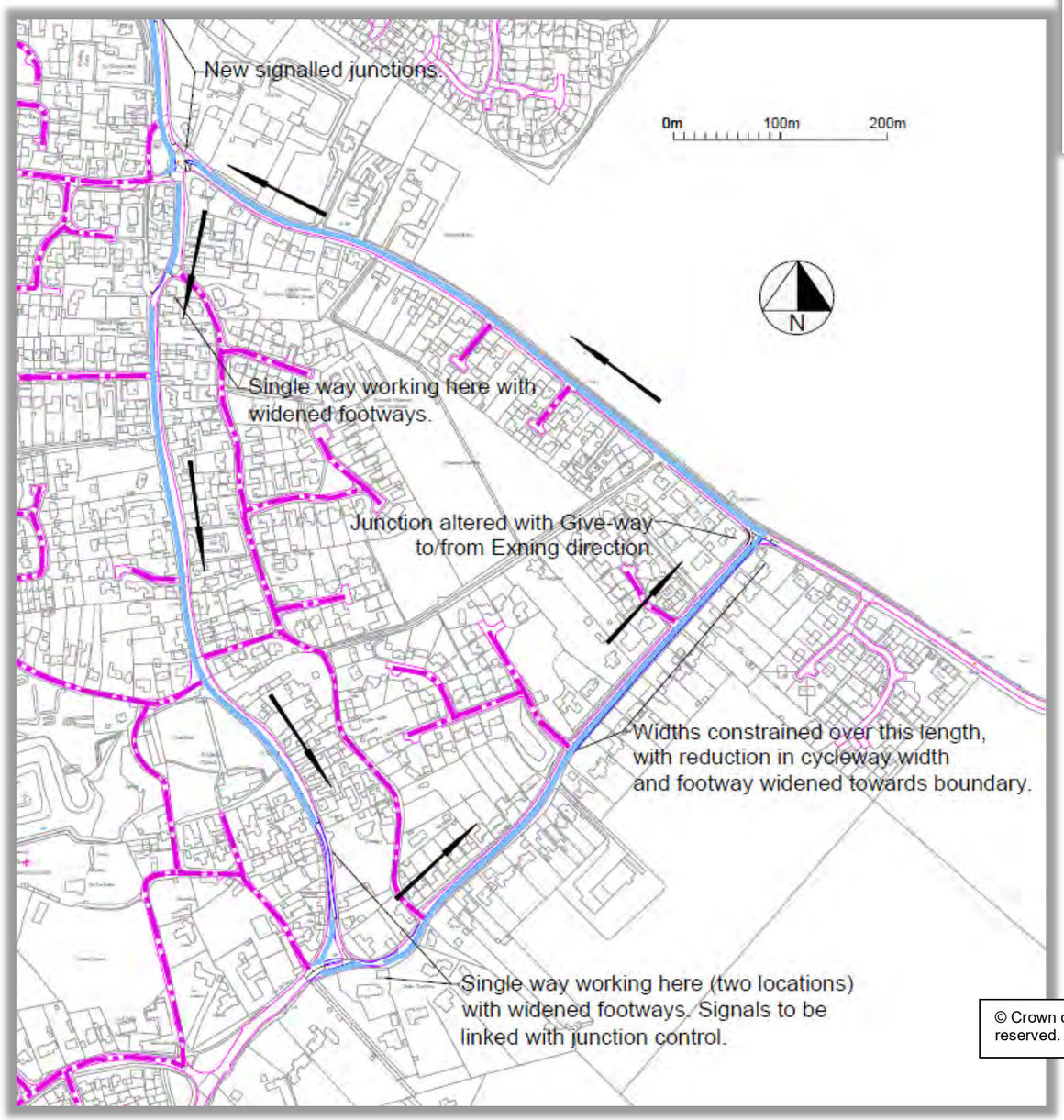
Section showing suggested street layout. (The one-way system is based on the need to maintain minimum widths for the cycleway and minimum segregation from motor traffic.)

The obvious gap in the network is the area along and 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. This is obviously a particular challenge for links with Fordham since Ness Road is the obvious route for direct links with Fordham.



Plan showing proposed Burwell Cycle Network. (right)

The plan shows 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 showing potential one-way system

On road cycle route mixed with traffic and with 20mph limit

Segregated bi-directional cycleway alignment

View of part of the High Street

View of part of Isaacson Road

View of part of Newmarket Road

View of the Causeway (before)

View of The Causeway (after)

For Fordham the narrow village centre roads, mixed with traffic mean that the environment is very poor for pedestrians and cyclists and similar arrangements are recommended as for Burwell, in order to comply with the LTN 1/20 guidance. This means using a one-way system based on Market Street, Sharman's Road, Carter Street, Collins Hill, River Lane and also changes to the former A142 so that Newmarket Road, Market Street, Soham Road and Fordham Road can benefit from having the bypass there. Speed limit changes are needed to comply with LTN 1/20 and to ensure that there is adequate segregation between any segregated cycleway and moving traffic.

In most cases the proposal is to simply reallocate roadspace which can be done relatively simply, along the old A142. Within the heart of the village the opportunity can also be taken to use high quality materials and enhance the streetscape.

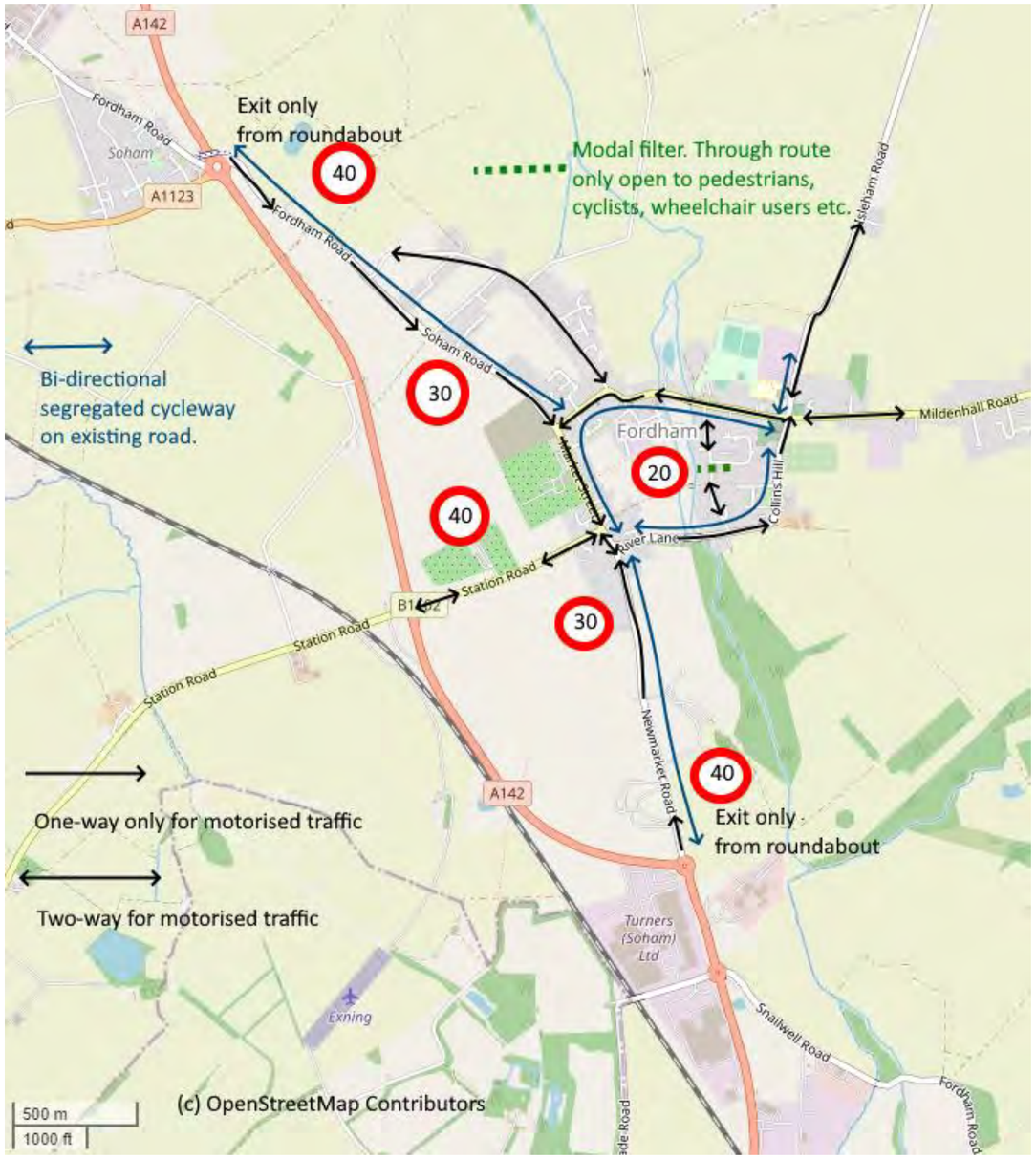
For simple segregation, no excavation and no changes to drainage there are various options including the example below. Any option would need to be agreed with Cambridgeshire County Council.

Two traffic flow options are shown– with motorised traffic directions reversed. Cyclists would be able to cycle in both directions using a segregated cycleway, with special provision needed on Carter Street at the narrowest point. This would give excellent cycling provision within Fordham, using the same design principles and widths as proposed for Burwell. It would also allow the substandard footways in Carter Street to be widened and would maintain traffic flows to all parts of the village.

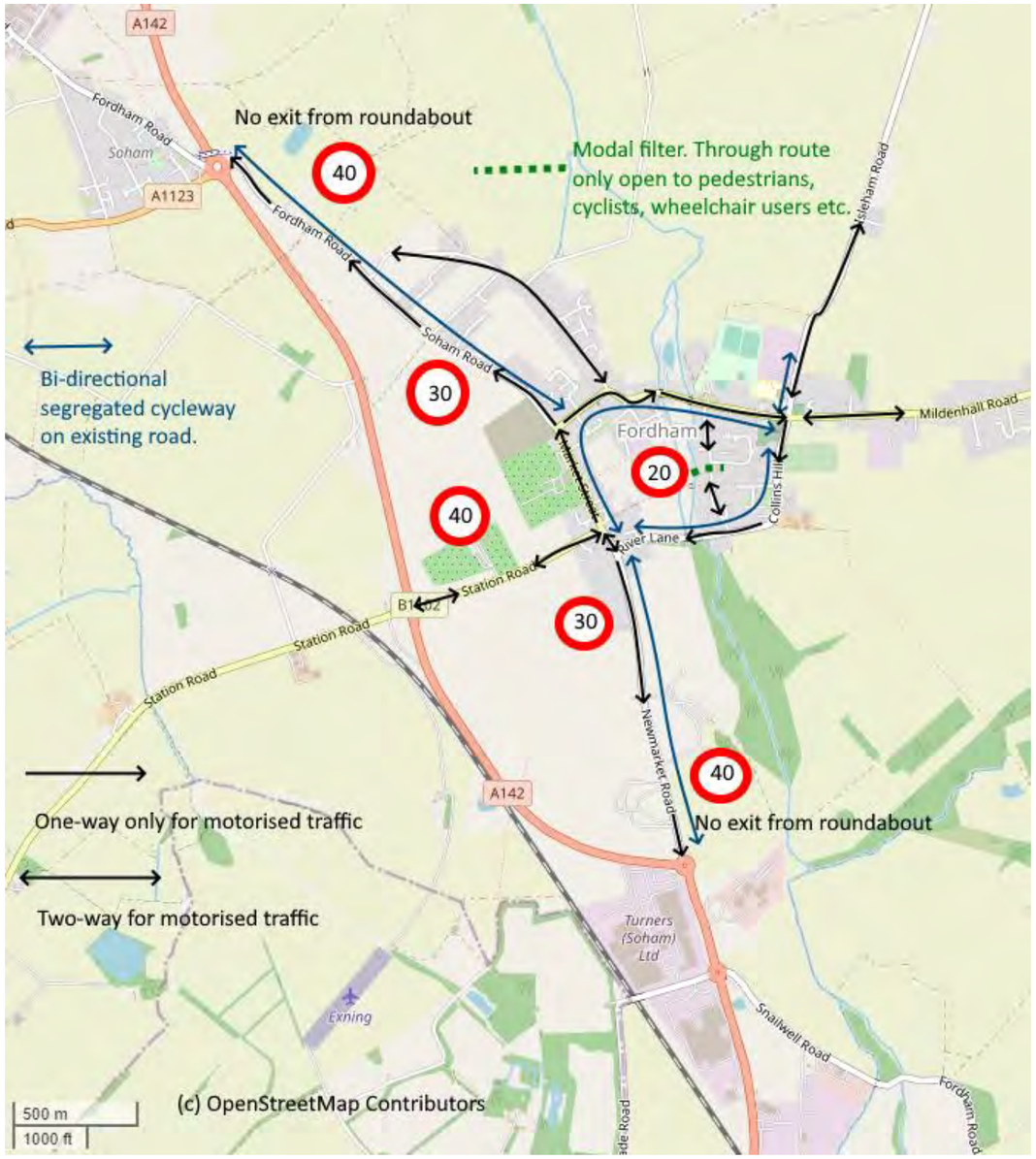
No provision is suggested at this stage for Station Road, which is regarded as relatively low priority for cycling given that none of the onward routes would use Station Road and there are clear advantages in using it as the main access to/from the bypass. However any future developments in that area would need to provide new off-road links and one of the options considered has to cross the road, so provision would be needed for that.

Photo: Rosehill Highways showing segregated cycleway being established on existing carriageway.

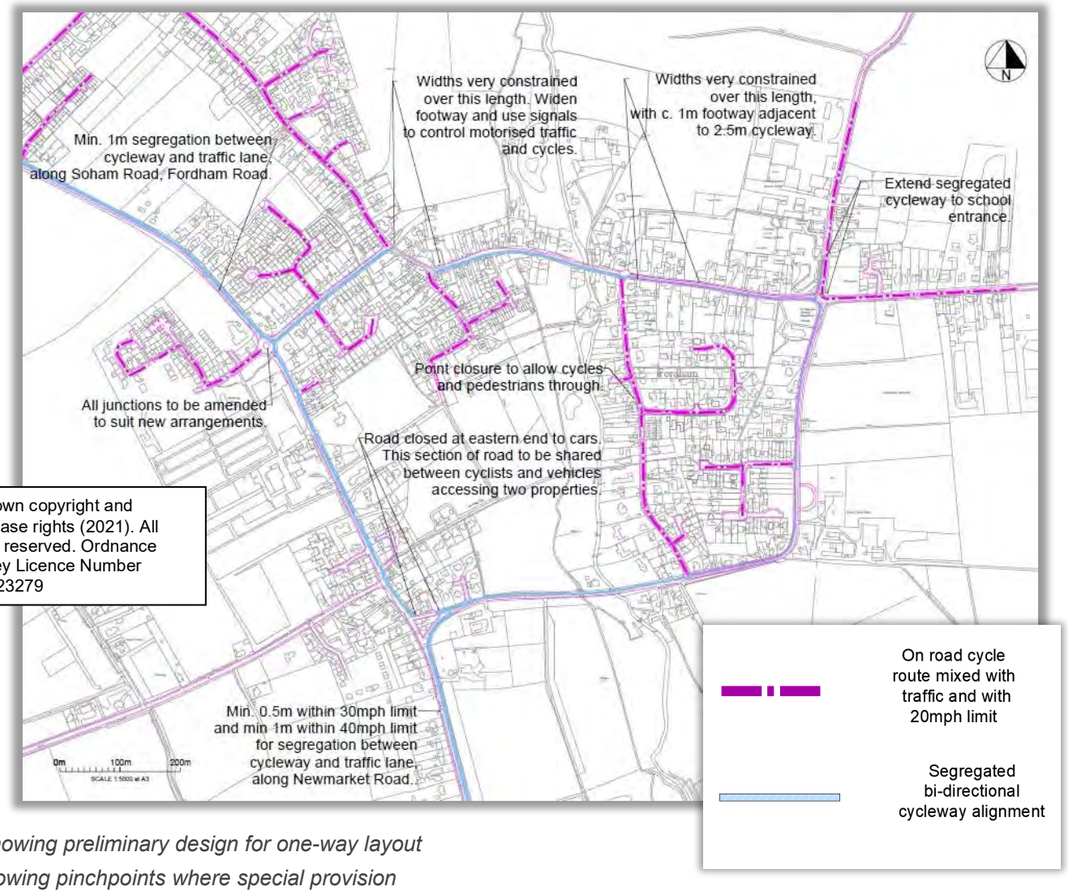
A preliminary design has been done to check on space available, using Ordnance Survey mapping and it shows that the segregated cycleway can be accommodated almost entirely within the existing roadspace. Detailed design will need to look at junction details, parking, street lighting etc., but it looks likely that on street parking will need to be reduced to create a high quality public realm.



Possible traffic flows in Fordham – Anticlockwise option.

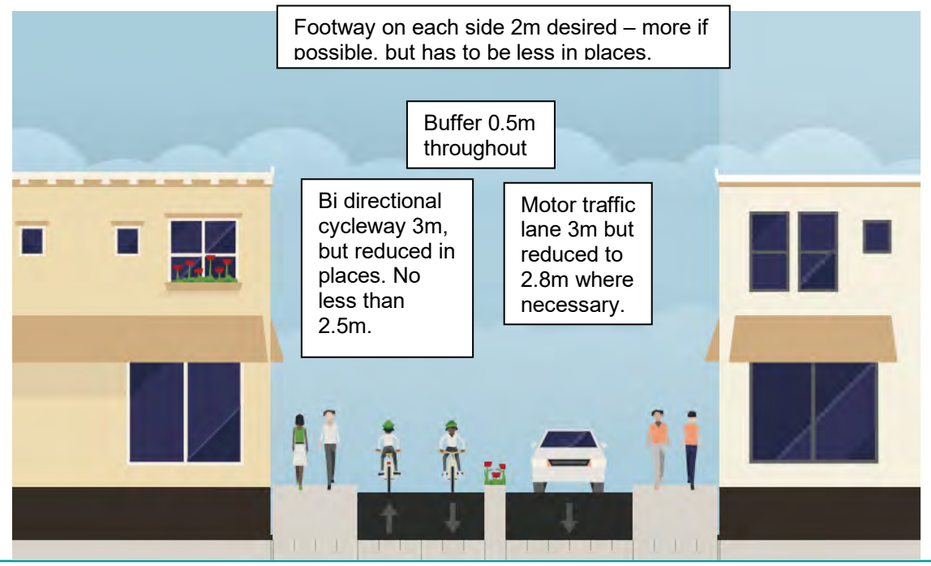


Possible traffic flows in Fordham – Clockwise option.

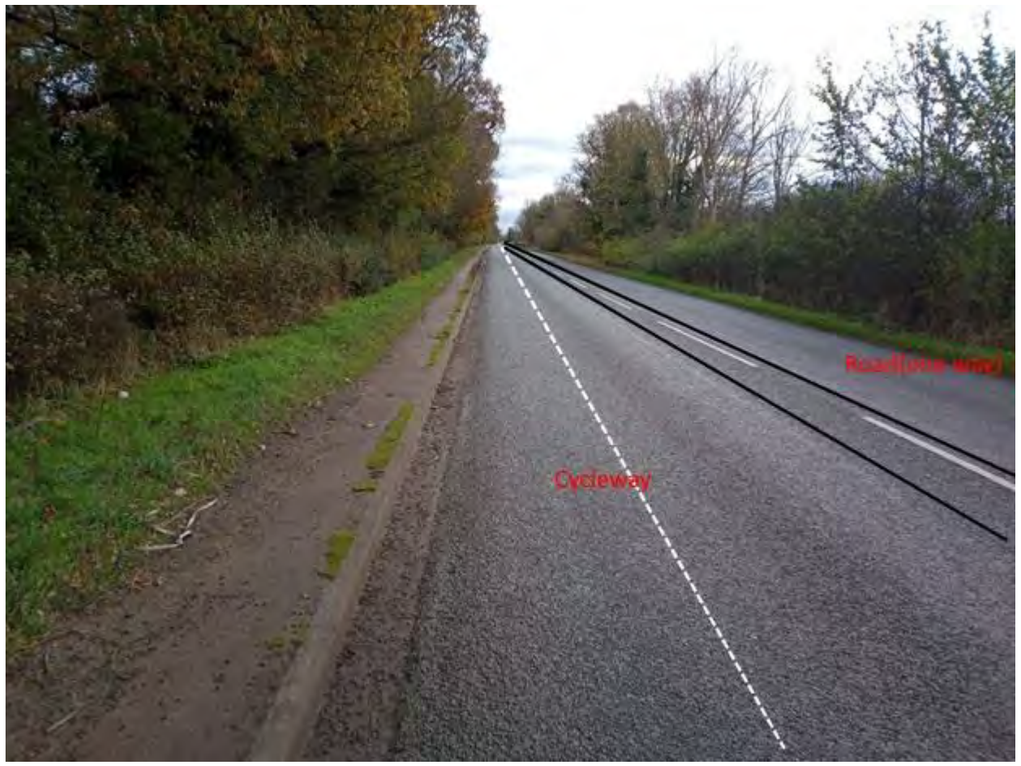


Plan showing preliminary design for one-way layout and showing pinchpoints where special provision will be needed.

Cross Section showing proposed street layout.



Newmarket Road (before)



Newmarket Road (after)

Sharman's Road, Fordham (before)

Sharman's Road, Fordham (after)

Fordham Primary School (before)

Fordham Primary School (after)

The main route alignments considered are outlined in the plan opposite, with most of the alignments having a number of different possible sub-options. Within Burwell and Fordham new high quality routes are needed and are assumed in option analysis. Between villages route options are limited due to the limited options for crossing the railway and for crossing the major roads and by the need to follow natural boundaries. For railway crossings there is only one location where existing infrastructure can be used for a route i.e the Landwade Road bridge on Options 5 and 6, but the road is too busy at present. The Cockpen Road level crossing has acceptable traffic volumes, but the angle of the crossing means that changes would be needed. The existing B1102 level crossing is not acceptable due to traffic volumes and speeds and there is no space to establish a suitable route, so it has been discounted. There are also limited options to cross the bypass (A142) due to the need for suitable access and long ramps. There is an existing foot/cycle bridge over the A142 to the north of the A1123 junction, although it does not meet current standards and that is considered in Option 1. The routes are considered in detail on the following pages but they are in outline:

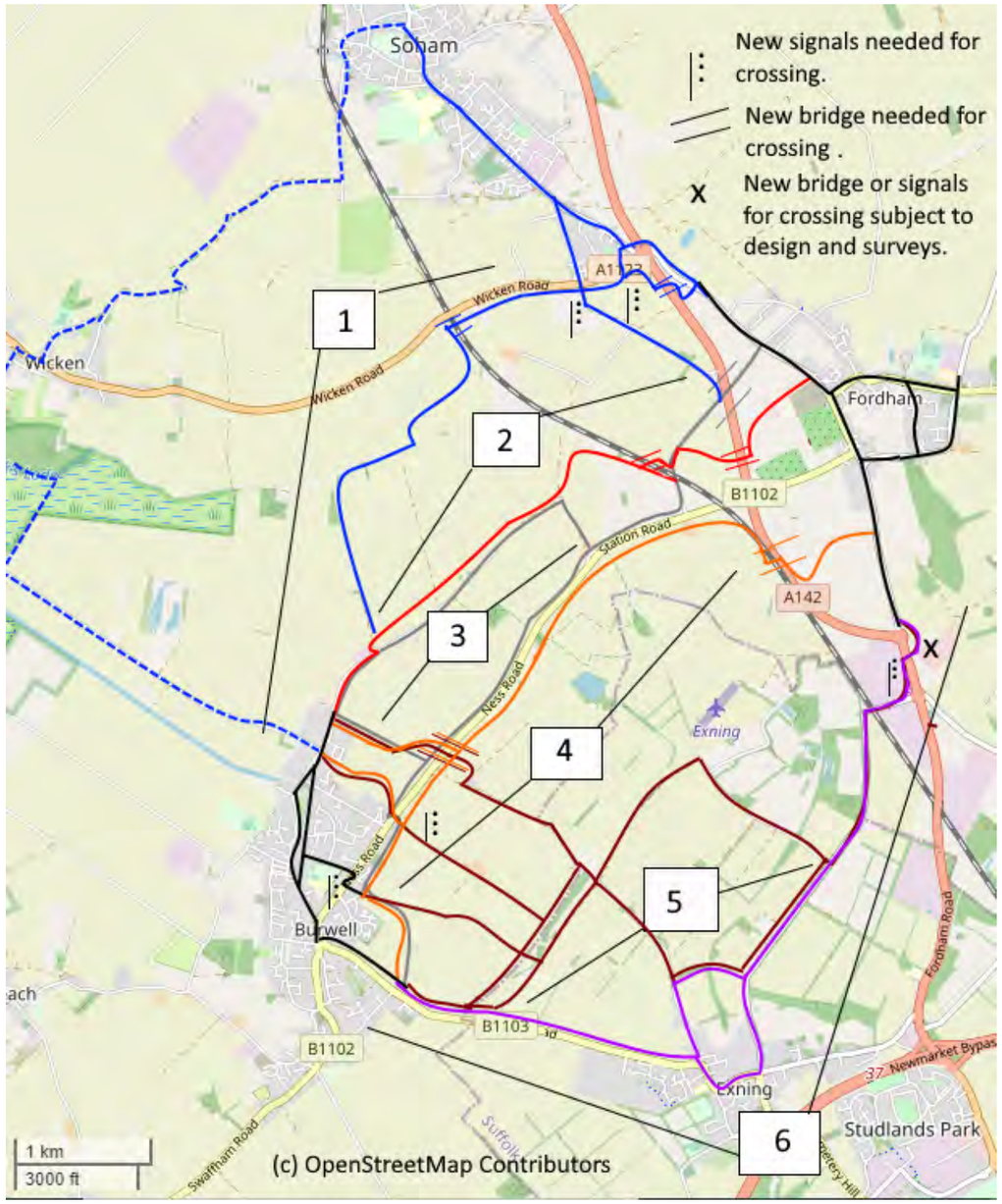
1. The route uses existing roads in Burwell and then requires new construction to create a new route to the south of Soham where a new bridge would be needed over the railway to the south of the existing A1123 road bridge. The route then has potential to form new links with both Fordham and Soham and would need existing routes to be upgraded. A dashed route that links Burwell with Wicken and Soham is shown on the adjacent map because it has some relevance in terms of linking Burwell with Soham, although it has little relevance in terms of linking Burwell and Fordham.

2. This route would need new path construction from the edge of Burwell following field edges to Cockpen Road where a new bridge may be needed over the railway or the existing level crossing could be used. Access to/from Fordham would need another bridge over the A 142.

3. This route would be similar to Option 2 but following Ness Road for at least some of the route, rather than the more remote alignment in Option 2. It would be more overlooked than option 2, but has space constraints that make it challenging or uses existing byways that are in poor condition.

