Sevenoaks
DISTRICT COUNCIL

Sevenoaks Urban Area

Local Cycling and Walking Infrastructure Plan (LCWIP)

January 2023

About Sustrans

Sustrans is the charity making it easier for people to walk and cycle.

We are engineers and educators, experts and advocates. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute.

Sustrans works in partnership, bringing people together to find the right solutions. We make the case for walking and cycling by using robust evidence and showing what can be done.

We are grounded in communities and believe that grassroots support combined with political leadership drives real change, fast.

Join us on our journey. www.sustrans.org.uk

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Revision	Description	Author	Check	Date
1	Draft	SZ/LDw	LDe	20/10/22
2	Draft for issue	SZ/LDw	LDe	24/10/22
3	Revised draft	SZ/LDw		20/12/22
4	Second revised draft	SZ/LDw	LDe	05/01/23

Contents

Introduction

1 Introduction

Sevenoaks Urban Area

Sevenoaks is a 13th century market town, in Kent. The town probably grew in size following the establishment of Knole House in the 15th century. Sevenoaks is situated southeast of London on the mainline to Charing Cross, subsequently it is a popular commuter town. Therefore the provision of good active travel links to the main and local stations is key.

This report focusses on a local cycling and walking network within the Sevenoaks Urban Area, including the following wards: Kippington, Northern, St. John's, Town, Wildernesse, Eastern and Otford. Secondary District towns such as Swanley will be subject to separate LCWIP reports and therefore fall outside of the scope of this report.

Map 1 shows Sevenoaks District and Sevenoaks Urban Area. The boundary of the urban area is the defined scope for this LCWIP.

What is an LCWIP?

Local Cycling and Walking Infrastructure Plans (LCWIPs), as set out in the Government's Cycling and Walking Investment Strategy, are a strategic approach to identifying cycling and walking improvements required at the local level. They enable a long-term approach to developing local cycling and walking networks, ideally over a 10-year period.

Local Policies and Plans

The Local Plan

The emerging Local Plan[1] identifies low carbon travel and active travel as central to sustainable development. The plan supports cycling and walking schemes and encourages new development to connect to existing networks as well as promoting new networks. The LCWIP will help deliver the aims and policies within the adopted and emerging Local Plan.

1 https://www.sevenoaks.gov.uk/info/20069131/emerging_local_plan

Draft Neighbourhood Development Plan – Sevenoaks Town Council

The Sevenoaks Town Neighbourhood Development Plan[2] identifies and establishes planning direction relating to the use of land within Sevenoaks. The Plan places great emphasis on the importance on the national climate emergency, while also recognising the need to preserve and enhance the town's heritage assets and unique open spaces. Plan objectives 7 and 8 highlight the need for a co-coordinated approach to sustainable transport and the need to work with Kent County Council as highway authority and with parishes to develop a network considering the needs of everyone.

Net Zero 2030

The Council has made a commitment to work towards achieving net zero carbon emissions for the Council and its assets by 2030 (Council emissions). There is also an ambition to assist the District to become net zero by working closely with local communities (District emissions) and to improve the resilience of the District to a changing climate (climate resilience). This is collectively known as the Council's Net Zero 2030 commitment[3].

The Net Zero 2030 Action Plan includes the following actions:

- Promote low carbon travel and sustainable movement
- Work with schools, local communities and groups to encourage low carbon travel such as car clubs, travel plans, cycling and walking routes

The LCWIP is key to delivering these actions and will help residents, businesses and visitors to travel within Sevenoaks Urban Area more sustainably.

Movement Strategy

The Council's Movement Strategy 2022[4] sets out the Council's aims to promote sustainable movement within the District. Cycling and walking has been identified as a key priority for the District and it states that 'we are committed to improving the cycling and walking network in Sevenoaks District.' This includes aims to:

2 https://sevenoaksndp.files.wordpress.com/
3 https://www.sevenoaks.gov.uk/info/20069148/climate_change_-_net_zero_carbon_council/618/climate_change_-_net_zero_2030_commitment
4 https://www.sevenoaks.gov.uk/downloads/download/896/movement_strategy_2022

Figure 1.1 St John's Road, Sevenoaks

- Increase the number and improve the safety of cycling routes
- Work with partners to improve the walking routes into and through the District
- Make walking and cycling easier through improved connections and improved infrastructure

The LCWIP for Sevenoaks Urban Area is a key delivery mechanism for achieving the aims of the Movement Strategy.

Sevenoaks Cycling Strategy

The 'Sevenoaks Cycling Strategy' (2012)[1], proposed a cycle network for the entirety of Sevenoaks District. Subsquently, two route feasibility studies were produced, building upon the Cycling Strategy recommendations.

East-West Route Feasibility Study

The 2012 Sevenoaks Cycle Strategy identified an east-west route across the north of Sevenoaks that would connect six schools along a network of low-traffic streets and traffic-free green spaces. The concept for this route was further developed in a 2014 feasibility study conducted by Amey titled 'Sevenoaks Cycling Strategy Feasibility Study' (2014).

In summer 2022 KCC and SDC were successful in a £1.2 million submission from the DfT Active Travel Fund Tranche 3 for further development of the route.

Sevenoaks to Otford Feasbility Study

Strong local support for a route between Otford and Sevenoaks has been present for several years. Evidenced by a feasibility study commissioned by Kent County Council and carried out by Amey in 2017 titled, 'Sevenoaks Route 6 Strategy' (2017). A more recent survey of Otford residents supported the introduction of an active travel route to Sevenoaks. The majority of the route to the Bat and Ball junction has potential width to deliver high standard infrastructure improvements.

School Survey Data

Data from Sevenoaks primary and secondary schools has been gathered to understand the average mode type of students journeys to/from school. This data is gathered as a part of an ongoing programme through the website Jambusters and Kent CC would welcome promotion of this website so the data available can grow and provide an up-to-date picture of the traffic situation directly related to school journeys. For both primary and secondary schools, car journeys make up 27% of trips to school. Walking to school is much higher in primary school age children at 63%, than secondary school children at 25%. Improved walking infrastructure in the areas children walk to school, identified by this study's Core Walking Zones could see an increase in this number.

20mph zones study

In 2021, a petition set up by a local resident suggested a review of the speed limits on many of Sevenoaks residential streets. The petition has led to Kent County Council as Local Tranport Authority reviewing the situation and investigating the creation of a central Sevenoaks 20mph zone.

The LCWIP will explore in detail exisitng conditions for walking and cycling in the Sevenoaks Urban Area, along with a detailed list of infrastructure improvements. Below is a high-level summary of barriers and recommendations to improve active travel provision in Sevenoaks.

Existing barriers to walking and cycling

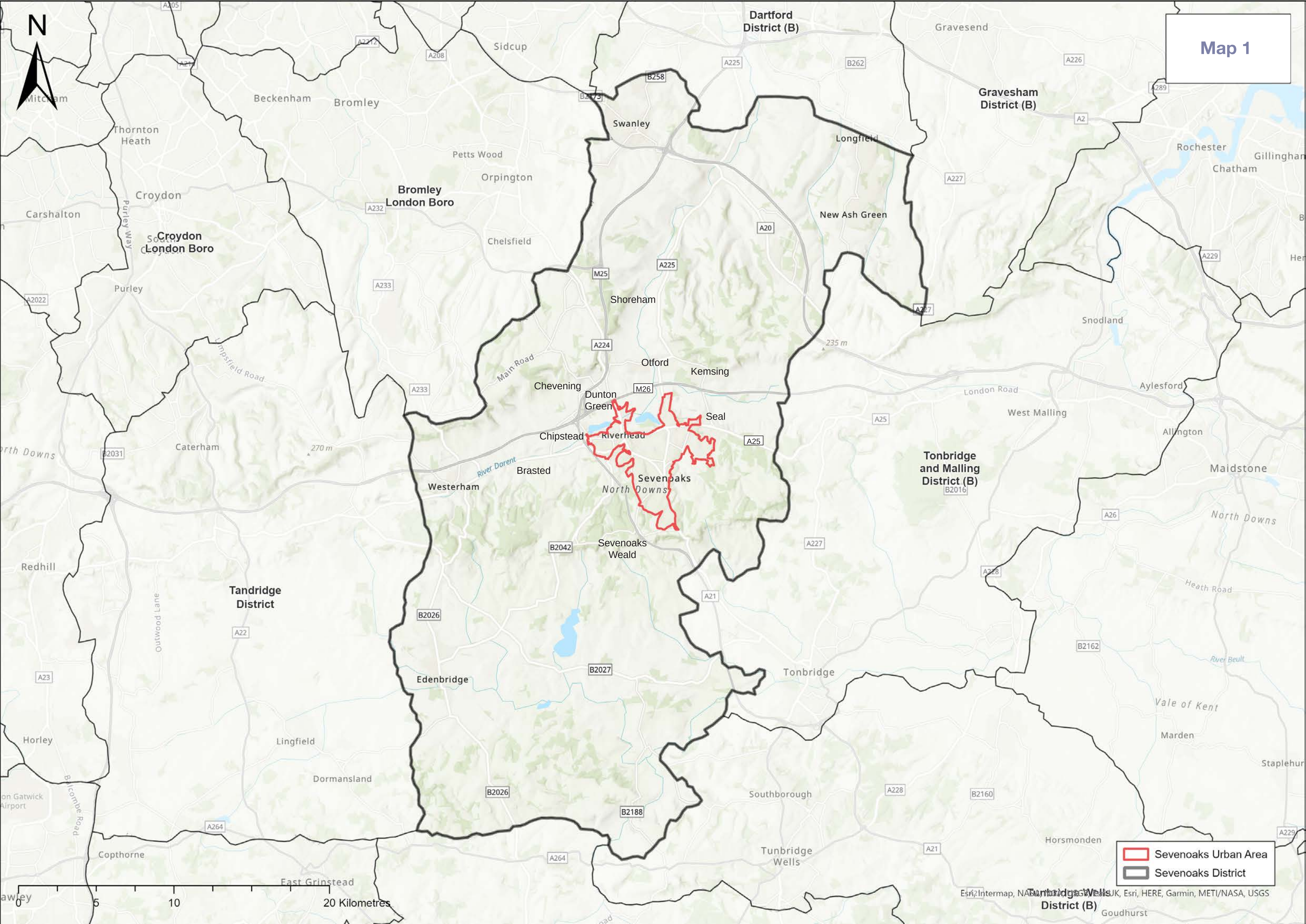
- High speed, high volume carriageways create severance. Particularly the A25, London Road, St Johns Hill
- Lack of dedicated cycle infrastructure - only one short segment of shared use path provision along Otford Road
- Narrow local roads with lack of footways or safe crossing provision
- Private roads create severance throughout the town
- Severance from South Eastern Main Line railway
- Bat and Ball junction
- Riverhead Roundabouts
- Two A roads converge in the town centre, creating a car dominated environment surrounding a very small pedestrianised zone
- Hilly topography

High-level recommendations

- Re-allocate and re-prioritise excess carriageway space to cycling, walking and wheeling
- Add dedicated cycle provision on the A25, Otford Road and London Road
- Re-design major junctions to prioritise walking, wheeling and cycling

Figure 1.2 London Road and Amherst Hill Roundabout, Riverhead

1 https://www.sevenoaks.gov.uk/directory_record/10/cycling_strategy


Map 1
N
Dartford District (B)
Gravesham District (B)
Bromley London Boro
Croydon London Boro
Tandridge District
Tonbridge and Malling District (B)
Tunbridge Wells District (B)
Sidcup
Gravesend
Beckenham
Bromley
Mitcham
Thornton Heath
Petts Wood
Orpington
Croydon
Carshalton
Chelsfield
Purley
Swanley
Longfield
New Ash Green
Rochester
Chatham
Gillingham
Shoreham
Otford
Kemsing
Chevening
Dunton Green
Seal
Chipstead
Riverhead
Brasted
Westerham
Sevenoaks
North Downs
Sevenoaks Weald
Caterham
Redhill
Snodland
Aylesford
West Malling
Allington
Maidstone
Edenbridge
Tonbridge
Horley
Lingfield
Dormansland
Copthorne
East Grinstead
Southborough
Tunbridge Wells
Marden
Horsmonden
Staplehurst
Goudhurst
Vale of Kent
River Darent
River Beult
Main Road
London Road
Heath Road
Limpsfield Road
Purley Way
Outwood Lane
Balcombe Road
270 m
235 m
M25
M26
A20
A21
A22
A23
A25
A26
A225
A224
A227
A228
A229
A232
A233
A264
B2026
B2027
B2042
B2188
B2162
B2160
B2031
B258
0
5
10
20 Kilometres
Sevenoaks Urban Area
Sevenoaks District
Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, HERE, Garmin, METI/NASA, USGS

Background Study and Methodology

2 Background

Sustrans was commissioned by Sevenoaks District Council in Spring 2022 to support the development of a Local Cycling and Walking Infrastructure Plan (LCWIP) for Sevenoaks Urban Area. The LCWIP was funded by Sevenoaks District Council and Kent County Council.

In line with government's LCWIP guidance, the scope of the work was limited to utility trips to work, education and shopping of up to 5km.

The approach was to look at opportunities to create walking and cycling networks. Existing facilities and routes were considered, along with known improvement proposals. Local stakeholders helped to identify where new routes and improvements were needed. The potential routes were then surveyed on foot and bicycle.

The adopted methodology was informed by the LCWIP Technical Guidance (2017) and Local Transport Note 1/20 (LTN 1/20). LTN 1/20 provided the principal design guidance when developing potential options for the primary cycle routes following consultation.

LCWIP Technical Guidance

Under the guidance, the key outputs of LCWIPs are:

- a network plan for walking and cycling which identifies preferred routes and core zones for further development
- a prioritised programme of infrastructure improvements for future investment
- a report which sets out the underlying analysis carried out and provides a narrative which supports the identified improvements and network

The LCWIP process has six stages:

1. Determining Scope

Establish the geographical extent of the LCWIP, and arrangements for governing and preparing the plan.

2. Gathering Information

Identify existing patterns of walking and cycling and potential new journeys. Review existing conditions and identify barriers to cycling and walking. Review related transport and land use policies and programmes.

3. Network Planning for Cycling

Identify origin and destination points and cycle flows. Convert flows into a network of routes and determine the type of improvements required.

4. Network Planning for Walking

Identify key trip generators, core walking zones and routes, audit existing provision and determine the type of improvements required.

5. Prioritising Improvements

Prioritise improvements to develop a phased programme for future investment.

5. Integration and Application

Integrate outputs into local planning and transport policies, strategies, and delivery plans.

Determining Scope

Sevenoaks District Council determined Stage 1, setting the study area boundary as the Sevenoaks Urban Area, as shown in Map 1.

Gathering Information

The following maps and supporting commentary outline the data gathering process. The maps presented build the evidence base for the identification of desire lines, which inputs directly into Stage 3, Network Planning for Cycling.

- Existing Transport Network
- Trip Attractors and Generators, Census 2011 Workplace and Population Data, Neighbourhood and Local Plan Allocated Sites
- Collisions involving pedestrians and cyclists
- Propensity to Cycle Tool Analysis

Stakeholder workshops

A series of online stakeholder workshops were held in the initial stages of developing the network plan in May 2022. Stakeholders, including members of the public, cycling groups, access groups, local schools and community representatives including District and Parish councillors. Participants were asked to identify barriers to walking and cycling and desired routes for cycling, looking for opportunities to facilitate access across barriers and create a joined-up cycling network across the Sevenoaks Urban Area. Participants also identified locations for potential core walking zones. These virtual workshops utilised ArcGIS Online and Sustrans' Online Community Mapping Tool. Maps 18 and 19 include the outputs from the stakeholder workshops. Outputs from these workshops were imported into our geographic information system (GIS) to inform and refine the desire line analysis. GIS is a system that creates, manages, analyses and maps all types of data. GIS connects data to a map, linking location data with descriptive information.

Mesh density

Following the creation of the draft cycle network, a buffer analysis was conducted to determine the potential 'mesh density' of the network. Mesh density is a term that describes how a grid of cycle networks is composed. High mesh density means that the grid of cycle routes is tighter, with more route choice, whereas low mesh density means there is less extensive route choice.

A buffer analysis involves creating a 200 metre zone around each proposed route, and assessing if their are any gaps in the coverage of the network. According to the LCWIP Technical Guidance (2017), in a joined-up urban cycle network, cyclists should typically not have to travel more than 400m to get between cycle routes of similar quality.

Desktop review

In addition, previous cycling strategies and feasibility studies were reviewed in the preparation of the LCWIP, as referenced in the Introduction.

3 Methodology

Network Planning for Cycling

There is a wealth of information to consider when planning a cycle network for Sevenoaks Urban Area, as described above. Our approach was to work through all the data, switching datasets on and off within our GIS to test the emerging network.

Origins and Destinations

The identification of demand for a planned network started by mapping the main origin and destination points across the study area.

These include the following:

- Resident Population (2011 Census)
- Workplace Population (2011 Census)
- Schools
- Shops and amenities
- Transport Hubs
- Major development sites/allocations within the adopted Local Plan

Mapping of Desire Lines

Further to the initial mapping exercise, the origin and destination points within close proximity to each other have been clustered to simplify the analysis.

Once the key clusters were identified, direct desire lines were drawn connecting the clusters to identify the principal links to be provided by the cycle network. The outputs of this exercise are illustrated on Map 4.

Propensity to Cycle Tool (PCT)

In addition to the clustering exercise, the PCT has been used to identify which routes within the study area have the greatest potential for an increase in the number of commuters cycling to work and the number of children cycling to school.

Route Identification

The desire lines identified by the above analysis were mapped to the existing highway network, and in some places the existing public rights of way (PRoW) network. In this way, the network seeks to connect the key origins and destinations within the study area, including centres of population, employment locations, schools, leisure destinations and various amenities such as shops and health services.

Converting these desire lines into routes was an iterative process. In some cases, particularly in rural locations, there is a clear preferred cycle route which is usually the most direct. However, in some cases there may be more than one potential route between origin and destination points or a reason why the most direct route would be less suitable for cycling.

At this stage, the network was mapped out based on the data analysis undertaken above and with reference to the Propensity to Cycle Tool (PCT) which shows which routes have the highest potential for an increase in cycling under various scenarios for change, and with reference to the outputs from the stakeholder workshops and collision data involving cyclists.

Primary and Secondary Routes

Once the network plan was complete, the network was split into primary and secondary routes.

The primary routes are judged to be the most popular and strategic routes, linking residential areas with the key trip generators. They form the main spine of the network to which the other routes will connect. Primary routes were selected based on routes that were expected to have high flows of cyclists along desire lines linking large residential areas or new development sites to the town centre of Sevenoaks as well as key links to adjoining outlier residential areas such as Otford. Primary routes were also selected based on their popularity at the workshops. These routes were then agreed with SDC and KCC.

Secondary routes can be locally important but are less strategic as they fill the gaps in the primary network. Some sections of secondary routes may have higher flows than parts of the primary routes, so the distinction between primary and secondary should not necessarily form the basis of investment priorities. Secondary routes also play a key role in directly connecting residential developments and schools to primary routes.

The proposed network was visually tested against the Propensity to Cycle Tool data and the outputs of the stakeholder workshops. There is a high degree of correlation between the networks. Major employment sites and secondary schools are served by the proposed network. The proposed network also serves the main shopping areas, hospital, leisure and sports centres and development sites.

Once preferred primary routes were identified, they were assessed against the five core design outcomes for cycling: coherent, direct, safe, comfortable and attractive. An audit was then undertaken of the eight primary routes to identify what measures were required to improve them to meet the core design outcomes.

In instances where there was more than one viable option for a route section, each option was audited. Each option was assessed on its own merits and with reference to the criteria set out within the DfT's Route Selection Tool (RST) with a preferred option being agreed following a discussion with SDC and KCC.

Auditing the Cycle Routes

The cycle routes were audited in person and the potential options have been devised with reference to the guidance set out within LTN 1/20 wherever possible. Notwithstanding, there are some locations where an LTN 1/20 solution may not be achievable due to a number of factors such as width constraints and gradient.

Network Planning for Walking

There is not an equivalent dataset to the Propensity to Cycle Tool for walking, so there is no detailed mapping exercise as part of the background study. Walking Zones were selected based on walking trip attractors, to reflect the shorter distances that people are likely to walk.

The DfT's LCWIP guidance suggests that Core Walking Zones (CWZ) normally consist of a number of walking trip generators that are located close together - such as a town centre or business parks.

Sevenoaks Town Centre, Bat and Ball junction and Riverhead were selected as the three Core Walking Zones. These three locations were the most popular suggestions from the initial stakeholder workshops, as shown in Map 18.

Improvements to the Town Centre wayfinding are currently being undertaken by Sevenoaks Town Council.

An approximate five minute walking distance of 400m can be used as a guide to the minimum extents of CWZs. Within CWZs, all of the pedestrian infrastructure should be deemed as important.

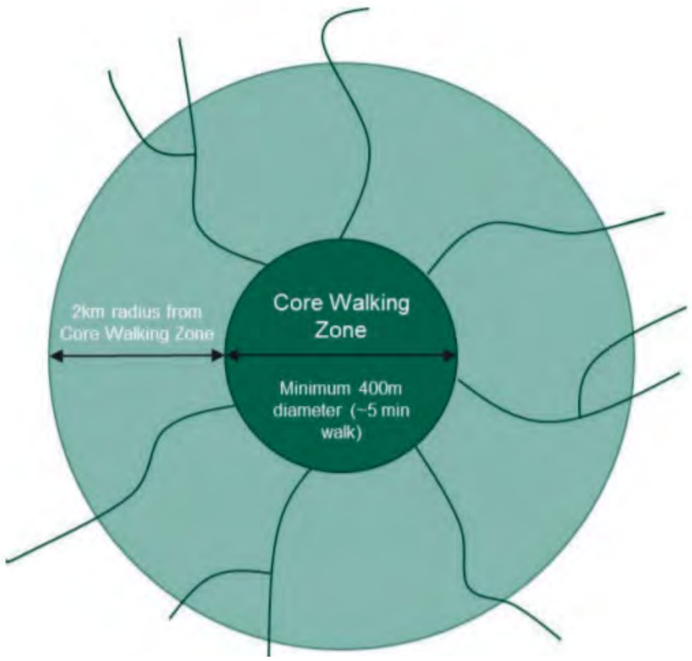


Figure 3.1 LCWIP Technical Guidance Figure 11, Core Walking Zones

Figure 3.1 has been extracted from the DfT's LCWIP guidance and illustrates how the Core Walking Zone should relate to walking routes.

Whilst this study has focussed on the CWZs, improvements on some of the key routes within close proximity to the CWZs have also been considered, such as the connections between the centres and their respective railway stations.

Auditing the CWZs

The Core Walking Zones were been considered using the categories from the Walking Route Audit Tool (WRAT) and the Healthy Streets Design Check (HSDC) tool.

The WRAT and HSDC are government supported tools for assessing walking and public realm environments.

The WRAT has not been used to calculate the existing condition of the Core Walking Zone as the calculations relate to auditing a route rather than a zone. As such, the categories from that and the Healthy Streets Check have been used instead, to provide an assessment. Additional information on the Healthy Streets Design Check can be found in the Design Principles section.

The core principles for consideration in the WRAT are:

- attractiveness
- comfort
- directness
- safety
- coherence

The core principles for consideration in the Healthy Streets Design Check are:

- Everyone feels welcome
- Easy to cross
- Shade and shelter
- Places to stop and rest
- Not too noisy
- People choose to walk and cycle
- People feel safe
- Things to see and do
- People feel relaxed
- Clean Air

Figure 3.2 Healthy Streets Indicators

Door to door journeys

In addition to planning for local trips on foot and by bike, it is important to ensure that longer distance journeys are made as easy as possible by integrating walking and cycling networks with public transport interchanges.

The concept of the "door-to-door" journey was introduced by the Campaign for Better Transport in 2011, leading to the publication of a Government door to door strategy in 2013. The emphasis is on access to public transport interchanges at both ends of the journey – perhaps walking or cycling from home to the train station, then picking up a hire bike to the final destination.

The government strategy focuses on four areas:

- accurate, accessible and reliable information about the different transport options for their journeys;
- convenient and affordable tickets, for an entire journey;
- regular and straightforward connections at all stages of the journey and between different modes of transport; and
- safe, comfortable transport facilities.

As most public transport journeys involve a mode change, interchange between these is very important. Users do not want to have to go out of their way to access the next mode. Signing also needs to be clear, passengers often have short connection times so need reassurance they will be able to locate their next connection within their time frame. Larger interchanges, such as train station to bus station, should also have facilities appropriate to usage. If there is shelter from the elements, a safe place to wait and possibly additional facilities, such as a coffee shop, then wait times can seem shorter than they actually are. It is also very useful to provide real-time information at interchanges.

Where users are not taking a motorised form of transport to access or exit their next mode of transport then interchange is still as important. Cycling facilities need to be safe and secure and in an accessible place for changing modes quickly. This is the same for bike hire facilities. Walking and cycling routes need to be well signed giving distances and potentially times for key destinations.

Provision for taxis, good pedestrian access and,where appropriate car parking, also need to be made.

The following pages step through various layers of data that were used to build the cycle network and walking zones.

Map 2

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Existing Transport Network- Sevenoaks Urban Area

The South Eastern Main Line railway connects Sevenoaks to London Charing Cross and Blackfriars with frequent services. Bat & Ball Station includes branch line services via Swanley. Dunton Green also provides rail connections to London. North of the Urban Area boundary is Otford railway station, with services to London Victoria.

In addition to the severance created by the railway lines, the A roads within the town are major barriers to walking and cycling. The A25 runs east-west, severing the northern and southern parts of the area. It carries very high traffic volumes, including very high HGV volumes, which may be used as an alternative route to the M25/ M26. The A225 and London Rd run north-south through the town and converge on the town centre, an area with high levels of traffic congestion as well as high levels of pedestrian activity.

There is very limited segregated cycle provision in Sevenoaks, with only a short segment of shared use path in the northeast near Riverside Retail Park.

0 0.75 1.5 3 Kilometres

- Railway Station
- Railway Track
- Railway Tunnel
- Shared Use Path
- Byway open to all traffic
- Public Bridleway
- Public Footpath
- Restricted Byway
- Sevenoaks Urban Area

Map 3

Trip Attractors and Generators

Sevenoaks town centre is the main shopping and employment hub for the area. The northern part of the Sevenoaks Urban Area is the most densely populated.

Sevenoaks has a very high concentration of schools, generating a significant amount of travel demand. Whilst some schools serve students in the local area, others draw in students from the wider region.

Whilst not directly in the study area, Knole Park and the Sevenoaks Wildlife Reserve are very popular leisure destinations in Sevenoaks.

Schools

- Primary
- Secondary
- Independent

Public Amenities

- Hospital
- Leisure Or Sports Centre
- Railway Station

2011 Census - Workplace Population

Jobs Per Hectare

- 50 - 99
- 100 - 200
- 200+

2011 Census - Usual Resident Population

Persons Per Hectare

- 30 - 39
- 40 - 50
- Sevenoaks Urban Area

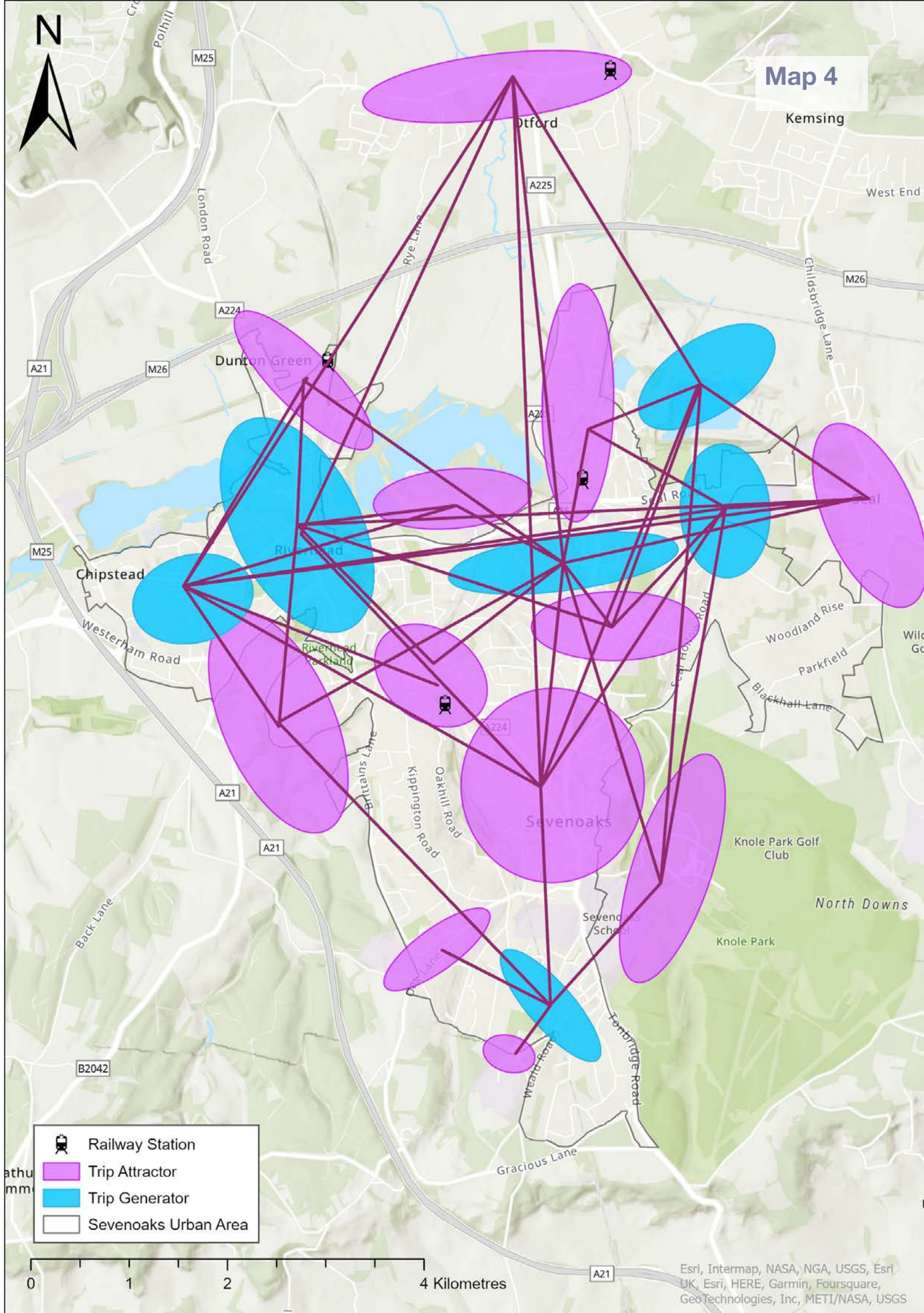
Trip Attractors and Generators Clustering

Clustering key trip generators and attractors reveals a strong east-west desire line throughout the town, as well as north-south links from the town centre to Otford and Dunton Green. The highest population density is along the south side of the A25 corridor, linking to the town centre and schools.

This high-level clustering exercise supports the Propensity to Cycle Tool data to help create a picture of the most popular desire lines for travel in the study area. This exercise underpins the development of the primary cycle route network, along with stakeholder feedback from a series of community workshops.

Figure 3.3 Knole Park

Figure 3.4 The Stag Theatre, Sevenoaks Town Centre



Adopted Allocations

Areas highlighted in pink are allocated sites adopted in the Allocations and Development Management Plan (ADMP) 2015, for both commercial and residential development. The development of the cycle route network considered the adopted allocations as part of the trip generator and attractor analysis.

Air Quality Management Areas

Due to high traffic volumes and congestion, several major roads in the area are designated as Air Quality Management Areas (AQMAs). London Road through Dunton Green and Riverhead, the entirety of the A25 through the area, and the entire town centre are AQMAs. This indicates that there is a huge opportunity for active travel to help reduce traffic volumes and improve air quality by shifting to walking and cycling.

The Air Quality Action Plan

The Air Quality Action Plan was adopted by Sevenoaks Council in Spring 2022. The main cause of poor air quality in the District is combustion engines. The Action Plan identifies cycling and walking as important ways to improve air quality in the District. It includes the following measures:

- Development of new walking and cycle routes
- District wide promotion of active travel

Two of the District's Air Quality Management Areas lie within Sevenoaks Urban Area, some areas have seen reductions in poor Air Quality indicators since 2016, demonstrating an overall improvement.

The LCWIP plays an important role in delivering the actions of the Air Quality Action Plan and helping to improve air quality.

Figure 3.5 Congestion at the Dartford Road/A225/Seal Hollow Road junction, within the AQMA

Topography

The hilly topography of the Sevenoaks Urban Area presents both challenges and opportunities for walking and cycling. Steep gradients from north to south into Sevenoaks Town Centre, from the more densely populated areas in northern Sevenoaks as well as the steep hill from Sevenoaks railway station to the town centre are major barriers to active travel. The A25 and parallel routes across Sevenoaks are relatively flat.

Identifying relatively flat routes with lower vehicle traffic, along with traffic-free routes is explored in this LCWIP. The growth in e-bikes and their ability to reduce the challenge of hills opens up the possibility for more of the area to be accessible by cycle.

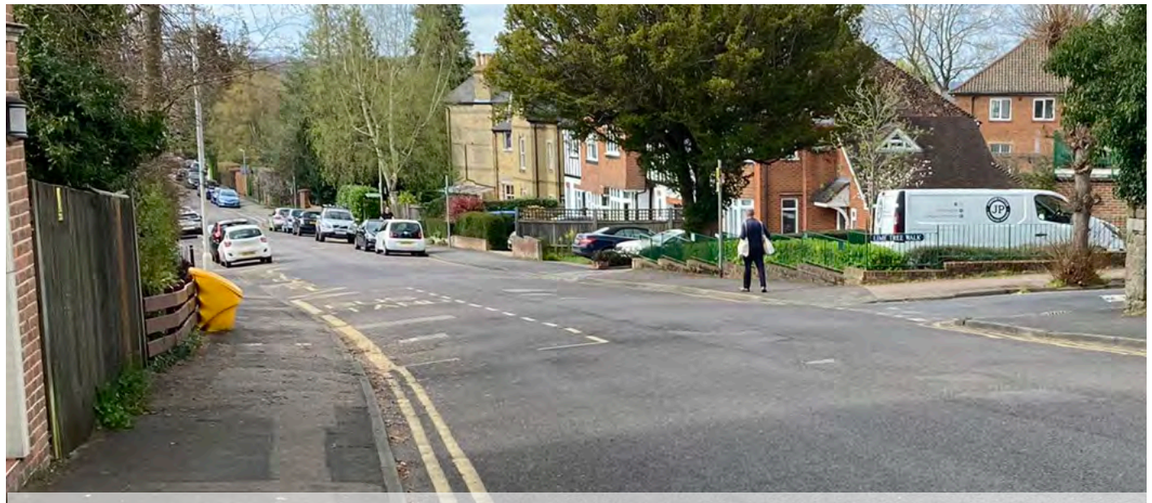
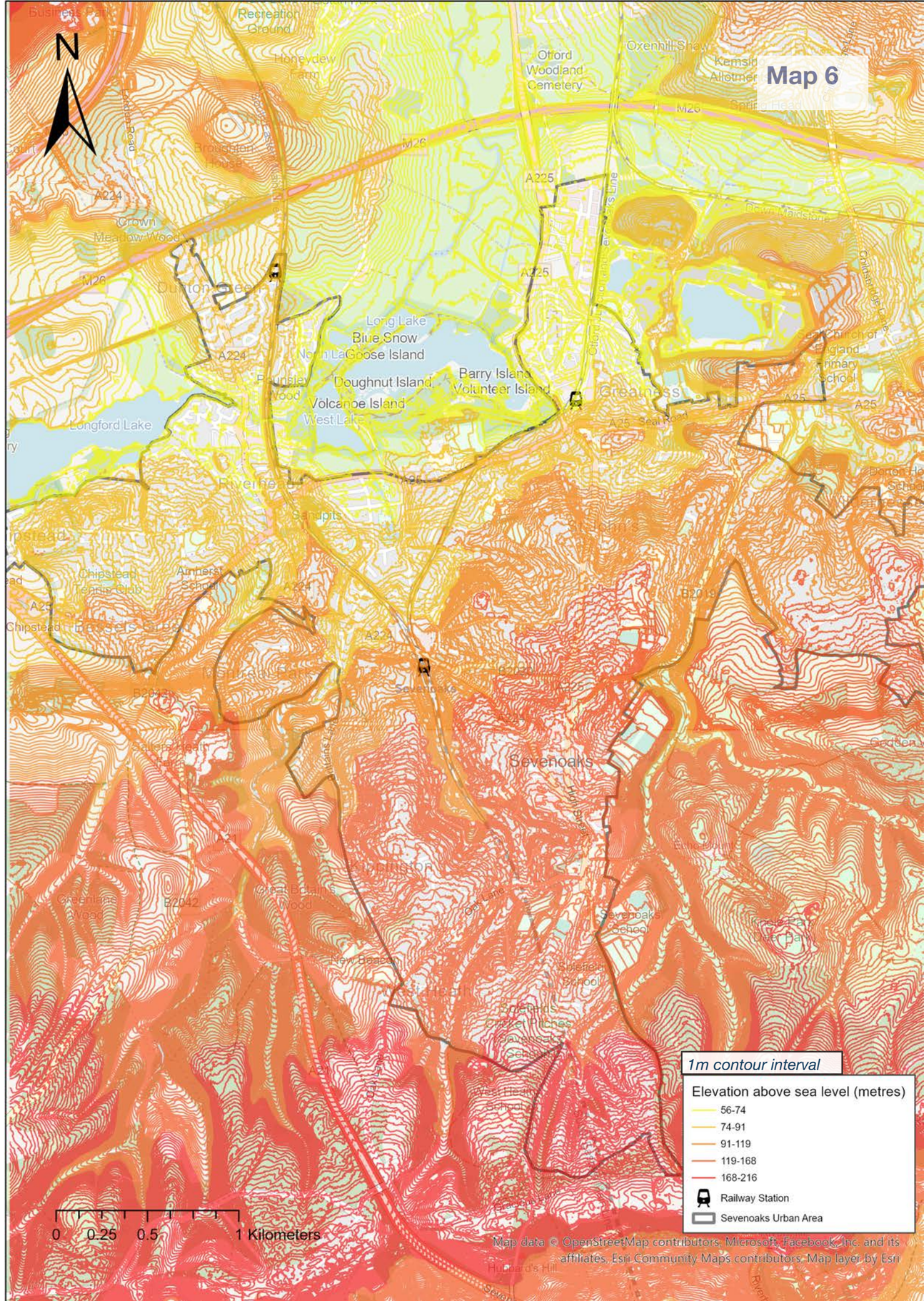


Figure 3.6 Granville Road/South Park Road



Propensity to Cycle Tool Analysis

The Propensity to Cycle (PCT) is an open-source transport planning system, part funded by the Department for Transport. It was designed to assist transport planners and policy makers to prioritise investments and interventions to promote cycling. More information is available from the PCT website: https://www.pct.bike/m/?r=kent. The aim of the PCT is to inform planning and investment decisions for cycling infrastructure by showing the existing and potential distribution of commuter and school cycle trips and therefore inform which investment locations could represent best value for money. PCT uses two key inputs:

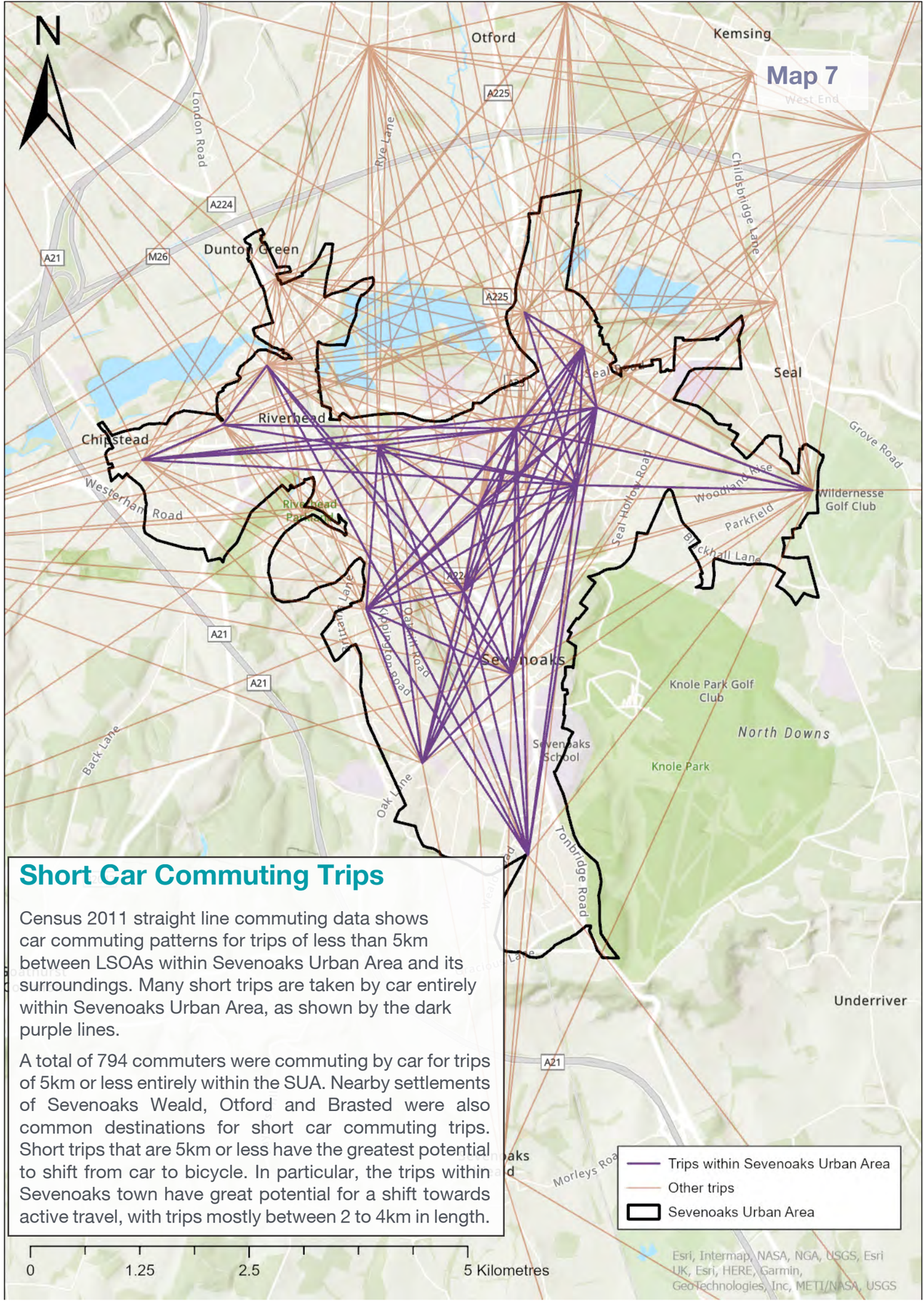
- Census 2011 Origin and Destination commuting data and school data (O-D data)
- Cycle Streets routing

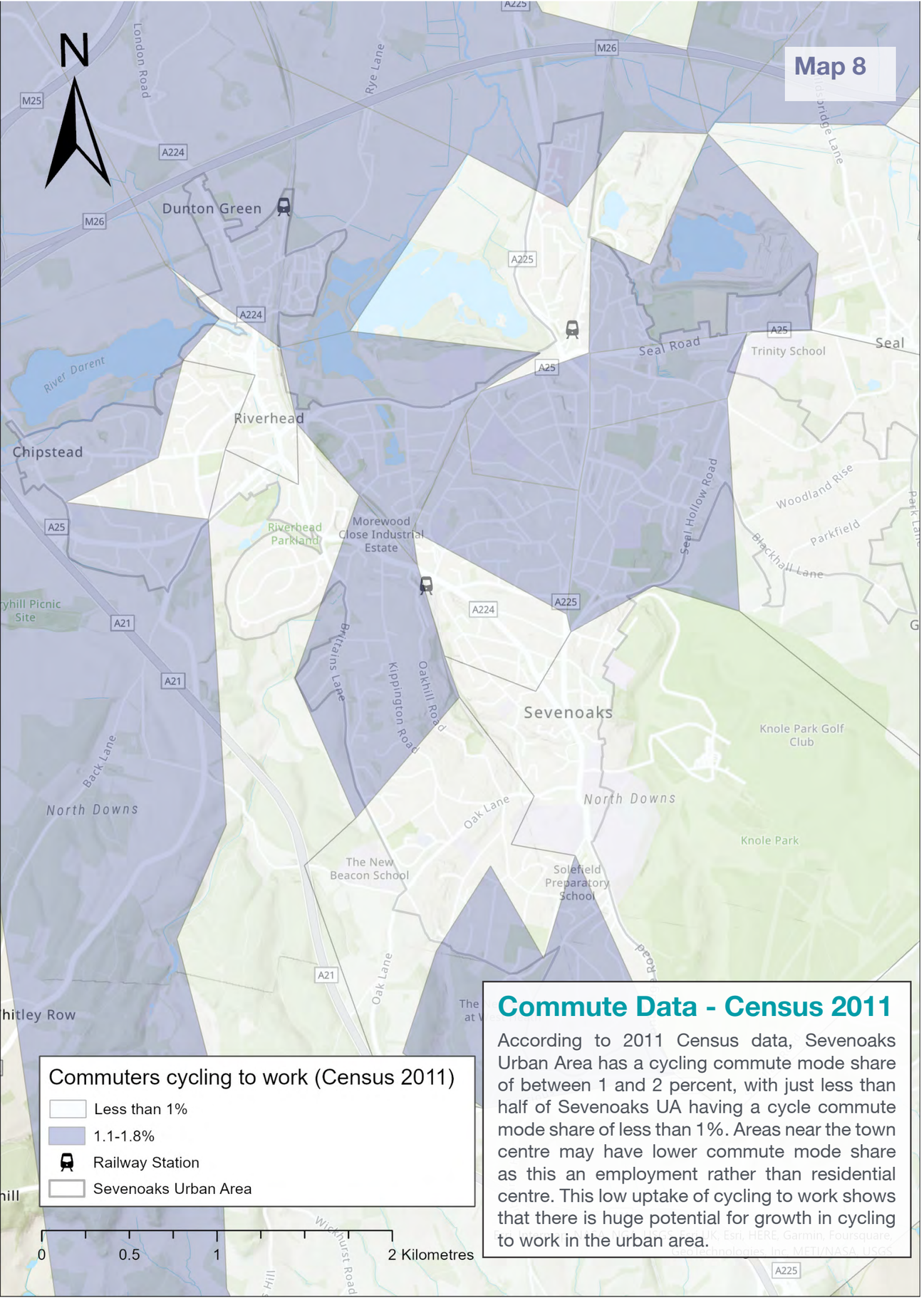
The model estimates cycling potential adjusted for journey distance and hilliness as well as predicting the likely distribution of those trips using the Cycle Streets routing application (https://www.cyclestreets.net/). The model can be applied to consider different scenarios such as: Gender Equality, where women cycle as frequently as men; Go Dutch, if cycling levels were the same as in the Netherlands; Government Target, where cycling levels meet the target for current government's aim for cycling; and E-bike. The E-bike scenario is an extension of the GoDutch modelling scenario. It models the additional increase in cycling that would be achieved through the widespread uptake of electric cycles ('e-bikes') if commuters were as likely to cycle a given trip as Dutch commuters.

The following scenarios are presented:

- Commute short car trips (under 5km) based on Census 2011 data
- Commute and School travel data by zones based on the Census 2011, Go Dutch Scenarios and E-bike scenarios
- Commute and School route data based on the Go Dutch and E-bike scenarios (Census 2011 data shows negligible cycling to school in Sevenoaks Urban Area)

Note: All data is modelled based on Census 2011 data, which is now 11 years out of date. However, comparable Census 2021 is not yet available.





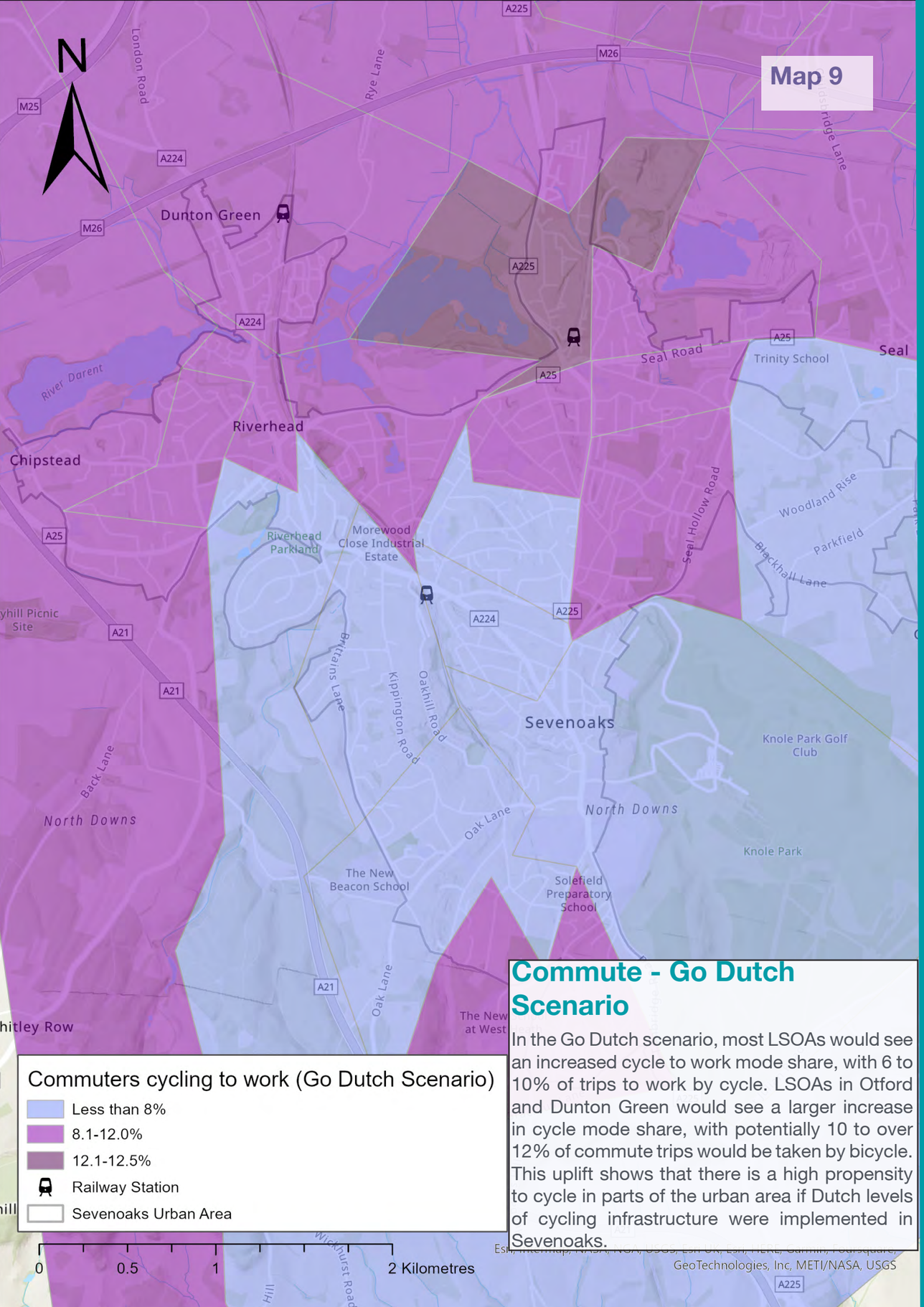
Commute Data - Census 2011

According to 2011 Census data, Sevenoaks Urban Area has a cycling commute mode share of between 1 and 2 percent, with just less than half of Sevenoaks UA having a cycle commute mode share of less than 1%. Areas near the town centre may have lower commute mode share as this an employment rather than residential centre. This low uptake of cycling to work shows that there is huge potential for growth in cycling to work in the urban area.