4. This route to the south of Ness Road would link into Burwell where new housing is being proposed and would need a major new bridge over the railway and the A142 to link into Fordham. There are also major issues with a new crossing of the B1102 needed to make a good link with the north of Burwell.

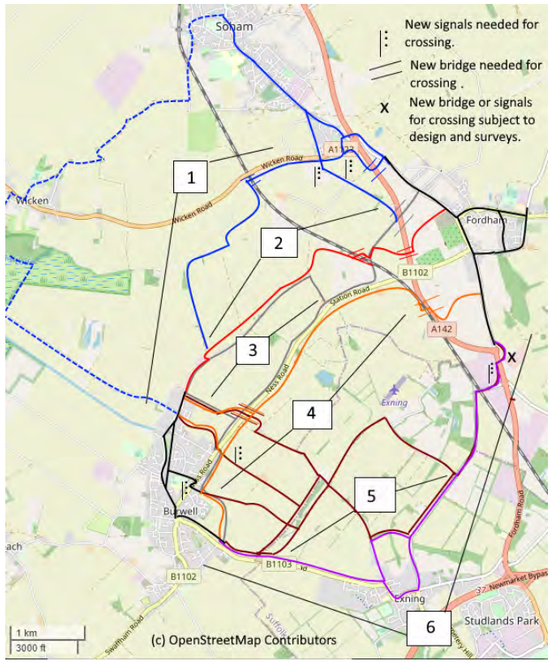
5. This option uses existing byways and the existing bridge over the railway at Landwade Road. There are a number of ways to establish a new route across fields, on field boundaries and on rights of way. The route would provide a Burwell-Exning route, although its usefulness would depend on exactly how it linked with both Burwell and Exning and which of the numerous sub-options were chosen. Options 5 and 6 are the same at the Fordham end and provide an opportunity to develop a Fordham – Newmarket route and also tie in closely with potential developments along the A142 south of Fordham. They use the existing bridge over the railway at Lanwade Road and need that road to become a quiet lane with no through traffic. 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.



Map showing the study area with options

6. This option is similar to Option 5 but goes through Exning rather than avoiding it. It addresses aspirations to improve the Burwell-Exning route, as secured through Planning application 15/01175.

6.1 Option 1



Map showing the study area with options

The route uses existing roads in Burwell and then requires new construction to create a new route to the south of Soham where a new bridge would be needed over the railway to the south of the existing A1123 road bridge. The route then has potential to form new links with both Fordham and Soham and would need existing routes to be upgraded. A dashed route that links Burwell with Wicken and Soham is shown on the adjacent map because it has some relevance in terms of linking Burwell with Soham, although it has little relevance in terms of linking Burwell and Fordham. The route crosses an area of flood risk.

The route is considered here in 5 parts:

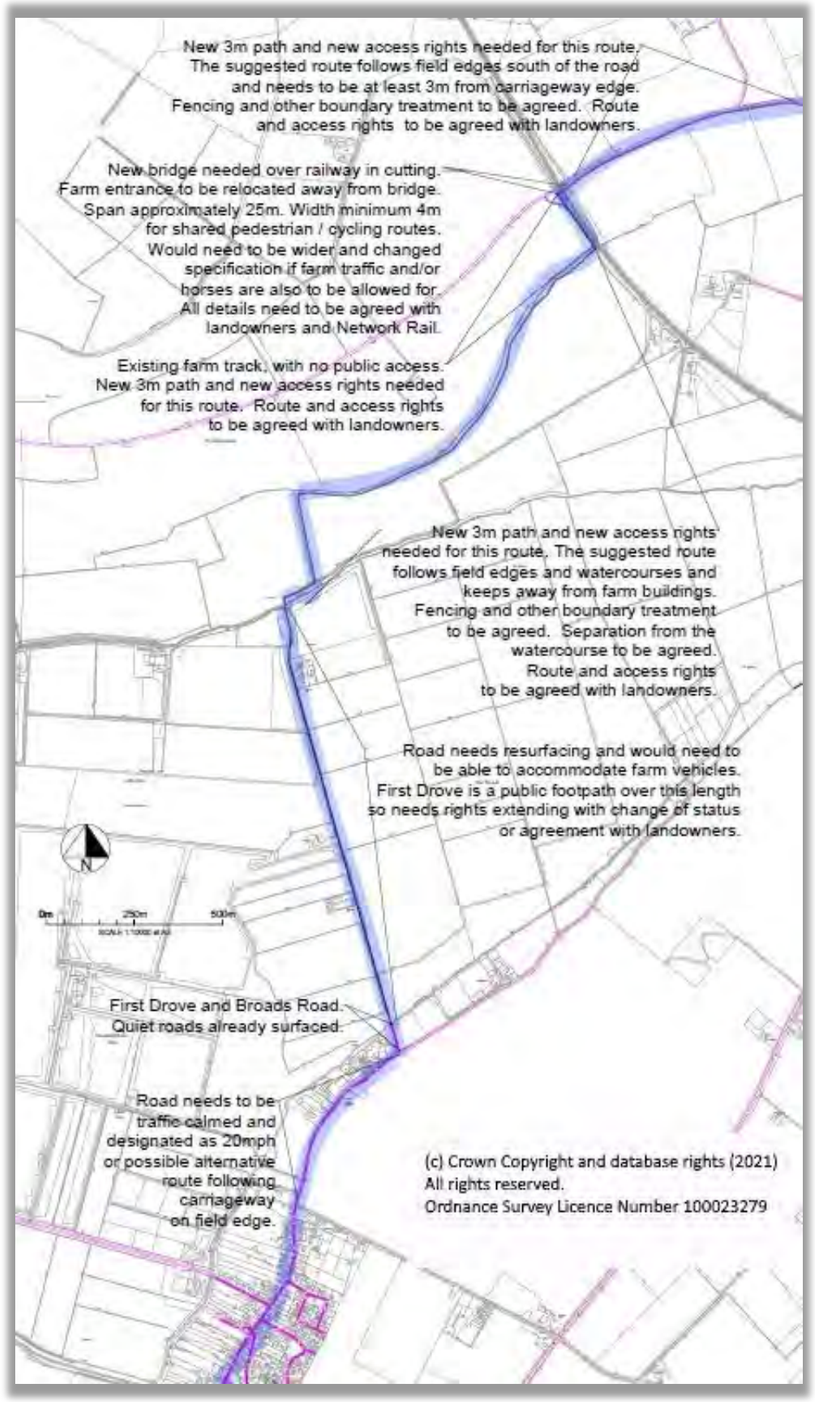
6.1.1 Within Burwell.

Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

6.1.2 Burwell to A1123.

Most of this is a completely new route and will involve major works and negotiations with landowners to agree a route, boundary arrangements and compensation. The route crosses areas of potential flooding and this is a concern. Flooding will have to be allowed for in the design, but there is a risk that the route may be unusable at times. The route will need to accommodate farm traffic along First Drove which is a public footpath already used by motorised vehicles. A new bridge will be needed over New River, but the major challenge will be a new bridge over the railway near the existing road bridge (A1123) **(Railway bridge option 1**). This will need to go through all the normal Network Rail approval processes and would need to be agreed with landowners who may want to have rights to use the bridge with their farm vehicles, adding to the complexity. In addition it will be necessary to move the farm access road junction with the A1123. A further complication is the gas mains in the vicinity which will need to be carefully protected as part of the design and installation of the bridge.

The suggested alignment indicated right may well change as landowners' requirements become clearer.



Plan showing Option 1 Burwell to A1123

View of First Drove from Broads Road (only the first part is surfaced like this.)

Existing path from Fordham Road, Soham towards Cornmills Road. In this area new segregated cycle paths and footpaths are needed.

View of A1123 bridge over railway. (A new bridge adjacent to the road bridge is feasible, but the farm access would need moving and special attention will need to be paid to gas pipes in the area.)

Existing ramp to existing bridge over A142. There is space to widen the path and move the fencing back from the path or remove the fencing all together.

View of A 1123 showing that any new path would need to be on the field edge away from the carriageway.

6.1.3 Soham South

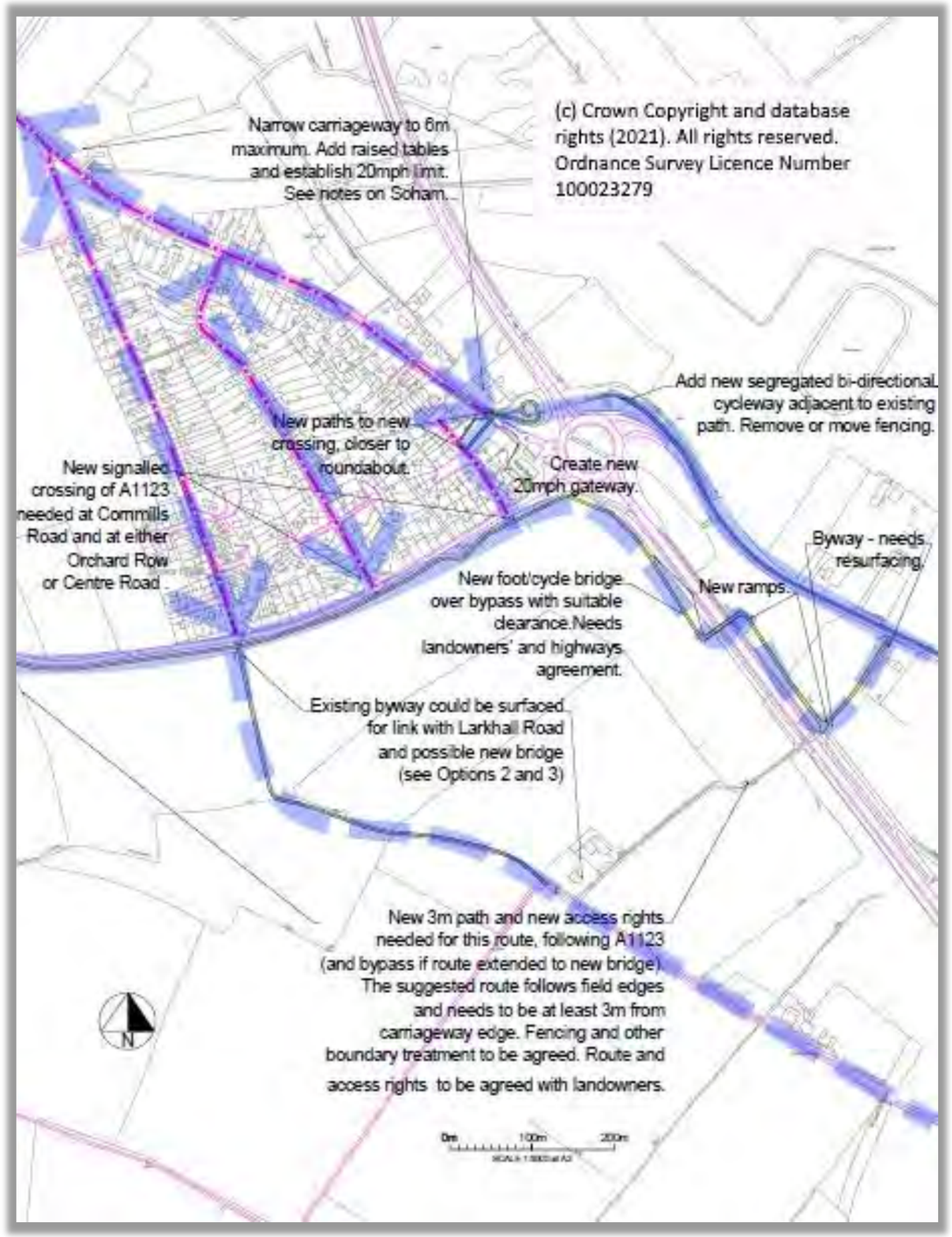
The route following the A1123 arrives in the Downfields area to the south of Soham. Any crossing of the A1123 needs to be either a bridge or a signaled crossing and the first suitable location for a crossing is at Orchard Row. A new crossing is recommended here to link with Soham, as long as suitable works are carried out to bring this link up to a suitable standard (See 6.1.4). An alternative would be to cross into Centre Road which again needs works to make the route suitable for use.

At Cornhills Road a signaled crossing is needed to link with the road and in order to link with the existing bridge.

The existing bridge (**A 142 Bridge Option 1**) is too narrow to comply with LTN 1/20. It should be segregated with a 3m cycleway set at least 0.5m from parapets and with a 2m footway, so needs to be at least 5.5m wide. The current width is inadequate at 2m. Nevertheless the bridge exists and replacing it is unlikely to be a high priority at present. However the approaches to the bridge can be much improved with a new segregated cycleway adding on the Fordham side and a widened path on the Soham side leading to a new segregated cycleway and a new crossing of Fordham Road. A parallel crossing on a raised table is recommended with new link paths through to Cornhills Road.

In order to establish a 20 mph gateway for Soham the section of Fordham Road north-west from the BP garage exit needs major changes. This is feasible within highway land and can accommodate the new parallel crossing.

As well as options for linking with Soham (shown to the north of Wicken Road (A1123) there are also options for new bridges over the bypass. These would have the advantage of providing a new facility and new route that would be LTN 1/20 compliant



Plan showing potential links between the South of Soham and the proposed route.

and would provide something in addition to the existing facility, which could be retained. A discussion would be needed about whether any new bridge would need to be able to accommodate horses. This would need a wider, more expensive bridge, with higher parapets than for cycling, but would be of benefit to local horse-riders.

The two bridge positions indicated are:

A142 Bridge Option 2.

Adjacent to the byway at West Lea and then adjacent to the bypass itself to the west of the crossing. If the byway is to be maintained as a link with the bypass the bridge ramps would have to be adjacent and to the north of the byway. This is feasible but would need landowners' agreement. It is also desirable that material for ramps on each side of the bypass is gained locally and could be won by excavating in local fields or possibly from nearby construction sites. The lengthy ramps and construction of a new bridge over the bypass are a significant technical challenge and the installation of a bridge would require closure of the bypass for a while, but this should be possible with minimal disruption if it can be done overnight. The position as indicated crosses the road at a position where the ground level is higher than further south, but the best position would need to be determined following site surveys and discussions with landowners.

A 142 Bridge Option 3.

A new bridge further south is also possible linking with Cockpen Road and the route to/from Cockpen Road via Larkhall Road is indicated. In order to comply with LTN 1/20 these quiet roads should be designated as 30mph limit. This bridge option is considered in 6.3.4.

6.1.4 Soham

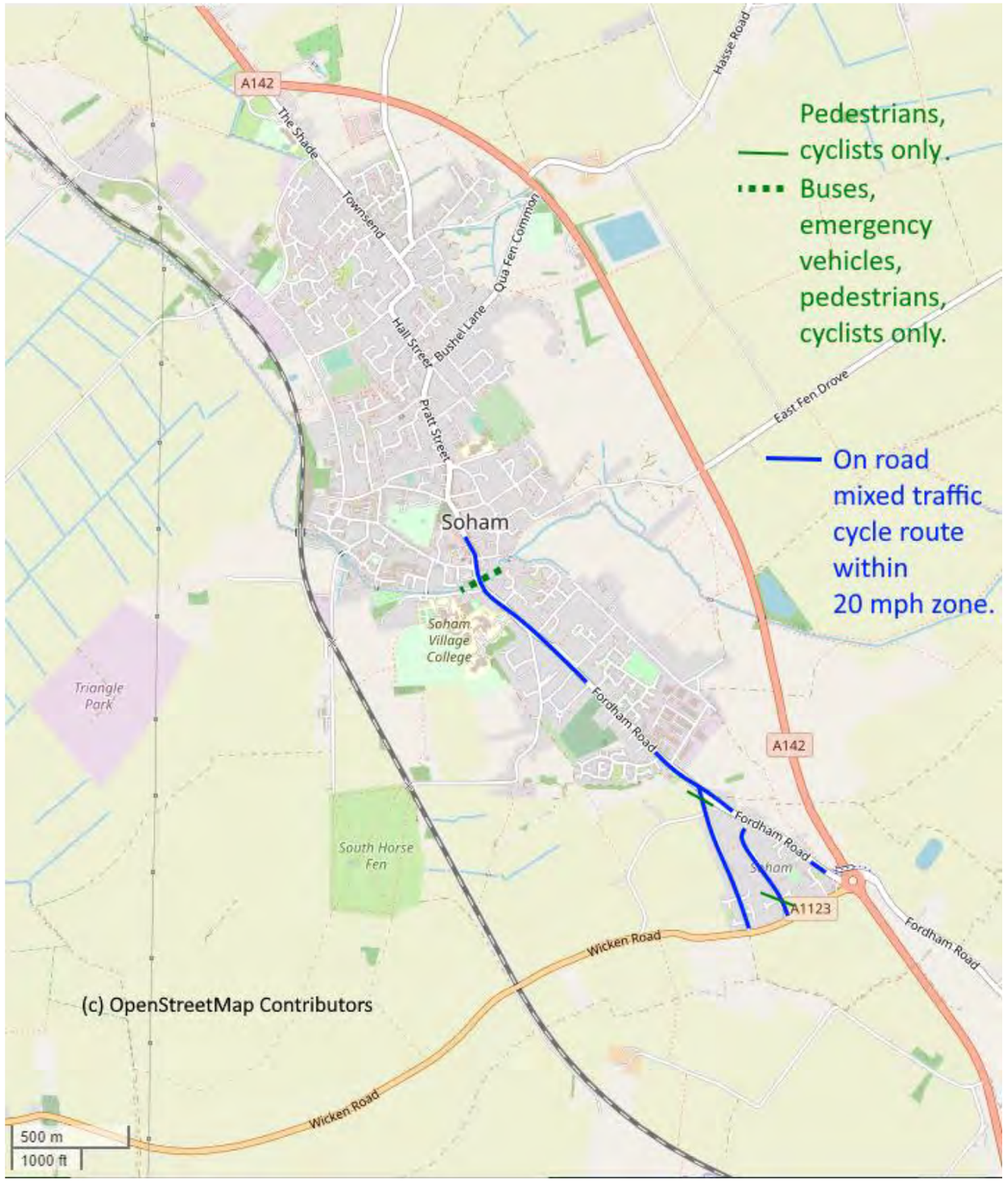
A cycle network for Soham is beyond the scope of this study, but nevertheless it is an important factor in route selection. If a new link is to be made between Soham and Burwell and between Soham and Fordham it needs to be easily accessible from all of Soham. At present this is not the case; the cycling environment in Soham is poor and does not comply with LTN 1/20.

Some initial consideration has been given as to how space can be created along Fordham Road in Soham. Any route should be at least as direct as Fordham Road and it is certainly the most important corridor to and from the south. The highway width on Fordham Road is variable – in places 11 or 12m going up to 15m or 18m. These larger widths could accommodate segregated cycle facilities and two-way traffic, but the lower widths could not. In addition there is no obvious way to establish a one-way system in the south of Soham. It may be possible to device a system that allows single way alternate working within the constrained areas, but it is hard to see how this could operate, given the many accesses onto the road and the need to maintain bus flows. There appears to be little option but a mixed traffic solution where traffic volumes are reduced as much as possible.

The obvious way to restrict traffic volumes is with a point closure of the road, forcing long distance traffic on to the bypass and giving clear local priority to walking, cycling and public transport. This would maintain vehicular access to all properties. In order to maintain bus traffic a bus gate is needed and Cambridgeshire County Council may need to obtain additional powers for this, so an early start on this process is recommended.

In order to create a suitable mixed traffic environment it is suggested that carriageway width is limited to 6m with regular raised table crossings to enforce the 20mph limit.

Plan showing potential arrangement for the south of Soham (below)



The plan (above) will clearly need a lot of detailed engagement and discussion. Issues for the north of Soham are different, but it would also benefit greatly from this.

A complete review of cycling in Soham is recommended. It will be challenging to produce solutions that satisfy all, but at present the cycling environment is poor, in a town that has huge potential given its size and terrain. On a visit at the end of the school day it was notable how few cyclists there were and how busy and congested the roads were with cars. This is a sign of a network that is not functioning well.

At the time of survey roads around the new station were closed to through traffic and the town was continuing to function.

The centre of Soham should be an attractive and convenient location for local people on bikes, but very few cyclists were evident at the time of survey.

The current standard of cycle provision in Soham is not LTN 1/20 compliant and the network is incomplete.

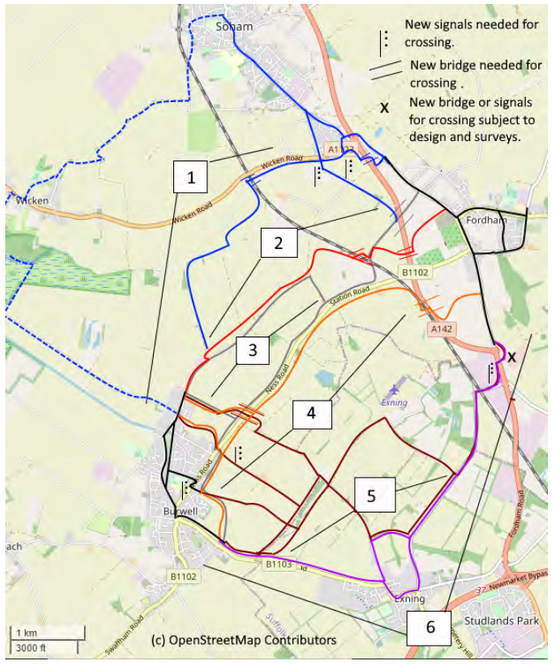
Existing shared use path besides Fordham Road. This feels very unsafe, especially with fast traffic on the road.

6.1.5 Fordham

Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

Option 1 Summary	
Comparative Length (B-A)	9.1 km (Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	10.9 km (Burwell Centre to Fordham employment south) *(6.4km by road)*
Comparative Length (C-A)	7.4km (Burwell North to Fordham Centre) *(6.5km by road)*
Comparative Length (C-E)	9.2km (Burwell North to Fordham employment south) *(6.8km by road)*
Comparative Length (D-A)	9.9km (Burwell South-east to Fordham Centre) *(6.9km by road)*
Comparative Length (D--E)	11.7km (Burwell South-east to Fordham employment south) *(7.2km by road)*
Likely estimated cost	4.6km approx. new build path + new bridge over railway without ramps + 2 x signalled crossings in Soham + Soham costs + Burwell and Fordham costs.
Engineering difficulties	Upgrading First Drove and maintaining farm access challenging, but appears to have reasonable base. Field edge paths. Working near the highway. Potential flooding will need to be allowed for. New bridge over the railway and changes to farm access are likely to be the main engineering challenges with gas main nearby too. The existing bridge over the A142 can serve as an interim route but in the long term needs upgrading with significant engineering challenges. Signalled crossings of A1123 are within 40mph limit so should be achievable, but need Cambridgeshire CC support.
Ecological issues	Mostly existing field edges or tracks. Works near watercourse may be sensitive.
Land ownership issues	Needs agreement of landowners for field edge works and new bridge.
Other issues	Remoteness of the route likely to be a deterrent to some. Route only really works well if there is a clear demand for better links with Soham and if a new Soham cycle network is built. Will need detailed local engagement in Soham as well as Burwell and Fordham.
Overall	This is an achievable route with land agreements and with Network Rail engagement, but is a considerable detour from desire lines particularly in relation to access to Fordham south employment sites. The route has risk of flooding. The benefits of better links with Soham need to be weighed against the disadvantages of the poor links with Fordham south.

6.2 Option 2



Map showing the study area with options

This route would need new path construction from the edge of Burwell following field edges to Cockpen Road where a new bridge may be needed over the railway or the existing level crossing could be used. Access to/from Fordham would need another bridge over the A 142. The route has a lot of similarities with Option 3 and it would be possible to develop a route that was a combination of parts of Option 2 and parts of Option 3. The route runs along a line of potential flooding, which Option 3 does not.

The route is considered here in 5 parts:

6.2.1 Within Burwell.

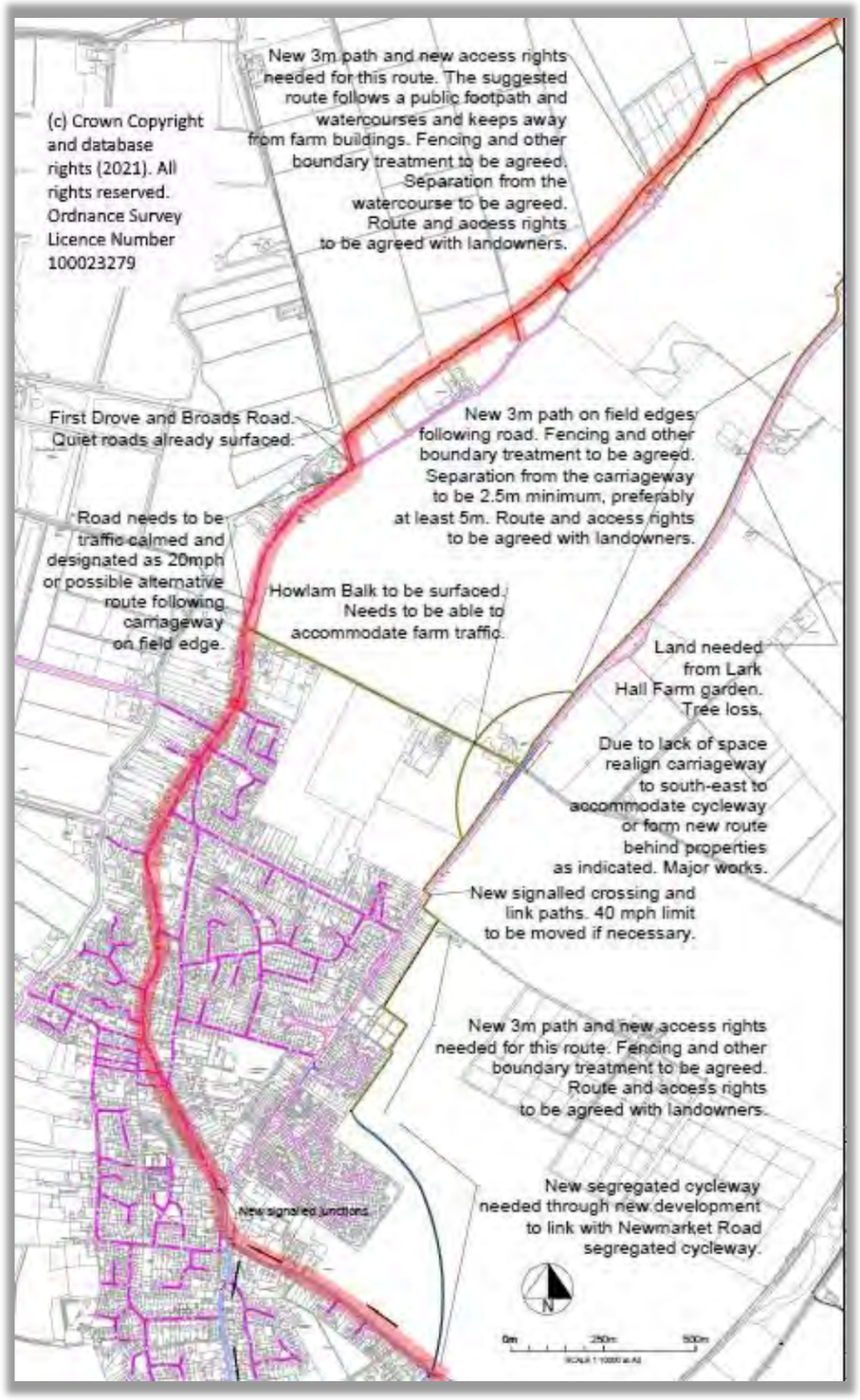
Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

6.2.2 Burwell to railway crossing.

The suggested route follows field edges and a watercourse and would establish a new route, although some of the route would be shared with a public footpath. Potential flooding and this is a concern. Flooding will have to be allowed for in the design, but there is a risk that the route may be unusable at times.

From First Drove it would be possible to use Broads Road as a route, which appears to have less risk of flooding and this could be shared with farm traffic. The onward route would however involve the use of private land and landowners may prefer an alignment that kept away from their properties, such as the alignment indicated.

The suggested alignment indicated right and on the following page may well change as landowners' requirements become clearer. There are also considerable ecology issues to consider and this will have to be a major factor in route selection.



Plan showing Option 2 from Burwell towards the railway.

6.2.3 Railway crossing

The crossings of railway lines is governed by the rail industry and any new crossing will need to be agreed with Network Rail, following the various stages of approval that they have and with all their costs covered.

The level crossing at Cockpen Road carries very little motorised traffic and would in many ways make an ideal cycle route, but any route that crosses the level crossing will need to be discussed with the Secretary of State and carries the risk that Network Rail will request major changes at the crossing. It is therefore sensible at this stage to consider if a bridge over the railway would be feasible and if so where it could be positioned.

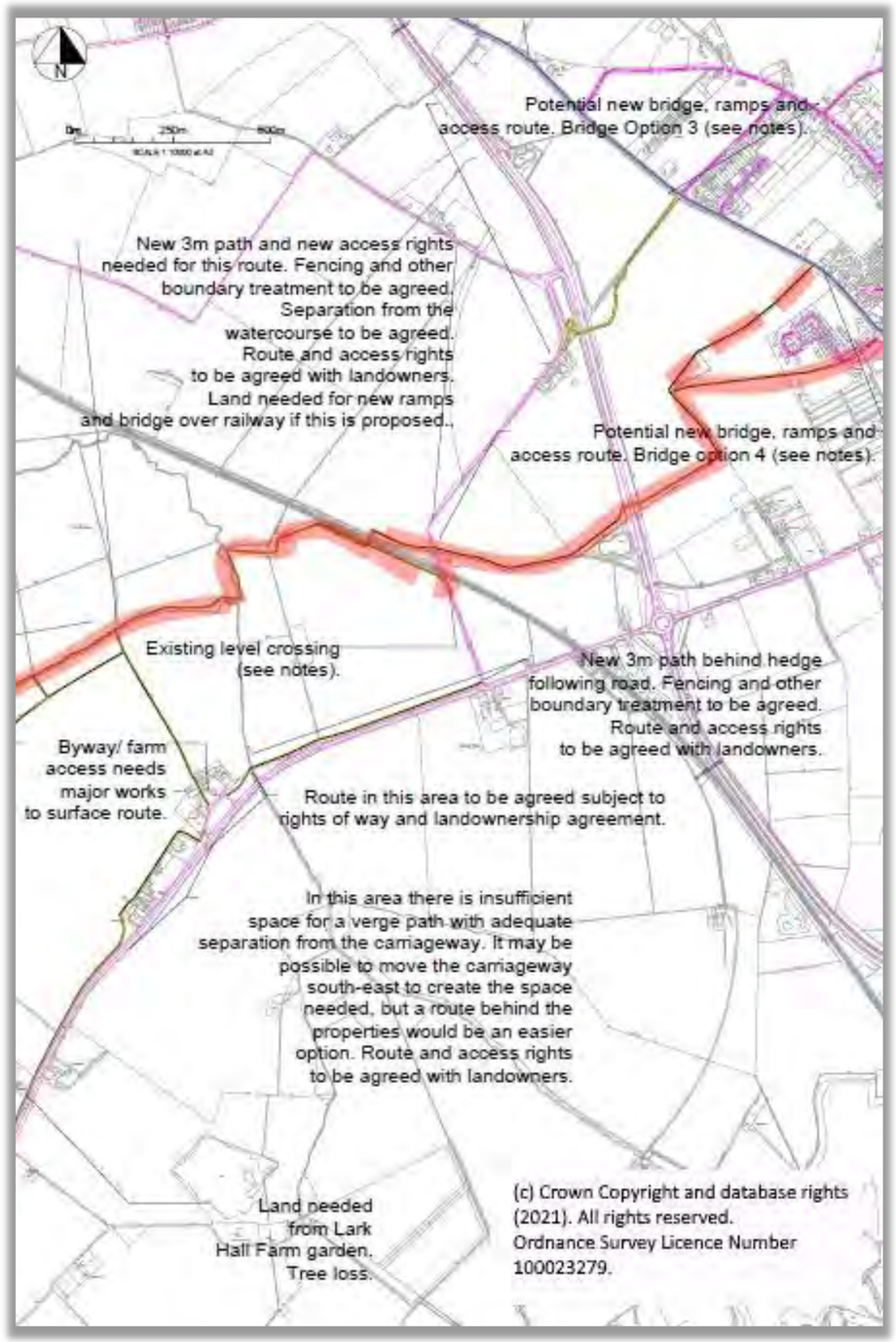
The suggested position would be some 200m north-west of the level crossing, which keeps it away from the nearby property and would allow space for in-line ramps. The ramps would require a significant land take and would need material to form the ramps to either be won locally from the fields or from nearby construction sites.

Any new bridge would clearly need to comply with Network rail specifications and would need to be at least 4m wide to comply with LTN 1/20 requirements. There would be significant health and safety issues to resolve and closures of the railway line to arrange.

Clearly if a bridge can be avoided and it is possible to use the level crossing this should be considerably cheaper and would not add significantly to the length of the route. The level crossing is considered further as part of Option 3 in 6.3.3.

View from Cockpen Road towards the railway from the north. The access route to a bridge would need to follow the drain to the right of it.

View from Cockpen Road towards the potential bridge site from the south of the level crossing.



Plan showing potential railway and A 142 crossings for Option 2

6.2.4 A142 Crossing

The A142 Fordham bypass is very difficult to cross and needs a new bridge, if the crossing is going to be in this vicinity. Two locations are considered suitable in this area. Bridge option 4 is considered here with Bridge option 3 considered in 6.3.4.

This bridge location has not been surveyed since it is on private land, with no rights of way, but the position appears feasible. It is proposed to be positioned to the north of a pond and field drains and would need sufficient land for ramps and for the material that could be used to form the ramps.

The preferred way to access Fordham would be through the new development (Rayner's Green) linking to the proposed bridleway to the rear of Scotdales Garden Centre. An alternative route avoiding Rayner's Green could link to the public highway slightly further north.

View from Cockpen Road towards the A142 showing the natural boundary that could be followed. The alignment has not been surveyed.

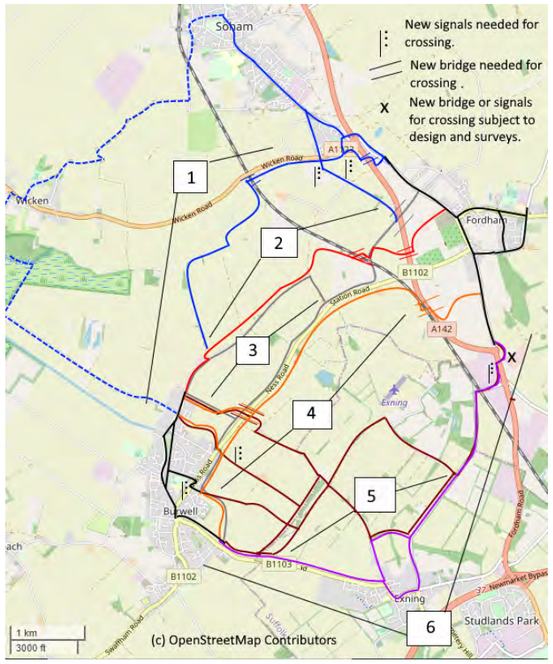
6.2.5 Fordham

Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

The preferred alignment would enter/ exit Fordham via the new development at Rayner's Green. Unfortunately the new infrastructure is not LTN1/20 compliant and will need changing to bring it up to standard. (The shared use path above is an example)

Option 2 Summary	
Comparative Length (B-A)	6.8 km(Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	8.6 km (Burwell Centre to Fordham employment south) (6.4 km by road)
Comparative Length (C-A)	5.1 km (Burwell North to Fordham Centre) (6.5 km by road)
Comparative Length (C-E)	6.9 km (Burwell North to Fordham employment south) *(6.8 km by road)*
Comparative Length (D-A)	7.6 km (Burwell South-east to Fordham Centre) *(6.9 km by road)*
Comparative Length (D--E)	9.4 km (Burwell South-east to Fordham employment south) (7.2 km by road)
Likely estimated cost	3.8km approx. new build path + new bridge over railway with ramps + new bridge over A142 with ramps, plus Burwell and Fordham costs.
Engineering difficulties	New bridges over the railway and the A142 are likely to be the major challenges.. Ground conditions may be challenging as will the risk of flooding.
Ecological issues	Mostly existing field edges or tracks. Works near watercourse may be sensitive.
Land ownership issues	Needs agreement of landowners for field edge works and new bridges.
Other issues	A route that uses Broads Road to its maximum extent would reduce new path works by approximately 1km, which would be a significant saving. This would also seem to reduce flood risks.
Overall	This is an achievable route with land agreements and with Network Rail engagement and is a reasonably direct route that links well into Burwell, as long as network improvements in Burwell are completed. There are risks of flooding and alternative routes in the event of flooding will need to be considered.

6.3 Option 3



Map showing the study area with options

This route would be similar to Option 2 but following Ness Road for at least some of the route, rather than the more remote alignment in Option 2. It would be more overlooked than option 2, but has space constraints that make it challenging or uses existing byways that are in poor condition.The route has a lot of similarities with Option 3 and it would be possible to develop a route that was a combination of parts of Option 2 and parts of Option 3.

The route is considered here in 5 parts:

6.3.1 Within Burwell.

Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

6.3.2 Burwell to railway crossing.

The obvious alignment would closely follow the B1102 to the north of the road avoiding the need to cross the road, (except in Burwell) and would then have additional links into north-east Burwell and south-east Burwell. This is indicated with the dashed line on the adjacent plan. It is a possibility, but has many challenges, because (in order to accommodate a 3m path set back from the carriageway by at least 2.5m with at least 0.5m from any boundary) a clear strip of 6m width is needed following the road. This is not achievable using highway verges and any route will need private land and agreement from landowners. It has to be expected however that at the Howlam Balk junction and at Lark Hall Farm the landowners will not be supportive of routes that effectively go through their front gardens. A route to the rear of farm buildings may be possible at Howlam Balk but this would involve a considerable land take. A more realistic may be to move the carriageway further south to create the necessary space. This would be costly and challenging given the proximity of electrical and gas services in the area. There appears to be little room for alternatives at Lark Hall Farm where the route would also need to pass through a small orchard with risk of loss of trees.

As well as the land complications a route following the B1102 also involves a lot of work to provide good links into Burwell. A route that started or finished on the edge of the village and then expected people to cycle on the busy road into Burwell would not be well used and would not comply with LTN 1/20, so the necessary works to make these links are shown on the adjacent plan. They should be achievable subject to landowner's agreement.

Given the major difficulties of delivering a route immediately to the north of the B1102 this is not recommended and the suggested alternative is a route following Broads Road and then following a byway that links all the way through to the B1102 near where Ness Road changes to Station Road as shown by the solid line on the two plans.

There are rights to construct a route along a byway and usage rights on foot, cycle horseback etc,, although of course discussion will still be needed with the Highway Authority and landowners. There are significant technical challenges because the byway has suffered greatly due to the usage of heavy vehicles and the County Council will want to ensure that any works do not create a significant maintenance burden. In addition there will need to be some restrictions introduced on vehicular usage so that the route does not become a short cut route to and from parts of Burwell.

Beyond the extent of existing rights of way, private land is needed to continue the route through to Cockpen Road. This attractive quiet road appears a good alternative to using the existing level crossing on the B1102. (The B1102 level crossing is not suitable and it is hard to see how it can be adapted to make a suitable route; it has been discounted as an option.)

View of Broads Road

View looking back to Broads Road from the byway that continues towards Fordham

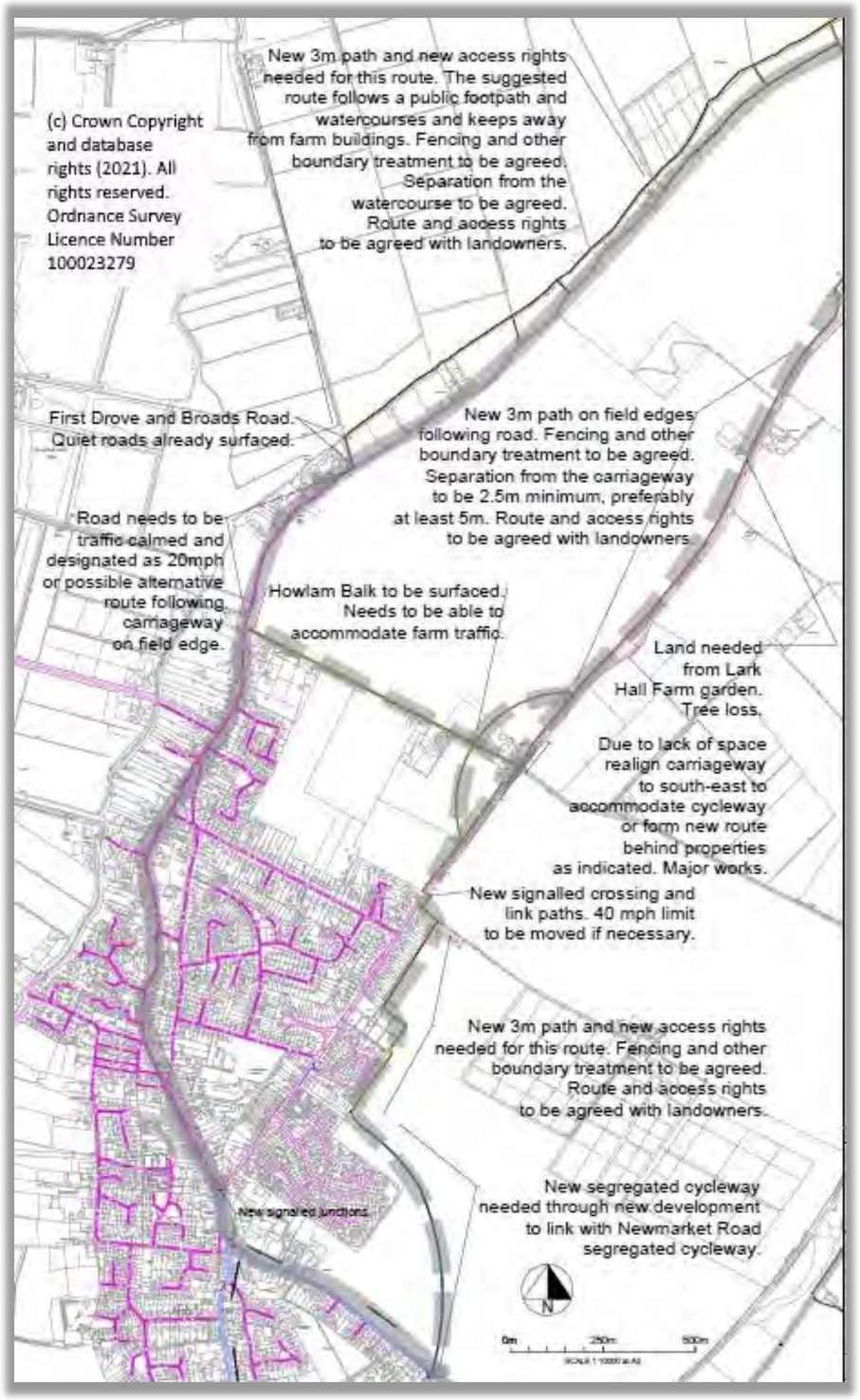
The byway is in poor condition and would need major work.

View of Howlam Balk

Lark Hall Farm garden. A route would have to go through the garden and remove trees.

Property at the junction of Howlam Balk and the B1102 showing the need to either take a route through the front garden, move the carriageway or avoid the area.

Over much of the distance a route away from the carriageway on farmland would be relatively easy, subject to landowner's agreement. (The road is on the right behind the hedge).



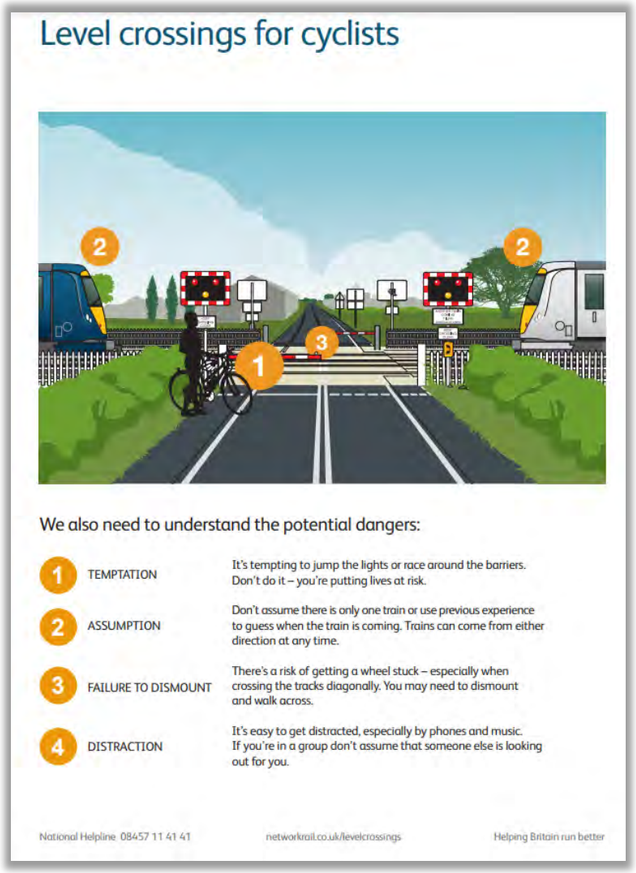
Plan showing Burwell end of Option 3

sustrans

6.3.3 Railway crossing

The level crossing at Cockpen Road carries very little motorised traffic and would in many ways make an ideal cycle route, but there is a requirement in planning legislation for planning authorities to consult the Secretary of State and the operator of the network, where a proposed development materially affects traffic over a level crossing. That would be the case here.

It is quite possible that the Secretary of State and the operator of the network will have no issues with the level crossing. There are plenty of similar crossings that carry higher volumes of traffic, including the nearby B1102 level crossing. The issue that may well be raised and which could be a significant concern is that the road crosses the tracks at an angle of approximately 45º. This is a concern because of the risks of bicycle wheels being caught in the tracks.

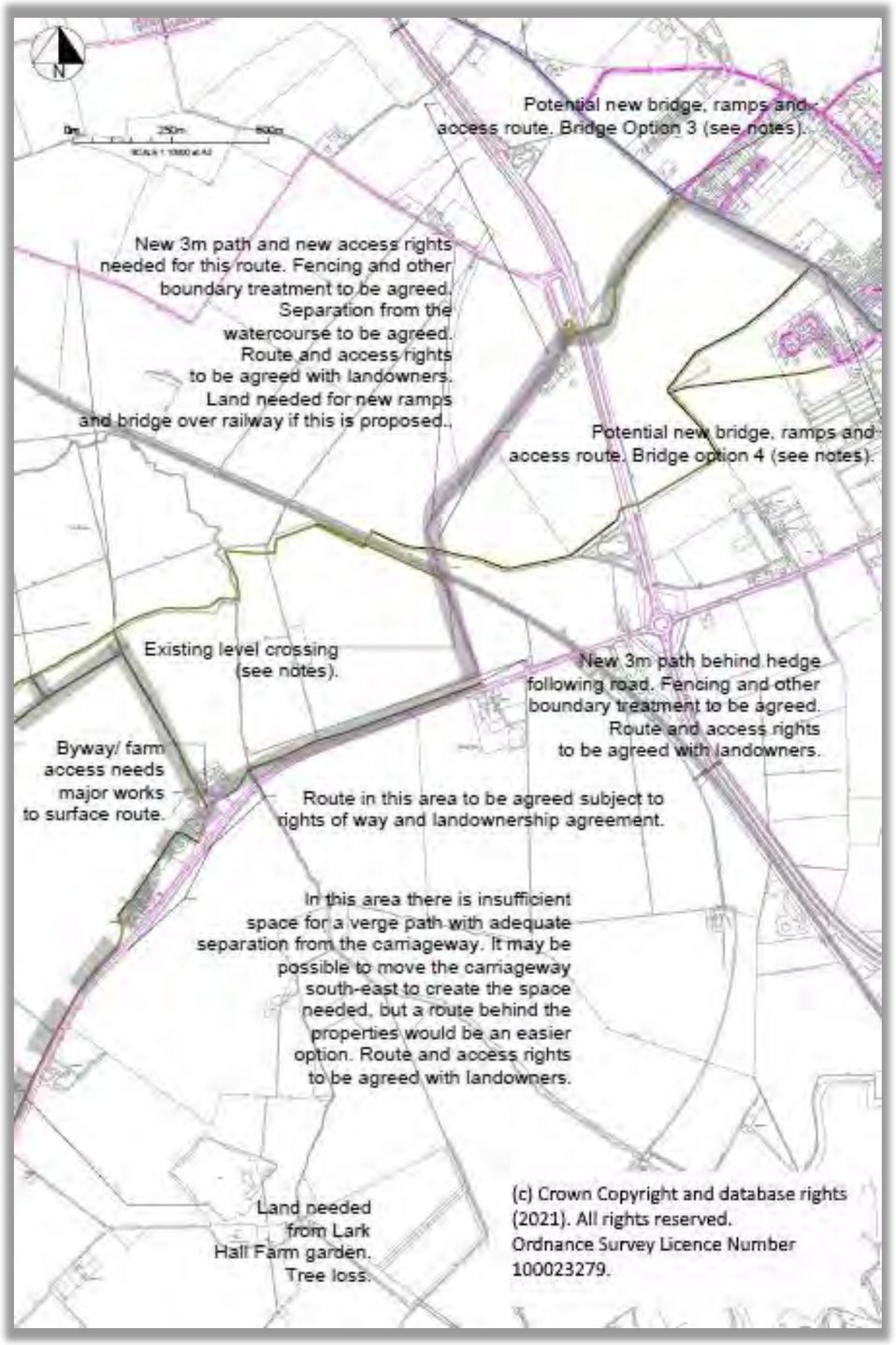


Network Rail's advice is that when crossing the tracks diagonally you may need to dismount and walk across. It seems highly unlikely that many people would do this and some people may not be able to dismount and walk. It is therefore recommended that the level crossing either needs to be amended or not used.

A relatively simple amendment would be to close the level crossing to motorised traffic and allow cyclists and pedestrians to then cross the tracks at closer to 90º. This would obviously need County Council agreement and Network Rail consent. Gates are unlikely to be acceptable if they are not fully automatic and usable easily by all, as the existing gates/

An alternative would be a new bridge over the railway, but that would be very difficult on the current Cockpen Road alignment due to the property near the level crossing. A new bridge is possible but changes to the level crossing may be easier.

A new bridge is considered nearby in 6.2.3 and a similar bridge with different ramps may be possible, but it represents a significant detour and would not be favoured; if a new bridge is needed Option 2 makes more sense than Option 3. Any new bridge would clearly need to comply with Network Rail specifications and would need to be at least 4m wide to comply with LTN 1/20 requirements. There would be significant health and safety issues to resolve and closures of the railway line to arrange.



Plan showing railway and A142 crossings for Option 3

6.3.4 A142 Crossing

The A142 Fordham bypass is very difficult to cross and needs a new bridge, if the crossing is going to be in this vicinity. Two locations are considered suitable in this area. Bridge option 3 is considered here with Bridge option 4 considered in 6.2.4.

This bridge location is on the line of the former Cockpen Road, which was severed by the Fordham bypass, but which has the advantage of being a surfaced right of way that remains in place. The major challenge for a new bridge is however the need for major ramps, which will need private land on the Fordham side of the bypass and which would have a significant impact on trees on the Burwell side.

On the Burwell side of the A142 it appears that major earthworks were added when the road was built and these were planted extensively with trees which are now maturing. The formation of a new ramp would mean major changes to the earthworks and the removal of most trees. Trees could be planted elsewhere and there would certainly need to be compensatory works.

Bridge options 3 and 4 have advantages and disadvantages and if a route through this area is prioritised both will need to be considered carefully along with landowners wishes.

View (above) of Cockpen Road showing the former road alignment Branching off to the right) that is now an earth bank with extensive planting (seen below).

The former road is in good condition and is a right of way to the east of the A142 making this an obvious access to/from Fordham.

6.3.5 Fordham

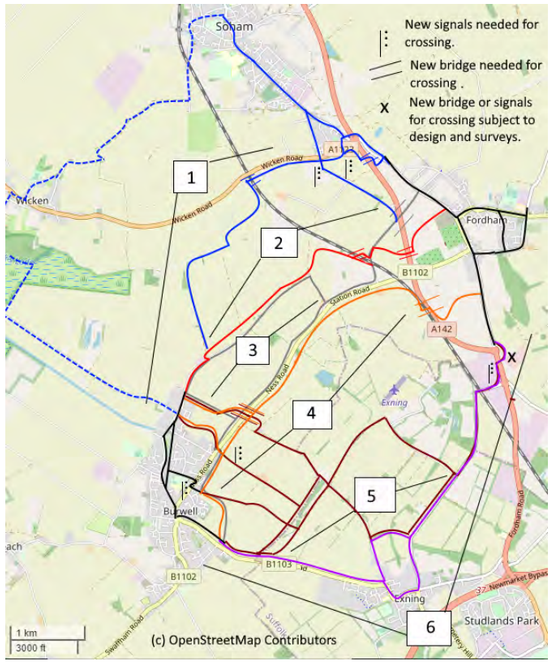
Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

View of Soham Road. Option 3 would link with Fordham along this road.

Analysis of Option 3 is based on the alignment that follows Broads Road, byways and new paths to Cockpen Road, rather than the more challenging option that follows the B1102 over a much longer length. The costs and challenges of this latter route are much greater and more challenging.