Figure 3.8 Entrance to Bligh's Meadow car park, Sevenoaks Town Centre

Figure 3.7 Cycling on St Johns Hill

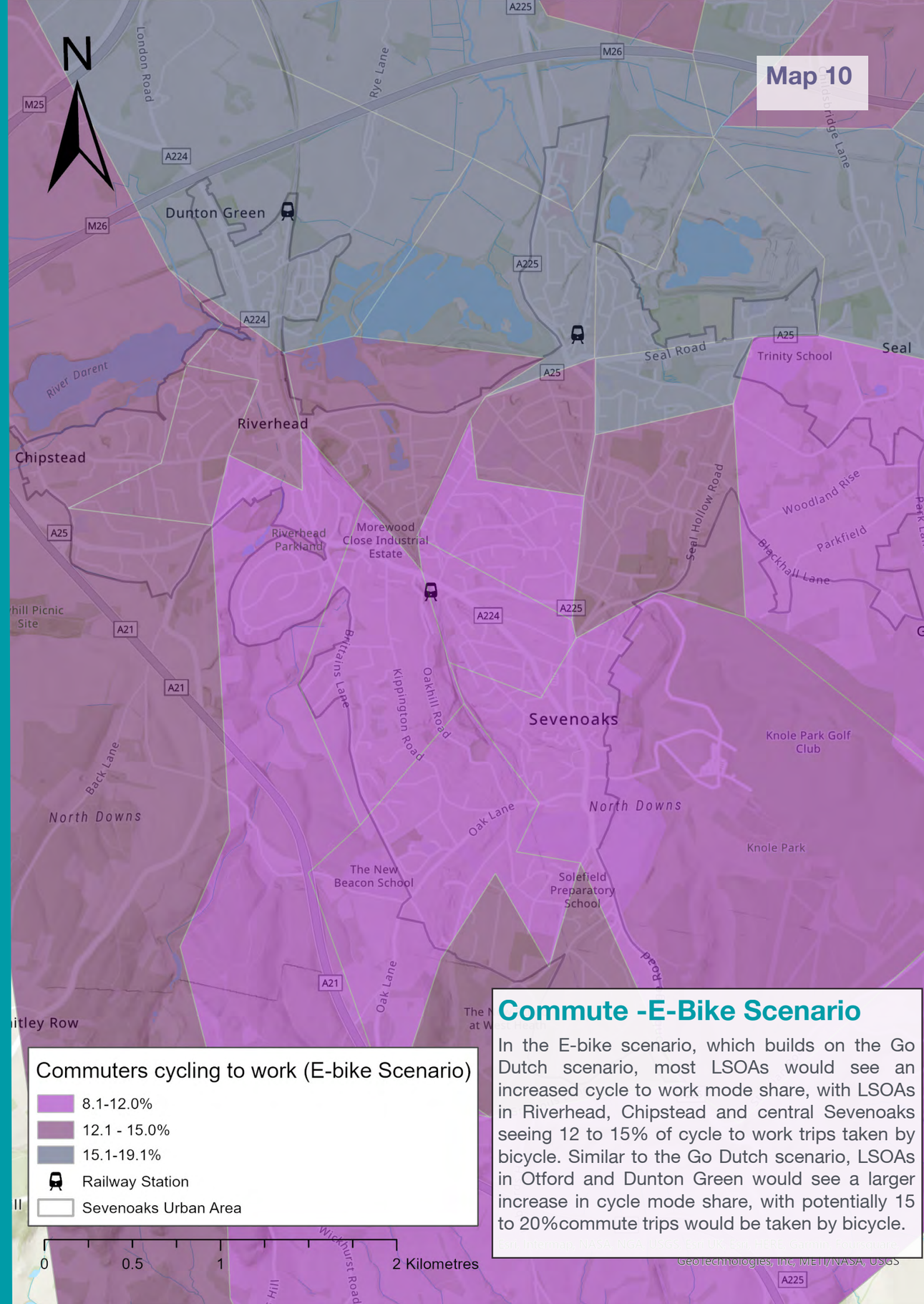
Map 9



Commute - Go Dutch Scenario

In the Go Dutch scenario, most LSOAs would see an increased cycle to work mode share, with 6 to 10% of trips to work by cycle. LSOAs in Otford and Dunton Green would see a larger increase in cycle mode share, with potentially 10 to over 12% of commute trips would be taken by bicycle. This uplift shows that there is a high propensity to cycle in parts of the urban area if Dutch levels of cycling infrastructure were implemented in Sevenoaks.

Map 10



Commute -E-Bike Scenario

In the E-bike scenario, which builds on the Go Dutch scenario, most LSOAs would see an increased cycle to work mode share, with LSOAs in Riverhead, Chipstead and central Sevenoaks seeing 12 to 15% of cycle to work trips taken by bicycle. Similar to the Go Dutch scenario, LSOAs in Otford and Dunton Green would see a larger increase in cycle mode share, with potentially 15 to 20%commute trips would be taken by bicycle.

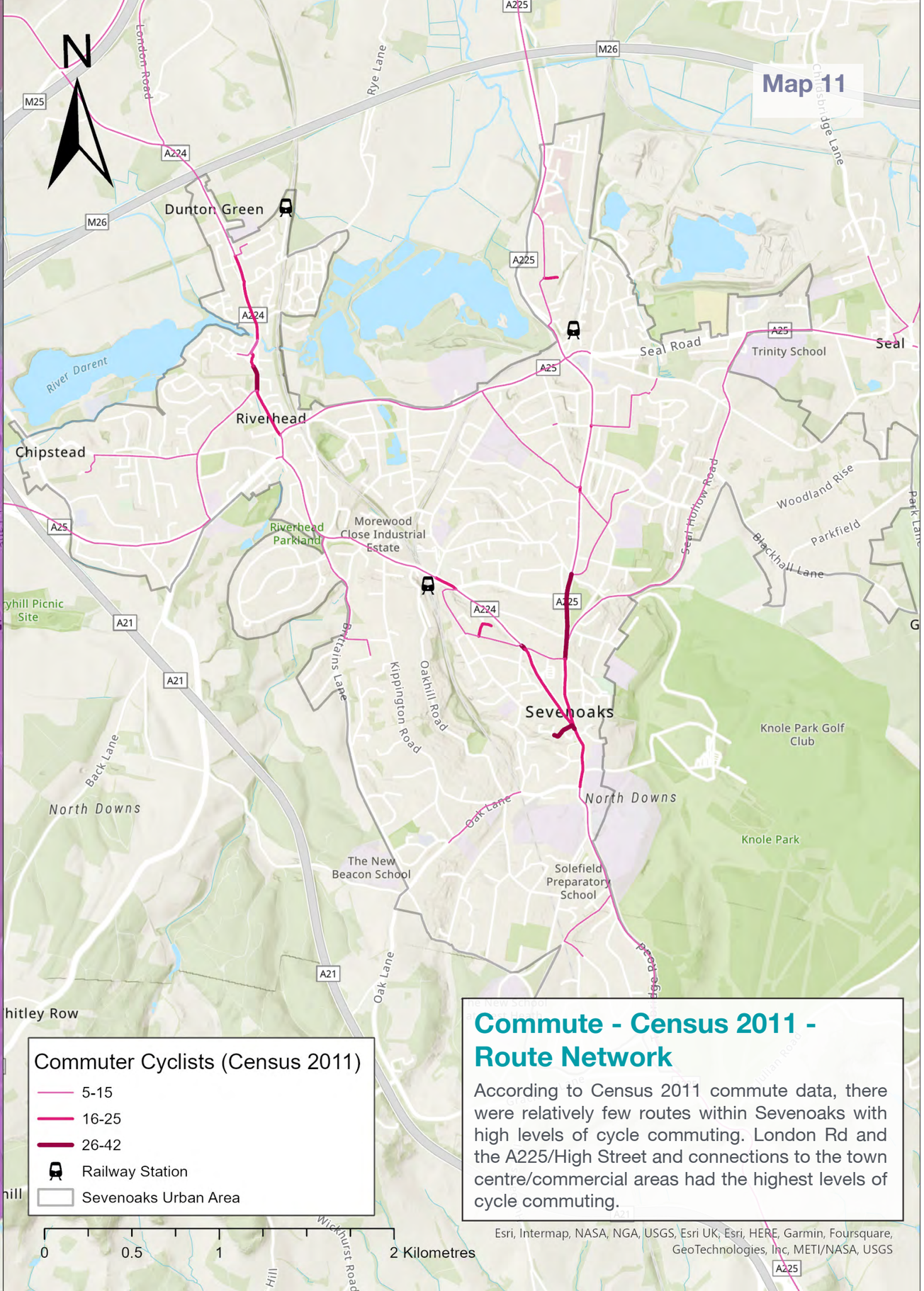


Figure 3.9 Cycling in Sevenoaks Town Centre

Figure 3.10 Exisitng conditions on the A25

Map 12

Commute - Go Dutch - Route Network

In the GoDutch Scenario, there would be a substantial uplift in cycling, with the most popular routes in the Census 2011 Scenario seeing more than five times the number of potential commuter cyclists, particularly along the A225/High Street from the town centre all the way northwards to the Bat and Ball railway station. The A25 east/ west between Riverhead and Bat and Ball station also comes forward as a route with potential for huge uplift in commuter cycling.

Commuter Cyclists (Go Dutch Scenario)

- Less than 50
- 51-100
- 101-150
- 151-200
- 200+
- Sevenoaks Urban Area

0 0.75 1.5 3 Kilometres

Map 13

Commute -E-Bike - Route Network

E-bike provision combined with Dutch style cycling infrastructure and cycle propensity would lead to an uplift in cycling on a variety of routes throughout Sevenoaks Urban Area. Most routes from the Census 2011 scenario seeing more than eight times the number of commuter cyclists The highest existing network use is in Sevenoaks Town Centre and north along the A225 to Hitchen Hatch Lane, with 26 of commuter cyclists, in the E-bike scenario, this segment is projected to have 307 commuters.

Routes with the highest cycling potential include the A225 - Bat and Ball Station through Sevenoaks Town Centre, London Road - Dunton Green through Sevenoaks Town Centre and the A25 - between Riverhead and Seal.

Commuter Cyclists (E-bike scenario)

- Less than 50
- 51-100
- 101-150
- 151-200
- 200+
- Sevenoaks Urban Area

0 1 2 4 Kilometres

Map 14

Schools - Go Dutch Scenario

Most LSOAs would see an increase the number of students cycling to school, with the greatest projected increase in Chipstead, Dunton Green, Riverhead and Otford. This uplift shows that there is a high propensity to cycle to school, particularly in the north of the urban area if Dutch levels of cycling infrastructure were implemented.

Railway Station

Increase in school cyclists (Go Dutch Scenario)

- 6-20
- 21-40
- 40-82
- Sevenoaks Urban Area

0 0.75 1.5 3 Kilometres

Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Map 15

Schools - Go Dutch Route Network

The Go Dutch Route Network scenario shows the greatest projected increase in school cycling along the A25 corridor and the A224 London Road Corridor. This strong uplift along this east-west corridor indicates an unmet demand for cycle facilities that link schools across the northern part of the urban area.

School

Number of School Cyclists

- 0-50
- 51-100
- 101-150
- 150+
- Sevenoaks Urban Area

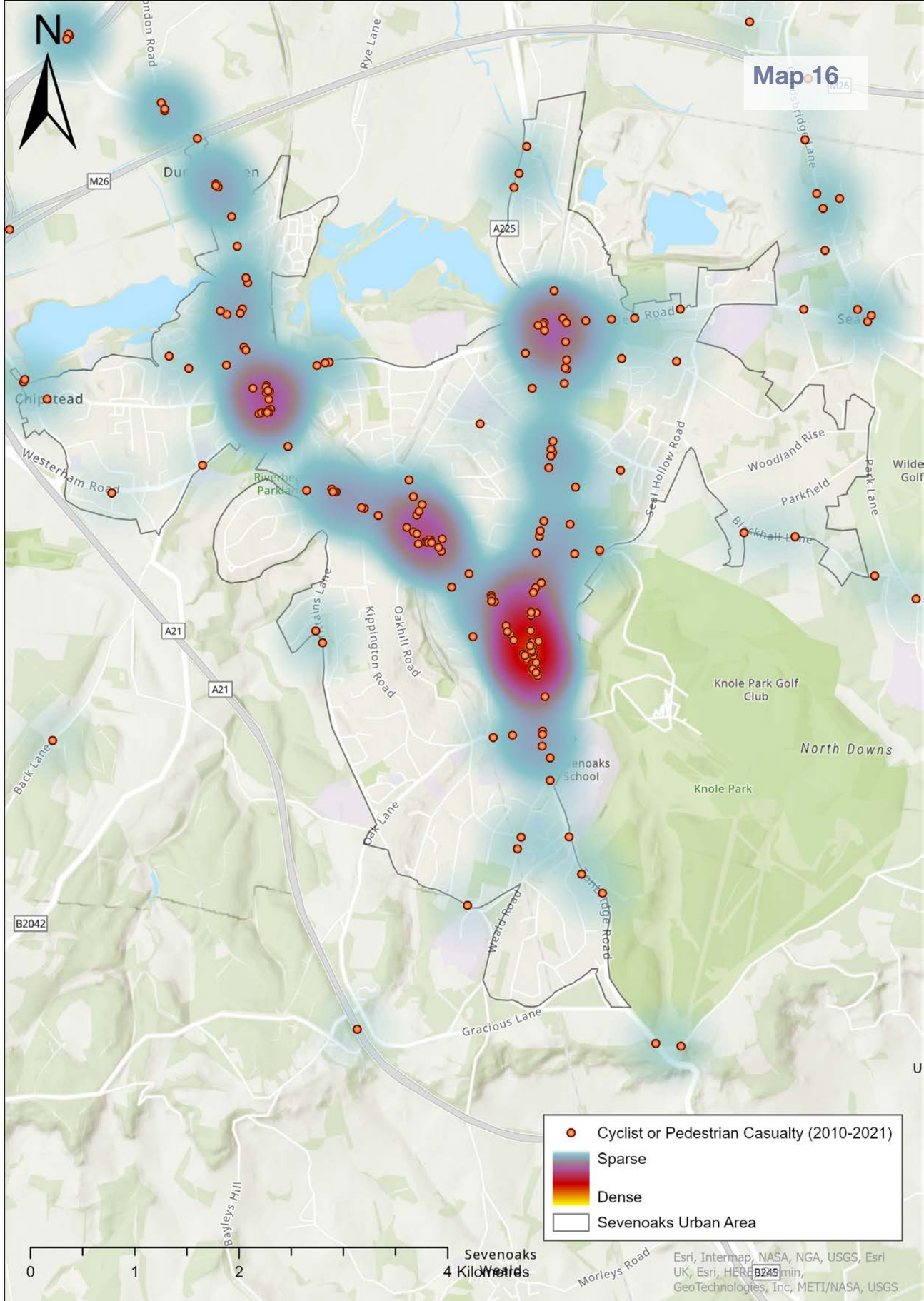
0 1 2 4 Kilometres

Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, HERE, Garmin, GeoTechnologies, Inc, METI/NASA, USGS

Collisions involving cyclists and pedestrians

Map 17 shows collisions with a cyclist or pedestrian casualty from 2010 to 2021 in the study area. Crash hotspots are shown in red. Collisions within Sevenoaks were concentrated near the railway station, within the centre of town and on the Bat and Ball junction. The A225 High Street section through Sevenoaks is probably the most significant collision hotspot and so this zone would benefit from a redesign of this space. There is also a high collision area focused at Bat and Ball, this may be due to the limiting walking provision provided for users attempting to cross this junction.

Figure 3.12 Bat and Ball junction, a collision hot spot



Stakeholder and Community Engagement

Summary of Workshops

A series of stakeholder workshops in May 2022 gathered feedback from councillors and the public on barriers to walking and cycling.

Participants shared ideas for potential cycle routes and walking zones in Sevenoaks Urban Area. Barriers to walking and cycling throughout the area were also identified. Residents also submitted feedback via Sustrans' interactive Community Mapping Tool.

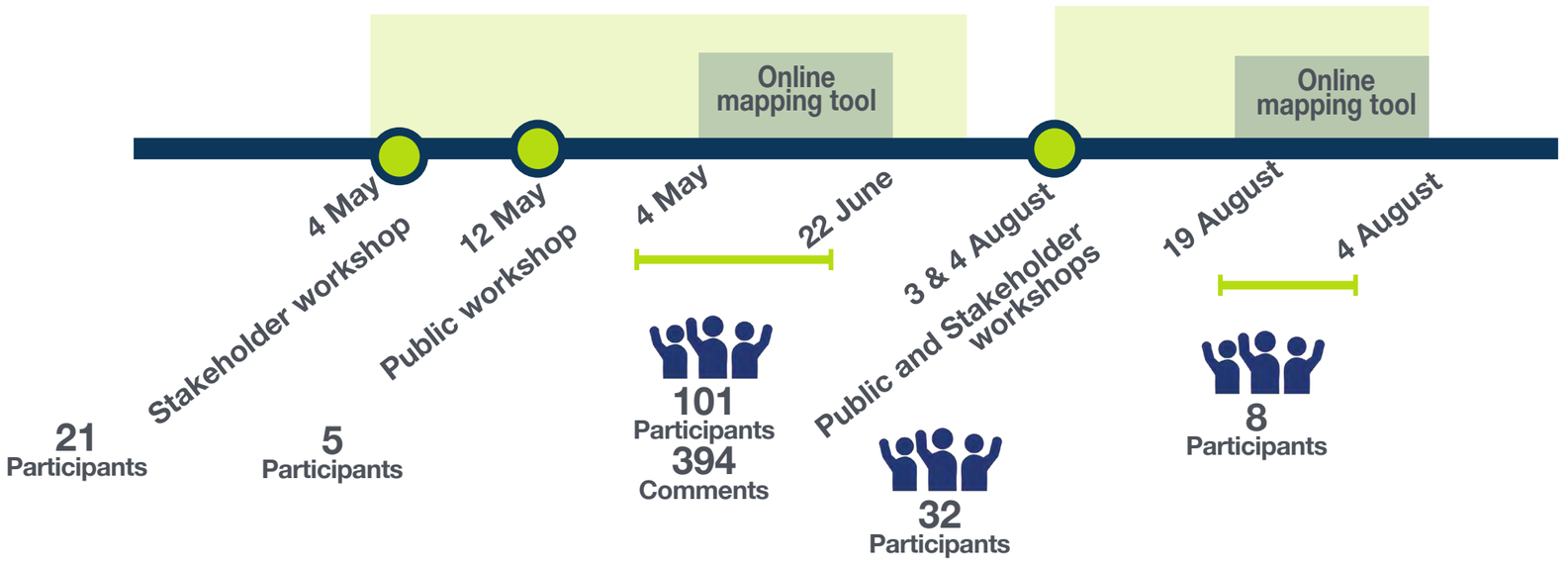
A list of stakeholder groups that attended the workshops is in Appendix 1.

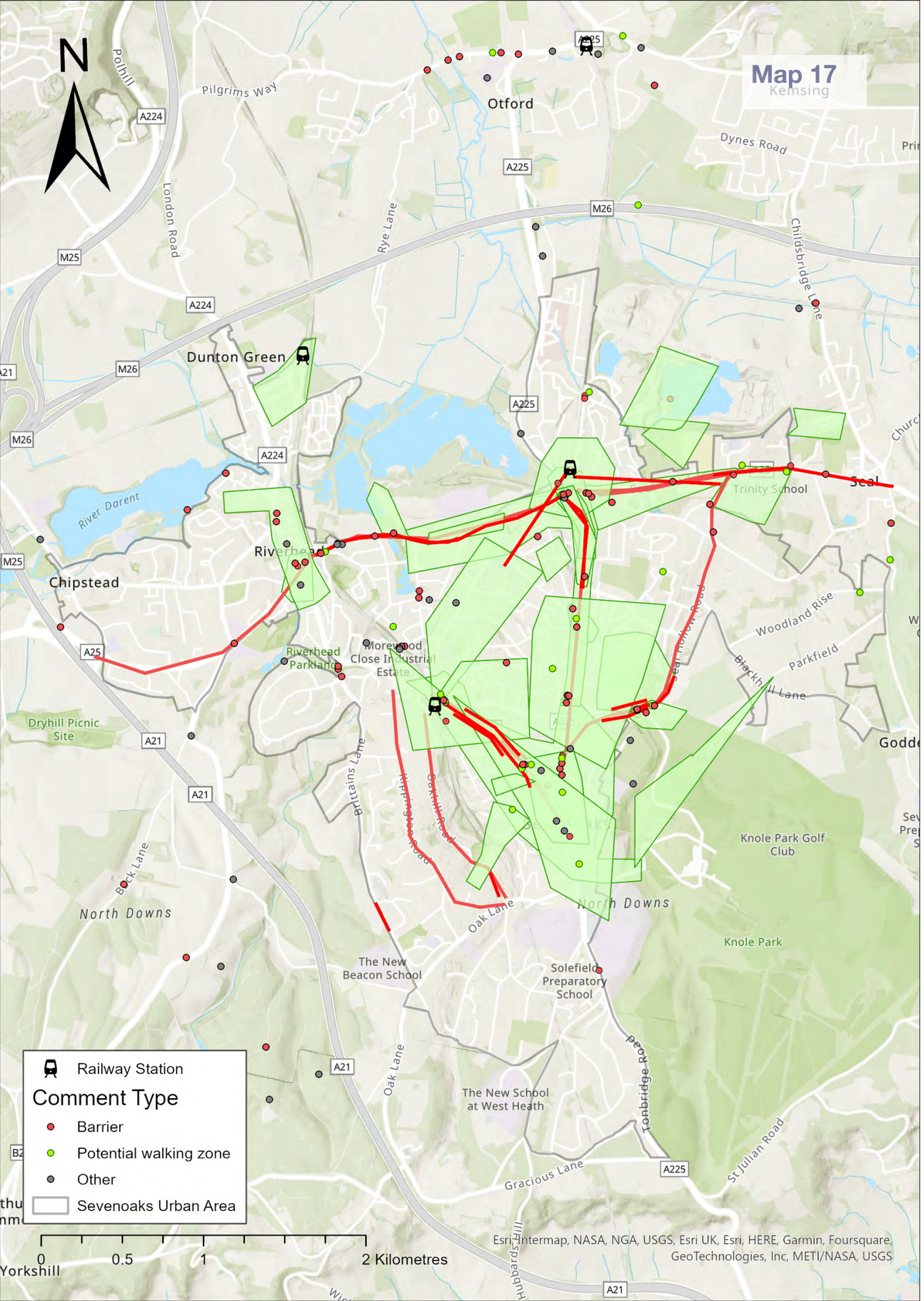
A second series of workshops was held in August 2022 to review the draft cycle network and core walking zones. Participants were able to review potential alignments and alternatives for each of the eight primary routes. Stakeholder comments helped to refine the route alignments. Participants were also asked to rank the proposed routes by relative priority for implementation, this data was fed into the prioritisation exercise as part of the final stage of the LCWIP.

Sustrans' Community Mapping Tool

The Community Mapping Tool, is a browser based interactive map, which allowed users to annotate a map of Sevenoaks Urban Area with lines and points, plus a feature to provide comments. If other users agree with a comment they could 'like' it to add more weighting and priority to whatever was suggested.

Key information gathered related to either walking, cycling or barriers to active travel overall, such as steep gradients.





Stakeholder Workshops and Community Mapping Tool Feedback - May - June 2022

Approximately 125 people provided their feedback on barriers and opportunities for walking and cycling in Sevenoaks Urban Area. Map 18 is a combination of feedback received from the two stakeholder workshops in May 2022 as well as the comments received via Sustrans' Community Mapping Tool.