Option 3 Summary	
Comparative Length (B-A)	7.4 km(Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	9.2 km (Burwell Centre to Fordham employment south) (6.4 km by road)
Comparative Length (C-A)	5.7 km (Burwell North to Fordham Centre) (6.5 km by road)
Comparative Length (C-E)	7.5 km (Burwell North to Fordham employment south) *(6.8 km by road)*
Comparative Length (D-A)	8.2 km (Burwell South-east to Fordham Centre) *(6.9 km by road)*
Comparative Length (D--E)	10 km (Burwell South-east to Fordham employment south) *(7.2 km by road)*
Likely estimated cost	1.8 km approx. new build path + level crossing changes + new bridge over A142 with ramps, plus Burwell and Fordham costs.
Engineering difficulties	Any changes to the level crossing will be complex and may be challenging. A new bridge over the A 142 will be major. Construction of a new path along the byway will require a very robust structure.
Ecological issues	Mostly existing field edges or tracks. Works near watercourse may be sensitive. Trees issues around the A142 crossing.
Land ownership issues	Needs agreement of landowners for field edge works and new bridge.
Other issues	The alignment closer to the B1102 would be less isolated and in that sense a better option, but the technical and land challenges mean that this has been ruled out. This option requires the level crossing to be closed to vehicles as a safety requirement and there may be some opposition to this.
Overall	This is an achievable route with land agreements and with Network Rail engagement and is a reasonably direct route that links well into Burwell, as long as network improvements in Burwell are completed. However the route diverts significantly from desire line at the Fordham end which is a major disadvantage compared to Option 2. It makes good use of existing infrastructure and will need community support for the level crossing changes, but Option 2 is preferred. It may be possible to use a combination of Options 2 and 3 to come up with the best route.

6.4 Option 4



Map showing the study area with options

This route to the south of Ness Road would link into Burwell where new housing is being proposed and would need a major new bridge over the railway and the A142 to link into Fordham. There are also major issues with a new crossing of the B1102 needed to make a good link with the north of Burwell. The route is considered here in 4 parts:

6.4.1 Within Burwell.

Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

In order for the route to link with the south of Burwell and the new developments there a new route is needed along the edge of the village. This obviously needs to link well with the new development, where facilities will need to be LTN 1/20 compliant. This is essential in order to avoid the B1102 which is not an acceptable route through this part of Burwell, due to the traffic volumes and the lack of space for a segregated cycleway.

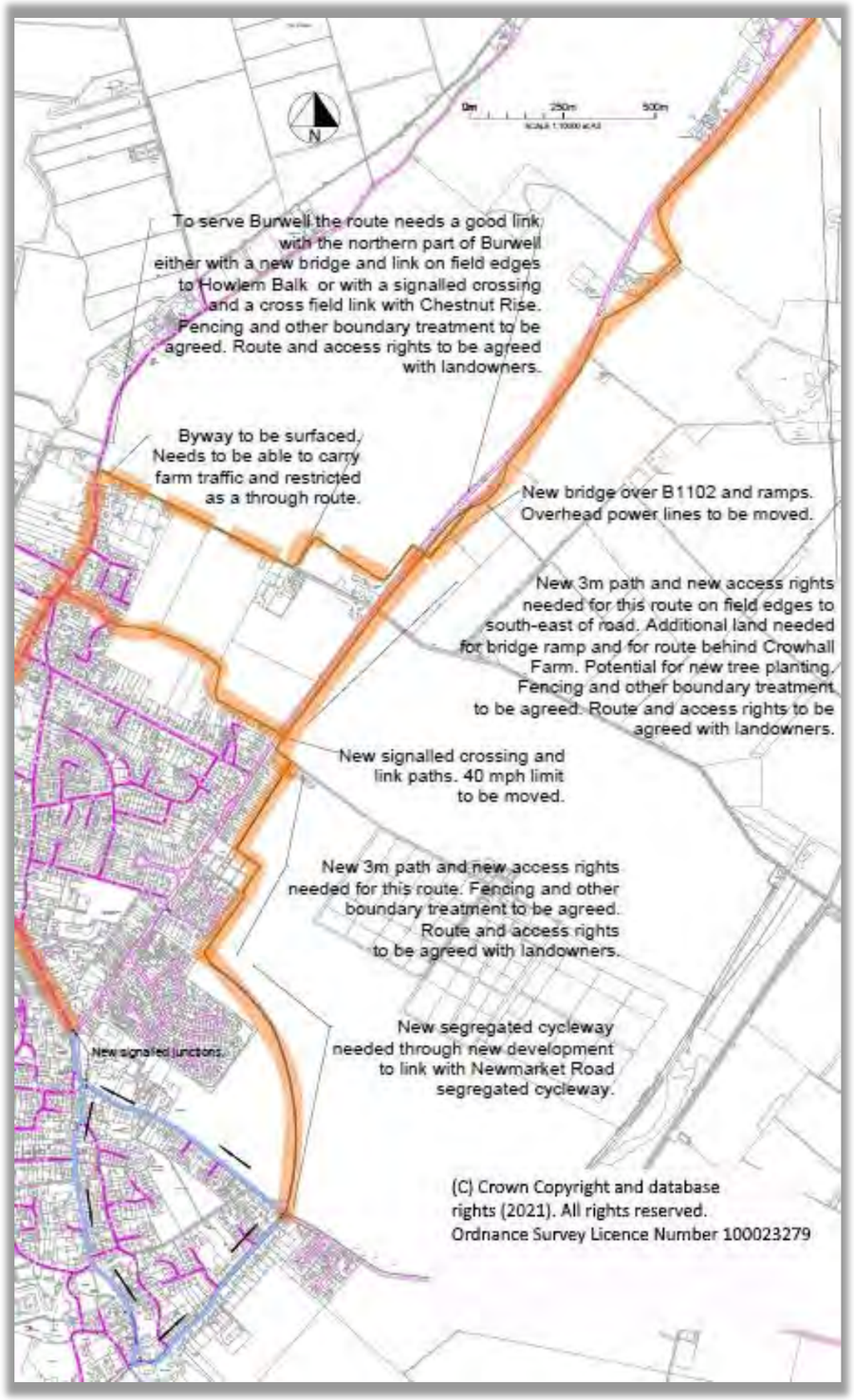
A new link with the north of Burwell is also essential and this is very difficult given the challenges of crossing the B1102, which needs to be by a bridge or a signaled crossing, given the traffic volumes and speeds.

A location for a bridge to the north-east of the village is suggested. This has technical challenges and land challenges including a gas main and overhead power lines in the vicinity, but should be achievable. The bridge also needs to link with Howlem Balk (a byway) in a convenient manner.

Given the difficulties of constructing a new bridge a signaled crossing is preferred, but this will need to be within the lower speed limits on the edge of Burwell, so will need a change in speed limit. The crossing will also need to be linked across fields with Chestnut Rise and residential streets in the north of Burwell. Reaching agreement with the landowner for this may be challenging, given that there may be some expectation of future development in this area.

Given the difficulties of a signaled crossing and a bridge both options should be kept open; one of them is essential for the success of the overall route.

Plan (right) showing Option 4 at the Burwell end.



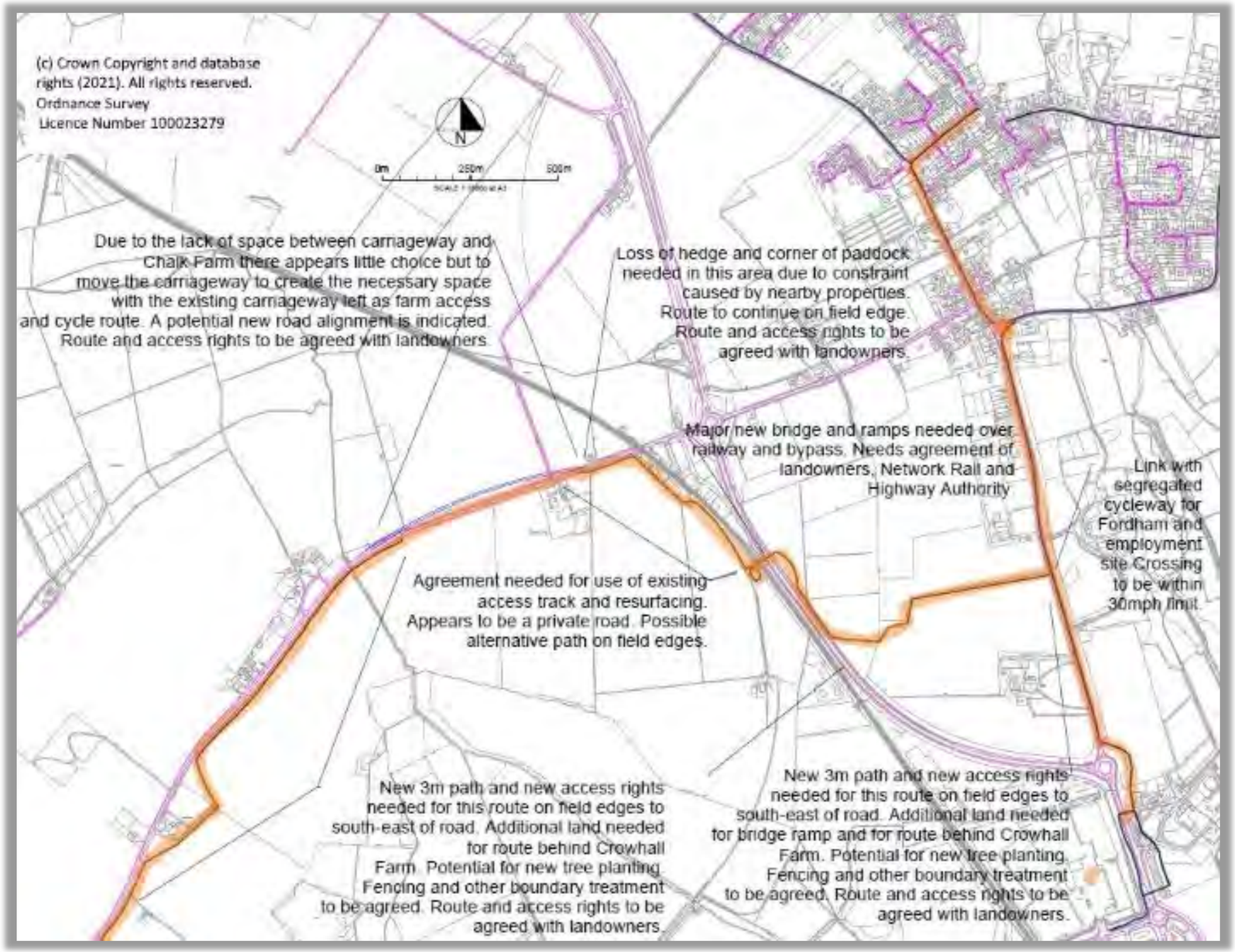
6.4.2 Burwell to railway and A142 crossing.

The obvious alignment would closely follow the B1102 on field edges to the south of the road avoiding the need to cross the road, (except to form the necessary links within Burwell).

As with Option 3 there are challenges where farms front on to the B1102. In this case there is not space for a new path to fit between Crowhall Farm and the carriageway and between Chalk Farm and the carriageway. In order to accommodate a 3m path set back from the carriageway by 2.5m with at least 0.5m from any boundary) a clear strip of 6m width is needed following the road. At pinchpoints the separation could be reduced to 2m but this is not desirable.

In order to pass Crowhall Farm it is possible to take the route behind the farm buildings, but in order to avoid sharp bends a significant land take will be needed. Some of this land could be used for tree planting – all subject to agreement with landowners.

In order to pass Chalk Farm a route behind farm buildings looks very difficult, because there is not at least 5.5m available. It might be possible subject to detailed survey to re-align the carriageway within the existing highway and to build over existing ditches, but it may well be easier to build a new section of carriageway, which would be less disruptive and would allow the existing carriageway to be used for the cycle route. A suggested alignment is shown. This would need detailed work and a detailed understanding of the ecological and technical issues, but appears to be feasible subject to agreement with the landowners. The proposed route would then head south-east either along an existing access track or following this with a new path in field edges. The track appears very quiet and suitable for use with resurfacing works, but its use would need landowner's agreement.



Plan showing Railway and A 142 crossing for Option 4 link with Fordham

To avoid Ness Road in Burwell a new route behind the Cemetery and housing is needed along the tree line seen above.

Space is limited near the Cockpen Road junction (above and below) and the carriageway would need moving away from the property.

A field edge path would link with the access track that follows the railway in this location.

To make a link with Chestnut Rise and north Burwell a signaled crossing would be needed in this vicinity, with the 30mph limit moved slightly.

The farm track is generally in good condition, but would need agreement for its use.

Approximate position for a new bridge over the B1102 (note the overhead power lines, which would need moving.)

Over this length a path on the field edge would be a good solution, subject to landowner's agreement.

View from farm track towards railway. This is the area where a new bridge ramp and bridge would need to be installed.

Railway and A 142 crossing.

It is possible to cross both the railway and the A142 with a single bridge at the point where the railway and bypass run very close to each other. An advantage of this is that it would save on ramps and would be cheaper than having two bridges. A single bridge would be technically challenging and would have to meet the requirements of both Network Rail and the Highway Authority, but the span of this bridge would be about 60m whereas the span of the bridge over the bypass at the Fordham Road/ Soham Road roundabout is 85m. The Carter Bridge in Cambridge and the Jane Coston Bridge over the A14 have longer spans than would be needed in this location. The design of the bridge would need to carefully consider the installation and maintenance of a new bridge, particularly issues relating to working near the railway and a busy road. The design will also need to carefully consider how to avoid and protect the major gas main that crosses the road and railway in this area. If this is not addressed at an early stage there could be major cost and delivery implications.

Due to limited space on the western side a spiral ramp would be needed, but an in-line ramps is feasible on the eastern side with an access route linking through to Newmarket Road. The bridge, access routes and ramps would all need landowner's agreement and would be expensive and difficult to deliver. It is possible that other alignments could be found but, although a new bridge would serve well in terms of links with the employment sites to the south of Fordham the route represents a significant detour from the desire line straight along the B1102 and that means that some would choose that alignment, despite the difficulties, weakening the case for a new bridge. This is reflected in the comparison of distances in the Table that follows.

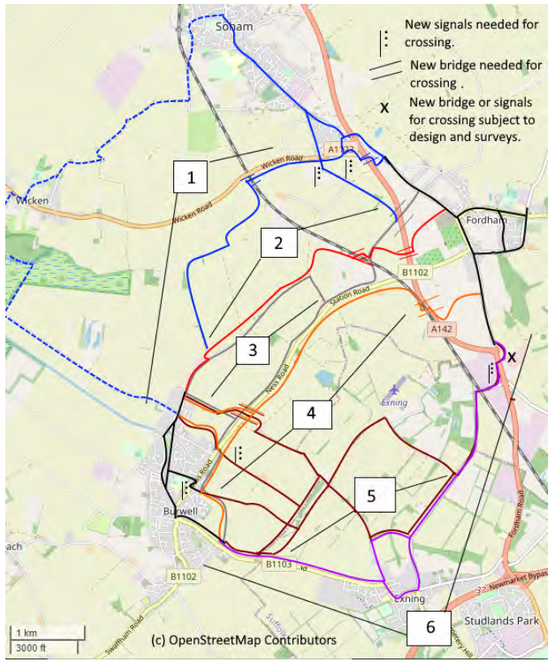
6.4.4. Fordham

Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

The River Lane/ Market Street/ Newmarket Road junction will need careful design and is the area where segregated cycleways would meet.

Option 4 Summary	
Comparative Length (B-A)	8.6 km(Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	7.8 km (Burwell Centre to Fordham employment south) (6.4 km by road)
Comparative Length (C-A)	7.6 km (Burwell North to Fordham Centre) (6.5 km by road)
Comparative Length (C-E)	6.9km (Burwell North to Fordham employment south) *(6.8 km by road)*
Comparative Length (D-A)	8.0 km (Burwell South-east to Fordham Centre) *(6.9 km by road)*
Comparative Length (D--E)	7.3 km (Burwell South-east to Fordham employment south) *(7.2 km by road)*
Likely estimated cost	5.2km approx. new build path + 0.7km new road + signalled crossing + new single bridge bridge over railway and A142 with ramps, plus Burwell and Fordham costs.
Engineering difficulties	Construction of new road and connections to existing road. Moving speed limit at Burwell. Major bridge over rail and road near a major gas main is the most challenging of all bridge options.
Ecological issues	Mostly existing field edges or tracks. Trees issues around the railway and A142 crossing.
Land ownership issues	Needs agreement of landowners for field edge works, new road, cross field link with Chestnut Rise and new bridge.
Other issues	The alignment closer to the B1102 would be less isolated and in that sense a better option, than other options, but the route diverts from this at both ends. At the Fordham end the diversion from the main road alignment weakens the case for a new bridge.
Overall	This is a very challenging route that has to divert significantly from the desire line at the Fordham end. Overall the difficulties are considered to outweigh the benefits and this option is not recommended.

6.5 Option 5



Map showing the study area with options

This option uses existing byways and the existing bridge over the railway at Landwade Road. There are a number of ways to establish a new route across fields, on field boundaries and on rights of way. The route would provide a Burwell-Exning route, although its usefulness would depend on exactly how it linked with both Burwell and Exning and which of the numerous sub-options were chosen. Options 5 and 6 are the same at the Fordham end and provide an opportunity to develop a Fordham – Newmarket route and also tie in closely with potential developments along the A142 south of Fordham. They use the existing bridge over the railway at Lanwade Road and need that road to become a quiet lane with no through traffic.

This route to the south of Ness Road would link into Burwell where new housing is being proposed and would need a major new bridge over the railway and the A142 to link into Fordham. There are also major issues with a new crossing of the B1102 needed to make a good link with the north of Burwell. The route is considered here in 6 parts:

6.5.1 Within Burwell.

Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

A good link with the south of Burwell and the new developments there is essential for the route and the facilities will need to be LTN 1/20 compliant. Planning application 15/01175 at Newmarket Road, Burwell secured a s106 contribution for a footway and cycleway link from Newmarket Road towards Exning.

View from Ness Road of farm track heading towards disused railway (iii on following plan)

View from Ness Road along byway towards disused railway (iv on following plan).

.View towards farm track above from disused railway.

View along Newmarket Road towards disused railway showing development works underway (December 2021)

View along field edge boundary with disused railway corridor.

View showing road bridge and field edge boundary with disused railway corridor.

6.5.2. Burwell to Disused Railway

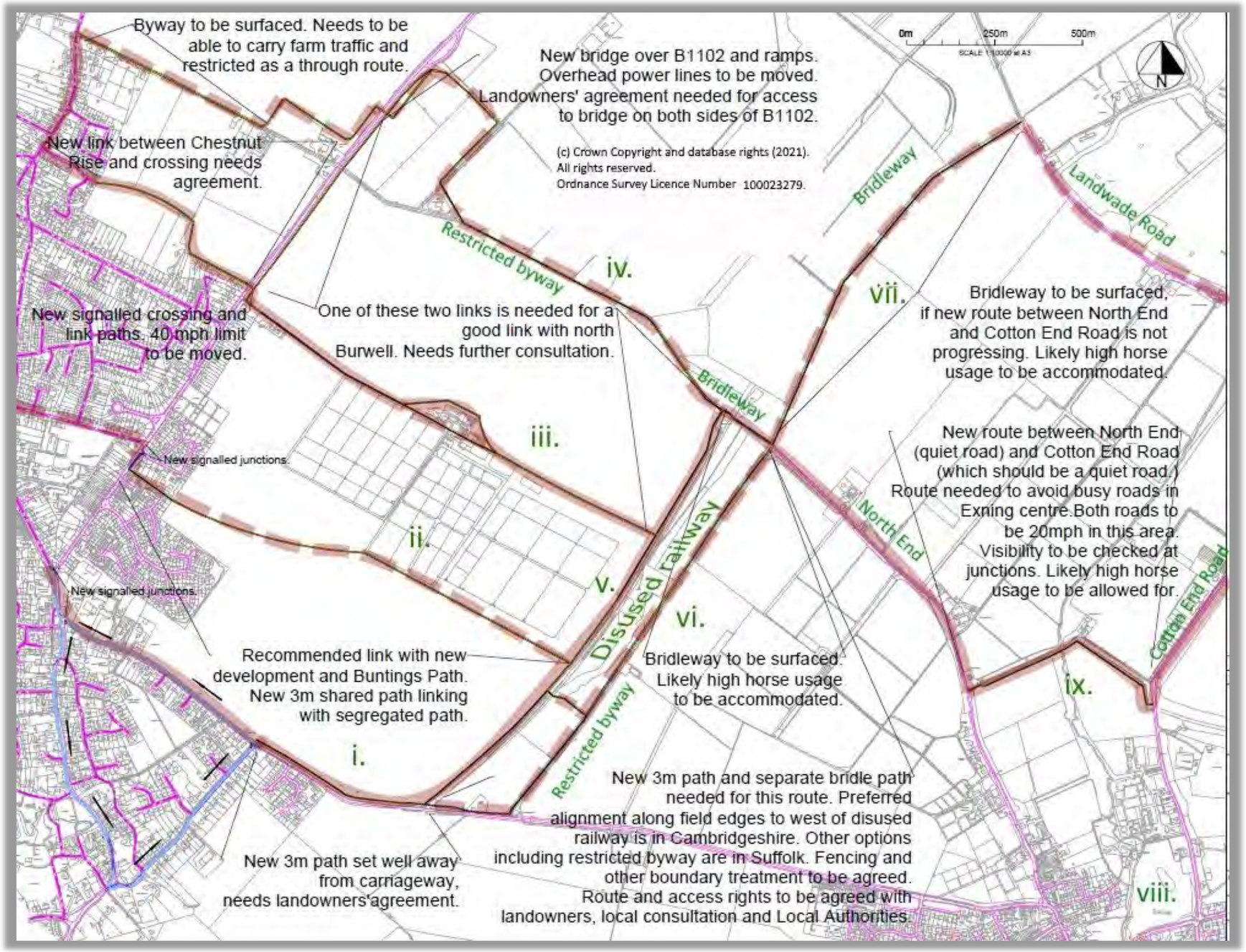
The plan right shows four potential routes from Burwell to the disused railway. It should be noted that there are major gas mains in this area and they will need to be allowed for.

i. A route closely following the B1103 to the north of the road and separated from it. This is the most obvious route and should link well with Burwell. It is feasible as long as there is sufficient land for a 3m path separated from the carriageway by the required amount, so will need private land.

ii. A route through the new development and then linking across fields to the disused railway. This will be very beneficial for the new development but needs a new route across a field that will need to tie in with landowners' aspirations. This is likely to become a desire line for the new residents and is feasible subject to landowner's agreement. The route will also need a good link with Newmarket Road.

iii. A route along a private farm road that could go behind or in front of farm buildings and could link to a new crossing of the B1102 and a new cross field link with Chestnut Rise. This is a feasible, but challenging route that appears a more achievable and more useful route than iv.

iv. A route along an existing restricted byway, that would need a new bridge over the B1102, so will have to divert off the byway alignment. Any new bridge will be challenging. Although this route mostly uses existing byways the bridge over the B1102 and the diversion and access to it makes this a less desirable and probably less achievable option than iii.



Overall for residents in the north of Burwell either route iii or iv to be developed in addition to route i or ii. For the purpose of analysis it is assumed that i. and iii are completed.

6.5.2 Disused railway corridor

The disused railway runs across the direct alignment between Burwell and Exning, but there are broadly speaking two possible routes along the corridor – to the west (v) and to the east (vi). Within these options there are alternatives including on field edges or farm tracks or on the disused railway (v) itself or on the restricted byway (vi). Following the disused railway over the whole length does not appear feasible due to the property which is to the east of the former railway bridge, known as Halfway House. At the time of visit works were still going on on a new house at the site. There is also a large field near the house that appears to be intended as a paddock.

A route to the west is considered to be the most feasible but would need farmland to construct a route from the highway at the disused railway all the way along the edge of the disused railway to link with the bridleway that joins with North End, Exning. A field edge path is preferred and would not disturb the ecology of the disused railway or the horsed usage along that corridor. However certainly at the northern end there does appear to be space for the route to divert onto the disused railway or even to cut across the disused railway to link with the restricted byway on the eastern side.

At the northern end of the proposed route a bridleway links with North End, Exning. This has been serving as an access to a property and is likely to need resurfacing, but has not been surveyed, to see all the options. Detailed discussions will be needed in this area to determine alignments that work well for cyclists and horse riders and landowners and do not leave any gap in the networks.

A significant benefit of the western field edge option in terms of this study is that the route and works would be entirely within Cambridgeshire on land that belongs to Cambridgeshire County Council. For this reason the western option (v.) is favoured and considered feasible.

For the eastern option to work a route is needed past or over the railway bridge and past Halfway House. The planning application for the house and the site plan (in West Suffolk) show “provision of land for cycle lane” between the house and the carriageway. The highway officer’s report notes that “ within the short term it is possible that the highway verge adjacent to site will be used for the purposes of a cycle track. “ There are various planning applications in relation to this development which can be found from searching for Halfway House at https://planning.westsuffolk.gov.uk/online-applications/ . The Planning Officers letter was from 2019 and there is no sign of any cycle track and it is hard to see how it can be accommodated within the space between house and carriageway without major impact on trees. Nevertheless a route past the house is extremely important for a direct route between Burwell and Exning and is considered in Option 6.

Given that a route past the house is needed the route should be able to link with the restricted byway that heads away from the road on the disused railway. At the B1103 end the byway is surprisingly narrow and overgrown but could be opened up to accommodate a 3m wide path. As the byway gets further from the B1103 there is evidence of horse usage and what appears to be a circular route using the disused railway and the restricted byway with access from North End, Exning. Any proposed route will need the byway to be cleared back to allow space for separate horse and cycle provision. The legal width of the byway is unknown and Suffolk County Council rights of way will need to be consulted.

6.5.3. North End to Cotton End Road

From the point where the bridleway and disused railway meet North End there are three options for a route to Cotton End.

vii. Surface an existing bridleway between North End and Landwade Road and use Landwade Road to the junction of Cotton End Road and Landwade Road. Surfacing to allow for horses and cycles. (Total distance 2.4 km , surfacing over 1.2km).

viii. Use North End to the centre of Exning and then highway works along Oxford Street and Swan Lane. These works would be extremely challenging and there is no easy solution. (Total distance 3.9km, major highway works over 0.6km).

ix. Establish with landowner’s agreement a new route between the two roads, ideally as close as possible to Exning village to benefit local residents, but not so close as to create a major detour on the overall route. There appears to be one obvious position and that is indicated on the plan.(Total distance 2.6km, surfacing over 0.6km).

On balance the establishment of a new route is preferred. This provides a new facility which will be of benefit to local residents and requires less surfacing work than vii. The highway works within Exning are desirable, but extremely difficult and would represent a significant detour for a Fordham route.

View from North End of possible route for new link with Cotton End Road following existing track, but on field edges with suitable boundary treatment.

View from Cotton End Road showing track that links with above. Any new access would need to carefully consider visibility and speeds on Cotton End Road, which should be low speed.

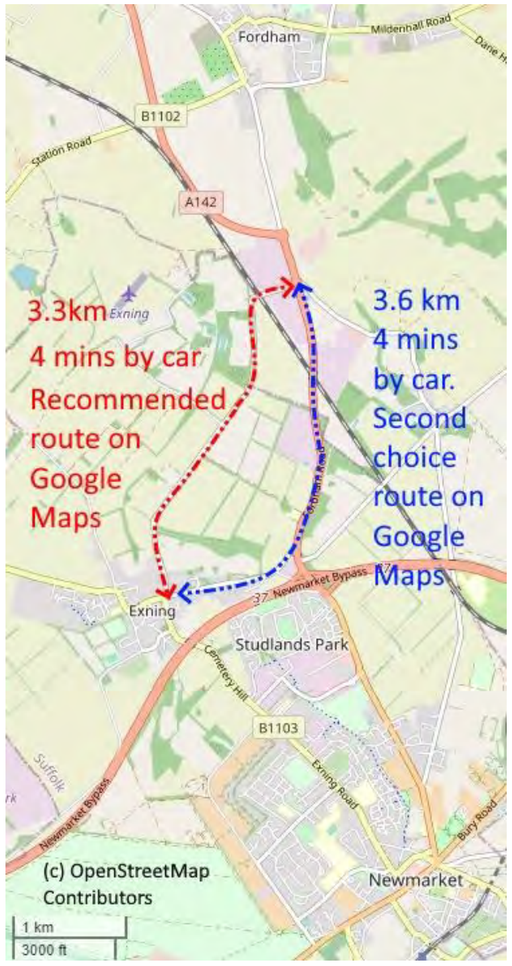
6.5.4. Cotton End Road and Landwade Road

Cotton End Road and Landwade Road are attractive roads that form a direct link between Exning and Fordham and include an existing bridge over the railway and link to a location where there are good opportunities to cross the A142. They are potentially great assets for walking and cycling and during the time of survey more people were seen on bicycles than on any other route. However the numbers were low and the numbers of cars were much higher. The volume and speed of cars as well as the onward routes are a major deterrent for cycling and without changes to the road it is not suitable as a route for cyclists.

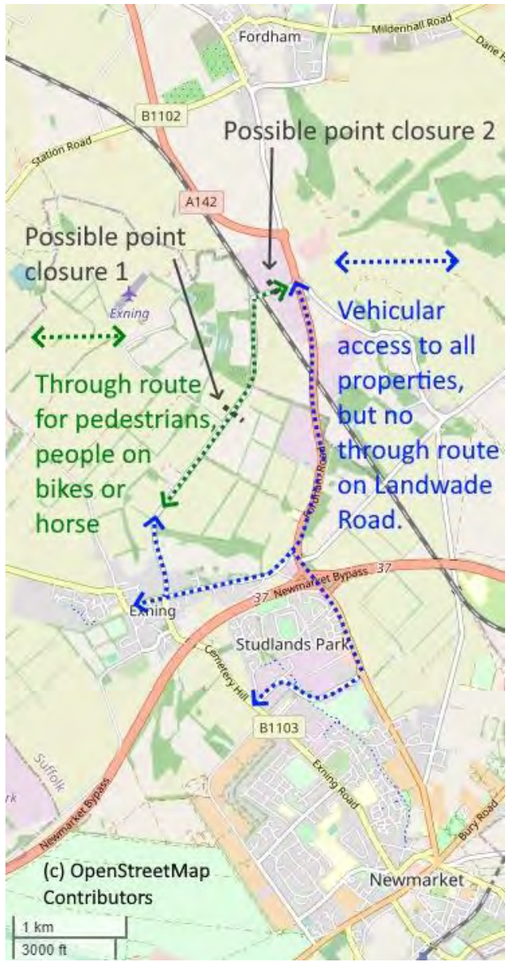
There is already a weight limit on the road, but it appears to be an attractive short cut for car traffic travelling to and from Newmarket. It was initially a surprise to see a Newmarket taxi on the road, but examination of the road options makes it clear that this is currently an attractive option for car drivers and indeed it is the recommended route on Google Maps between Fordham and Exning and between Fordham and much of Newmarket. This is shown in the two maps below left.

Landwade Road and Cotton End Road are potentially great assets for the area that could help to transform the cycling environment in the area. These are country lanes, not designed for high speed traffic and they bring significant volumes of traffic through the middle of Exning, that does not need to be there. On the other hand Fordham Road (the A142) and roads such as Willie Snaith Road in Newmarket are modern roads designed to accommodate modern traffic. The A 142 is the route that most people would expect others to use, but with satnavs and local knowledge suggesting otherwise, unless action is taken Landwade Road and Cotton End Road will become ever more hostile environments. The simple solution would be to close the roads to through traffic and impose a 30mph or 20mph limit. The exact position of any closure would need to be a matter of local consultation but two obvious options are shown below. For the purpose of this study and for both Options 5 and 6 it has been assumed that a point closure can be achieved at one location and the route is therefore a viable and very strong option.

Plan showing Fordham/ Newmarket car options at present.



Plan showing Fordham/ Exning car options at present.



Plan showing suggested changes to motorised vehicle routes Fordham/ Exning/ Newmarket.

Part of Landwade Road is already 30mph. This should apply to the whole length.

6.5.5 Landwade Road, Turners and the crossing of the A142.

No detailed design has been done in this area, but it is considered that an at-grade signalled crossing of the A142 is feasible in this area. From the point where Landwade Road meets the entrance to Turners until the centre of Fordham there should be a segregated cycleway away from existing footways and set well back from the carriageway. There appears to be space for this within the planted areas behind the highway boundary, but the area is likely to change and detailed design needs to be a part of any development, which must deliver LTN 1/20 compliant facilities and a safe crossing of the A142. The design will need to allow for the major gas mains and other utilities in this area, as well as the ecology which recommends avoiding the woodland. In order to accommodate a signalled crossing a 40 mph limit needs to be established and this would be an appropriate location for this. An indicative arrangement is shown adjacent.

View towards the railway bridge from near the Turners entrance. A potentially quiet lane linking with a major industrial road.

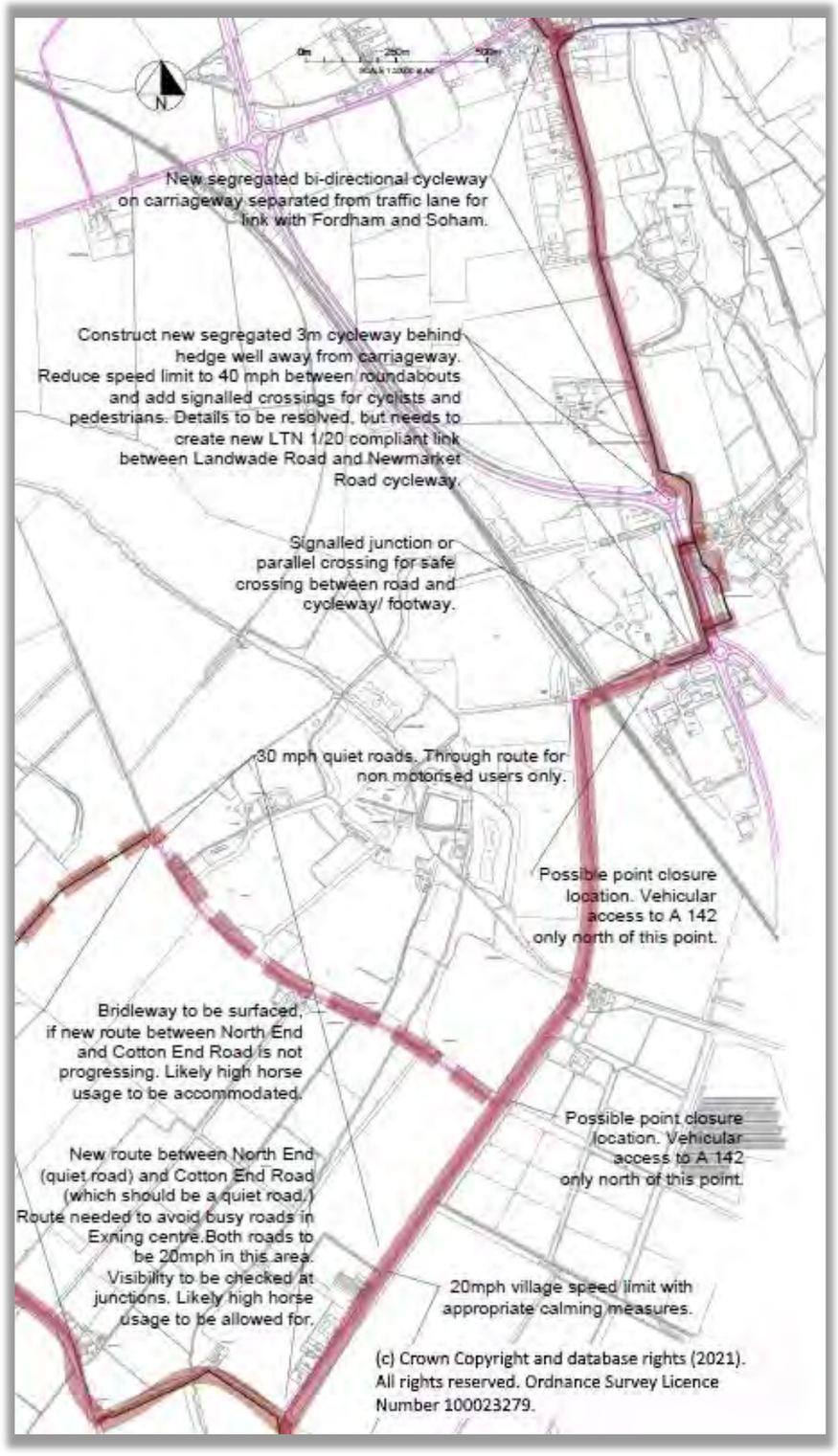
There is space for a segregated path away from the carriageway, but it will need surveying and landowner's agreement.

6.5.6 Fordham

Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

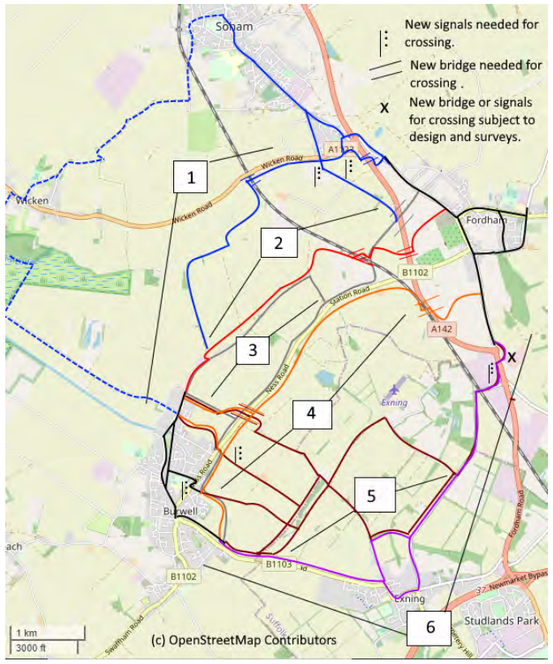
Newmarket Road needs major changes to make it a good route to and from work on a bicycle.

Plan (right) showing Option 5 and the link with Fordham



Option 5 Summary	
Comparative Length (B-A)	9.6 km(Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	7.3 km (Burwell Centre to Fordham employment south) (6.4 km by road)
Comparative Length (C-A)	9.3 km (Burwell North to Fordham Centre) (6.5 km by road)
Comparative Length (C-E)	7.0km (Burwell North to Fordham employment south) *(6.8 km by road)*
Comparative Length (D-A)	8.8 km (Burwell South-east to Fordham Centre) *(6.9 km by road)*
Comparative Length (D--E)	6.5 km (Burwell South-east to Fordham employment south) *(7.2 km by road)*
Likely estimated cost	3.4 km new path on fields, 0.7km paths near A 142, 2 x new signalled crossings,1.3 km farm track, + highway works for road closure and slower speeds, plus Burwell and Fordham costs.
Engineering difficulties	The signalled crossings and getting good new routes as part of and linked with new developments will need careful and detailed design. There are major gas mains along significant parts of the route.
Ecological issues	Mostly existing field edges or tracks. Woodland issues around the A142 crossing.
Land ownership issues	Needs agreement of landowners for field edge works and new links across or on field edges. Landowners will no doubt have an important part to play in community engagement regarding Landwade Road.
Other issues	This option only works with the closure of Landwade Road so this is essential, although details can be resolved during community consultation. A new link with north Burwell should be included as part of the scheme, although this is challenging. There are a number of alternatives which will need careful consideration. Horse riders will need to be accommodated for all alignments.
Overall	This is not an obvious route for Burwell- Fordham, but is a route with considerable benefits in terms of Newmarket-Fordham and would help links between Burwell and Fordham.. This is an achievable route with land agreements and ties in well with potential developments to the south of Fordham. It makes very good use of existing infrastructure and would be of significant benefit for Exning residents and for links with Exning. It will need community support for the Landwade Road changes. This and Option 6 are the only options that do not need at least one new bridge and they therefore have significant cost advantages.

6.6 Option 6



Map showing the study area with options

This option follows roads except in Exning and then uses the existing bridge over the railway at Landwade Road. The route would provide a Burwell-Exning route (with onward link with Newmarket) and a Fordham - Exning route (with onward link with Newmarket) which is a major advantage of the route, which might compensate for the indirect nature of the route. 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, so part of the route is well advanced.

Options 5 and 6 are the same at the Fordham end and tie in closely with potential developments along the A142 south of Fordham. They use the existing bridge over the railway at Lanwade Road and need that road to become a quiet lane with no through traffic.

The route is considered in 6 parts:

6.6.1 Within Burwell.

Traffic calming and new segregated cycleway needed to link with the whole village. This study assumes a minimum of an on road mixed traffic route at 20 mph along North Street and the Causeway to the B1102 junction and a new segregated cycleway along Newmarket Road to the Isaacson Road junction.

The route ties in with the new developments in the south of Burwell and good links and LTN 1/20 compliant facilities within the new development are essential.

The route is considered in 6 parts:

6.6.2 Burwell to Exning

The proposed route closely follows the B1103 to the north of the road and separated from it. The alignment follows a major gas main and crosses major gas mains and this will need to be allowed for in the design and construction of any path. This is an obvious route between Burwell and Exning and has been an aspiration for decades for the National Cycle Network and in particular for journeys between Burwell and Newmarket. Various options have been considered and ways to use the highway verge have been investigated, but now with the requirement within LTN 1/20 for a desirable segregation between carriageway and path of 2.5m (or 2m absolute minimum) for a 60 mph road this makes highway verge space almost unusable. The vast majority of the route would need to be on field edges behind hedges and will need to be agreed with landowners. The route is feasible over the whole length subject to landowners' agreements and resolving how the route will get past the disused railway bridge and Halfway House.

The route past the railway bridge and Halfway House is mostly in Suffolk and was considered for Option 5. The planning application for the house and the site plan (in West Suffolk) show "provision of land for cycle lane" between the house and the carriageway. The highway officer's report notes that "within the short term it is possible that the highway verge adjacent to site will be used for the purposes of a cycle track. " There are various planning applications in relation to this development which can be found from searching for Halfway House at https://planning.westsuffolk.gov.uk/online-applications/ . The Planning Officers letter was from 2019 and there is no sign of any cycle track. It is hard to see how it can be accommodated within the space between house and carriageway without major impact on trees. Nevertheless a route past the house is extremely important for a direct route between Burwell and Exning and if there is not sufficient space to maintain traffic flows with a segregated path then traffic flows will need to be changed. An option is to install signals, so that the route over the railway bridge and past the house would be one-way alternate working with a segregated path on carriageway on the northern side. This would be similar to the arrangement at Kennett where the road crosses the railway – not far away.

At the Exning end of the route it is essential that the route links with North End.

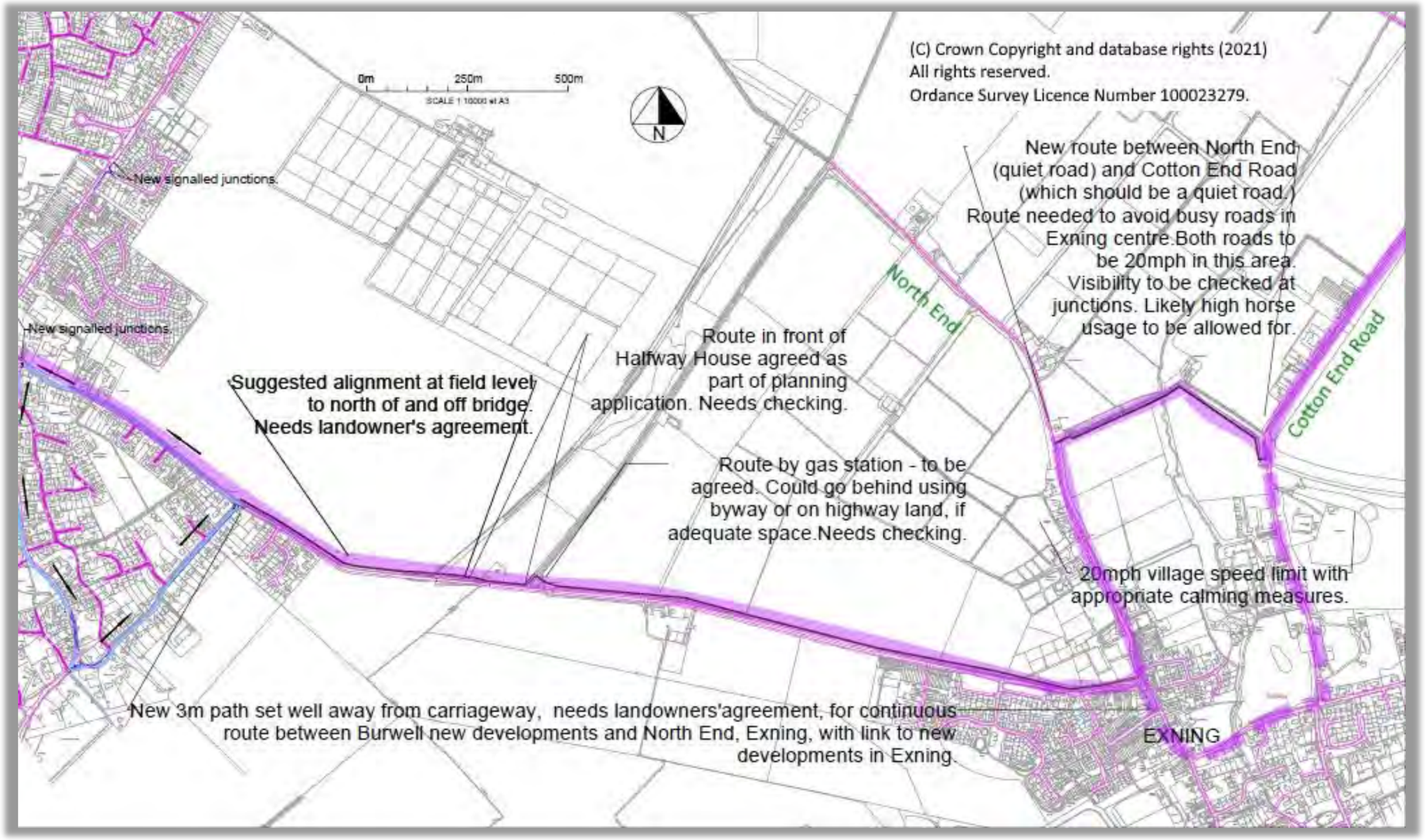
View showing the existing railway bridge and nearby fields. Due to the confined nature cycling over the bridge is very unpleasant and very difficult for walkers.

View showing new house at Halfway House. It is not obvious how the proposed cycleway will fit between the house and road and maintain the required segregation needed for LTN1/20.

6.6.3 Exning

Like Burwell and Fordham, Exning is a difficult environment for cycling, particularly in relation to the main roads that go through the village. Away from the main roads the environment is generally good, but it is hard to make trips without interacting with traffic, which is the case here. From North End the obvious route to Cotton End Road is along the main roads – Oxford Road and Swan Lane, but traffic volumes on these roads mean that a segregated facility is recommended for cycling and it is hard to see where the space for this will come from. For this reason a new path between North End and Cotton End Road is recommended, which should be as close to the village centre as possible for convenience. The best location appears to be that indicated adjacent and will need landowners' agreement.

In order to improve the environment in Exning a 20 mph limit is recommended for the whole village with additional calming measures as necessary.



Plan showing Burwell to Exning part of Option 6

View from near Halfway House. The proposed route would follow the hedgeline towards the house in the distance.

View from North End showing land needed for the route to continue all the way to North End and following the B1103.

6.6.4. Cotton End Road and Landwade Road (same issues as 6.5.4)

Cotton End Road and Landwade Road are attractive roads that form a direct link between Exning and Fordham and include an existing bridge over the railway and link to a location where there are good opportunities to cross the A142. They are potentially great assets for walking and cycling and during the time of survey more people were seen on bicycles than on any other route. However the numbers were low and the numbers of cars were much higher. The volume and speed of cars as well as the onward routes are a major deterrent for cycling and without changes to the road it is not suitable as a route for cyclists.

There is already a weight limit on the road, but it appears to be an attractive short cut for car traffic travelling to and from Newmarket. It was initially a surprise to see a Newmarket taxi on the road, but examination of the road options makes it clear that this is currently an attractive option for car drivers and indeed it is the recommended route on Google Maps between Fordham and Exning and between Fordham and much of Newmarket. This is shown in the two maps below:

Landwade Road and Cotton End Road are potentially great assets for the area that could help to transform the cycling environment in the area. These are country lanes, not designed for high speed traffic and they bring significant volumes of traffic through the middle of Exning, that does not need to be there. On the other hand Fordham Road (the A142) and roads such as Willie Snaith Road in Newmarket are modern roads designed to accommodate modern traffic. The A 142 is the route that most people would expect others to use, but with satnavs and local knowledge suggesting otherwise, unless action is taken Landwade Road and Cotton End Road will become ever more hostile environments. The simple solution would be to close the roads to through traffic and impose a 30mph or 20mph limit. The exact position of any closure would need to be a matter of local consultation but two obvious options are shown below. For the purpose of this study and for both Options 5 and 6 it has been assumed that a point closure can be achieved at one location and the route is therefore a viable and very strong option.

Plan showing Fordham/ Newmarket car options at present.

Plan showing Fordham/Exning car options at present.

Plan showing suggested changes to motorised vehicle routes Fordham/ Exning/ Newmarket.

Cotton End Road needs to be 20mph.

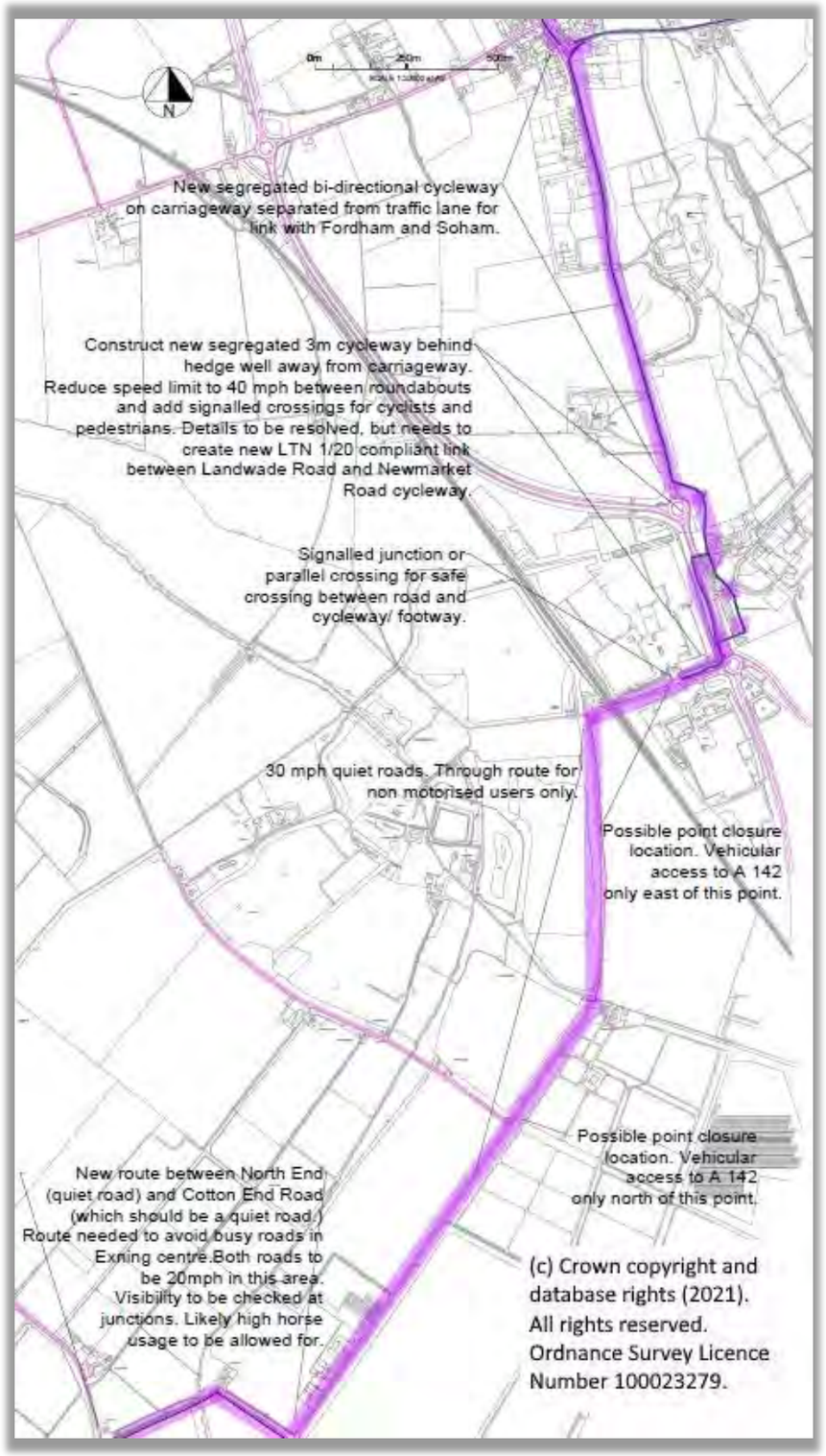
View towards railway bridge on Landwade Road showing weight limit on road, but with no other restrictions it is a popular short cut.