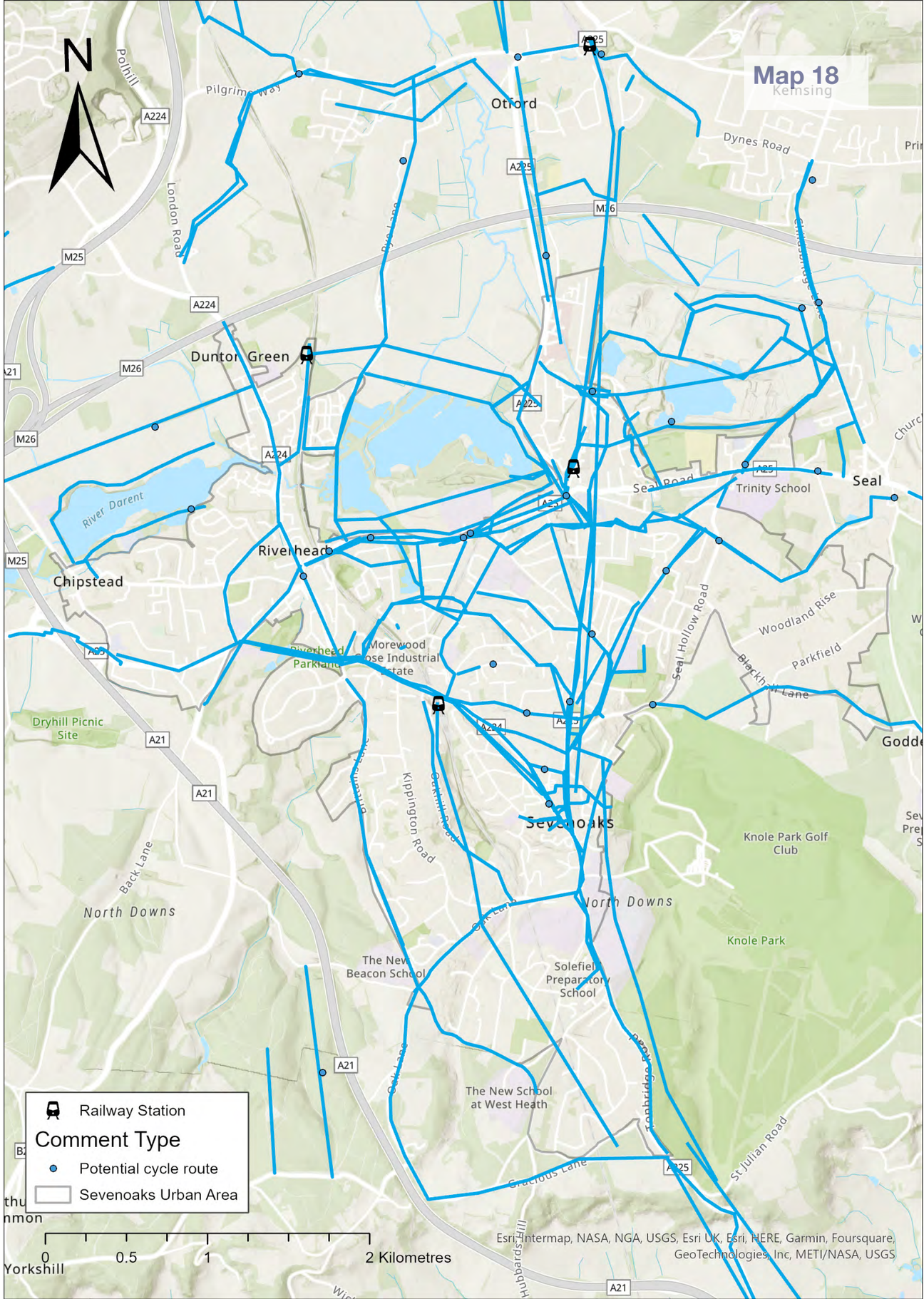
Red dots and lines indicate barriers to active travel in the town. The A25 and the steep gradient between Sevenoaks railway station and the town centre were commonly identified barriers. Clusters of point barriers at Bat and Ball junction and on the A25 in Riverhead were comments that identified these places as challenging areas for walking safely in the town.

Green polygons show proposed Core Walking Zones, or simply areas of high pedestrian activity. Much of the town is highlighted in green, showing that walking is popular within the town centre and along the A225/St Johns Hill corridor. These suggestions were fed into the identification process for the three Core Walking Zones.

Suggested Cycle Routes - May - June 2022

Community feedback was integral to the development of the proposed cycle network. A wealth of suggestions were provided for potential cycle routes throughout the urban area. Map 19 shows cycle routes suggested at the stakeholder and public workshops as well as from the Community Mapping Tool. In general, route suggestions were clustered in the northern part of Sevenoaks Town, with the A25 corridor and the Otford to Sevenoaks routes receiving the most suggestions. There is also a clear desire line for a route from Riverhead and Chipstead to Sevenoaks Railway Station and Sevenoaks town centre.

This dataset was used to support the trip generators and attractors and PCT analyses in the development of the route network. The route network encompasses the key corridors highlighted on this map.



Proposed Cycle Network and Core Walking Zones

4 Proposed Cycle Network and Core Walking Zones

The adjacent map shows the proposed cycle network for Sevenoaks Urban Area with primary routes shown in red, secondary routes shown in yellow and local routes in blue.

Subject to funding opportunities, the delivery of the primary routes will be progressed and then the secondary routes will be reviewed, prioritised and delivered in tranches

The Core Walking Zones of Sevenoaks town centre, Bat and Ball junction and Riverhead are shown as yellow polygons on Map 22.

Implementation

The inclusion of a route in the network plan is no guarantee that it will be implemented. Sevenoaks District Council do not have the direct powers or funding to implement the proposed cycle network and core walking zones. Discussions will need to be held with Kent County Council as the local transport authority and as indicated in the Next Steps chapter, funding opportunities will need to be identified.

While we have made every effort to ensure that our proposals are practical, it should be recognised that there are competing demands for highway space, including cars, buses, taxis and parking. Some sections of proposed routes may be on private land and discussions with landowners will be required. It should also be noted that all major changes to the Highway network will be publicly consulted on before being implemented.

Proposed road space reallocations for walking and cycling will need to carefully consider implications across all modes, although the ultimate aim must be to reduce the dominance of motor vehicles, thereby easing congestion. This report is not a feasibility study, but a high level assessment. All proposals will be subject to further feasibility work and detailed design work will be necessary. In some cases, this may mean that a route is moved to an alternative parallel alignment.

If schemes are to be progressed, they will need to be prioritised for inclusion in delivery programmes alongside other proposals, with schemes subject to the appropriate level of business case development. It is also intended that this LCWIP would be used to inform developers of the level of ambition for the walking and cycling network so that they may contribute towards it.

The progress of this LCWIP should be coordinated with the adjoining authorities to ensure that routes extending beyond the study area are connected, cohesive and continuous.

Map 19

Proposed Cycle Network

N

0 0.75 1.5 3 Kilometres

Primary Cycle Route
Secondary Cycle Route
Local Cycle Route
Private Road
Railway Station

Map 20

Proposed Primary and Secondary Cycle Route Network

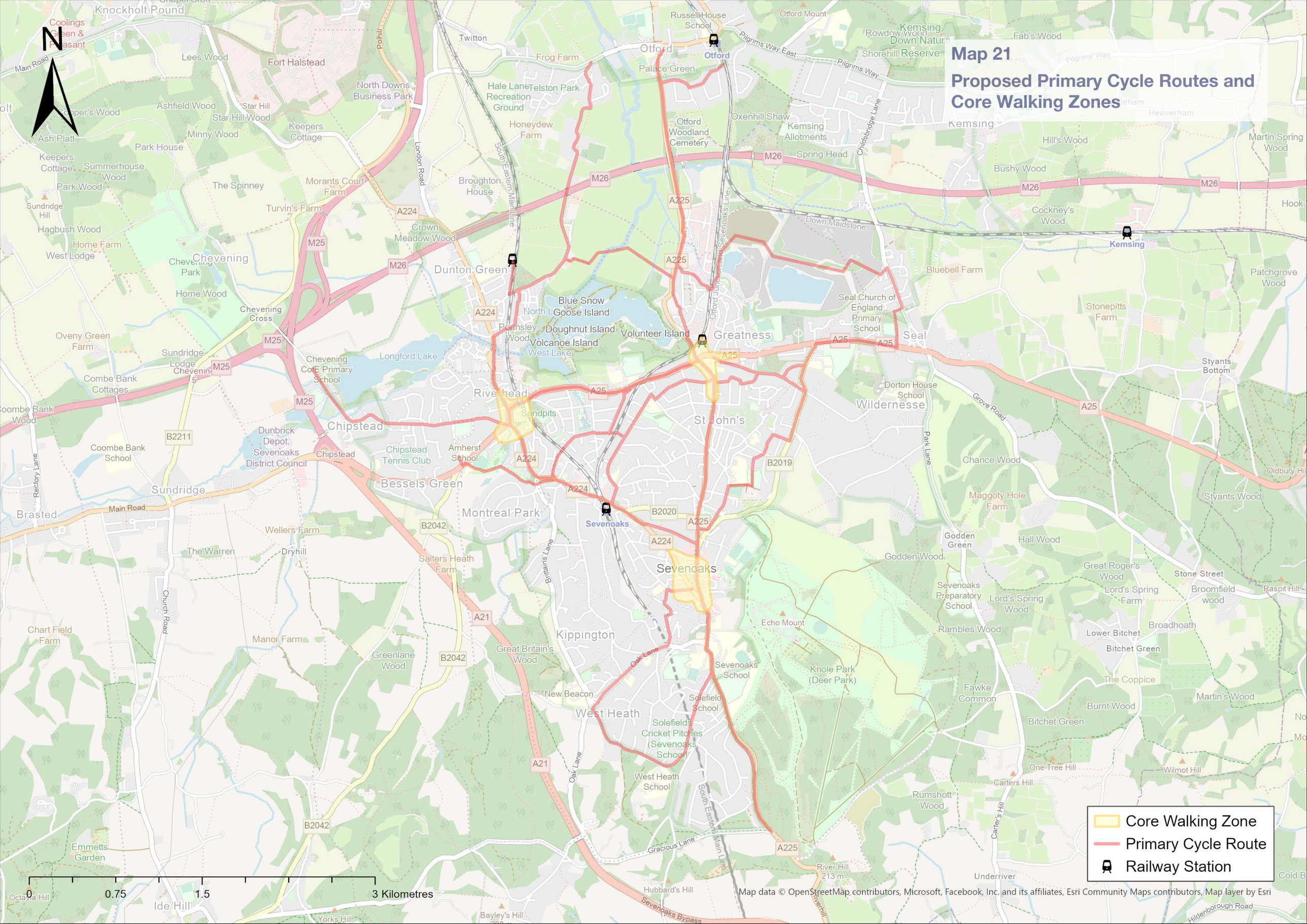
N

0 0.75 1.5 3 Kilometres

Primary Cycle Route
Secondary Cycle Route
Railway Station

Map 21

Proposed Primary Cycle Routes and Core Walking Zones



Design Principles

Design principles

The options outlined in this study have been based on the standards presented in the Department for Transport (DfT) Cycle Infrastructure Design guidance document Local Transport Note (LTN) 1/20.

All new scheme designs should meet the current highway infrastructure design guidance as identified by the Department for Transport and its new executive agency, Active Travel England.

Another resource for design guidance is the Kent Design Guide. It communicates key guidance on placemaking for the county.

Some of the most relevant criteria considered for cycle corridor design guidance are presented as follows:

Local Transport Note 1/20

This national guidance provides a basis for design based on five core principles and 22 summary principles, as follows:

Core design principles

The five core design principles represent the essential requirements to achieve more people travelling by cycle, based on best practice both internationally and across the UK.

There are five core design outcomes for cycle routes:

- Coherent
- Direct
- Safe
- Comfortable
- Attractive

Summary Principles

1. Cycle infrastructure should be accessible to everyone from 8 to 80 and beyond: it should be planned and designed for everyone. The opportunity to cycle in our towns and cities should be universal.
2. Cycles must be treated as vehicles and not as pedestrians. On urban streets, cyclists must be physically separated from pedestrians and should not share space with pedestrians. Where cycle routes cross pavements, a physically segregated track should always be provided. At crossings and junctions, cyclists should not share the space used by pedestrians but should be provided with a separate parallel route.
3. Cyclists must be physically separated and protected from high volume motor traffic, both at junctions and on the stretches of road between them.
4. Side street routes, if closed to through traffic to avoid rat-running, can be an alternative to segregated facilities or closures on main roads – but only if they are truly direct.
5. Cycle infrastructure should be designed for significant numbers of cyclists, and for non-standard cycles. Our aim is that thousands of cyclists a day will use many of these schemes.
6. Consideration of the opportunities to improve provision for cycling will be an expectation of any future local highway schemes funded by Government.
7. Largely cosmetic interventions which bring few or no benefits for cycling or walking will not be funded from any cycling or walking budget.
8. Cycle infrastructure must join together, or join other facilities together by taking a holistic, connected network approach which recognises the importance of nodes, links and areas that are good for cycling.
9. Cycle parking must be included in substantial schemes, particularly in city centres, trip generators and (securely) in areas with flats where people cannot store their bikes at home. Parking should be provided in sufficient amounts at the places where people actually want to go.
10. Schemes must be legible and understandable.
11. Schemes must be clearly and comprehensively signposted and labelled.
12. Major ‘iconic’ items, such as overbridges must form part of wider, properly thought-through schemes.
13. As important as building a route itself is maintaining it properly afterwards.
14. Surfaces must be hard, smooth, level, durable, permeable and safe in all weathers.
15. Trials can help achieve change and ensure a permanent scheme is right first time. This will avoid spending time, money and effort modifying a scheme that does not perform as anticipated.
16. Access control measures, such as chicane barriers and dismount signs, should not be used.
17. The simplest, cheapest interventions can be the most effective.
18. Cycle routes must flow, feeling direct and logical
19. Schemes must be easy and comfortable to ride.
20. All designers of cycle schemes must experience the roads as a cyclist.
21. Schemes must be consistent.
22. When to break these principles.

Cycle parking

Cycle parking is integral to any cycle network, and to wider transport systems incorporating public transport.

The availability of secure cycle parking at home, the end of a trip or at an interchange point has a significant influence on cycle use.

LTN 1/20 states that:

Cycle parking is an essential component of cycle infrastructure. Sufficient and convenient residential cycle parking enables people to choose cycling. At the trip end, proximity to destinations is important for short stay parking, while for longer-stay parking security concerns can be a factor. As with other infrastructure, designers should consider access for all cycles and their passengers.

Cycle parking would be considered as part of relevant schemes.

Accessibility for all				
Coherent	**Direct**	**Safe**	**Comfortable**	**Attractive**

DO Cycle networks should be planned and designed to allow people to reach their day to day destinations easily, along routes that connect, are simple to navigate and are of a consistently high quality.

DO Cycle routes should be at least as direct – and preferably more direct – than those available for private motor vehicles.

DO Not only must cycle infrastructure be safe, it should also be perceived to be safe so that more people feel able to cycle.

DO Comfortable conditions for cycling require routes with good quality, well-maintained smooth surfaces, adequate width for the volume of users, minimal stopping and starting and avoiding steep gradients.

DO Cycle infrastructure should help to deliver public spaces that are well designed and finished in attractive materials and be places that people want to spend time using.

DON'T Neither cyclists or pedestrians benefit from unintuitive arrangements that put cyclists in unexpected places away from the carriageway.

DON'T This track requires cyclists to give way at each side road. Routes involving extra distance or lots of stopping and starting will result in some cyclists choosing to ride on the main carriageway instead because it is faster and more direct, even if less safe.

DON'T Space for cycling is important but a narrow advisory cycle lane next to a narrow general traffic lane and guard rail at a busy junction is not an acceptable offer for cyclists.

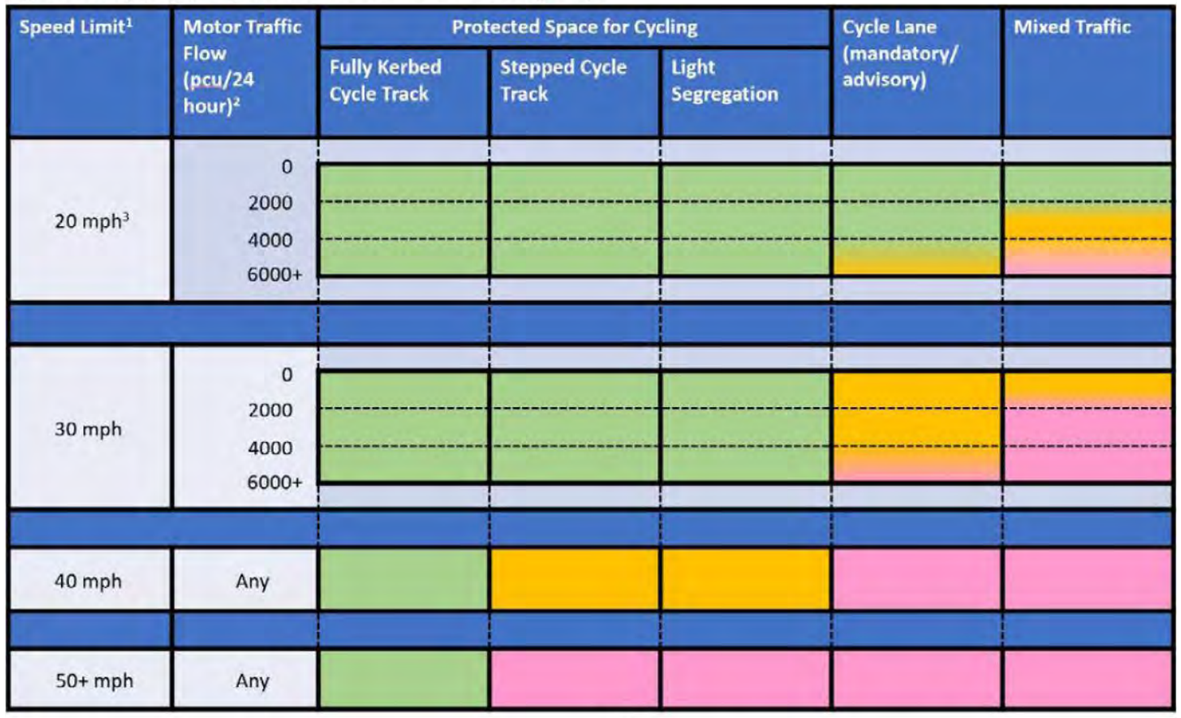
DON'T Uncomfortable transitions between on-and off carriageway facilities are best avoided, particularly at locations where conflict with other road users is more likely.

DON'T Sometimes well-intentioned signs and markings for cycling are not only difficult and uncomfortable to use, but are also unattractive additions to the street scape.

Design Standards

Relevant extracts from LTN 1/20 used as a basis for potential options in this report:

Figure 4.1: Appropriate protection from motor traffic on highways



Notes:

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

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

*Separation strip should be at least 0.5m alongside kerbside parking and 1.5m where wheelchair access is required.

Table 5-2: Cycle lane and track widths

Cycle Route Type	Direction	Peak hour cycle flow (either one way or two-way depending on cycle route type)	Desirable minimum width* (m)	Absolute minimum at constraints (m)
Protected space for cycling (including light segregation, stepped cycle track, kerbed cycle track)	1 way	<200	2.0	1.5
		200-800	2.2	2.0
		>800	2.5	2.0
	2 way	<300	3.0	2.0
		>300-1000	3.0	2.5
		>1000	4.0	3.0
Cycle lane	1 way	All – cyclists able to use carriageway to overtake	2.0	1.5

*based on a saturation flow of 1 cyclist per second per metre of space. For user comfort a lower density is generally desirable.

Table 6-3: Recommended minimum widths for shared use routes carrying up to 300 pedestrians per hour

Cycle flows	Minimum width
Up to 300 cyclists per hour	3.0m
Over 300 cyclists per hour	4.5m

Table 7-2: Minimum acceptable lane widths*

Feature	Desirable minimum	Absolute minimum	Notes
Traffic lane (cars only, speed limit 20/30mph)	3.0m	2.75m	2.5m only at offside queuing lanes where there is an adjacent flared lane
Traffic lane (bus route or >8% HGVs, or speed limit 40mph)	3.2m	3.0m	Lane widths of between 3.2m and 3.9m are not acceptable for cycling in mixed traffic.
2-way traffic lane (no centre line) between advisory cycle lanes	5.5m	4.0m	4.0m width only where AADT flow <4000 vehicles** and/or peak hour <500 vehicles with minimal HGV/Bus traffic.

* these lane widths assume traffic is free to cross the centre line, see 7.2.9 for details on critical widths at pinch points

** While centre line removal is still feasible with higher flows, the frequency at which oncoming vehicles must enter the cycle lane to pass one another can make the facility uncomfortable for cycling.

Table 10-2: Crossing design suitability

Speed Limit	Total traffic flow to be crossed (pcu)	Maximum number of lanes to be crossed in one movement	Uncontrolled	Cycle Priority	Parallel	Signal	Grade separated
≥ 60mph	Any	Any					
40 mph and 50 mph	> 10000	Any					
	6000 to 10000	2 or more					
	0-6000	2					
	0-10000	1					
≤ 30mph	> 8000	> 2					
	> 8000	2					
	4000-8000	2					
	0-4000	2					
	0-4000	1					

Provision suitable for most people

Provision not suitable for all people and will exclude some potential users and/or have safety concerns

Provision suitable for few people and will exclude most potential users and/or have safety concerns

Notes:

1. If the actual 85th percentile speed is more than 10% above the speed limit the next highest speed limit should be applied
2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow

Figure 10.39: Carriageway-level cycle track used with 'hold the left' traffic staging

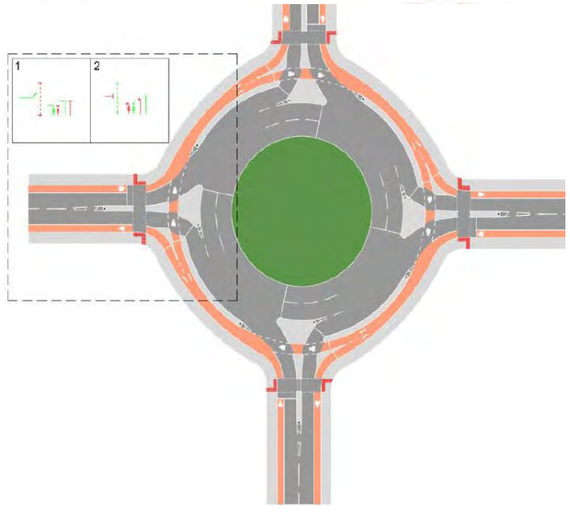


Table 11-1: Suggested minimum cycle parking capacity for different types of land use

Land use type	Sub-category	Short stay requirement (obvious, easily accessed and close to destination)	Long stay requirement (secure and ideally covered)
All	Parking for adapted cycles for disabled people	5% of total capacity co-located with disabled car parking.	5% of total capacity co-located with disabled car parking.
Retail	Small (<200m²)	1 per 100m²	1 per 100m²
	Medium (200-1,000m²)	1 per 200m²	1 per 200m²
	>1,000m²	1 per 250m²	1 per 500m²
Employment	Office/Finance (A2/B1)	1 per 1000m²	1 per 200m²
	Industrial/Warehousing (B2/B8)	1 per 1,000m²	1 per 500m²
Leisure and Institutions	Leisure centres, assembly halls, hospitals and healthcare	Greatest of: 1 per 50m² or 1 per 30 seats/ capacity	1 per 5 employees
	Educational Institutions	–	Separate provision for staff and students. Based on Travel Plan mode share targets, minimum: Staff: 1 per 20 staff Students; 1 per 10 students
Residential	All except sheltered/elderly housing or nursing homes	–	1 per bedroom
	Sheltered/elderly housing/ nursing homes	0.05 per residential unit	0.05 per bedroom
Public Transport Interchange	Standard stop	Upon own merit	–
	Major interchange	1 per 200 daily users	–

Cycle Dimensions and Cycle Design Vehicle: Figure 5.2 shows the range of dimensions for cycles typically in use. It is important that infrastructure can accommodate the full range of cycles to ensure routes are accessible to all cyclists. The cycle design vehicle referred to in this document represents a composite of the maximum dimensions shown in Figure 5.2 is assumed as 2.8m long and 1.2m wide. Table 5-1 shows the minimum turning radii suitable only for low speed manoeuvres such as access to cycle parking.

Figure 5.2: Typical dimensions of cycles

Table 5-1: Size and minimum turning circles of cycles

Type of Cycle	Typical length (m)	Typical width (m)	Minimum turning circle (m)	
			Outer radius	Inner radius
Cycle design vehicle	2.8 (max)	1.2 (max)	3.4 (max)	0.1 (min)* 2.5m (3 and 4 wheel cycles)
Solo upright cycle	1.8	0.65	1.65	0.85
Cycle plus 850mm wide trailer	2.7	0.85	2.65	1.5
Tandem	2.4	0.65	3.15	2.25

*applies only to some cycles that can pivot at very low speeds

Gradients: Table 5-8 shows the desirable maximum length for gradients. People can cycle steep gradients that are fairly short but typically cannot maintain high levels of effort for long distances. Cycle routes along existing roads and paths will usually have to follow the existing gradient, but there may be opportunities to divert onto alternative routes for short sections or reducing gradients through earthworks where space is available.

Speed of travel is also important to consider. Steep gradients can lead to high speeds for descending cyclists and low speeds for climbing cyclists, which can create hazards for all users on the route. Stopping sight distances increase on down gradients greater than 3%.

Table 5-8: Maximum length for gradients

Gradient %	Desirable maximum length of gradient (m)
2.0	150
2.5	100
3.0	80
3.5	60
4.0	50
4.5	40
5.0	30

Primary Cycle Route Recommendations

Map 23
Primary Cycle Network

Primary Cycle Network

Eight primary cycle routes were audited as part of the LCWIP. Route number does not indicate priority.