6.6.5 Landwade Road, Turners and the crossing of the A142. (Same as 6.5.5)

No detailed design has been done in this area, but it is considered that an at-grade signaled crossing of the A142 is feasible in this area. From the point where Landwade Road meets the entrance to Turners until the centre of Fordham there should be a segregated cycleway away from existing footways and set well back from the carriageway. There appears to be space for this within the planted areas behind the highway boundary, but the area is likely to change and detailed design needs to be a part of any development, which must deliver LTN 1/20 compliant facilities and a safe crossing of the A142 in an area where there are a number of major gas pipes, as well as the ecology which recommends avoiding the woodland. In order to accommodate a signalled crossing a 40 mph limit needs to be established and this would be an appropriate location for this.

An indicative arrangement is shown adjacent.

View showing space away from the carriageway that could be used for a new segregated cycleway. There are services as well as trees in this area and it will need surveying.



6.6.6 Fordham

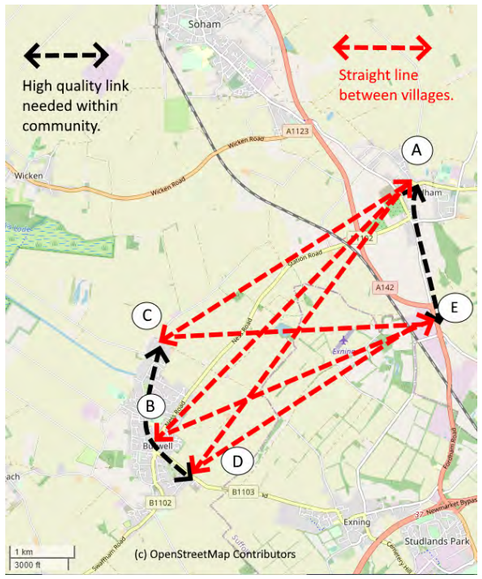
Traffic calming and new segregated cycleways needed to link with the whole village. This study assumes a segregated cycleway along Fordham Road and Soham Road, Fordham (which will need to be made one-way), a segregated cycleway within the centre of the village (again made one-way) and a segregated cycleway along Newmarket Road (also one-way).

A segregated cycleway must continue through the centre of Fordham with the route to be of use for all.

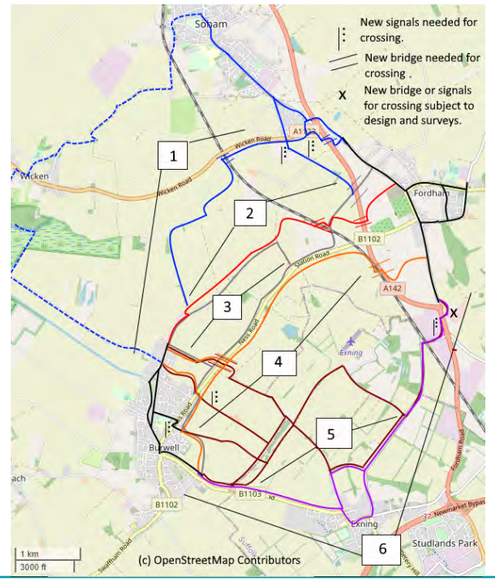
Option 6 Summary	
Comparative Length (B-A)	9.5 km(Burwell Centre to Fordham Centre). *(6.1 km by road)*
Comparative Length (B-E)	7.2 km (Burwell Centre to Fordham employment south) (6.4 km by road)
Comparative Length (C-A)	11.1 km (Burwell North to Fordham Centre) (6.5 km by road)
Comparative Length (C-E)	8.8km (Burwell North to Fordham employment south) *(6.8 km by road)*
Comparative Length (D-A)	8.7 km (Burwell South-east to Fordham Centre) *(6.9 km by road)*
Comparative Length (D--E)	6.4 km (Burwell South-east to Fordham employment south) *(7.2 km by road)*
Likely estimated cost	2.8 km new path on fields, 0.7km paths near A 142,1 x new signalled crossings + highway works for road closure and slower speeds, plus Burwell and Fordham costs.
Engineering difficulties	The signalled crossings and getting good new routes as part of and linked with new developments will need careful and detailed design.
Ecological issues	Mostly existing field edges or tracks. Woodland issues around the A142 crossing and tree and vegetation issues near Halfway House.
Land ownership issues	Needs agreement of landowners for field edge works and new links across or on field edges. Landowners will no doubt have an important part to play in community engagement regarding Landwade Road. Halfway House is critical.
Other issues	This option only works with the closure of Landwade Road so this is essential, although details can be resolved during community consultation. A route past Halfway House is vital and it is important to fully understand what has been agreed through the planning system with West Suffolk Council.
Overall	This is not an obvious alignment for Burwell –Fordham, but is a route that needs developing for other reasons and could benefit Burwell-Fordham, as well as Burwell –Newmarket and Fordham-Newmarket. This is an achievable route with land agreements and ties in well with potential developments to the south of Fordham, Burwell and Exning. It makes very good use of existing infrastructure and would be of significant benefit for Exning residents and for links with Exning. It will need community support for the Landwade Road changes. This and Option 5 are the only options that do not need at least one new bridge and they therefore have considerable cost advantages.

6.7 Overview and Recommendations for Progress.

The proposed works for Burwell and Fordham need to be completed, plus one or more of the 6 options outlined in detail earlier and in summary here:



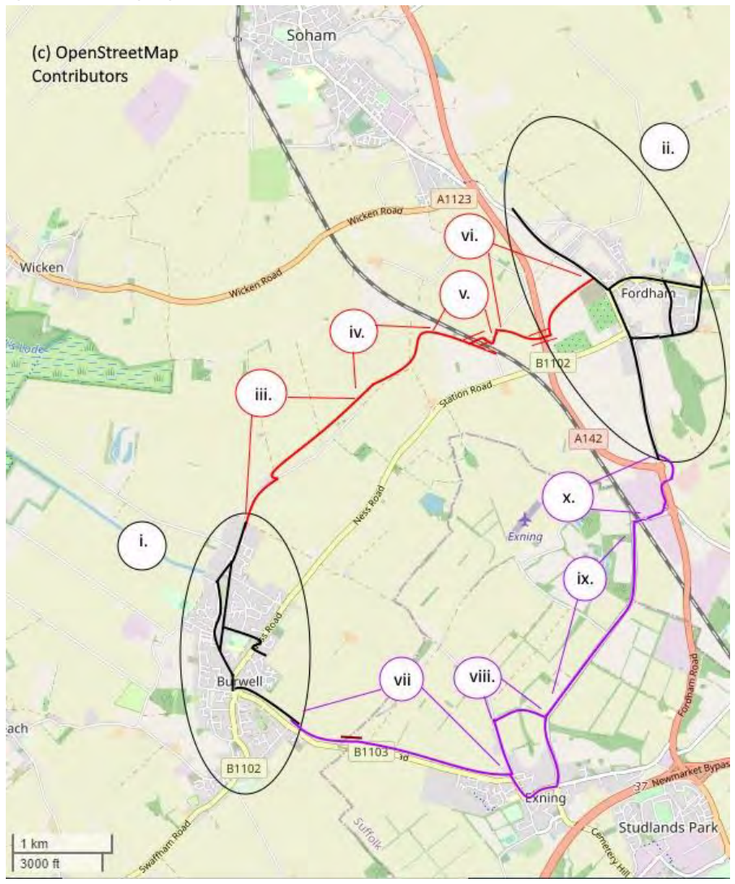
Maps showing the locations used for measurements (above) and the six options considered (below).



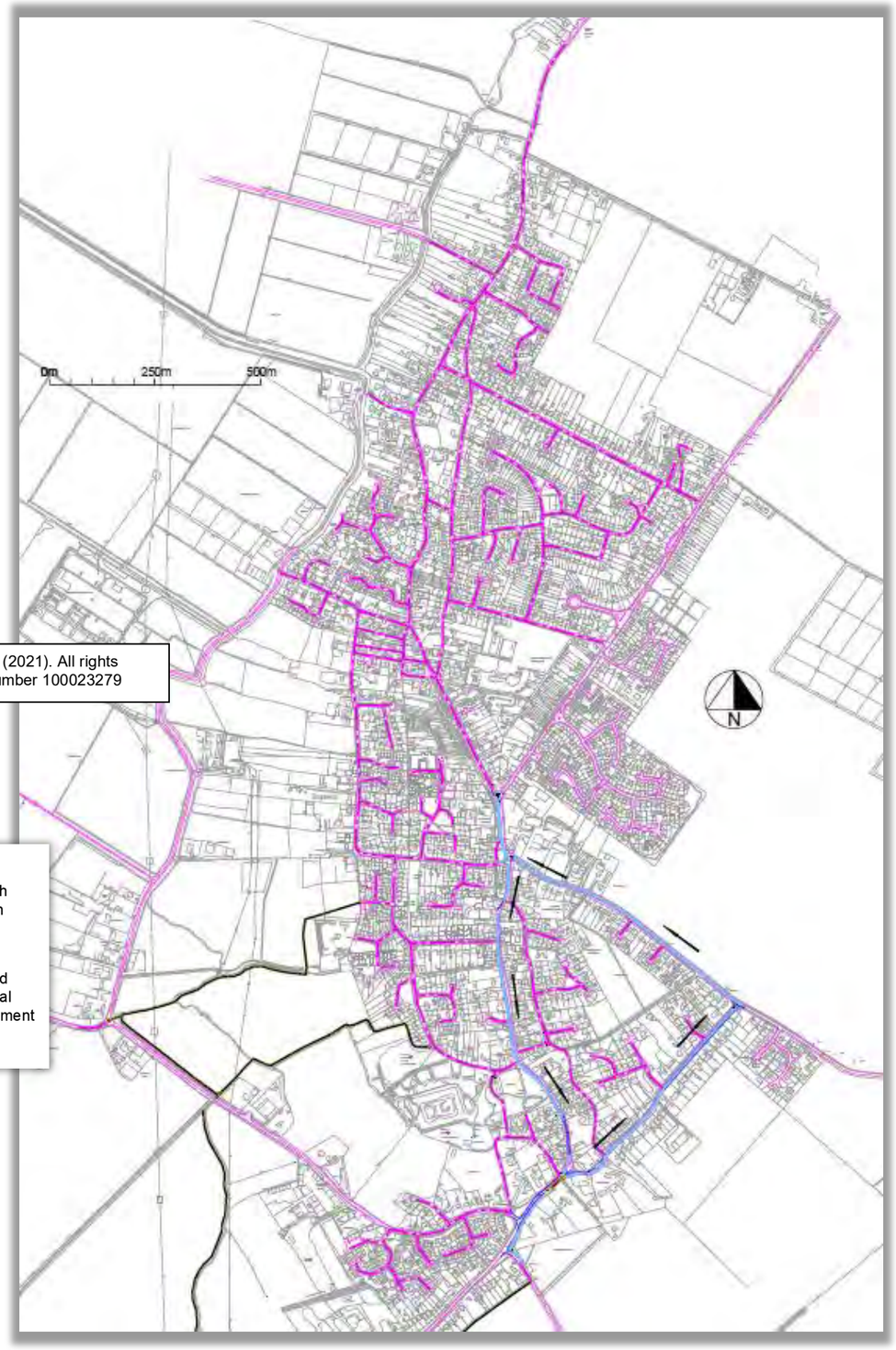
	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Notes
Comparative Length (B-A)	9.1 km	6.8 km	7.4 km	8.6 km	9.6 km	9.5 km	Burwell Centre to Fordham Centre 6.1km by road.
Comparative Length (B-E)	10.9 km	8.6 km	9.2 km	7.8 km	7.3 km	7.2 km	Burwell Centre to Fordham Employment Centre South 6.4km by road.
Comparative Length (C-A)	7.4km	5.1 km	5.7 km	7.6 km	9.3 km	14.1 km	Burwell North to Fordham Centre 6.5km by road.
Comparative Length (C-E)	9.2km	6.9 km	7.5 km	6.9km	7.0km	8.8km	Burwell North to Fordham Employment Centre South 6.8 km by road.
Comparative Length (D-A)	8.9km	7.6 km	8.2 km	8.0 km	8.8 km	8.7 km	Burwell South-east to Fordham Centre 6.9km by road.
Comparative Length (D--E)	11.7km	9.4 km	10 km	7.3 km	6.5 km	6.4 km	Burwell South-east to Fordham Employment Centre South 7.2 km by road.
Likely estimated cost in villages	High, plus Soham costs	High	High	High	High, plus Exning costs	High, plus Exning costs	Costs are the same for all options in Burwell and Fordham.
Likely estimated cost between villages	Medium to high off road construction with poor ground conditions and farm traffic, plus 1 x bridge.	Medium to high off road construction with poor ground conditions and farm traffic, plus 2 x bridges.	Medium to high off road construction with poor ground conditions and farm traffic, plus 1 x bridges, 1 x Level crossing.	Medium to high off road construction with new section of road, plus 1 x long span bridge, 1 x signalled crossing.	Medium to high off road construction with high horse usage, road closure and 2 x new signalled crossings. No new bridges.	Medium to high off road construction with road closure and 2 x new signalled crossings and possibly signals at Halfway House. No new bridges.	Cost assumed to be higher where there is farm traffic and for any structures.
Engineering difficulties	Bridge over railway in cutting.	Bridge over railway with ramps and bridge over A 142 with ramps.	Changes to Level crossing and bridge over A142 with ramps.	New road construction. New single span bridge over railway and A142, by gas main.	Difficulties in getting separate bridle and cycle paths.	Crossing in front of Halfway House likely to be most challenging. Gas mains along much of the route.	Further work is needed to assess fully the engineering difficulties.
Ecological issues	Opening up new access may cause disturbance.	New routes by railway and new bridges. Crossing of A142 sensitive.	Route in front of Lark Hall Farm difficult. Ramps for A142 bridge will need significant loss of planting.	Crossing of railway and road likely to be the most sensitive.	If disused railway used there may be issues there.	Halfway House area may be most sensitive.	Ecological surveys focused on Options 1,2,5,6 as these are the most likely to progress.
Land ownership issues	Agreement essential with some choice of alignment to west of railway.	Although mostly Byway needs new access for railway crossing and A142 crossing.	Agreement essential.	Agreement essential.	Various options including rights of way, but preferred option needs farmland. A 142 crossing likely to need to rely on developer support.	Agreement essential besides B1103. A 142 crossing likely to need to rely on developer support.	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 the landowners. The Local Authority does have powers to acquire land if needed or to create rights of way, but it is hoped that this will not need to be used.
Comments	Route has benefits for links with Soham and has advantage that it can use existing A142 bridge, but should be discounted due to diversion unless strong case for Soham link.	Likely to be best option for links with Fordham Centre. Flooding risks need more consideration.	Discounted due to complications and diversion from desire line to cross railway and A142.	Discounted due to complications and diversion from desire line to cross railway and A142.	Route has some merits for linking with the Employment area to the south of Fordham, but only if Option 6 cannot be delivered.	Useful in developing links with Exning and Newmarket and with the Fordham Employment area, but poor in terms of links with Fordham Centre. Worth progressing.	Efforts to be focused on Options 2 and 6, unless strong case for Soham- Burwell link.

Based on the analysis of options the recommended alignment for a new route between Burwell Centre and Fordham Centre would be Option 2. However for a new route between Burwell Centre and Fordham Employment site to the south of Fordham Option 6 has clear advantages in that it would be more direct for some trips, lower cost and it would deliver important parts of better links with Newmarket from both Burwell and Fordham. Similar arguments can be made for Option 1 in terms of better links with Soham, but its advantages over Option 2 are not strong. Therefore Options 2 and 6 along with works in Burwell and Fordham are recommended to be progressed, as priorities, with Option 5 a possibility if there are problems with Option 6. The proposals are indicated below:

i. 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 adjacent. 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.



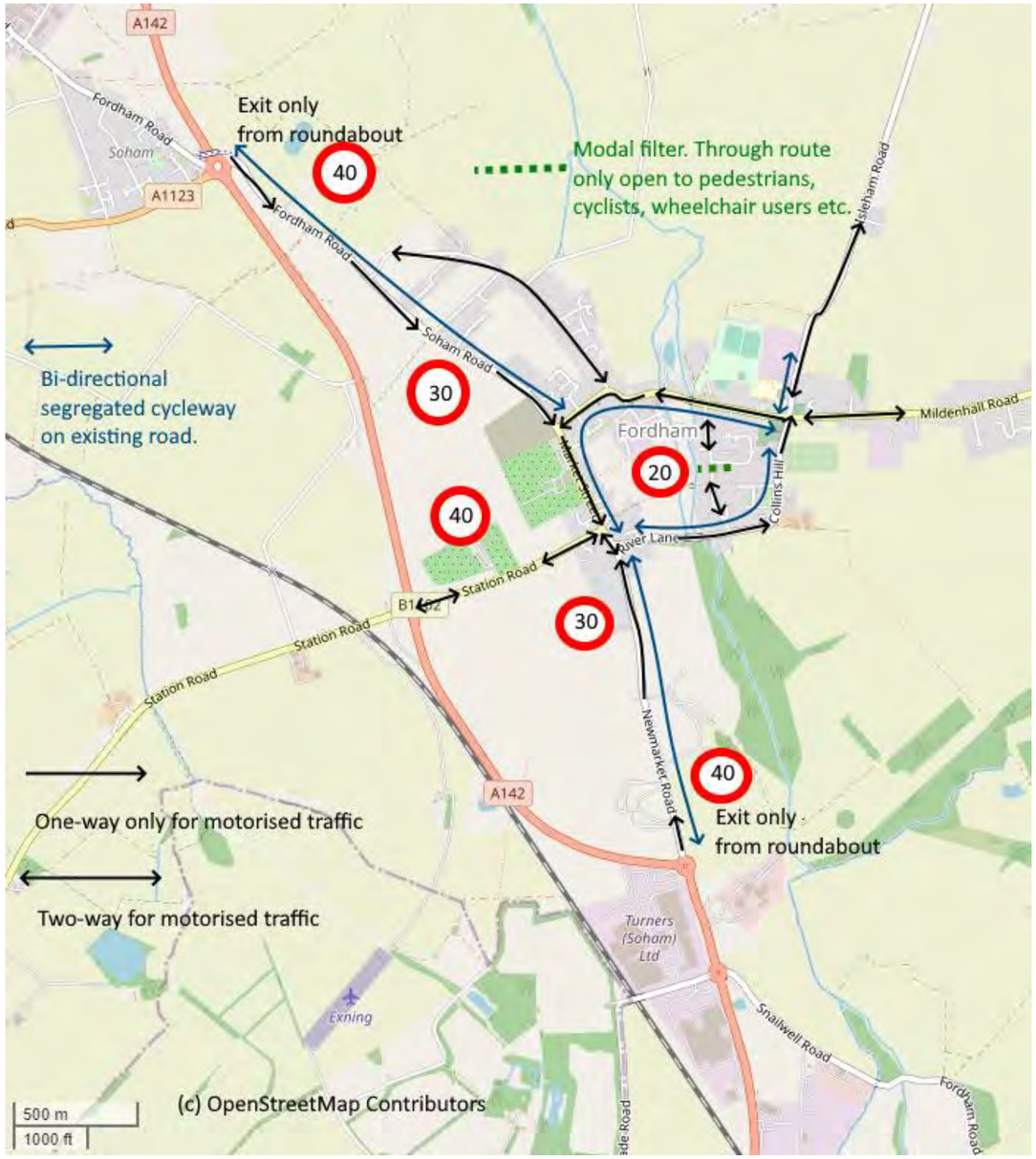
Plan showing recommended routes to progress



Plan showing proposed Burwell Cycle Network. (right)

ii. Reallocation of road space in Fordham and establishment of a usable LTN 1/20 compliant route along the route of the former A142 for links with the employment area and Soham.

One option is indicated below:



iii. Use of existing road or construction of new path along similar alignment.

iv. Construction of new field edge path linking existing rights of way and land near the railway.

v. New ramps and bridge over railway line or change of use at level crossing if it can be agreed.

vi. Construction of new access paths, ramps and new bridge over A142. An alternative alignment is possible for a bridge further north.

vii. Construction of new path following B1103 but set away from the carriageway and linking new developments in the south of Burwell with North End, Exning (including path in front of Halfway House).

viii. Construction of new link path between North End and Cotton End Road in Exning to avoid busy roads in Exning.

ix. Point Closure of Landwade Road at location to be agreed to establish this as a quiet road for local traffic and non motorised users only.

x. Construction of new paths and a new signaled crossing of the A142 with new speed limit on that road. Works to be tied in with development in the area to link with new segregated cycleway along Newmarket Road.

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Plan showing proposed Fordham Cycle and traffic Network. (left)

In terms of a direct link between the centre of Burwell and the centre of Fordham Option 2 is clearly the best option and addresses the brief of the study, but if other factors are taken into account such as Fordham employment centre, value for money and aspirations to improve links with Newmarket then Option 6 has a very strong case. For this reason it is recommended that both options are considered further. If aspects of Option 3 can be incorporated into Option 2 without making the route significantly further then that is also worth considering further.

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.

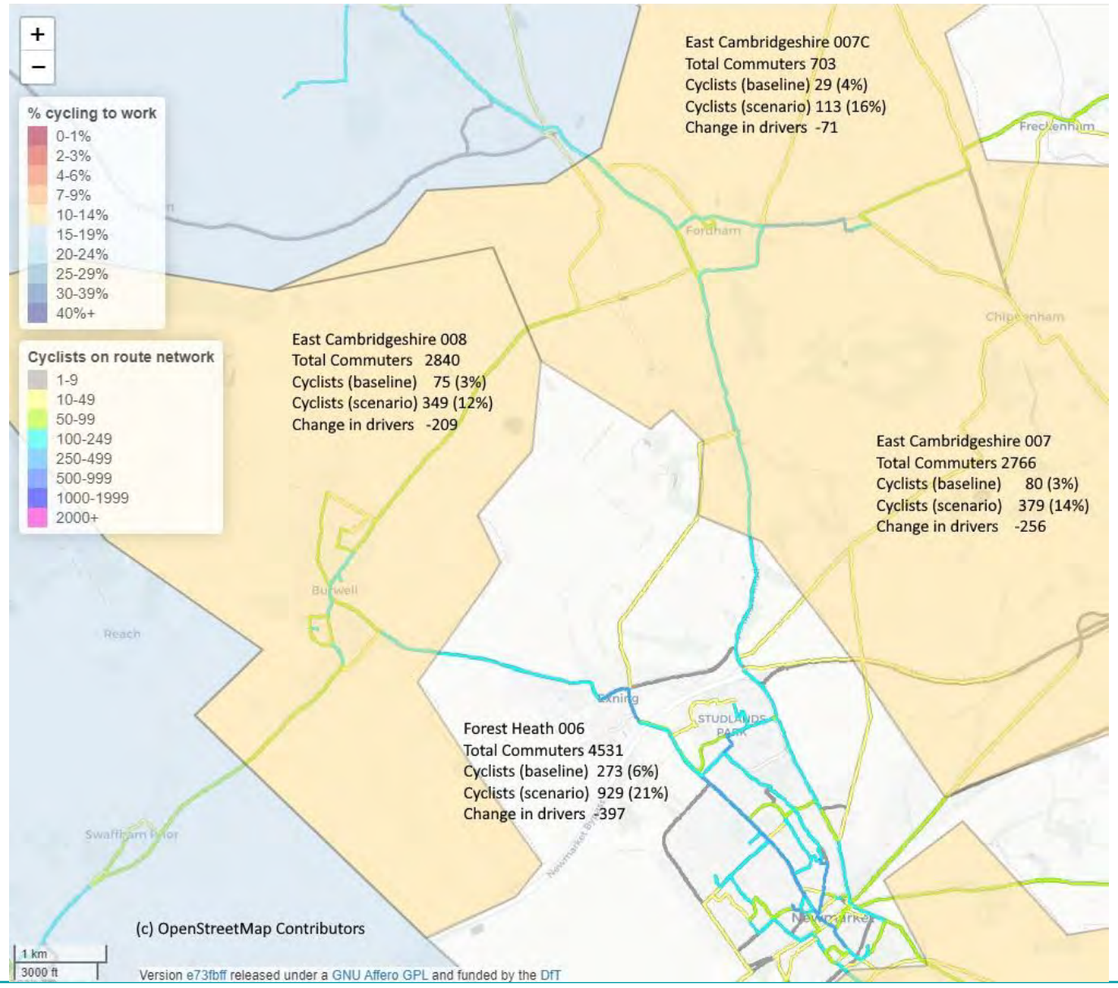
Under the "Go Dutch" scenario as indicated right the tool highlights a number of interesting issues:

1. The tool assumes that cyclists between Burwell and Fordham 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 2 (as an alternative to the B1102) because it does not exist at present. If Option 2 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.

3. The tool shows that there is likely to be greater demand for links between Burwell and Newmarket and Fordham and Newmarket than between Burwell and Fordham direct which strengthens to case for Option 6. The tool also shows a stronger demand between Fordham and Soham than between Burwell and Soham but given that there is no direct road this is not surprising. Nevertheless the case for option 6 appears stronger than Option 1.

Image from Propensity to Cycle Tool "Go Dutch" scenario



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 Fordham village and Burwell
Go Dutch Commuters	50-99
Go Dutch School trips	50-99
Ebikes Commuters	50-99

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 cycling to and from school in Soham. It also shows significant potential increases in commuting trips, particularly with the Ebike scenario.