Recommended interventions for each route, in accordance with LTN 1/20, are outlined in this section. Each route incorporates a variety of infrastructure improvements described in the 'Cycling Interventions Toolkit' on the following page.

A significant transformation of existing carriageway space and priorities will be required in order bring about a step-change in cycling within Sevenoaks Urban Area.

0 0.75 1.5 3 Kilometres

Primary Cycle Route
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- Railway Station

Cycling Interventions Toolkit

Fully kerbed segregated cycle track

Cycle facility protected from motor traffic by a full-height kerb, with some buffer space between the cycle track and carriageway.

Stepped segregated cycle track

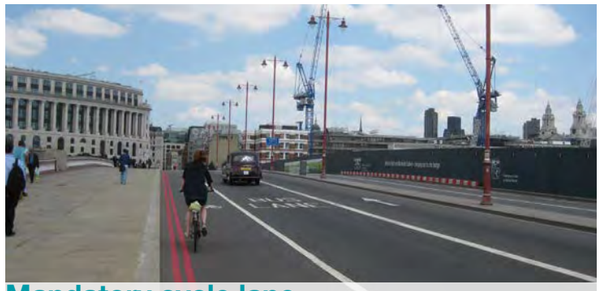
Cycle track is set below footway level, typically protected from the carriageway by a lower height kerb and usually directly next to it.

Mandatory cycle lane w/ light segregation

Cycle lane with the use of intermittent physical features placed along the inside edge of a mandatory cycle lane to provide additional protection from motor traffic.

Modal filter

A bollard or planter in the carriageway which people can travel past be walking or cycling. Helps create a low traffic environment by restricting access to motorised through-traffic.



Mandatory cycle lane

Area of the carriageway reserved for the use of cycles, marked with a solid white line.

Contraflow cycle lane

Mandatory cycle lane that allows cyclists to travel opposite the flow of vehicle traffic, allowing for greater permeability of the cycle network.

Off-carriageway cycle track

Cycle facility separated from motor traffic typically through green space.

20mph zones

Lower speed zones create safer environments for all, may need to be combined with infrastructure and enforcement changes to ensure compliance.

Pedestrian/cyclist priority street

Street design that prioritises pedestrian and cyclist travel. Characterised by lower traffic speeds, restricted motor vehicle access, and coloured paving materials.

Dutch style street/Quietway

Street without a centre line encourages slower vehicle speeds and helps create a shared street environment.

Dutch style roundabout/mini-roundabout

A roundabout that provides a segregated facility for cyclists and pedestrians through all arms of the roundabout. In a mini-roundabout the central island is replaced by road markings.

CYCLOPS junction

CYCLOPS stands for 'Cycle Optimised Protected Signals'. The unique design of the junction completely separates pedestrians and cyclists from motor traffic, reducing the possibility of collisions or conflict.

Pedestrians are also able to get where they want to be in fewer stages with more space to wait than on other junction designs.

Route 1

Route Description

Route 1 starts in the north of Sevenoaks town in the residential area of Otford. It travels south along the same alignment as the A225, this being the most direct and coherent alignment to take the route along. Three additional sections within Otford link to the High Street through Otford Palace grounds; provide access to the railway station along Well Road; and a further link to the western end of High Street, via a public footpath.

Upon crossing the M26 bridge the route arrives at Riverside Retail Park, remaining on the A225 Otford Road until it reaches the public footpath (Figure 4.3) which runs between Wickes and the redundant gas works site, emerging onto Crampton's Road. Travelling south along Crampton's Road the alignment then re-joins the A225 until it meets the A25 at the Bat and Ball junction.

The route then travels up St. John's Hill in a southerly direction passing the War Memorial, the B2019 junction and onto High Street, Sevenoaks.

Otford to Sevenoaks Feasibility Study

As detailed in the introduction to this report an Otford to Sevenoaks Feasibility Study has been written which informed the route alignment. However, this report has applied the LTN1/20 guidance and made alterations and updated recommendations to reflect the guidance.

Existing Conditions

The route(s) within Otford have minimal provision for pedestrians consisting of narrow footways, with no cycle or wheeled infrastructure provided at all.

From Riverside Retail Park there is an isolated cycle track and shared use footways. Bat and Ball junction is an Air Quality Management Area.

The existing Bat and Ball junction lacks controlled pedestrian crossing points on all but one filter lane and inhibits crossing through the overuse of guardrails. There is a single advanced stop line travelling north from St. John's Hill. A wide footway serves pedestrians well past The Vine cricket ground, but narrows to a wide inaccessible junction at the B2019, and remains narrow until the junction with Pembroke Road/Suffolk Way.

Route Opportunities

- Space can be reallocated from the dual carriageway without a negative impact on traffic flows.
- As part of an existing planning application for development at the Sevenoaks Quarry site, there is a proposal to improve the Bat and Ball junction.

Route Constraints

- On street parking
- Obstruction to footway by parked cars (see Figure 4.4)
- 47% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile.

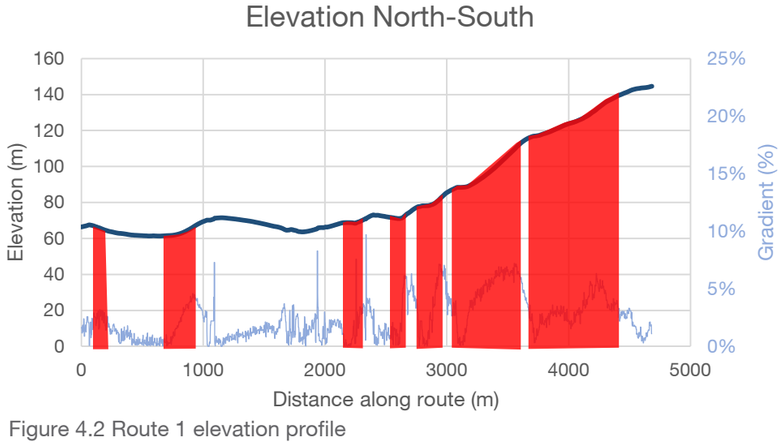


Figure 4.2 Route 1 elevation profile


Figure 4.1 On-street parking Sevenoaks Road, Otford


Figure 4.3 Public Footpath link to Crampton Road


Figure 4.4 Pavement parking, St. John's Hill

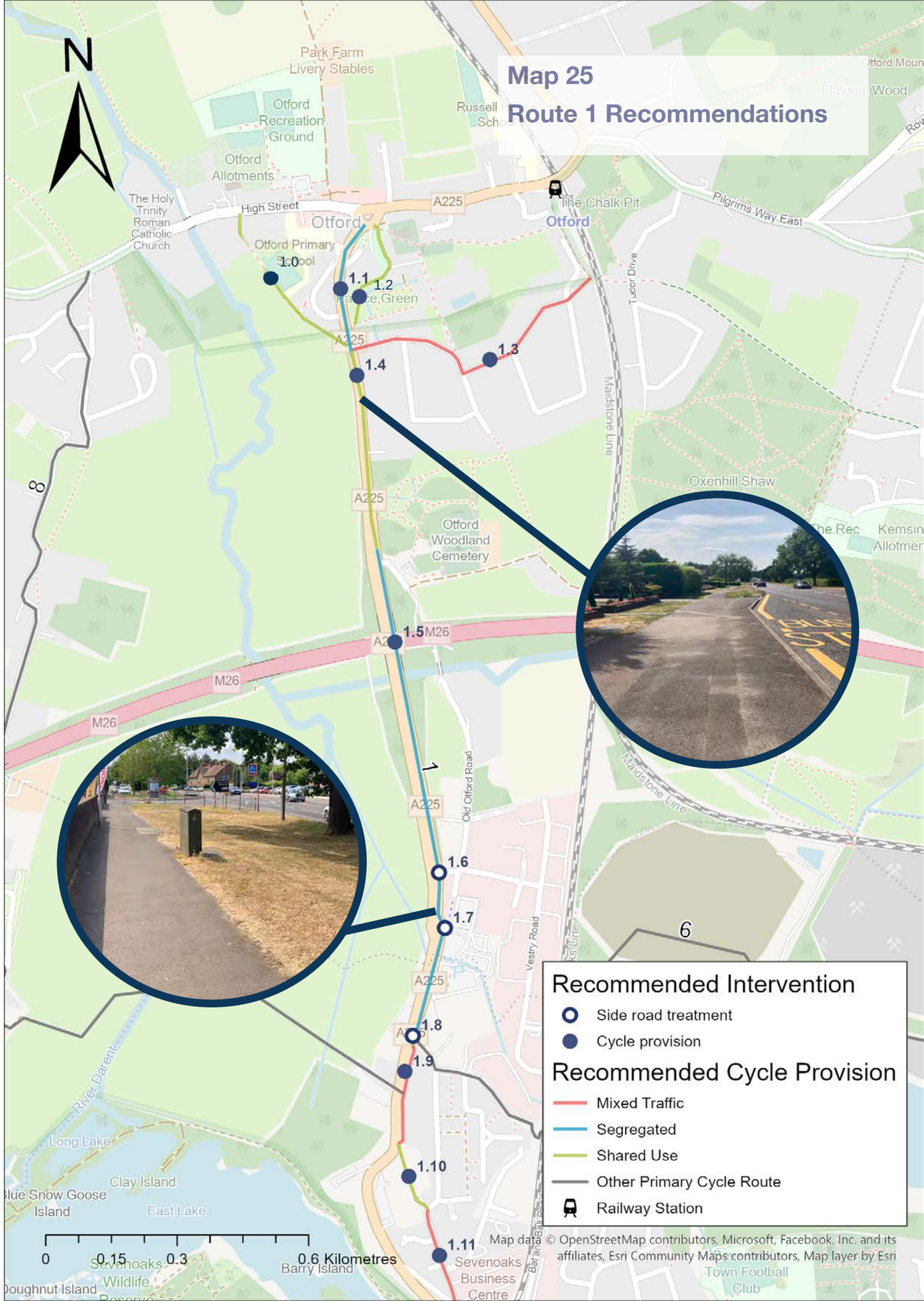
Map 24
Route 1 Recommended Cycle Provision

N

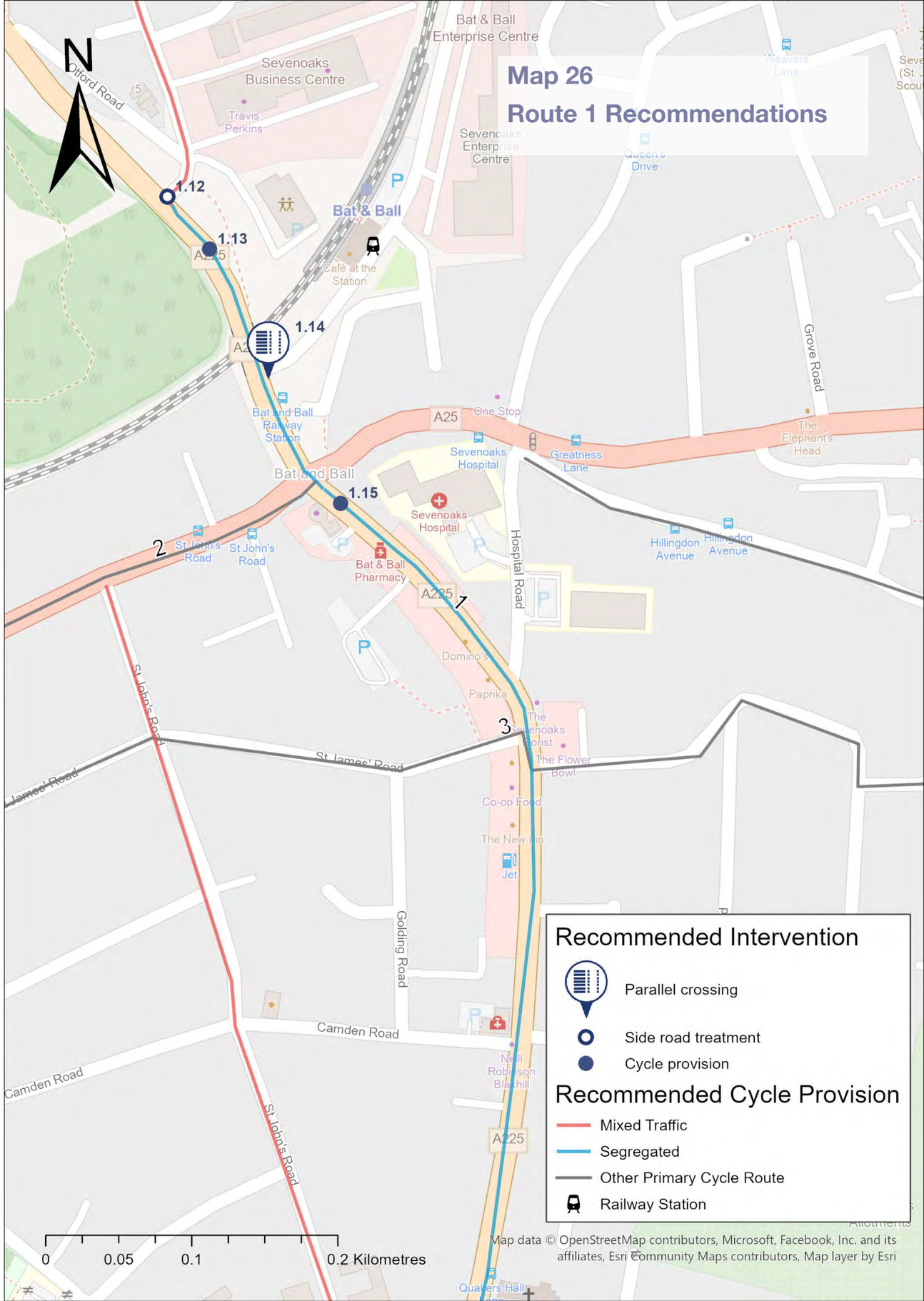
Recommended Cycle Provision
- Mixed Traffic
- Segregated
- Shared Use
- Other Primary Cycle Route
- Railway Station

0 0.25 0.5 1 Kilometres

Intervention Number	Location	Recommendation
1.0	Public Footpath (0192/SR51/1) from Bubblestone Road junction A225 to High Street, Otford	There is an option to negotiate with the landholder for a wider public footpath for shared use, through the creation a cycle track order.
1.1	A225 Between Bubblestone Road and High Street Otford	The existing on street parking should be reallocated to restricted time limit. With reprioritisation to one way separated from traffic (pending vehicle volume data to determine which side) with shared use in the other direction.
1.2	Palace Green Public Footpath (0192/SR49/1)	Path widening along this public footpath would allow for shared use access away from the main High Street roundabout.
1.3	Well Road	Reduce speed limit in this residential road to 20mph.
1.4	A225 Between Bubblestone Road and Otford Woodland Cemetery	Space potential for 2.5m shared use by widening the path redistributing highway width, will require removal of the bus stop layby and install bus stop bypass design.
1.5	A225 Otford Woodland Cemetery to Cramptons Road	Through reallocation of the carriageway by reducing southbound carriageway to one lane, two way cycle track and separate pedestrian walkway is possible.
1.6	Vestry Road junction with A225	Raised section to prioritise pedestrians and cyclists.
1.7	Entrance to Sainsbury's Petrol Station (unnamed)	Raised crossing to allow for uninterrupted travel, priority to pedestrians and cyclists.
1.8	Cramptons Road junction with A225	This wide turning should be tightened to reduce the crossing distance, have a raised step free crossing point to give priority to walkers and cyclists plus remove the railings. The small section south of Cramptons road to Otford Road (cul de sac) should be widened for shared use.
1.9	Otford Road (cul de sac)	Small residential no-through road travels parallel with main Otford Road, low speeds and volumes deem this section suitable for use by Cyclists with additional signing.
1.10	Public Footpath between Otford Road and Cramptons Road (0221/SU2/1)	If there is an opportunity to widen this section to 3.0m, it will make this alignment more feasible as a shared use route.
1.11	Public Footpath between Cramptons Road and Otford Road (PFP ref. as above)	Pending further traffic data, low volumes and average speeds should allow mixed traffic use we would also suggest a speed limit reduction to 20mph.



Intervention Number	Location	Recommendation
1.12	Junction of Cramptons Road and Otford Road	Design a filter lane to take active travel seamlessly from on road to separated.
1.13	A225 Between Cramptons Road and Bat and Ball junction	Space can be reallocated from highway and verge to provide a two-way cycle track. With a shared use section as we cross the narrow pinch point at the railway bridge.
1.14	Junction of Bat and Ball Road with A225	A raised junction with pedestrian and cyclist priority may suffice if parallel crossing is unsuitable.
1.15	A225 South of Bat and Ball junction to St John's Road junction	Light separation one way only, uphill. If unable to deliver recommendation, traffic volumes per day and speeds need to be reduced. Consider 20mph by default.



Intervention Number	Location	Recommendation
1.16	St. John's Road junction with Bradbourne Road and Dartford Road	Junction redesign should reprioritise pedestrians and cyclists to allow them to join and leave St John's Hill. Perhaps tighten roundabout adding coloured cycle lanes with shortened crossing distances for pedestrians.
1.17	St John's Road to The bus stop on Dartford Road	Potentially space for two way cycle tracks and pavement, with the loss of some non-residential parking spaces
1.18	A225 The Vine to The Drive/junction of B2019	Section can feasibly be designed for shared use, with a width reallocation taken from park and highway
1.19	B2019 junction with Dartford Road	Suggest this junction is redesigned, it needs to be tightened to allow for safe pedestrian and cycle crossing. Reconsider need for the northbound turning from B2019. Perhaps send traffic along Park Lane by reversing the one way direction. Have no left from A225 onto B2019.
1.20	B2019 to Pembroke Road junction	Separated cycle lane - Reallocate junction space to allow separate cycle traffic

Route 2

Route Description

Route 2 follows the A25 corridor from Bat and Ball junction to Riverhead, and then continues to Chipstead via Chipstead Lane. The A25 was identified by stakeholders as a major barrier to cycling and walking in the town.

Existing Conditions

The A25 is a wide high speed, high flow traffic corridor in the north of Sevenoaks town. It carries a high volume of HGVs. There are no dedicated cycle facilities on the corridor. The route would connect Knole Academy, Bradbourne Riding and Driving Stables, and the Sevenoaks Wildlife Reserve. In Riverhead the route would travel through two roundabouts, which are currently hostile to cyclists and pedestrians. In Chipstead the route would follow narrow but low traffic Chipstead Lane to Chevening CE Primary School.

Route Opportunities

- Wide carriageway on the A25 between Bat and Ball junction and the South Eastern Main Line railway bridge
- Direct corridor linking Bat and Ball/Greatness area to Riverhead and Chipstead – area of greatest population density (North Sevenoaks)
- Key spine cycle route, that would provide links to several primary cycle routes

Route Constraints

- South Eastern Main Line railway bridge pinch point on the A25 (Figure 4.6)
- Bat and Ball junction – major redesign needed
- Riverhead junction – major redesign needed
- Narrow Chipstead Lane, High Street and Chevening Road – pose challenges to improve visibility for all users
- Bus corridor
- 54% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile

Figure 4.5 A25/Bradbourne Vale Road

Figure 4.6 A25 and South Eastern Main Line Railway Bridge

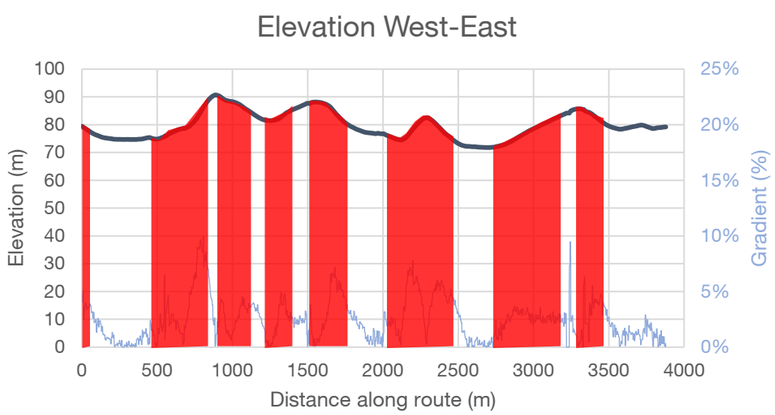
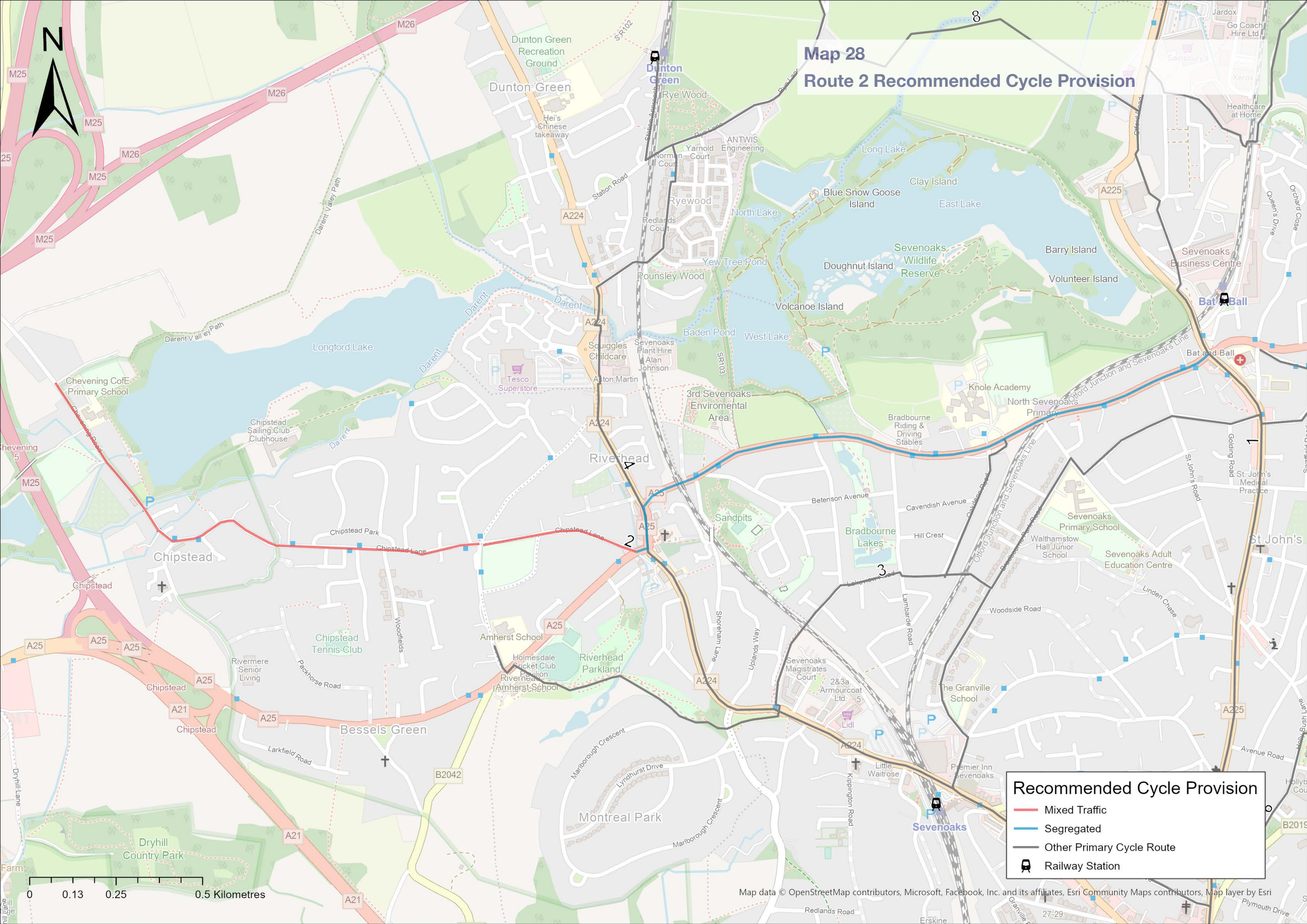


Figure 4.8 Route 2 elevation profile

Figure 4.7 Chipstead Lane

Map 28

Route 2 Recommended Cycle Provision

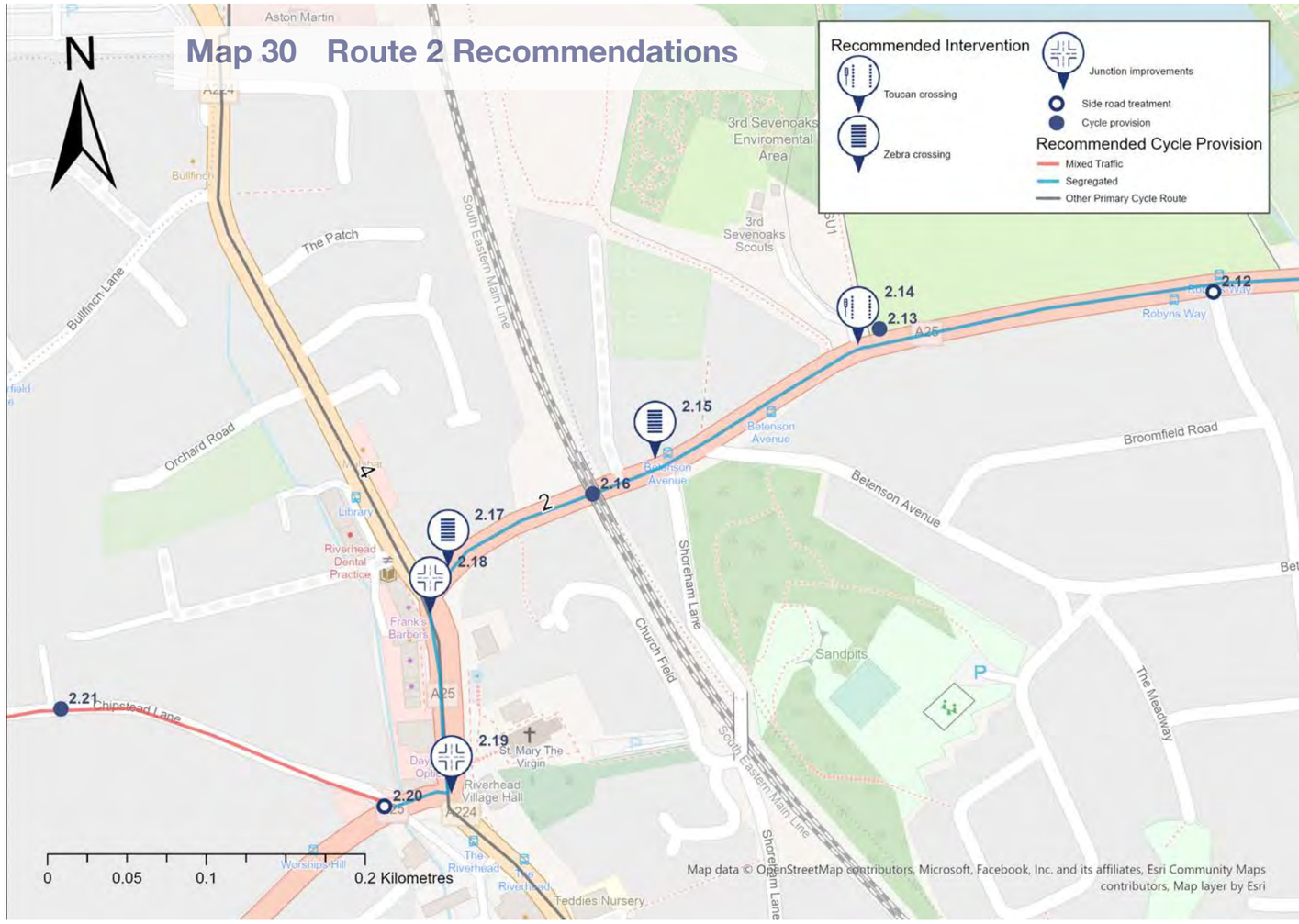


Intervention Number	Location	Recommendation
2.1	Bat & Ball junction	Complete junction re-design is required. Consider upgrading junction to include segregated cycle provision and dedicated pedestrian crossings at all arms of the junction. Coordinate feasibility study and design with plans as part of Sevenoaks Quarry development.
2.2	A25 - Bat & Ball junction to Knole Academy	Reallocate existing carriageway space to accommodate two-way segregated cycle provision.
2.3	A25/St John's Hill	Consider installing a raised table or continuous footway across St John's Hill.
2.4	A25/Bradbourne Road	Consider installing a raised table or continuous footway across Bradbourne Road.
2.5	A25/Oakdene Road	Consider installing a raised table or continuous footway across Oakdene Road.
2.6	A25/Knole Academy access road	Consider installing a raised table or continuous footway across Knole Academy access road. Tighten kerb radii.
2.7	A25/Bradbourne Vale Road	Consider installing a raised table or continuous footway across Bradbourne Vale Road.