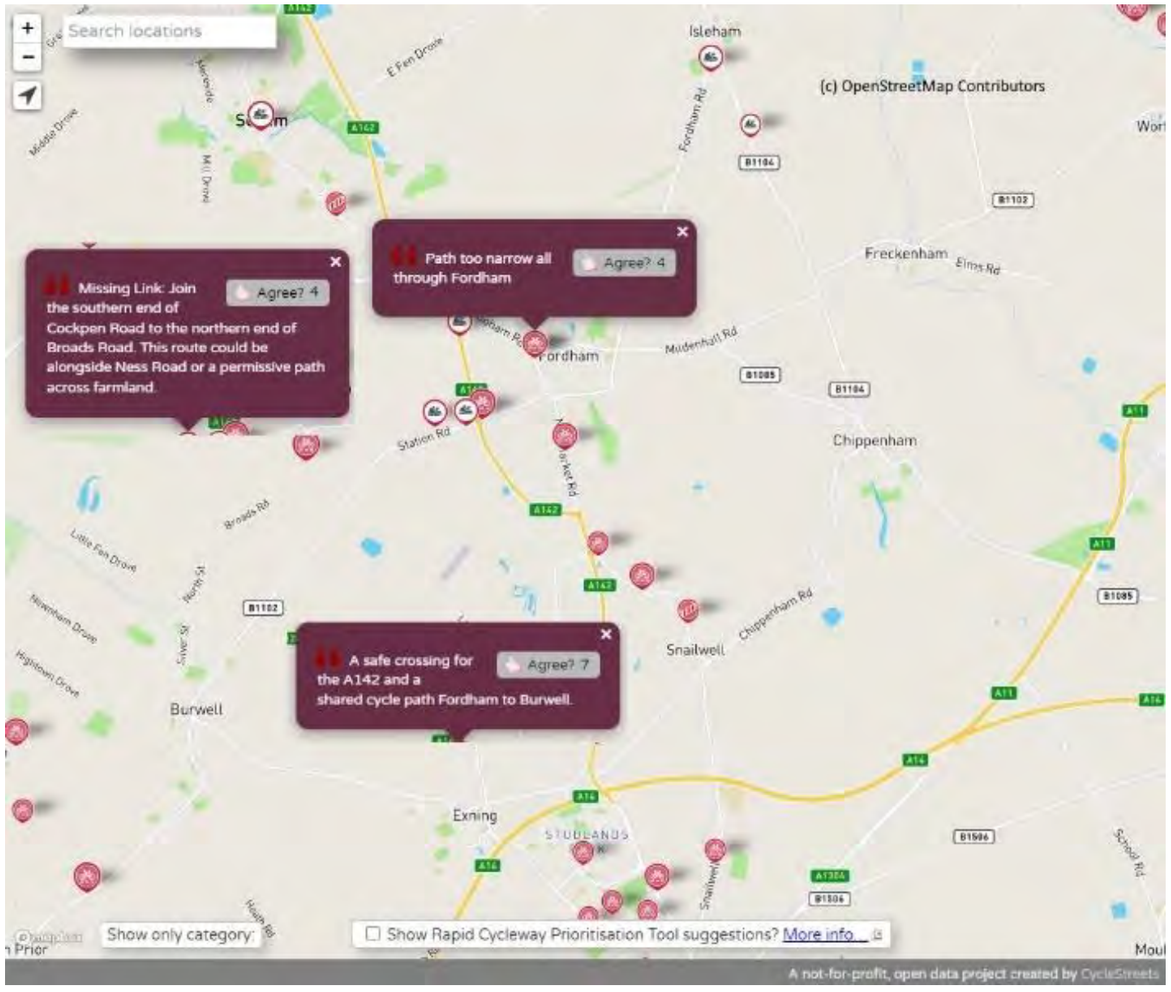
Whilst the tool does not allow for attractiveness it is likely that if a very attractive and direct "Dutch" style route is developed (perhaps linking with other routes) it will attract significant leisure users and walkers in addition to the figures above.

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.

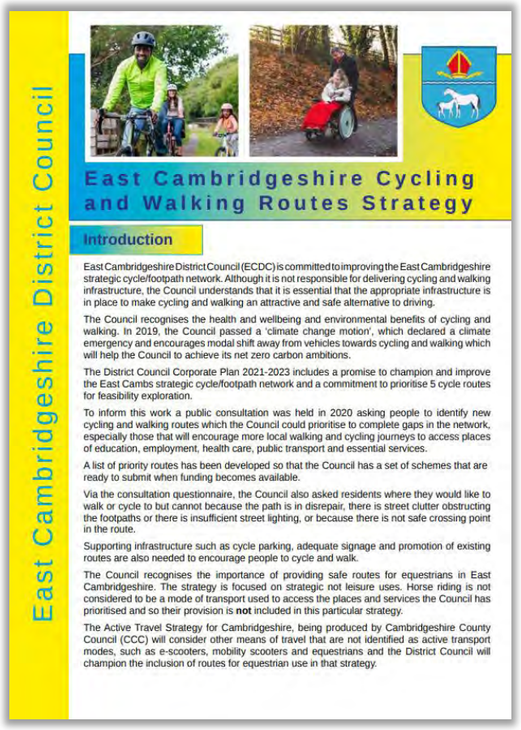
An extract from Widen My Path is shown below with comments added in for ease of viewing:

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. This produced a strong response for a new Burwell to Fordham route. The full report is at https://www.eastcambs.gov.uk/sites/default/files/agendas/Cycling%20and%20Walking%20Routes%20Strategy%20webAC.pdf



Extract from Widen My Path



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.

In total 309 cycle routes were proposed. There was a lot of demand/ interest in new routes in this vicinity. A summary of the responses for Fordham to Burwell is adjacent. This shows the heaviest demand being for better connections with sport/ entertainment facilities and with friends/ family. There was also a strong demand for leisure routes. None of these are picked up by the Propensity to Cycle analysis of journeys to work or school.

Route	Number of responses
Burwell to Fordham	61
Burwell to Newmarket	37
Burwell to Exning to Newmarket	20
Burwell to Exning	33
Burwell to Soham	13

Burwell to Fordham By Journey Purpose	Number of responses
Work	24
College/ Higher Education	10
Doctors/healthcare	27
Shopping	37
Access other public transport	28
Council offices/ public services	11
Sports/ entertainment	49
Visit family/ friends	46

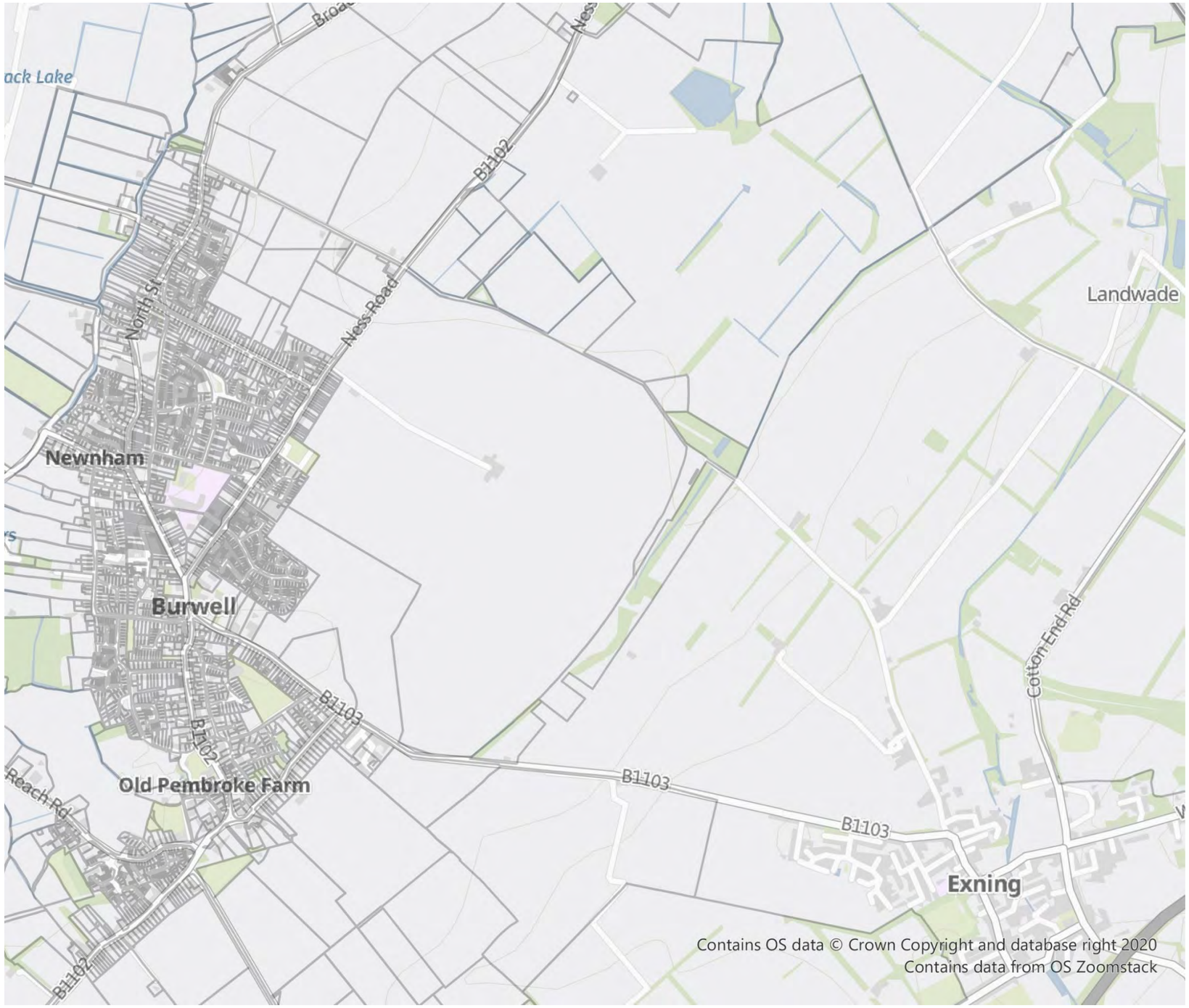
Tables with data taken from East Cambridgeshire Cycling and Walking Strategy

8. 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. (If this is in Suffolk then West Suffolk Council or Suffolk County Council would need to lead on this). 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 and some big farm estates, as indicated by the parcels of land indicated on the following plans. Although landownership data is widely available from The Land Registry at https://www.gov.uk/search-property-information-land-registry 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.

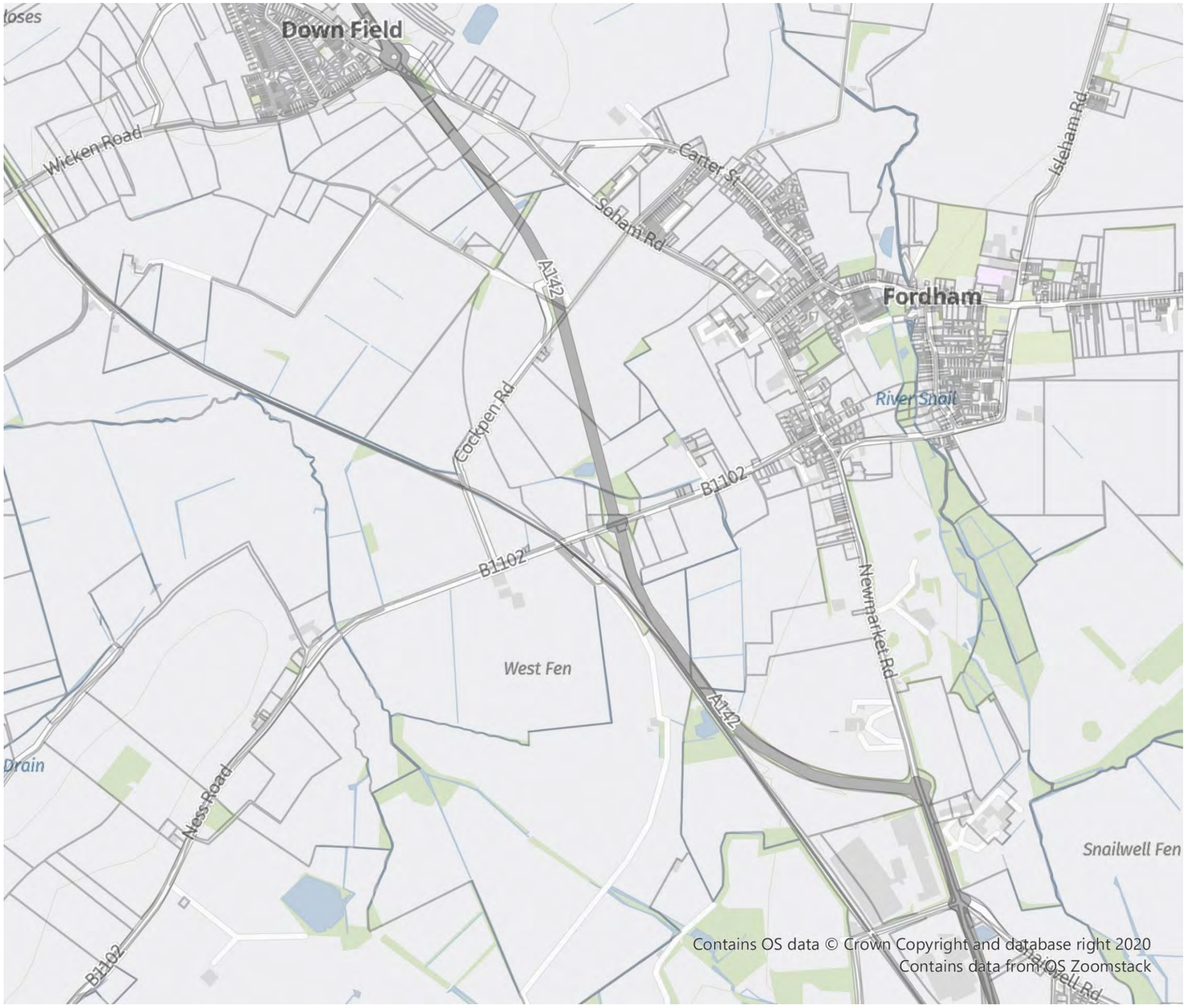
It may be useful to note that Cambridgeshire County Council is a major landowner in this area with their County Farms Estate and that can be seen at https://maps.cambridgeshire.gov.uk/?tab=maps under Public Sector Assetts/ Rural Assetts. Cambridgeshire County Council also hold records of the extent of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

Plan showing individual parcels of land near Soham.



Plan showing individual parcels of land near Fordham.

9. Ecological Assessment.

An Ecological Desk Study has been prepared and submitted to East Cambridgeshire District Council as a separate report. The report summary and three of the images from the report are included here.

Ecological Summary	
Introduction	
Scope and limitations of ecological assessment	The likely ecological constraints for route options 1-6 have been assessed in March 2022 and are summarized below. An ecological desk study was conducted with reference to CIEEM (2017) guidelines . As this project is in feasibility stages, the design has not been finalized and no field survey has been conducted. Therefore, 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 risks summary	This desk study has not identified any barriers to the construction of any of the route options, although this would need to be verified by a further survey work – in particular a walkover survey with habitat assessment. A range of additional habitat and species surveys may be required to fully assess the impacts of the proposal. The most sensitive parts of the proposal as identified by this desk study are the potential impacts on New River, a statutory main river and County Wildlife Site (CWS), and impacts on woodland, including priority woodland habitat. Environment Agency consent would be required for route options 1-4 due to the proximity of works to a statutory main river. Consultation with the Local Authority and detailed botanical and other surveys will also be necessary to characterise impacts on the CWS. The alignment for route options 5 and 6 is currently proposed through priority broadleaved woodland habitat. It is strongly recommended that these are re-aligned to avoid this habitat.
Ecological baseline	
Designated nature conservation sites	Three sites with international designations were identified within 5km of the proposal, these were Wicken Fen and Chippenham Fen which form the Fenland Special Area of Conservation (SAC) and Devils Dyke SAC. The Fenland SAC sites were designated for their wetland and grassland habitats and Devils Dyke for its calcareous grassland and important orchid assemblage. An additional four nationally designated sites were identified within 1km of the proposal and nine locally designated sites identified within the search area. Routes 1-4 were located through Monks Lode and New River CWS, which flows into Wicken Fen.
Habitats	All routes will be primarily situated on tracks, roads, field edges and road verges. The importance of the road verges and arable field edges cannot be determined without a habitat survey as they could have negligible ecological importance or could support priority habitats or notable species and assemblages associated with the SAC and SSSI in the landscape. Route alignments are also situated through and close to areas of woodland, including priority broadleaved woodland, hedgerows and lines of trees. Woodlands are small and occasional in this landscape and these habitats are considered to have at least parish importance, but may act as habitat stepping stones between woodlands in Bracklands Rough SSSI and Wicken Fen SAC. The main rivers are considered important at a county or district level and the network of field drains at a parish level. The drains could have a greater importance if they are high quality habitats that support aquatic populations linking the two Fenland SAC sites.
Species with statutory controls	Habitats in the landscape are likely to be suitable for a wide range of protected species including great crested newts, nesting birds (including schedule 1 species), white-clawed crayfish, bats, otter, water vole and reptiles. Invasive non-native species may also be present.
Notable species/assemblages	The habitats present in the landscape had potential to support notable plant and invertebrate assemblages and species of principal importance from these groups. The landscape may also support species of principal importance including birds, common toad, hedgehog, harvest mouse and polecat.

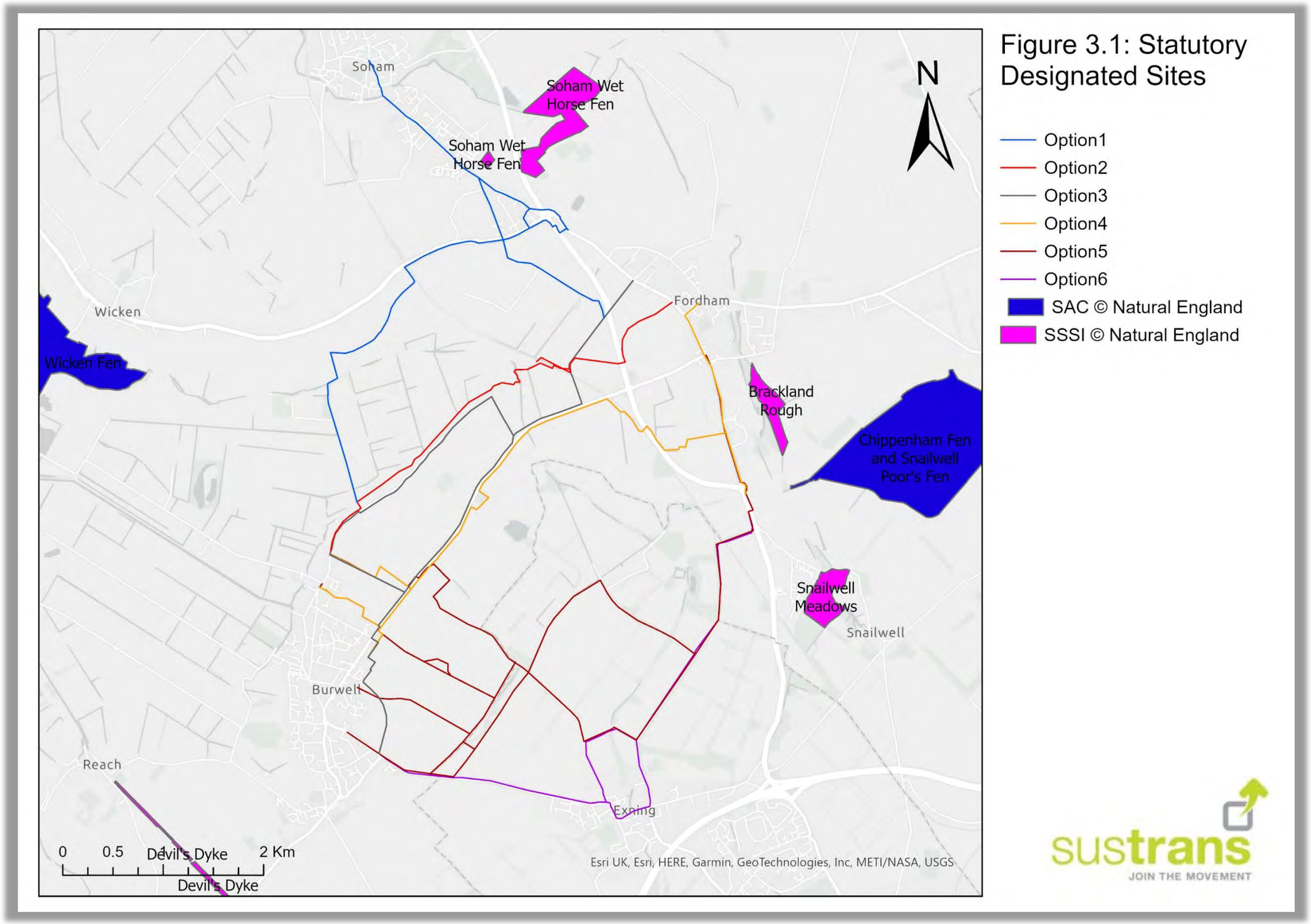


Fig 3.1 from Ecological Desk Study

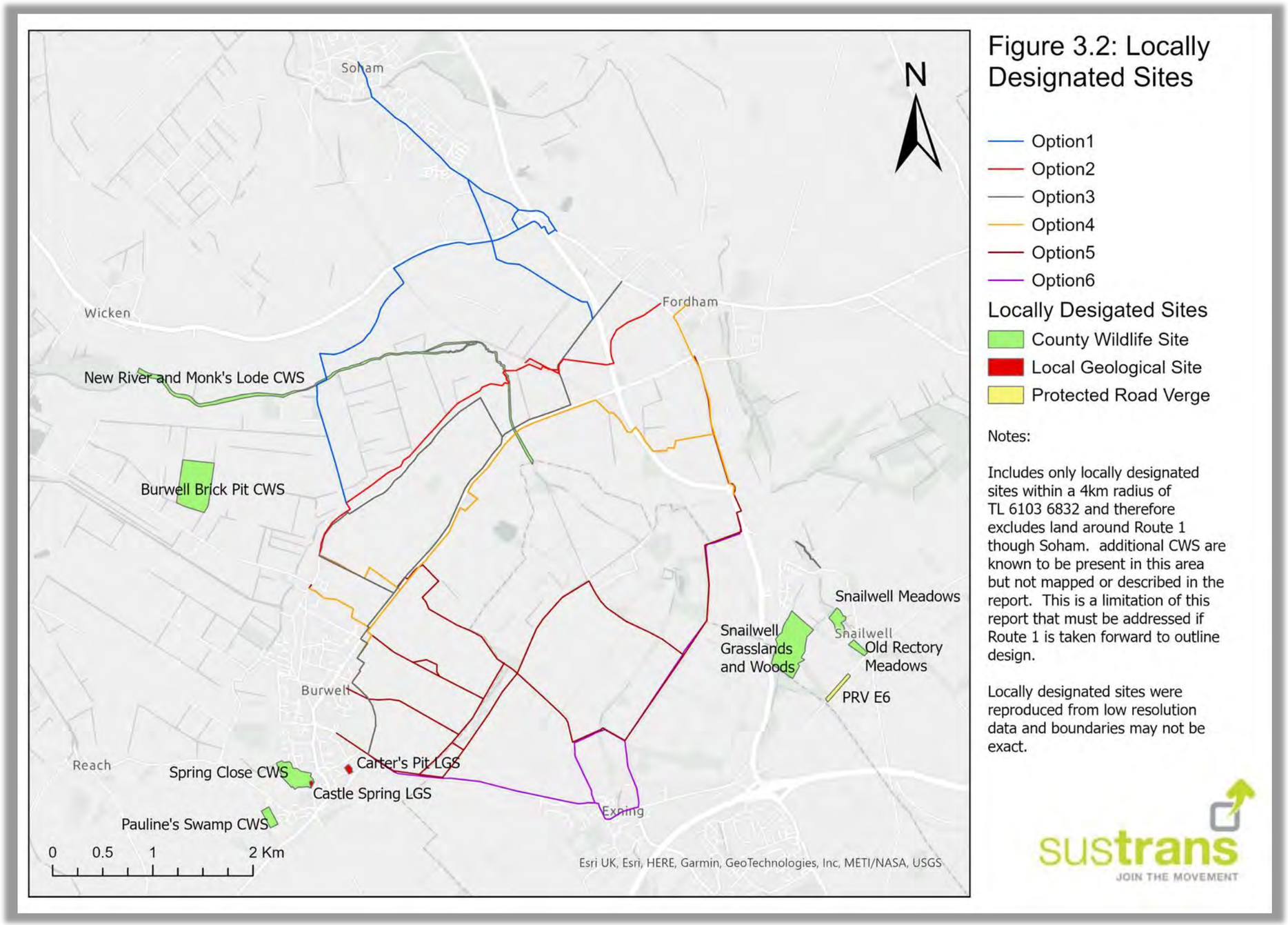


Figure 3.2: Locally Designated Sites

Option1
Option2
Option3
Option4
Option5
Option6

Locally Desigated Sites

County Wildlife Site
Local Geological Site
Protected Road Verge

Notes:

Includes only locally designated sites within a 4km radius of TL 6103 6832 and therefore excludes land around Route 1 though Soham. additional CWS are known to be present in this area but not mapped or described in the report. This is a limitation of this report that must be addressed if Route 1 is taken forward to outline design.

Locally designated sites were reproduced from low resolution data and boundaries may not be exact.