Figure 4.9 A25 uncontrolled crossing at Sevenoaks Wildlife Reserve

Intervention Number	Location	Recommendation
2.8	A25 - Knole Academy to Darent Valley Path	Reallocate existing carriageway space and investigate using northern verge to create two way segregated cycle track.
2.9	A25/Entrance to Bradbourne Riding & Training Centre and Sevenoaks Wildlife Reserve	Consider installing a raised table or continuous footway across entrance.
2.10	A25/Entrance to Bradbourne Riding & Training Centre and Sevenoaks Wildlife Reserve	Investigate feasibility of installing a toucan crossing across the A25 at this location, to accommodate high levels of pedestrian activity to the Wildlife Reserve.
2.11	A25/Lambarde Road	Consider installing a raised table or continuous footway across Lambarde Road. Tighten kerb radii.
2.12	A25/Robyns Way	Consider installing a raised table or continuous footway across Robyns Way.

Intervention Number	Location	Recommendation
2.13	Darent Valley Path	Add wayfinding signage for Darent Valley Path
2.14	Near Darent Valley Path/Sevenoaks Scouts Club	Investigate feasibility of installing a toucan crossing across the A25 at this location, to accommodate high levels of pedestrian activity to the Darent Valley Path and Scouts Area.
2.15	Maidstone Road/ A25 near Betenson Avenue	High frequency of pedestrian crossings in this location. Consider installing zebra crossing of A25 near Betenson Avenue.
2.16	A25 - South Eastern Main Line underpass	There is significant pinch point at railway bridge. Investigate options for adding one-way signalisation with cycle priority under bridge to allow for two way cycle track. A feasibility study will be needed.
2.17	Maidstone Road/ A25	As part of the roundabout re-design, consider installing zebra crossing on Maidstone Road/A25.
2.18	London Road/Maidstone Road/A25 Roundabout	Complete re-design required to prioritise people walking, wheeling and cycling. In coordination with cycling improvements, investigate feasibility of installing Dutch-style roundabout. This should help improve compliance with existing zebra crossing on north side of roundabout.



Intervention Number	Location	Recommendation
2.19	London Road/Worships Hill Roundabout	Complete re-design required to prioritise people walking, wheeling and cycling. In coordination with cycling improvements, investigate feasibility of installing Dutch-style roundabout. This should help improve compliance with existing zebra crossing on north side of roundabout.
2.20	Worships Hill/Chipstead Lane	Consider installing a raised table or continuous footway across Chipstead Lane.
2.21	Chipstead Lane - Worships Hill to Bullfinch Lane	Investigate making Chipstead Lane local access only - reallocate parking where possible to improve visibility.

Figure 4.10 Worhsips Hill/Chipstead Lane entrance, Riverhead

Intervention Number	Location	Recommendation
2.22	Chipstead Lane - Bullfinch Lane to High Street/The Old Carriageway	Low traffic volumes in this location. Ensure 20mph speed limit and install traffic calming measures if required.
2.23	High Street - The Old Carriageway to Stairfoot Lane	Carriageway narrows significantly at High Street approach to Chipstead. Investigate feasibility of installing one way shuttle flow system. Unsignalised give way system is already in place.
2.24	Chipstead Square	Redesign junction of Chipstead Square at Homedean Road and Chevening Road to improve visibility for all road users.
2.25	High Street/Chevening Road - Stairfoot Lane to Darent Valley Footpath/ Chipstead Sailing Club	Mixed traffic cycling provision. Seek to reallocate parking in key areas to increase visibility of cyclists and pedestrians
2.26	Chevening Road - Darent Valley Footpath/Chipstead Sailing Club to Chevening CE Primary School	Reduce speed limit to 20mph, consider reallocating parking and additional traffic calming measures as required.

Figure 4.11 Chevening Road

Route 3

Route Description

Route 3 follows the general alignment of Sevenoaks District Council's proposed 'Safe East-West Schools Route'. The route makes use of several low-traffic streets and traffic-free green spaces across the northern part of the town to link to six schools schools in a cohesive way.

(Note: spur routes on Oakdene Road, Bradbourne Park Road south and Hillingdon Road were not audited in detail as part of this LCWIP)

Previous Plans/Studies

- 2014 Feasibility Study Safe East-West Route

Existing Conditions

The route comprises a mixture of shared use paths and mixed traffic on-carriageway cycling provision. Some cycle wayfinding signage is in place along the route, but it is not signposted in a cohesive way. Whilst most of the route is along streets with low traffic counts, there are congested times of day during school drop off and pick up that would impact on active travel.

Route Opportunities

- Quietway style treatment on many of the low-traffic streets is feasible
- Improve traffic-free cycling provision through green spaces and formalise cycling where is it currently not legally permitted (upgrades to bridleway status)
- Work with Sevenoaks Primary School and Trinity School to improve active travel access to/from their doors.
- In summer 2022 KCC and SDC were successful in a £1.2 million submission from the DfT Active Travel Fund Tranche 3 for further development of the route.

Route Constraints

- Sections of the route are on private land/private roads (Clock House Lane, St James' Road)
- Ecological constraints in Riverhead Parkland and Brittains Meadow
- Route alignment requires many small turns, improved/robust wayfinding will be essential
- 58% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile.
- Part of the alignment runs through a wooded area and some users may feel lighting would make the route feel more attractive, but this could have ecological impacts.

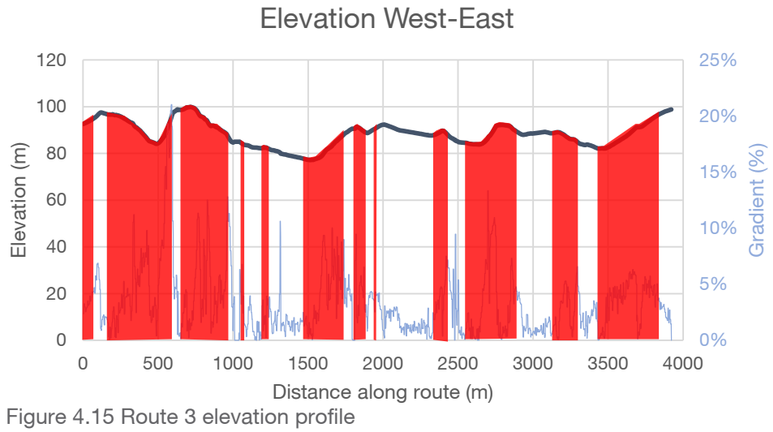


Figure 4.15 Route 3 elevation profile


Figure 4.12 Existing shared use path in Riverhead Parkland

Figure 4.13 Bradbourne Park Road


Figure 4.14 Trinity School at The Crescent

Map 32

Route 3 Recommended Cycle Provision

N

Recommended Cycle Provision
- Mixed Traffic
- Shared Use
- Other Primary Cycle Route
- Railway Station

0 0.25 0.5 1 Kilometres

Intervention Number	Location	Recommendation
3.1	Worships Hill	Convert existing crossing to toucan.
3.2	Worships Hill/Riverhead Infants School	Remove or re-design barriers in order to be accessible to all users.
3.3	Riverhead Parkland	Upgrade PRoW footpath (0210/SR734/1) to bridleway to allow cycling, subject to permission from landowner. Widen path to a minimum of 3m. Widening may impact tree lined path, impacting root protection zones, bats may also be impacted if lighting included.
3.4	Riverhead Parkland Bridge	Existing bridge would need to be widened to a minimum of 3m.

Intervention Number	Location	Recommendation
3.5	Brittains Lane	Remove or re-design barriers in order to be accessible to all users. This would require widening/removing part of a Grade II listed boundary wall.
3.6	Brittains Lane	Depending on traffic volumes and speeds, install a raised cycle priority crossing. Additional traffic calming measures may be needed to slow traffic travelling northbound on Brittains Lane.
3.7	Brittains Meadow	Widen existing path through Brittains Meadow to 3m. As it is a tree lined section - widening may require earthworks and impact trees.
3.8	Brittains Meadow	Option: As an alternative, consider linking in to existing shared use path on the north side of Brittains Meadow. Already an acceptable width, meaning less environmental impact than 3.7.

Figure 4.16 Grade II listed boundary wall at Brittains Lane

Intervention Number	Location	Recommendation
3.9	London Road/A224	Upgrade existing staggered zebra to straight across toucan or parallel crossing, dependent on traffic volumes. Remove central island and widen the northern footway to reduce overall crossing length
3.10	London Road/A224 - Bus Stop	Add cycle parking.
3.11	London Road - entrance to footpath	Remove or re-design barriers in order to be accessible to all users.
3.12	Footpath between London Rd and Robyns Way	Upgrade PRoW footpath (0221/SU12/1) to bridleway to allow cycling. Improve path surfacing and widen to 3m, possible issues with trees, root protection zones and bats.
3.13	South Eastern Main Line underpass	Add rest point/seating.
3.14	Robyns Way - Footpath to Lake View Road	Implement Quietway treatment. Add on street cycle symbols, remove on street parking. Consider changing road layout so that the give way is on the northern arm of the junction of Robyns Way and Lakeview Rd, this would create a continuous cycle route onto Lakeview Road
3.15	Lakeview Road - Robyns Way to Lambarde Road	Continue Quietway treatment on Lakeview Road. Remove on street parking (it is already restricted) and add on street signage.
3.16	Lakeview Road/ Lambard Road junction	Add wayfinding signage.
3.17	Lakeview Road/ Lambard Road junction	Re-design junction so that exit from Clock House Lane feeds more directly into Lakeview Road. Reduce kerb radii. Depending on traffic speeds, consider adding in a raised table through the junction to slow traffic. Option 1: Install a short section of shared use path on Lambarde Road with dropped kerb to feed into Clock House Lane. Option 2: Transition to a new shared use path on southwest side of junction, and add a crossing on the south side of the junction to connect to Clock-house Lane.
3.18	Clock House Lane entrance	Remove or re-design barriers in order to be accessible to all users.

Intervention Number	Location	Recommendation
3.19	Clock House Lane - Lambarde Road to Bradbourne Park Road	Re-surface existing track. Upgrade PRoW footpath (0221/SU11/1) to bridleway. Note: land is in private ownership, so upgrade will be subject to permisson.
3.20	Clock House Lane	Add rest point/seating.
3.21	Clock House Lane/ Oakdene Road	Add wayfinding signage for northern link of route on Oakdene Road.
3.22	Clock House Lane railway bridge	Consult with Network Rail. Additional fencing may be required if increasing usage.
3.23	Clock House Lane	Resurface Clock House Lane to sealed surface on approach to Bradbourne Park Road. Note: road/ land is in private ownership.
3.24	Bradbourne Park Rd - Clock House Lane to Harrison Way	Install quietway treatment, reallocate on-street parking.
3.25	Bradbourne Park Rd/Chancellor Way	Consider installing a raised table or continuous footway across Chancellor Way.
3.26	Bradbourne Park Rd/Harrison Way	Consider installing a raised table or continuous footway across Harrison Way.
3.27	Bradbourne Park Rd/Harrison Way	Consider installing a raised table or continuous footway across Harrison Way.

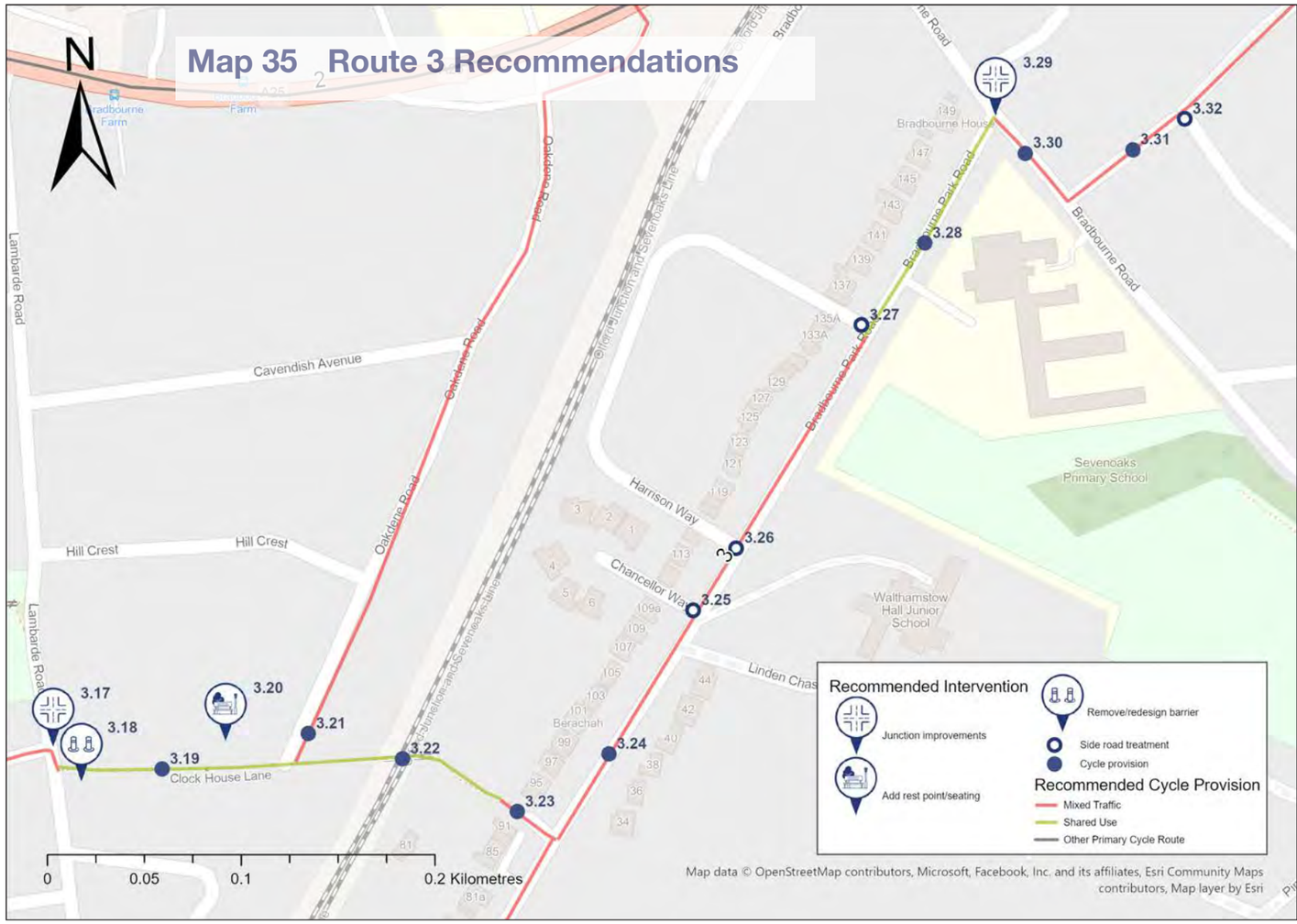
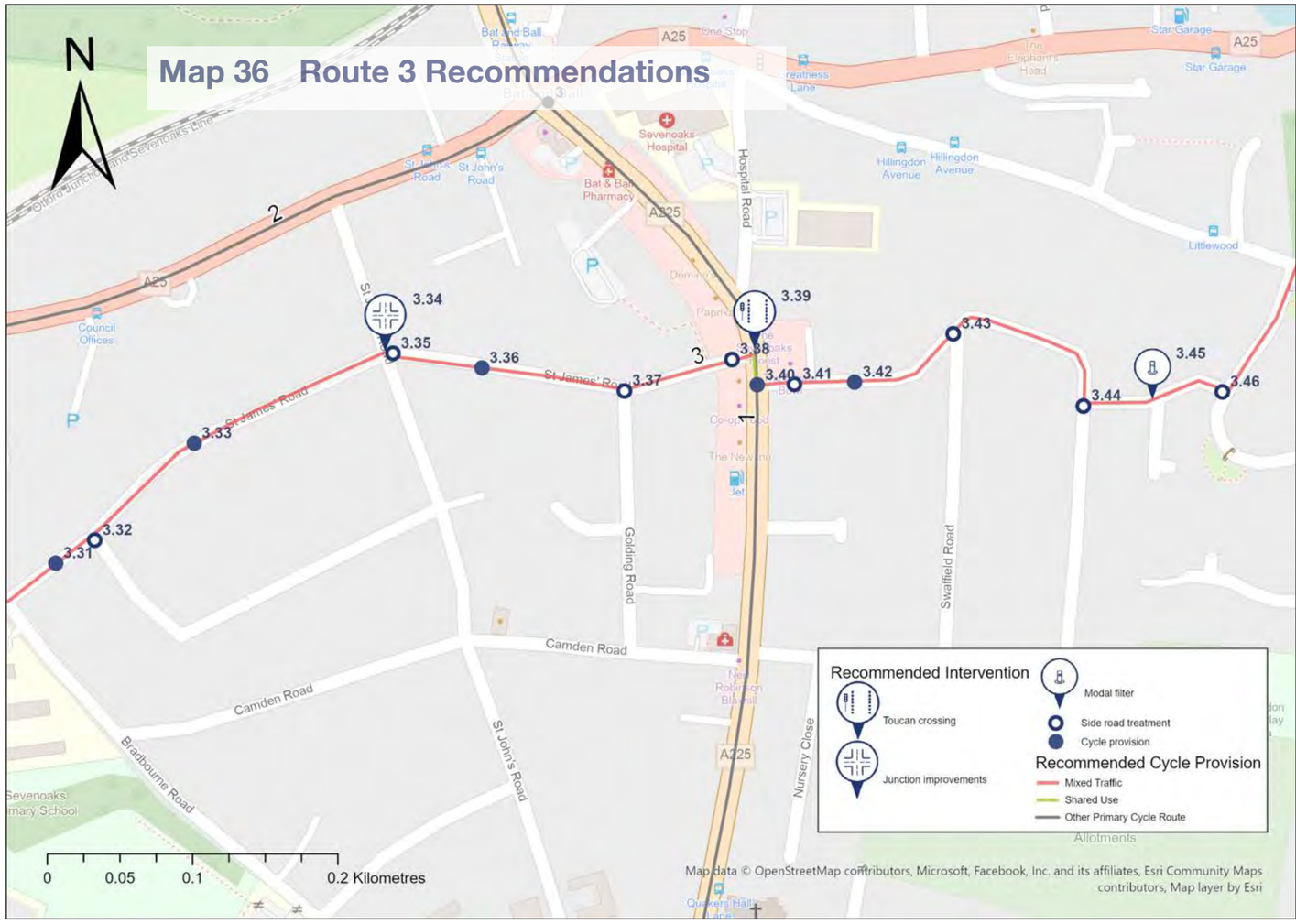


Figure 4.17 Clock House Lane

Intervention Number	Location	Recommendation
3.28	Bradbourne Park Rd - Harrison Way to Bradbourne Rd	Explore if there is space on the school side of Bradbourne Park Road to create a path amongst the trees. (This would need to be no dig construction).
3.29	Bradbourne Park Rd/Bradbourne Park junction	Tighten radius and add crossing add raised table at junction
3.30	Bradbourne Rd - Bradbourne Park Rd to St James' Rd	Low traffic volumes on Bradbourne Road. Suitable for mixed traffic cycling provision. Long-term: Consider a one-way route for vehicles around Bradbourne Road and St Georges Road. The existing walkway is already extremely narrow in this area. More space is needed for walking, cycling and wheeling around the school.
3.31	St Georges Rd leading to St James' Rd	Mixed traffic cycling provision. Improve surfacing.
3.32	St Georges Rd/St James' Rd junction	Create a giveway from southern arm of St Georges Road so that cycling direction is continuous (note: sight line could be difficult).

Intervention Number	Location	Recommendation
3.33	St James' Rd	St James' Road is a private road, will require permissions in order to upgrade to cycle route. Needs resurfacing.
3.34	St James' Rd and St John's Rd	Add raised table/junction or cycle priority crossing.
3.35	St James' Rd	Steep incline on junction approach. Investigate re-allocating parking at the junction to improve visibility, add build out to improve visibility around the wall.
3.36	St James' Rd - St John's Rd to A225	Continue Quietway treatment, remove hand rail on St James' Rd near St John's Road
3.37	St James' Road/ Golding Road	Consider installing a raised table or continuous footway across Golding Road
3.38	St James' Road/ A225	Consider installing a raised table or continuous footway across St James' Road
3.39	A225 at Wickenden Road	Investigate the feasibility of installing a toucan crossing (or other controlled crossing) across the A225/St Johns Hill
3.40	A225 - St James' Road to Wickenden Road	Install a short segment of shared use path provision on the A225 between St James' Road and Wickenden Road
3.41	Wickenden Road at St Johns Hill/A225	Re-allocate parking or narrow the junction to create the space for shared use path transition.



Intervention Number	Location	Recommendation
3.42	Wickenden Road, Little Wood, Hillingdon Avenue and The Crescent	Install quietway treatment. Add on cycle signage. Consider removing on-street parking. Resurfacing required.
3.43	Swaffield Road at Wickenden Road	Reduce kerb radii across Swaffield Road to shorten crossing distance and to reduce turning vehicle speeds.
3.44	Little Wood and Wickenden Road junction	Consider creating a giveway configuration from Wickenden Road on to Little Wood so that cycle route is continuous.
3.45	Little Wood - Between Wickenden Road and Hillingdon Avenue	Option: Investigate the feasibility of installing a modal filter or bus gate on Little Wood to reduce through traffic.
3.46	Little Wood and Hillingdon Rise junction	Narrow junction and consider creating a giveway configuration from Hillingdon Rise on to Little Wood so that cycle route is continuous.