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Fig 3.2 from Ecological Desk Study

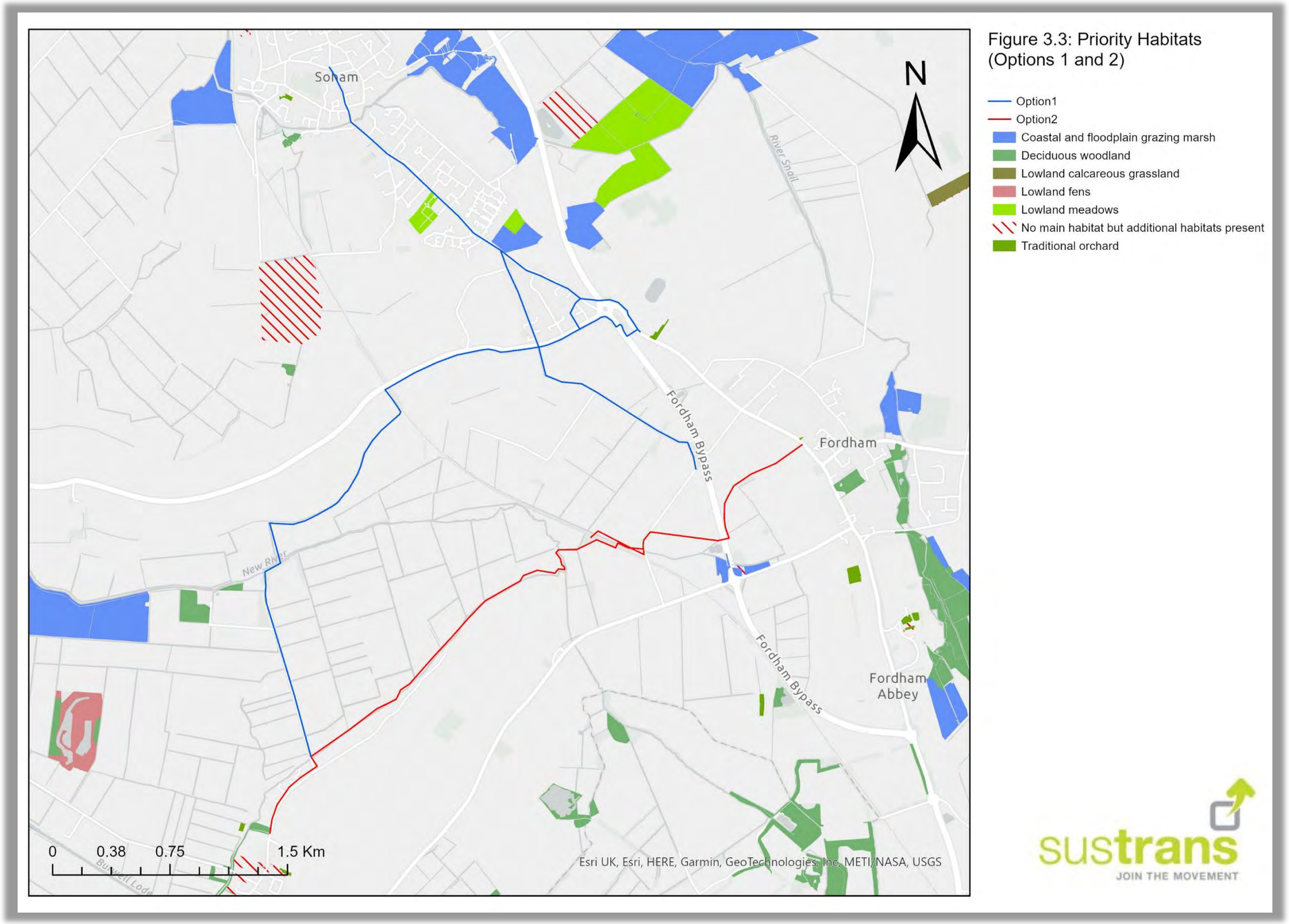

Fig 3.3 from Ecological Desk Study

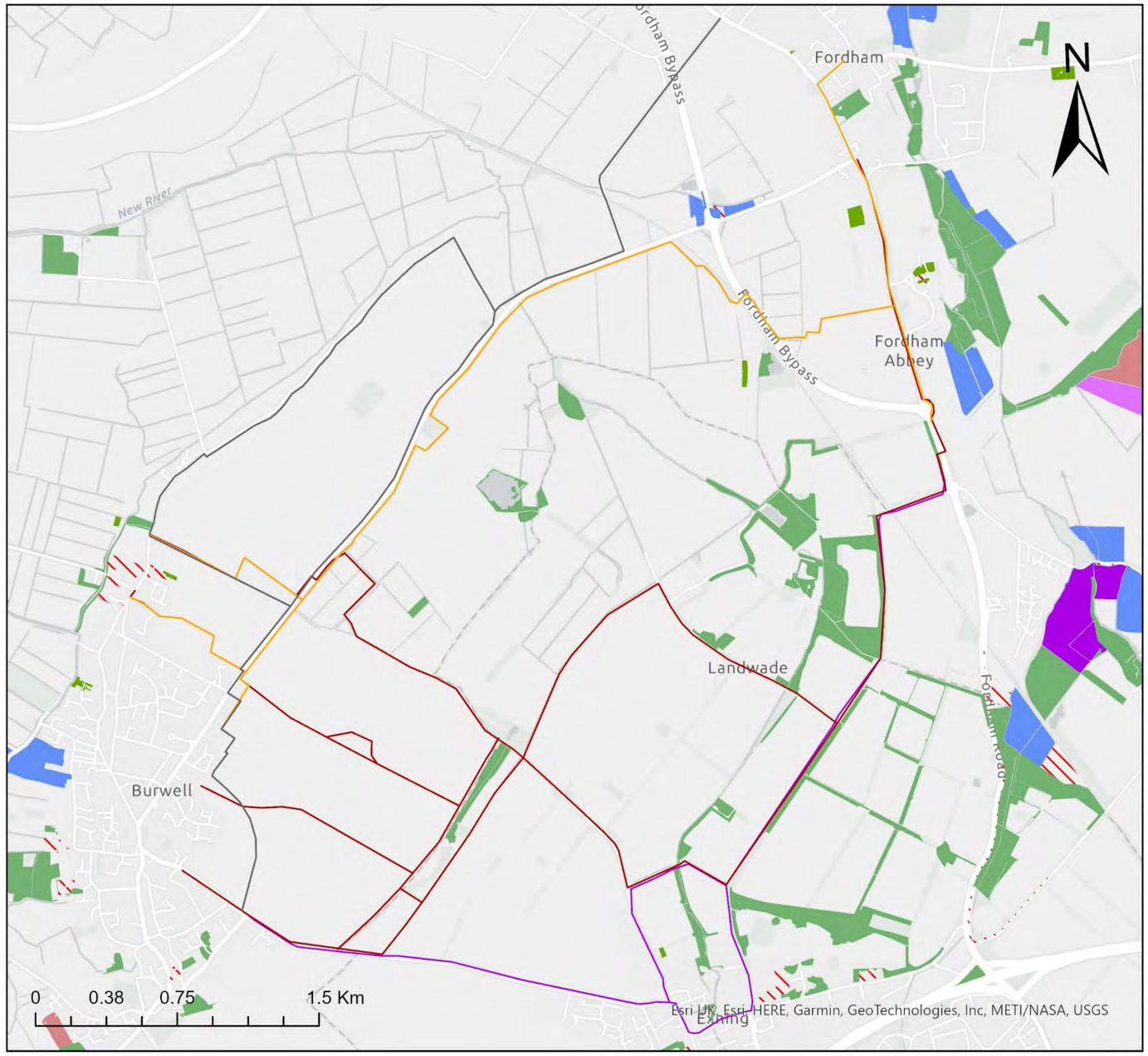

Figure 3.4: Priority Habitats (Options 3-6)

- Option3
- Option4
- Option5
- Option6
- Coastal and floodplain grazing marsh
- Deciduous woodland
- Good quality semi-improved grassland
- Lowland fens
- No main habitat but additional habitats present
- Purple moor grass and rush pastures
- Traditional orchard

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Fig 3.4 from Ecological Desk

Ecological Summary	
Anticipated impacts	
Designated nature conservation sites	The only site on which direct impacts are anticipated is the Monks Lode and New River CWS. Four of the route options (Routes 1-4) cross this site. Routes 1 and 2 will require the construction of a new bridge across this site. Option 1 will also be situated alongside New River for approximately 110m and Option 2 will be situated alongside the adjoining Catchwater Drain for approximately 2.4km. As such, Routes 1 and 2 have potential to significantly impact this site. Routes 3 and 4 cross New Rive at an existing bridge, but modification of this structure or a new structure may be required to encompass a path alongside the road. It is anticipated that significant impacts on this site can be avoided through good design and construction.
Habitats	As most route options have a number of sub-options, links and interdependencies, direct comparison of habitat loss is difficult, particularly as no field survey has been conducted. All route options will cause habitat loss, primarily arable field edges, the ecological importance of which are unknown. Routes 1 and 2 have the greatest potential impact on watercourses as they are situated adjacent to main rivers and will require bridge construction. Option 1 will also be situated in grassland habitat for 100m adjacent to New River. The importance of this grassland is unknown. Route Options 3 and 4 may require new structures or modification of structures over New River and will also include construction in areas of plantation woodland around the A142. Route Options 5 and 6 are unlikely to impact main rivers, but the proposed alignment is currently located through woodland along the A142 including 150m through priority broadleaved woodland.
Species with statutory controls	Depending on the detailed design, impacts that would contravene current legislation (killing, injury and/or disturbance to resting places) could be anticipated if great crested newts, nesting birds (including Schedule 1 species), badgers, bats, white clawed crayfish, otter, water vole and reptiles are present. Fish populations within the main rivers could also be impacted by poor construction or bridge design. Works could also cause the spread of any invasive species present. The risk to great crested newts has been identified as most likely for Routes 5 and 6 and possible for Route 2. The risk to otter is considered greatest for routes 1 and 2, possible for routes 3 and 4 and unlikely for Routes 5 and 6. Otherwise, without a walkover survey to assess habitat suitability, the risk to other species is currently considered roughly equal across routes.
Notable species/assemblages	Depending on the detailed design, the proposal could impact the conservation status of notable invertebrate and plant species/assemblages if present. Hedgehog, harvest mouse and polecat could be impacted by construction.

Ecological Summary	
Recommendations	
Further survey and assessments to ensure compliance with statutory legislation	In order to fully characterise impacts and inform design and construction management; – A full PEA including a walkover survey must be undertaken to include all works areas to assess potential risks to species with statutory controls. Depending on the route option additional surveys will be necessary relating to protected species. – Surveys for badger setts, invasive non-native species and reptiles may be necessary for all routes. – Great crested newt surveys would only be necessary if the scheme was not applying to the district level licence. – White-clawed crayfish assessments would be necessary for all schemes including new river bridges. – Water vole and otter surveys required wherever construction is within 5m of waterocourses or drains. – Bat roost assessments will be necessary wherever trees are to be impacted. If lighting is proposed, more detailed bat surveys may be necessary. Environment Agency consent will be required for the new bridges and any construction within 8m of New River or Catchwater Drain. Flood risk, drainage and environmental assessments will be required to obtain a permit for these works.
Further surveys and assessments to ensure compliance with planning policies	In order to fully characterise impacts and inform design and construction management; – A habitat survey must be undertaken to determine the likely presence of notable species and assemblages and identify whether additional surveys such as invertebrate or detailed botanical surveys are required. – If a new bridge or construction within 8m are proposed at New River, a targeted botanical survey and consultation with the Local Planning Authority will be required in relation to impacts of the proposal of the CWS – An Arboricultural Impact Assessment (compliant with BS5837) underpinned by a full topographical survey will be required to inform final designs for this proposed route. A biodiversity net gain scheme must be developed for this scheme.
Additional considerations for detailed design	Detailed design, including temporary access points, storage and works compound should; – Minimise habitat loss, particularly of important habitats as informed by a habitat surveys. Routes 5 and 6 should be diverted around the woodland on the A142. – Maintain appropriate buffer zones between construction and rivers, ditches, trees and hedgerows. – Avoid fencing and lighting where possible, or design for minimal impacts on wildlife if essential. – Include biodiversity enhancements.
Licences which may be required.	If impacts cannot be avoided, licences may be required for work relating to great crested newts, white- clawed crayfish, bats, badgers, otter, and water vole. This project is within a great crested newts district level licensing scheme.
Construction and Environmental Management Plan (CEMP)	– A CEMP must be prepared that includes all species and habitat protection measures, as identified in Section 4.5 of this report and in further species survey reports. It must also contain construction control measures to minimise the spread of invasive non-native species.
Landscape and Ecological Management Plan (LEMP)	A LEMP should be produced to protect and enhance habitats and populations in the long-term (for at least 30 years). This must include measures identified in Section 4.5 of this report and detailed information on the funding and responsibilities for implementation to ensure compliance.

These recommendations will need to be followed as the proposals progress.

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 Community Engagement undertaken as part of this study, but this is clearly a high priority to progress the proposals.

10.1 Evidence of Support

Contacts have been made with 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 Fordham or Burwell who may not want changes to the street environment.
- Businesses in Fordham or Burwell who may have concerns about access to their properties.
- Farms along Broads Road who may not want additional access.
- The owners of Halfway House who may object to the route near their property.
- The owners of the house near Cockpen Road level crossing who may object to the bridges near their property.
- Footpath and bridleway users who may object to surfacing works and/ or changes in the number and types of users.
- Residents of Exning and/or businesses on Landwade Road who may object to the closure of the road to through traffic.

10.3 Audit of Engagement Opportunity

The works in Burwell and Fordham 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.

If the route via Exning is to be developed residents of Exning will need to be closely engaged in a similar way to those in Burwell and Fordham. This will need to include close engagement with the horse-riding community who stand to benefit from new links, but who may also have some concerns.

Successful engagement with the businesses near the A142 south of Fordham will be very important to gain their support and to ensure good benefits for staff.

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. 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.

A community engagement plan might include:

- In-depth discussion with landowners.
- On-line consultation and poster, leaflet campaign.
- Consultation meetings in Burwell, Fordham and Exning.
- Events in Burwell, Fordham and Exning.
- Walk through of proposals.
- Meetings with businesses and staff and staff surveys.
- Presenting at Council meetings etc.
- The completion of Healthy Streets Audits for the villages. This can help engagement in the wider issues.
- Consultation meetings or events outside the immediate area, such as in Newmarket, Soham, at Wicken Fen or nearer to Cambridge.

11. Key stakeholder engagement

All key stakeholders should be engaged at this stage. In many ways the most important stakeholders will be the landowners, because without the land needed for a route it cannot be delivered. The landowners will undoubtedly have concerns and will expect compensation for any loss of land and their reasonable expenses. The engagement with landowners will need careful planning and will need skillful negotiations. It might take a considerable amount of time and legal teams will need to be involved.

Informal discussions with all stakeholders can give an indication of likely acceptance of the scheme and likely issues that will need to be examined more carefully at Detailed Design.

As with community engagement an important part of the stakeholder engagement could be the completion of Healthy Streets Audits for the villages. This can help engagement in the wider issues.

Key Stakeholders might include:

- All landowners along the preferred route alignments.
- Burwell Parish Council
- Fordham Parish Council
- Exning Parish Council
- Soham Town Council
- West Suffolk Council
- Suffolk County Council
- Local Public Rights of Way Teams in Cambridgeshire and Suffolk
- Greater Cambridge Partnership
- Cambridgeshire County Council
- Combined Authority
- British Horse Society
- CamCycle
- Historic England
- Natural England
- Disability Groups
- Major employers such as Turners, Scotsdales, Fordham Abbey and others.
- Local businesses

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. Network Rail have their own lengthy procedures which will need to be followed.

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, West Suffolk Council, Suffolk County 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, as well as ecological requirements. 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 a new bridge is needed the land required will be much greater to allow for ramps and if possible agreement should be reached to allow for material to be dug locally 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. These discussions may need to include West Suffolk Council.

Cambridgeshire County Council and Suffolk 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

Negotiations with landowners can take a very long time to conclude and an early start is recommended.

The planning process can also be slow, but a much lengthier process is likely to be anything that needs Network Rail approval. Network Rail will expect their costs to be paid up front with or without the scheme going ahead, If a new railway bridge or level crossing changes are to be progressed engagement with Network Rail should start at an early stage.

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. Any ecological issues may present bigger challenges and these need to be addressed at an early stage with compensation agreed, if necessary.

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 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.

Within Fordham village a similar plan will be needed and work could be done in four stages again. It would also be desirable to implement the point closure of Mill Lane before other works :

- Near the Primary School and Cemetery where work should ideally be done in school holidays and the school itself could be used for facilities and a site compound.

- Sharman's Road/ Carter Street/ Church Street, where a closure as through route would mean traffic diverting via Collins Hill/ River Lane and Market Street. A possible location for site compound and facilities would be the Recreational Field.

- Collins Hill/ River Lane, where a closure as a through route would mean traffic diverting via the Sharman's Road/ Carter Street/ Church Street and Market Street. A possible location for site compound and facilities could be on agricultural land near Trinity Close.

- Market Street, where a closure as a through route would mean traffic diverting via Sharman's Road/ Carter Street/ Church Street and Collins Hill/ River Lane. A possible location for site compound and facilities could be on Scotsdales land.

- For the routes along Soham Road/ Fordham Road and Newmarket Road and the changes at the roundabouts it should be possible to create space for site compounds and facilities near the roundabouts by closing of junctions and implementing one-way systems using cones while the permanent one-way facilities are installed. It will be desirable to close the roads to through traffic while this is underway to minimise traffic flows.

For Option 2 a number of site compounds will be needed including:

- Near the end of Broads Road on agricultural land. There may be a temporary bridge over Catch Water Drain for access.

- Near the level crossing on Cockpen Road on the Burwell side of the railway on agricultural land for construction of the route towards Broads Road and for the construction of a new bridge over the railway if needed.

- Near the level crossing on Cockpen Road on the Burwell side of the railway on agricultural land for construction of the route towards the A142 and the ramp for the new bridge over the A142 and also for the construction of a new bridge over the railway if needed.

- East of the A142 near the bridge location, on agricultural land, for construction of the bridge and ramps and the link with Soham Road.

For both bridges it will be necessary to minimise the need for construction traffic to cross the road/ railway that is to be bridged. It will also be necessary to have sufficient land that can be accessed by heavy vehicles where the new bridge can be stored/ assembled prior to being lifted into place.

For Option 6 a number of site compounds will be needed depending on route details including:

- On the Cambridgeshire side of the disused railway along the B1103, for the route from Burwell to the bridge. 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.

- On the Suffolk side of the disused railway along the B1103, for the route past Halfway House and towards Exning. A possible location for site compound and facilities could be on agricultural land to the east of Halfway House.

- To the north of the B1103, within Exning for the route into Exning and to North End. A possible location for site compound and facilities could be on agricultural land to the north of the B 1103.

- Near to the new path between North End and Cotton End Road, for the link between the two roads with a site compound and facilities on agricultural land off either road.

- Near the A142 on the Fordham employment site. If this work is carried out as part of development in the area the site compound and facilities could be shared with the developer or they could be on land not yet developed. Two sites may be needed – one on each side of the A 142.

14. Cost estimates

At this stage costs are very approximate, based on estimated costs/ m or estimated unit costs. The bridges have the highest range of costs, because they are by far the single most expensive items and costs can escalate significantly depending on ground conditions, environment, the requirements of Network Rail etc.

In the villages the highway works have a high 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.

Options 1 to 3

Item	Item description	Unit	Low cost per unit	High cost per unit	Quantity	Low total cost	High total cost	Notes
Option 1	4.6km approx. new build path.	Linear m	£170	£230	4600	£782,000	£1,058,000	Length of new build dependent on survey and landowners' requirements.
Option 1	New bridge over railway with no ramps but near road with farm access road changed.	Item	£1,000,000	£2,5,000,000	1	£1,000,000	£2,500,000	Costs are dependent on any engineering complexities such as Network Rail requirements, the proximity of a road and the gas mains in the area, as well as the need to change the existing farm access.
Option 1	Signalled crossings Soham	Item	£100,000	£200,000	2	£200,000	£400,000	Costs do not include traffic calming and road changes in Soham.
Option 1	**Combined**	**Total**				**£2 million**	**£4 million**	**Needs early discussions with Network Rail if this option is to progress.**
Option 2	3.8km approx. new build path	Linear m	£170	£230	3800	£646,000	£874,000	Length of new build dependent on survey and landowners' requirements.
Option 2	New bridge over railway with ramps	Item	£1,500,000	£3,000,000	1	£1,500,000	£3,000,000	Preferred design using earthwork ramps, but a lot depends on Network Rail. Possible to avoid bridge if level crossing can be used and adapted for use.
Option 2	New bridge over A142 with ramps,	Item	£1,500,000	££3,000,000	1	£1,500,000	£3,500,000	Bridge site not surveyed.
Option 2	**Combined**	**Total**				**£3.7 million**	**£7.4 million**	**Two bridges so considerable cost range. Big saving if railway bridge can be avoided and use level crossing instead so early consideration of this needed.**
Option 3	1.8 km approx. new build path	Item	£170	£230	1800	£306,000	£414,000	Length of new build dependent on survey and landowners' requirements.
Option 3	Level crossing changes.	Item	£500,000	£1,000,000	1	£500,000	£1,000,000	Assumes level crossing changes can be agreed and closure to motorised traffic is agreed, so actual works are relatively small.
Option 3	New bridge over A142 with ramps,	Item	£1,500,000	£3,000,000	1	£1,500,000	£3,000,000	Should be possible to use existing earthworks on Burwell side.
Option 3	**Combined**	**Total**				**£2.3 million**	**£4.4 million**	**Level crossing is a significant unknown.**

Options 4 to 6

Item	Item description	Unit	Low cost per unit	High cost per unit	Quantity	Low total cost	High total cost	Notes
Option 4	5.2km approx. new build path	Linear m	£170	£230	5200	£884,000	£1,196,000	Length of new build dependent on survey and landowners' requirements.
Option 4	0.7km new road	Item	£340	£460	700	£238,000	£322,000	Length of new build dependent on design and landowners' requirements.
Option 4	Signalled crossing	Item	£100,000	£200,000	1	£100,000	£200,000	Assumes speed limit can be changed.
Option 4	New single bridge bridge over railway and A142 with ramps.	Item	£2,500,000	£5,000,000	1	£2,500,000	£5,000,000	The most complex bridge option.
Option 4	**Combined**	**Total**				**£3.7million**	**£7million**	**Needs early discussions with Network Rail and County Council if this option is to progress.**
Option 5	4.1km new paths	Linear m	£170	£230	4100	£697,000	£943,000	Assumed same cost for paths near A142 and for field edge paths.
Option 5	2 x new signalled crossings .	Item	£150,000	£300,000	2	£300,000	£600,000	Cost of crossing A142 likely to be much higher than B1102, due to complexity and traffic management.
Option 5	1.3km	Item	£50	£100	1300	£65,000	£130,000	Track not surveyed but likely to need upgrading.
Option 5	Point closure + Exning speed limits	Item	£100,000	£250,000	1	£100,000	£250,000	Legal orders, bollards, speed limit changes and some calming measures.
Option 5	**Combined**	**Total**				**£1.2 million**	**£1.9 million**	**No bridges so considerable savings. Fordham A142 crossing and works should be delivered as part of developments.**
Option 6	3.5km new paths	Linear m	£170	£230	3500	£697,000	£943,000	Assumed same cost for paths near A142 and for field edge paths.
Option 6	1 x new signalled crossings .	Item	£200,000	£400,000	1	£200,000	£400,000	A 142 crossing.
Option 6	Point closure + Exning speed limits	Item	£150,000	£300,000	1	£150,000	£300,000	Legal orders, bollards, speed limit changes and some calming measures. Additional allowance for North End compared with Option 5
Option 6	**Combined**	**Total**				**£1.1million**	**£1.7million**	**No bridges so considerable savings. Fordham A142 crossing and works should be delivered as part of developments.**

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.

Whilst the costs are higher for Fordham than Burwell despite Burwell being the bigger community the existing conditions in Fordham are worse than in Burwell and there is a very obvious need for major changes, given the very poor environment for walking and cycling within Fordham.

Village Costs

(Applies to all options)

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.
Burwell	**Combined**	**Total**				**£1.7 million**	**£3.4million**	**Needs detailed design to get more accurate costing.**
Fordham former A142	Segregated cycleway on existing road. Bolt downs.	Linear m	£120	£250	3000	£360,000	£750,000	Traffic management will be costly.
Fordham one way	New bridge over railway with ramps	Linear m	£500	£1000	2700	£3,000,000	£5,000,000	High quality finishes likely to be needed and complex design including signals.
Fordham	**Combined**	**Total**				**£3.4 million**	**£5.8million**	**Needs detailed design to get more accurate costing.**

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. This assumes Go Dutch scenario, so high quality infrastructure everywhere. The toolkit shows that the greatest benefits related to costs (BCR) will come from the route via Exning, where the numbers of trips changed can be expected to be the highest. The high cost of the direct route between Fordham and Burwell (Option 2) raises some difficulties since this addresses the brief of this study, but the BCR is much poorer than for Option 6. The BCR for this option could be reduced if a bridge over the railway can be avoided and costs can be reduced. Similarly the low BCR for works in Fordham, despite the clear need for changes, is a reflection of the relatively low population and the high costs. If a cheaper solution can be agreed this would shift the balance. Burwell, on the other hand has a larger population and works are potentially cheaper, making a clear case for these works.

Item	Item description	Capital	Annual maintenance	Usage change	Notes on usage	AMAT BCR
Option 2 Edge of Burwell to Soham Road, Fordham	High Cost with two bridges	£7,400,000	£490,000	10 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.	0.3
	Low Cost with two bridges	£3,700,000	£245,000	As above	As above	0.6
Option 6 via Exning	High Cost with road closure	£1,700,000	£85,000	120 before 1100 after	Based on Propensity to cycle 2011 census figures with assumption of journeys to work approx. 30% of trips. Adding figures from Fordham to Exning/ Newmarket to figures from Burwell to Exning/ Newmarket. Based on Propensity to Cycle Go Dutch figures with assumption that journeys to work approx. 30% of trips. Cross checking with potential school trips from tool.	3.98
	Low cost with road closure	£1,100,000	£55,000	As above	As above	6.15
Burwell	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
Fordham and links along former A142	Whole village circulatory scheme and segregated route along Soham Road/ Fordham Road and Newmarket Road high cost	£5,800,000	£290,000	145 565	Based on Propensity to Cycle 2011 census figures for Fordham Lower Super Output Area with assumption of journeys to work approx. 20% of trips. Based on Propensity to Cycle 2011 census figures for Fordham Lower Super Output Area with assumption of journeys to work approx. 20% of trips.	0.49
	Whole village circulatory scheme and segregated route along Soham Road/ Fordham Road and Newmarket Road low cost	£3,400,000	£170,000	As above	As above	0.83

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.

Design Risk Register

	Designer	Sustrans
	Client	East Cambridgeshire D.C.
	Author	NB (Sustrans)
	Date	15/12/21
Risk ID number	**Description**	**Response**
1	**All construction works carry risk. Is work necessary?**	Clear need for new facilities, because existing do not comply with standards such as LTN 1/20.
2.	**Works near railway lines and over railway lines carry risk.**	Route has to cross the railway line. The one option where there is an existing bridge has been given careful consideration and priority. All works to be agreed with Network Rail at all stages.
4.	**Works near A142 carry risk.**	Route has to cross this major road, so bridges or signals are proposed. Design needs to minimise works and maintenance near the carriageway.
5	**Works near roads carry risks.**	Road closures and traffic management will be needed and cannot be avoided so should be carefully considered throughout design process.
6.	**Works in rural areas carry risks, including waterways and farm activities.**	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.
7.	**Gas mains and electricity supplies are in the area.**	Utility search underway to check for any issues.
8	**Inadequate provision made for site compounds and facilities.**	Early consideration has been given to this and it needs to be a key task as part of land negotiations.
9.	**CDM needs to be considered in choosing preferred options.**	CDM has been a significant factor, but will need to be considered further as options are reviewed.
10.	**Community Engagement Risks**	Risk Assessments will need to be completed and acted upon for events and activities.
11.	**Design and surveying risks**	Risk Assessments will need to be completed and acted upon for site visits, surveys and design work.

17. RAG Report

	Project title	Burwell Fordham Feasibility Study	**Date RAG report initiated**	15/12/21	**Project Manager**	AA
	Client	East Cambridgeshire D.C.	**Date of current edition**	11/04/22	**RAG Author**	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 in Burwell and Fordham not agreed and traffic calming measures with speed limit changes not agreed so route not LTN 1/20 compliant in Burwell and/or Fordham**		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/ SCC	15/12/21		High level of community engagement and engagement with all users needed to come up with solutions.	
4.	**Failure to get Network Rail consent for rail crossing.**		CCC	15/12/21		Allocate sufficient money, technical skills and time to this.	
5	**Failure to get agreement for route past Halfway House.**		West Suffolk/SCC	15/12/21		May have to install signals and one way alternate working with segregated cycleway.	
6.	**Failure to get agreement to close Landwade Road or agreement on speed limits.**		West Suffolk/SCC	15/12/21		High level of community engagement needed to come up with solutions.	
7.	**Reallocation of road space on Newmarket Road, Soham Road/ Fordham Road and one way systems not agreed.**		ECDC / CCC	15/12/21		High level of community engagement needed to come up with solutions.	
8	**Bridge over A142 cannot be agreed.**		ECDC/CCC	15/12/21		CCC need to be persuaded of need for scheme.	
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/West Suffolk	11/04/22		Follow recommendations in Ecology Study and use these to inform design and route selection. Undertake pre-app discussions and ensure all issues addressed.	