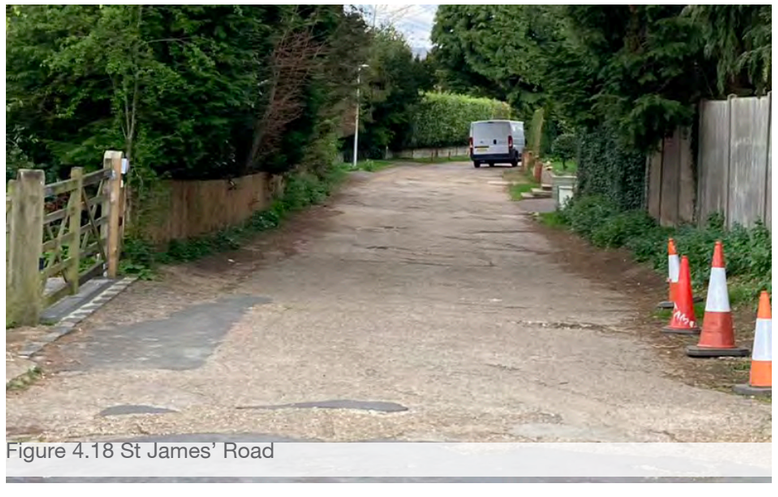


Figure 4.18 St James' Road

Intervention Number	Location	Recommendation
3.47	Hillingdon Avenue and The Crescent	Option: Investigate feasibility of installing a short section of shared use path by widening the existing footway in the green space to 3.0m.
3.48	The Crescent - Hillingdon Avenue to Seal Road	Mixed traffic provision on The Crescent. Steep gradient. Option: investigate opportunities to use green space on northern side of road for potential segregated cycle provision.
3.49	The Crescent and Seal Road junction	Option: Investigate creating cycle entrance to Trinity School near the existing Deliveries entrance.

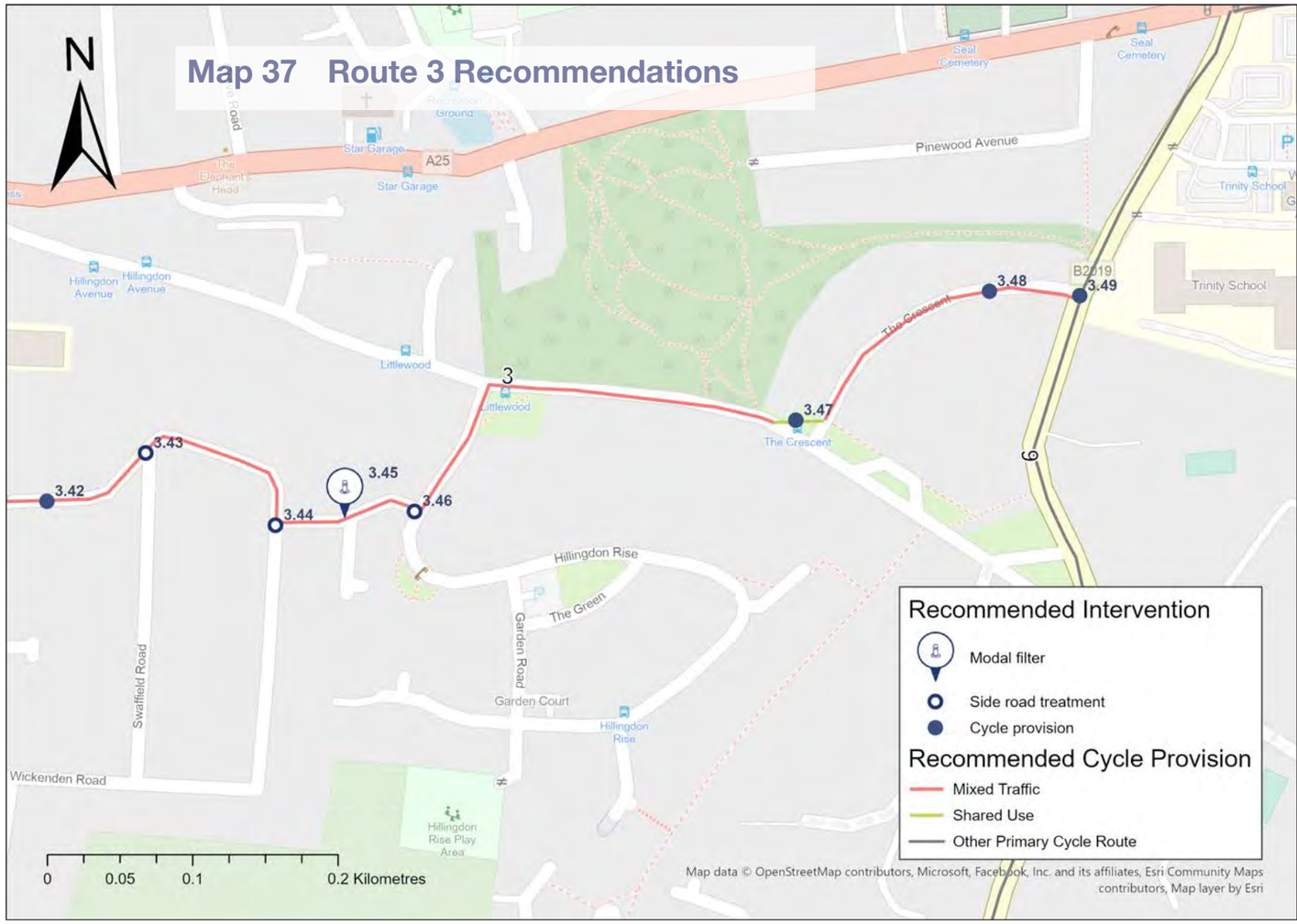


Figure 4.19 Wickenden Road

Route 4

Route Description

Leaving Dunton Green station this route takes a direct alignment via the new development parallel to the rail line on the eastern side. Joining the A224 London Road, via Pounsley Road before crossing the River Darent. The route then remains on the London Road, through Riverhead junction where it briefly shares the road with the A25. An alternative alignment is available for downhill cyclists along Witches Lane and Bullfinch Lane. Back on the main route, the alignment carries on up Amherst Hill and down past Brittains Meadow, Lidl and the Halfway House, with a pinch point over the railway line to arrive at Sevenoaks station.

Existing Conditions

Station Approach on-street parking is full, but the car park is empty. Much of the route along the A224 main artery road is constricted, with some on-street parking but mainly constrained due to narrow road space. After Riverhead the road does go uphill, so the gradient may be a challenge for some. Parallel side roads and shopping parades may allow for some sections to be improved. Brittains Meadow currently has an open situation and only gradually tapers to a reduced width on the approach to the bridge under the railway line.

Route Opportunities

- A redesign of the roundabout at Aisher Way and London Road
- A redesign of the Riverhead junction with A25/A224 to create a better sense of place
- Provide improvements to the greenspace at Brittains Green
- Add a wildlife underpass/tunnel from Brittains Green to the public footpath green corridor to Robyns Way

Route Constraints

- Two uphill sections also narrow along A224
- Bus route
- Narrow road under railway bridge
- 52% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile.
- The alternative route along Witches Lane and Bullfinch Lane is viable for cyclists connecting to Route 3 in Riverhead Parkland

Figure 4.20 Railway underpass on Rye Lane

Figure 4.21 Modal filter onto Pounsley Road

Figure 4.22 London Road, wide section

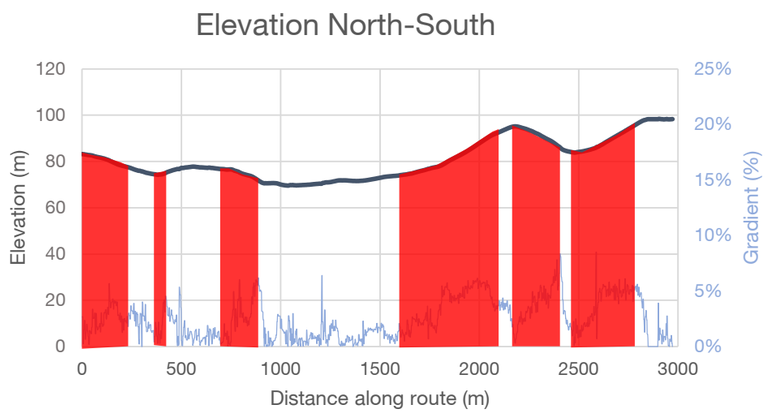


Figure 4.23 Route 4 elevation profile

Map 38

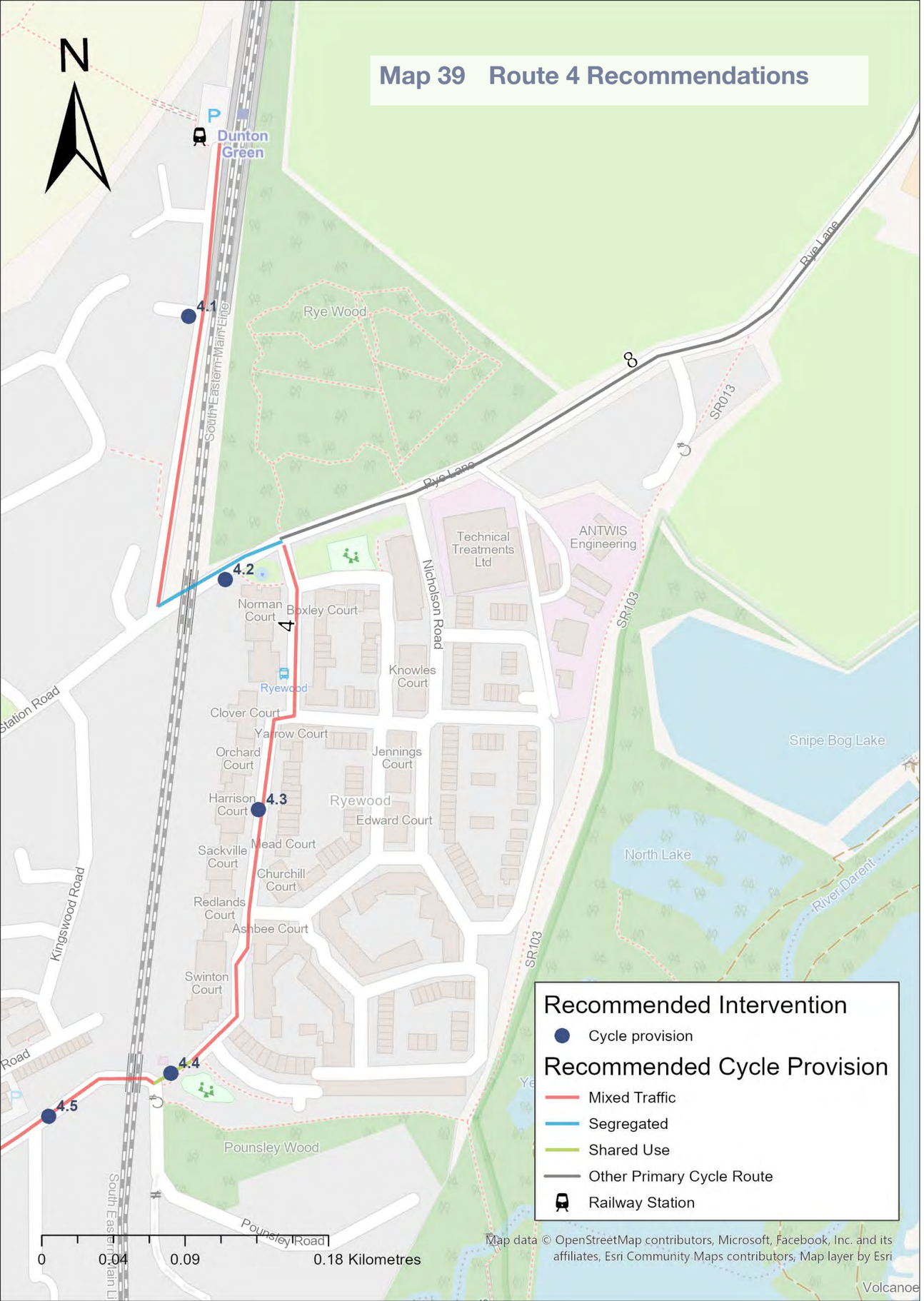
Route 4 Recommended Cycle Provision

N

Alternative alignment

Recommended Cycle Provision
- Mixed Traffic
- Segregated
- Shared Use
- Other Primary Cycle Route
- Railway Station

0 0.25 0.5 1 Kilometres



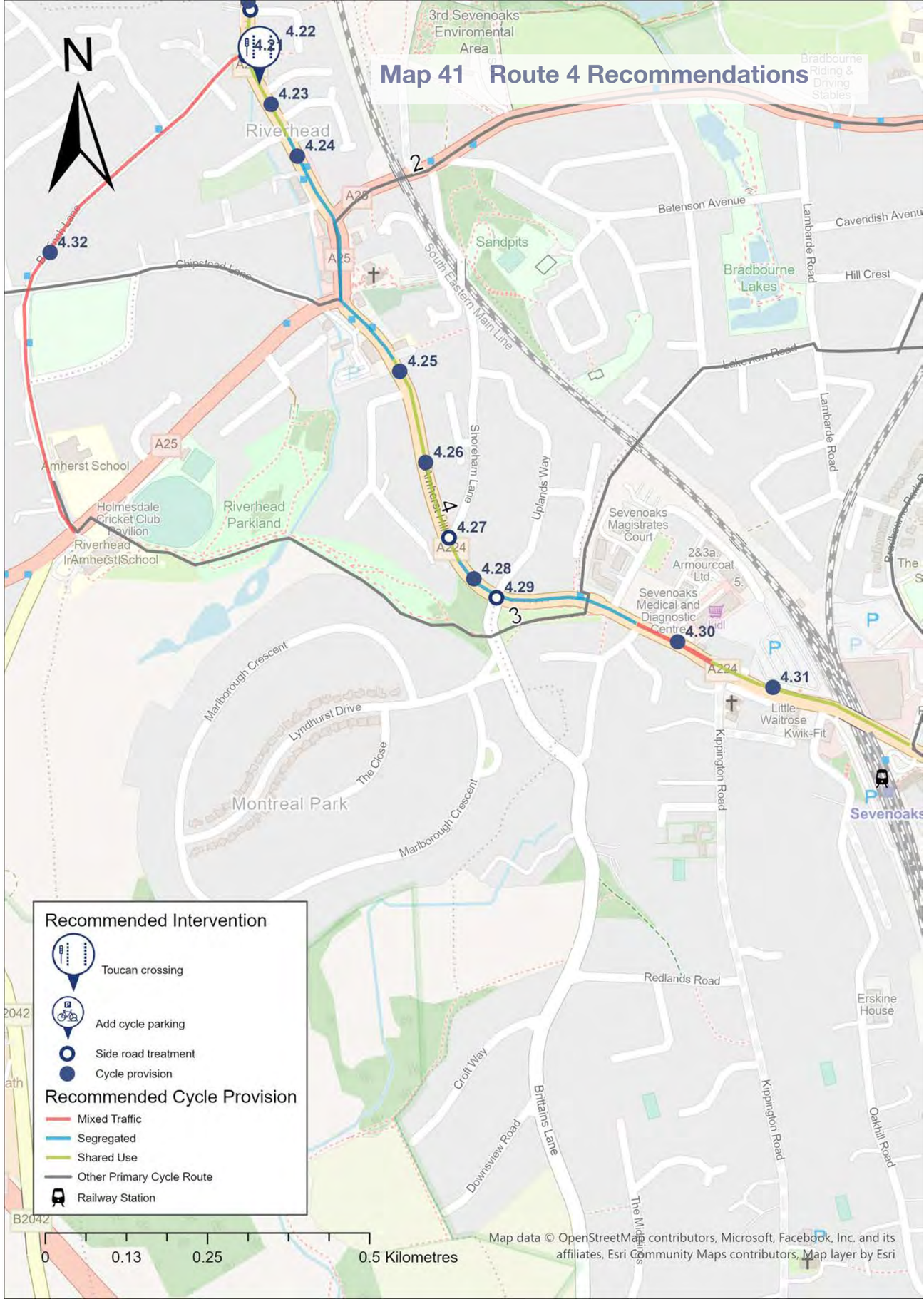
Intervention Number	Location	Recommendation
4.1	Station Approach	Mixed traffic will require potential quiet road treatment, but a 20mph limit will certainly raise awareness of shared use.
4.2	Mainline underpass (Station Road/Rye Lane	Narrow underpass requires separation for safety, narrow car-riageway to accommodate this.
4.3	Eden Road and Campion Square	Highlight presence of walkers and cyclists through signing and limit carriage way speed to 20mph.
4.4	Link between Mere Road and Pounsley Road	This section can remain as mixed use as a modal filter restricts vehicular traffic.
4.5	Pounsley Road to the junction of A224	This road is mixed with traffic, but this cul de sac road receives minimal traffic volumes as a result.
4.6	Shopping parade on junction of Pounsley Road	Potential space for seating if section redesigned through road space reallocation.

Figure 4.24 Campion Square

Intervention Number	Location	Recommendation
4.7	Shopping parade on junction of Pounsley Road	Space should be created for cycle storage, if carriage-way not redesigned, perhaps using up a parking bay.
4.8	Shopping parade on junction of Pounsley Road	Two way shared use until Parallel crossing. Space could be gained by moving highway west and purchasing land from ex car dealership opposite.
4.9	Location of exist-ing Zebra crossing north of Darent river A224	Replace existing zebra crossing with parallel crossing.
4.10	Northern approach to Aisher Way roundabout	Potential for two way separated if carriageway space used.
4.11	Majestic Wine en-trance	A raised junction will give priority to pedestrians and cy-clists at side junction. Also tighten turning to make this safer to cross/use.
4.12	Cul de sac adjacent to Majestic Wine	Opportunity to add seating, planting and naturalise in-dustrial no through road.
4.13	Cul de sac adjacent to Majestic Wine	Cycle parking may incentivise alternative modes of transport to industrial area, particular staff commuting to work here.
4.14	Aisher Way/A224 Roundabout	A redesign of this roundabout prioritising cycle and pedestrian could allow for separated cycle tracks and pavements to fully enhance this junction to the benefit of active travellers.
4.15	Cul de sac adjacent to Aston Martin	There is space on this green area for improved planting and seating.
4.16	Cul de sac adjacent to Aston Martin	Additional cycle parking would assist staff accessing small industrial area.
4.17	Link footway be-tween Cul de Sac to London Road (A224)	Space for separated cycle and walking footway/track.
4.18	Footway link to Tesco superstore	Potential to improve walking and cycling access to su-perstore, through path widening and designated space to link to store through car park.
4.19	Hamlin Road to The Patch	Width will allow shared use, but potential for one way separated.
4.20	Hamlin Road with London Road	Side road treatment should prioritise walkers and pe-destrians at junction.

Map 40 Route 4 Recommendations

Intervention Number	Location	Recommendation
4.21	Bullfinch Lane with London Road	If north bound route has separated cycle track, side road will require give way and infrastructure redesign.
4.22	London Road north of The Patch	A long section of road without crossing provision, suggest additional crossing here.
4.23	The Patch to Linden Square	Segregated might be possible from this point south.
4.24	Linden Square to Maidstone Road	Potential to merge with highway and separate cycle traffic in one direction with shared on the other.
4.25	Amherst Hill by Bright Horizons nursery	Remove on street parking to provide more width for infrastructure.
4.26	Bright Horizons nursery to just south of Shoreham Road	Highway space should be reallocated to allow for shared use.
4.27	Shoreham Road junction	Side road will require raised table and repriority for Pedestrians and cyclists.
4.28	South of Shoreham Road junction to Sevenoaks Fire Station	Separated potentially two way cycling and walking track and footway feasible with wider section of road.
4.29	Brittains Lane junction with London Road	Provision for cycling and walking through installation of a raised table crossing treatment will provide better accessibility and priority to pedestrians and walkers.
4.30	Sevenoaks Fire Station to Halfway House	Small section where cyclists will need to join traffic. We suggest a 20mph section and potentially some form of surface treatment.
4.31	Halfway House to Sevenoaks Station	Adjacent land could allow provision of shared path, with a pinch point across the railway bridge.
4.32	Witches Lane and Bullfinch Lane	If one direction on main alignment is separated, the other direction can be directed along this alternative alignment in mixed traffic. Suggest 20mph and taking direction down hill.



Route 5

Route Description

Travelling south from Sevenoaks station, the trajectory of Route 5 is southeast, leaving the main A224 via The Drive to join the A225 before it travels through the High Street. The alignment provides access to all the amenities on Sevenoaks High Street, before continuing south to link with Sevenoaks School and the southern most residential area of the town, bounded by Gracious Lane.

Existing Conditions

The present situation within the highway boundary limits full separated cycle and walking infrastructure. Leaving Sevenoaks station travelling uphill, wide side road junctions and pinch points due to residential property boundaries restrict the footway. The Drive acts as a short cut for vehicles linking the A224 with the A225. The A225 junction with the B2019 is frequently congested with queuing traffic merging with the main road, the junction at this point is currently very wide. High Street through the town centre of Sevenoaks is constrained and the footway is restricted. There is a congested merge point at the southern end of the town where the A225 joins with the A224. The whole town centre of Sevenoaks is an Air Quality Management Zone. The road south continues to narrow as the route winds between older characterful buildings, past Sevenoaks School, at which point the route widens once more.

Route Opportunities

- Review options to reduce traffic volumes within the town centre
- Improve Air Quality in Town Centre
- Enhance the Heritage features in Sevenoaks
- Improve seating and greenery within the town
- Potential to extend route south if agreement sought with Knole Park

Route Constraints

- Narrow section of High Street
- Narrow footways throughout the route
- Bus route
- 54% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile.
- Steep verges south of Letterbox Lane limit width

Figure 4.25 The Drive junction with A224

Figure 4.26 Narrow sections on southern section of High Street, Sevenoaks

Figure 4.27 Verge available from Letter Box Lane, towards The White Hart

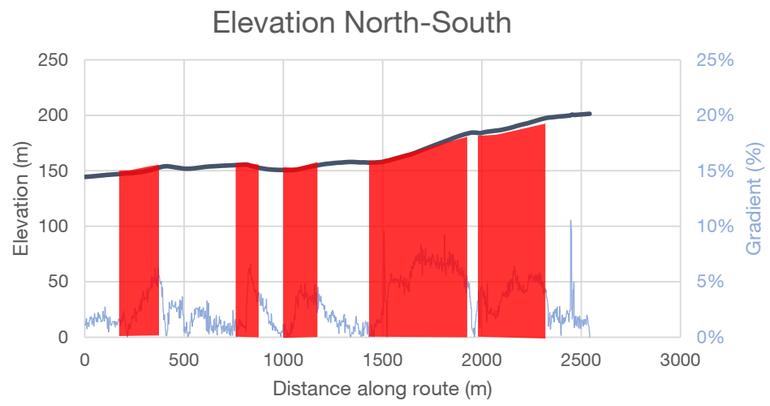
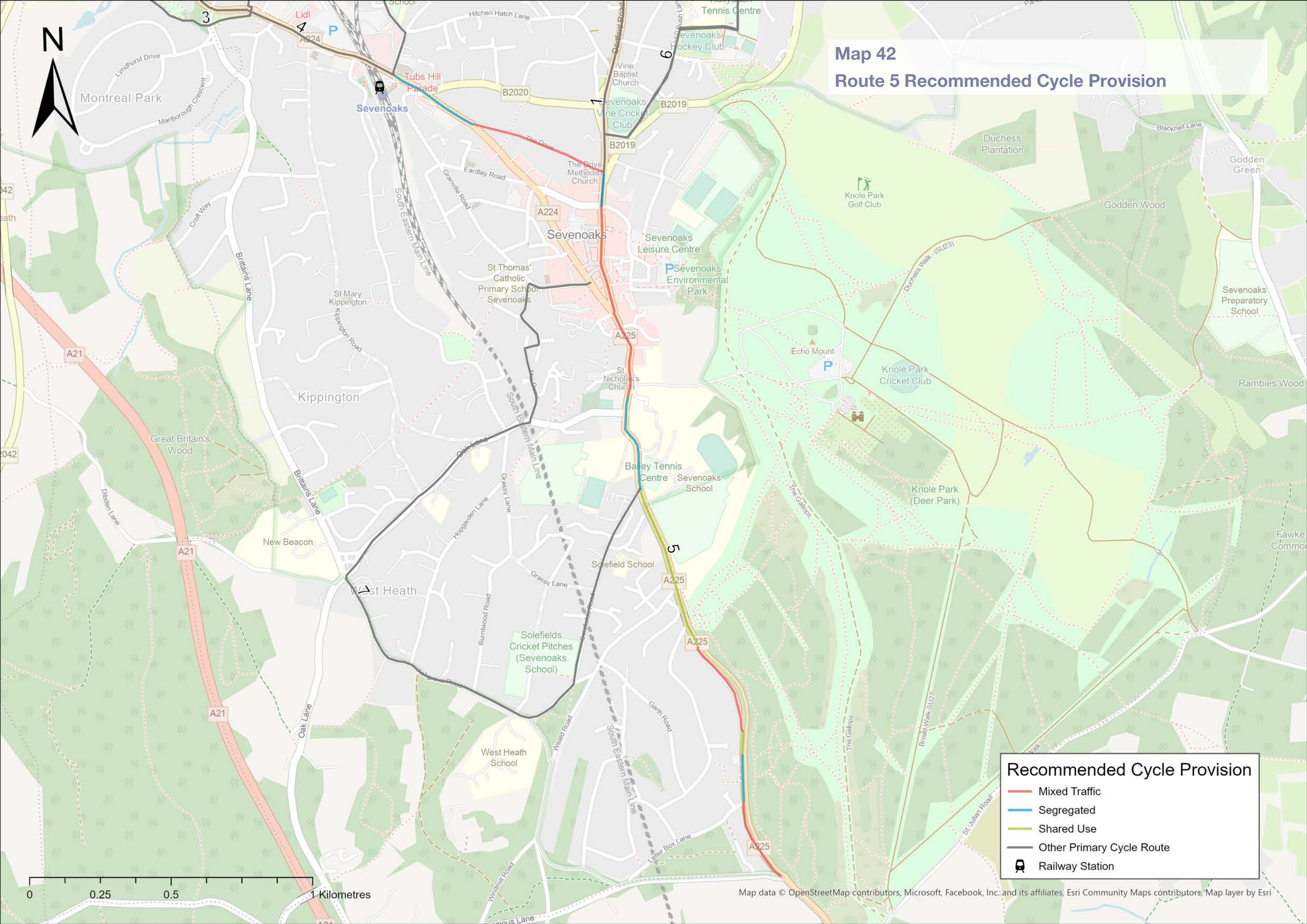
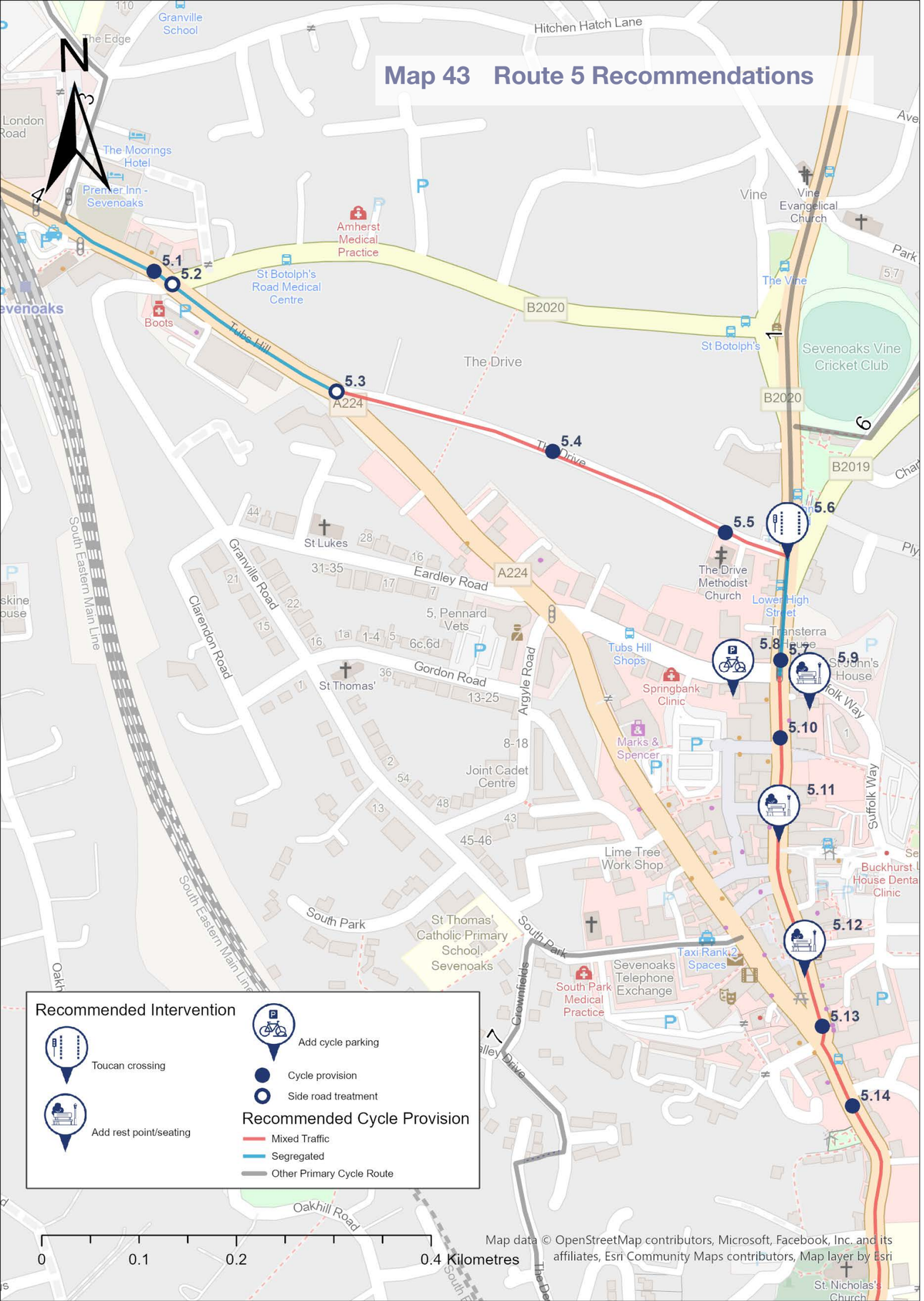


Figure 4.28 Route 5 elevation profile

Map 42
Route 5 Recommended Cycle Provision





Intervention Number	Location	Recommendation
5.1	Tubs Hill	Width of highway will allow separated uphill cycle provision and footway, but downhill will require cyclists to mix with vehicular traffic. Suggest a 20mph speed restriction to mitigate for this or shared use on downhill footway.
5.2	St. Botolph's Road junction with Tubs Hill	This side road will require narrowing to provide safer crossing distances for pedestrians with continued priority for cyclists. With space gained there is an opportunity to increase the natural amenity.
5.3	West entrance to The Drive	A side road treatment should be installed to slow cars turning into The Drive.
5.4	The Drive	The Drive could accommodate one way uphill cycle lane with loss of parking. Downhill route can be aligned down St Botolph's Road.
5.5	East entrance to The Drive	A side road treatment should be installed to slow cars turning into The Drive.
5.6	South of eastern exist of The Drive on A225	Toucan crossing will allow access to Route 1 through provision of a crossing.
5.7	A225 junction with Pembroke road	Review method in which motor vehicle traffic volumes could be reduced within the town centre.
5.8	A225 junction with Pembroke road	Add cycle parking where space has been reconfigured.
5.9	South of Pembroke Road	Add placemaking where highway has been reconfigured.
5.10	High Street Sevenoaks	Due to the constrained width along High Street, cyclists and wheeled users will be requried to share the carriageway with motor vehicles. To enable LTN 1/20 compliant on-road use volumes and speeds will need to be reduced as per the guidance detailed in Table 10.2 on Page 38.
5.11	A225 near to Buckhurst Lane	Placemaking opportunity where highway has been reconfigured.
5.12	Near to existing bike storage	Opportunity for more seating where the bike storage is situated.
5.13	A225 junction with A224	Review method in which motor vehicle traffic volumes could be reduced within the town centre.
5.14	A224 junction with A225 (The Chequers) south to Sevenoaks School	Reduce highway width and widen paths to enable shared use wherever possible to Sevenoaks school. Consider creating a 20mph speed limit while in the town centre.

Intervention Number	Location	Recommendation
5.15	Sevenoaks School (Claridge House) to Solefields Road	Potential for one way cycle track, if space was reallocated and further land gained from school through the relocation of fence. Tight bends in sections south of Almshouses may limit carriage-way width reallocation.
5.16	North of Solefields Road	Replace staged crossing with parallel crossing. Would have to be developed with shared use route switching sides to western A225.
5.17	A225 Solefields Road to Shenden Way	This path should be widened to accommodate both modes and should be situated on the western side of A225. Perhaps look to gain permission to run a shared route along the inside boundary of the adjacent land.
5.18	Shenden Way, where it leaves and rejoins A225 in crescent.	Low traffic volumes and speeds will allow use of this residential road for walking and cycling, if status changed to Quiet Way status.
5.19	Shenden Way to White Hart pub	Create shared path on western side of A225, through negotiation with landowners. A path on the west side would also give best access to amenities along A225.
5.20	The White Hart car park and bus stop	Cycle parking would allow for better connectivity with bus stop.
5.21	Buckwell Place	Side road will require repriority to walkers and cyclists and treat-ment to indicate this change.
5.22	A225 White Hart PH to Letter Box Lane	With some potential land reallocation, path can be separated track and footway.
5.23	Letter Box Lane to Gracious Lane	Width unavailable for separated or shared route.

Route 6

Route Description

This route would connect the potential new development at the Sevenoaks Quarry Site in the Greatness Area to Riverside Shopping Centre to the west of the new development and to Seal and Sevenoaks town centre to the east and south. Most of the route is a link south into Sevenoaks town centre via the A25 and a series of quiet roads in eastern Sevenoaks town.

Existing Conditions

The A25 is a major barrier to north south connectivity between Greatness and Sevenoaks town centre. The narrow corridor has high traffic flows and speeds and has limited space within the carriageway for adding cycle facilities (Figure 4.29). As the route continues south on Seal Hollow Road, there is no dedicated cycle provision, and south of Serpentine Road, Seal Hollow Road continues to narrow and has limited footway provision. The route would use the quiet Serpentine Road to connect to Hollybush Lane Recreation Grounds, then continue through the grounds on to Hollybush Lane and a series of quiet roads, it would then connect to Route 1 at Sevenoaks Vine Cricket Club.

Route Opportunities

- Connect Greatness and Sevenoaks Quarry Site with Seal and Sevenoaks town centre
- Opportunity to add dedicated cycle infrastructure if more space can be acquired, along the A25 – a major barrier to walking and cycling in the Sevenoaks Urban Area
- Connections to Seal Recreation Ground, Hollybush Lane Recreation Ground and the Sevenoaks Vine Cricket Club.
- Add segregated crossings for cyclists and pedestrians

Route Constraints

- Sevenoaks Quarry site plans are not yet finalised – could impact proposed alignments on Childsbridge Lane
- Adding cycle provision on the A25 will likely require use of private land
- Shared use path provision through Seal Recreation Ground, Hollybush Lane Recreation Ground and the Sevenoaks Vine Cricket Club will require coordination with landowners.
- 61% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile (Note: this does not include the gray alignment through the Sevenoaks Quarry site).

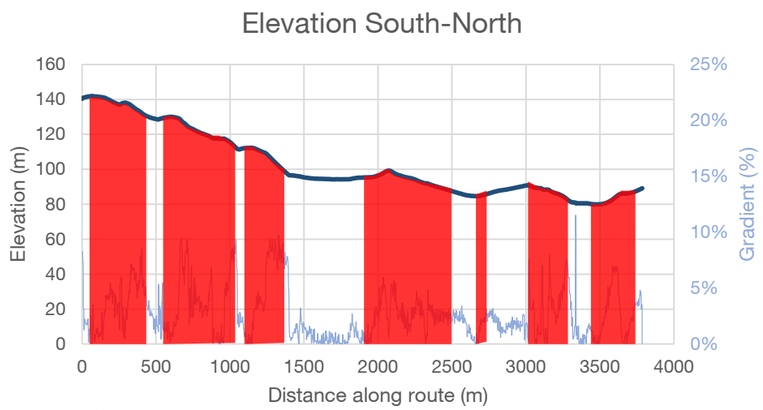


Figure 4.32 Route 6 elevation profile


Figure 4.31 Existing footbridge over Bat and Ball Road


Figure 4.30 Seal Recreation Ground


Figure 4.29 Seal Road/A25 near Ash Platt Road

Map 45
Route 6 Recommended Cycle Provision

Conceptual Alignment through Sevenoaks Quarry Site (subject to change)

N

0 0.15 0.3 0.6 Kilometres

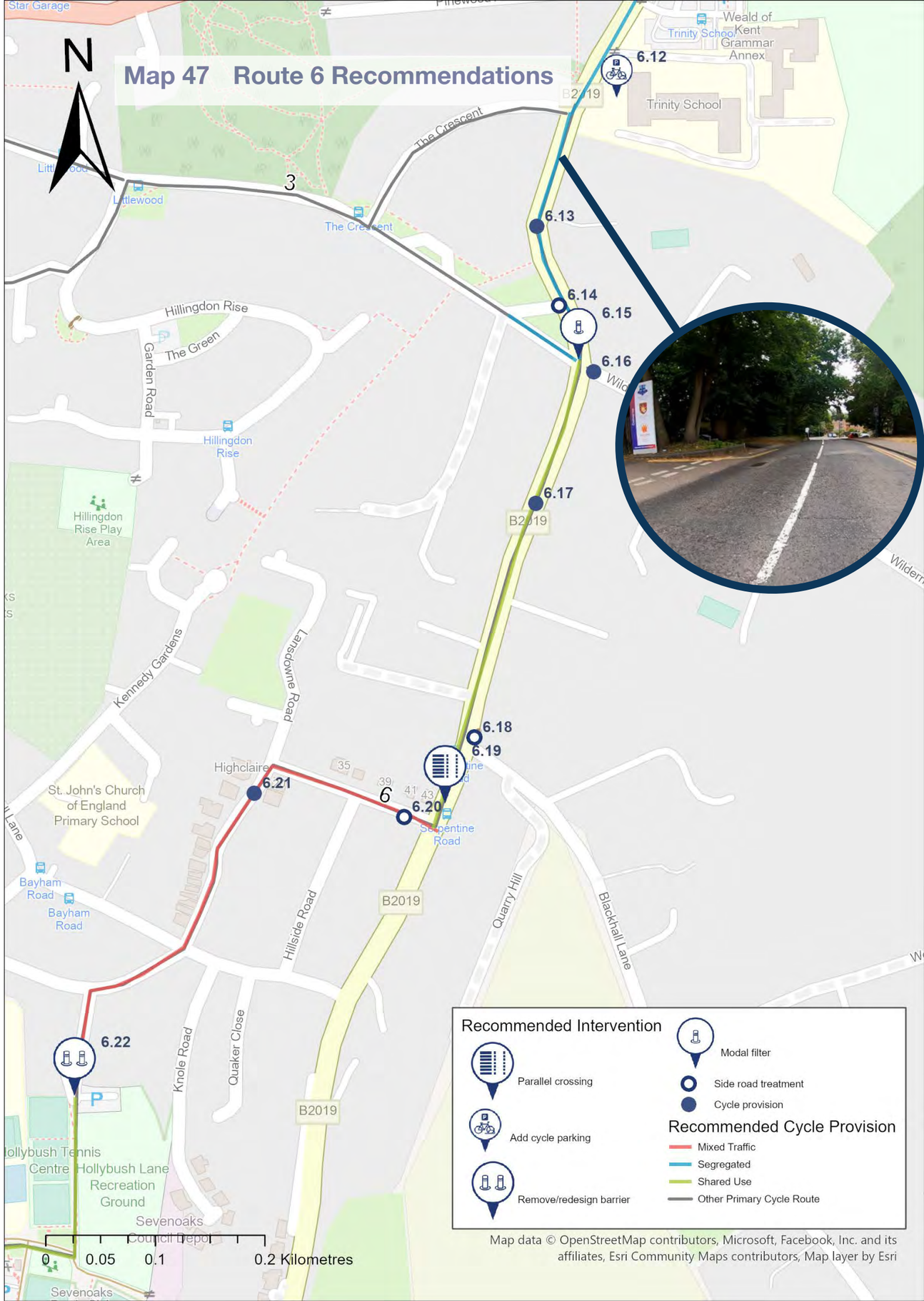
Recommended Cycle Provision
- Mixed Traffic
- Segregated
- Shared Use
- Other Primary Cycle Route
- Railway Station

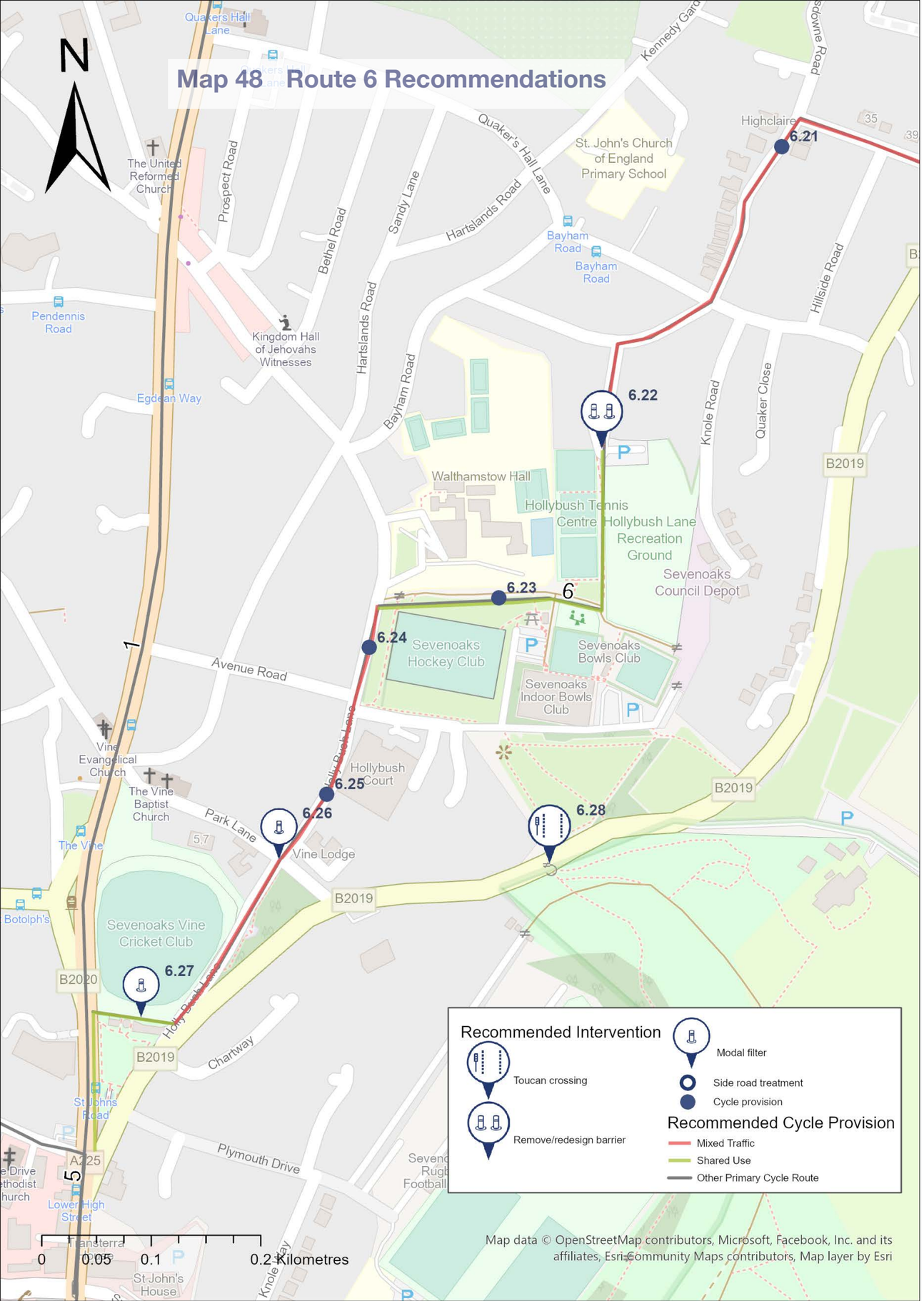
Intervention Number	Location	Recommendation
6.1	The Moor Road, Riverside Retail Park: Otford Road to Railway Line	Long-term: Provide cycle connection from railway bridge to Otford Road, which also provides links to Riverside Retail Park Opportunity to upgrade The Moor Road and access road. PRoW footpath (0221/SU3/1) runs along access road.
6.2	Railway bridge at Bat and Ball Road	Upgrade bridge to carry cycle and pedestrian traffic. Will likely require a wider bridge with lighting and accessible ramps. Coordinate with potential Sevenoaks Quarry development.
6.3	Tarmac Sevenoaks Quarry Site	If site developed, cycle and pedestrian links through the site and connecting to Bat and Ball Road and Childsbridge Lane will be provided.
6.4	Childsbridge Lane - Bentley's Meadow to Seal	Quietway treatment. Extend 20mph speed limit to Bentley's Meadow.
6.5	Seal Recreation Ground - Childsbridge Way to A25	Widen existing path on eastern side of Seal Recreation Ground to minimum of 3m
6.6	Seal Recreation Ground - Entrance on A35	Re-design entrance gate to recreation ground to be accessible for all users. Minimum 1.5m gap required.
6.7	A25 - Seal Recreation Ground to Ash Platt Road	In order to provide segregated cycling facilities on the A25, one lane of vehicle traffic would need to be removed to accommodate a two-way cycle track. There are very limited parallel routes for through traffic, so this may prove to be infeasible. In order to provide safe cycling provision, another option is to install a minimum 3m shared use path with 0.5m separation from the carriageway. The speed limit will need to be reduced to 30mph on the corridor. The construction of the shared use path is subject to further investigation, may require use of private land on the north side of the A25.

Intervention Number	Location	Recommendation
6.8	A25 at Ash Platt Road	Investigate feasibility of installing a controlled crossing, such as a toucan, across the A25.
6.9	A25 - Ash Platt Road to Seal Hollow Road	Currently there is no footway on the southern side of the A25. Option 1: Utilise land on northern boundary of Trinity School for two-way segregated cycle track (minimum of 3.0m) and minimum 2.0m footway. Reduce speed limit to 30mph on the A25 and provide a minimum 0.5m separation from the carriageway. Would likely require earthworks and tree impacts. Option 2: Shared use path (minimum 3.0m) Option 3: remove one lane of vehicle traffic and convert to two way segregated cycle track (discussed in 6.7).
6.10	A25/Seal Hollow Road junction	Complete junction re-design required to make safe for people walking, wheeling and cycling. Add controlled crossings on all arms junction. Reduce kerb radii significantly. By reducing kerb radii on southeast corner of the junction, there would be space to include segregated cycling provision and a footway.
6.11	Seal Hollow Road - A25 to The Crescent	Install a two way cycle track (minimum 3.0m) on eastern side of Seal Hollow Road. This may require using Trinity School verge or shifting carriageway alignment.
6.12	Trinity School	Install additional covered cycle parking.

Figure 4.33 A25/Seal Road looking west near Trinity School

Intervention Number	Location	Recommendation
6.13	Seal Hollow Road - The Crescent to Hillingdon Avenue	Create a one-way traffic flow system around The Crescent, Seal Hollow Road and Hillingdon Avenue to allow for one lane of travel on Seal Hollow Road to be re-purposed in to a two way segregated cycle track on eastern side.
6.14	Hillingdon Avenue at Seal Hollow Road (north)	Consider installing a raised table or continuous footway across Hillingdon Avenue. At a minimum add dropped kerbs and tighten kerb radii significantly.
6.15	Hillingdon Avenue at Seal Hollow Road (south)	Close the spur of Hillingdon Avenue between Wildernesse Mount and Seal Hollow Road. Make a cyclist and pedestrian only street. Add a modal filter.
6.16	Wildernesse Avenue at Seal Hollow Road	Provide pedestrian access gate at Wildernesse Avenue, as required by planning permission. Pedestrian access gates on Seal Hollow Road have not been provided but are required as part of planning permission. Pedestrian access needs to be clearly indicated and maintained at all Seal Drive/A25 and Park Lane in addition to Seal Hollow Road. (Reference: 15/03912/FUL | Provision of oak vehicular & pedestrian gates at junctions of Wildernesse Avenue with Seal Hollow Road, Park Lane & A25. | Entrance Gates At Wildernesse Avenue Sevenoaks Kent TN13 0EA)
6.17	Seal Hollow Road - Hillingdon Avenue to Serpentine Road	Limited space in this location. Option 1: Investigate feasibility widening existing footway into a 3m shared use path on the eastern verge. May be constrained widths due to trees. Option 2: Continue one way traffic flow on Seal Hollow Lane and re-purpose one travel lane into a two-way cycle track on the eastern side.
6.18	Blackhall Lane at Seal Hollow Road	Tighten kerb radii. Create raised/cycle pedestrian priority crossing over Blackhall Lane.
6.19	Seal Hollow Road and Serpentine Road	Dependent on traffic speeds and flows, install parallel crossing over Seal Hollow Road.
6.20	Serpentine Road at Seal Hollow Road	Consider installing a raised table or continuous footway across Serpentine Road. At a minimum add dropped kerbs and tighten kerb radii significantly.
6.21	Serpentine Road - Seal Hollow Road to Holmesdale Road/Hollybush Lane Recreation Ground	Quietway treatment on this low volume, low speed street
6.22	Entrance to Hollybush Lane Recreation Ground	Ensure 1.5m gap in existing barrier





Intervention Number	Location	Recommendation
6.23	Hollybush Lane Recreation Ground	Upgrade PRoW footpath (0221/SU16/1) to allow for cycling. Widen existing path to a minimum of 3.0m throughout the grounds.
6.24	Hollybush Lane - Hollybush Lane Recreation Ground entrance to Holly-bush Close	Quietway treatment on this low volume, low speed street.
6.25	Hollybush Lane - Hollybush Close to Park Lane	Very narrow, low traffic street. All for contraflow cycling and make Dutch-style cycle priority street.
6.26	Hollybush Lane - Park Lane to Seal Hollow Road	Investigate feasibility of installing a modal filter on Hollybush Lane at Park Lane. This will allow for Hollybush Lane between Park Lane and Seal Hollow Road to become a cyclist and pe-destrian priority street.
6.27	Vine Cricket Club	Investigate feasibility of allowing cycling through the southern end of The Vine Cricket Club to join up with cycling provision on St Johns Road. It is noted that changes to The Vine area may require listed property consent.
6.28	Seal Hollow Road at 'The Hole in the Wall' access to Knole Park	Whilst not on Route 6 - investigate feasibility of installing a con-trolled crossing over Seal Hollow Road connecting to Knole Park. This is an area with high levels of pedestrian activity, on a busy section of Seal Hollow Road that has reduced visibility.

Figure 4.34 Seal Hollow Road at the 'Hole in the Wall' entrance to Knole Park

Route 7

Route Description

This route alignment is a circular navigation of West Heath, starting at the main A225 the direction of travel connects Solefield School with the residential surrounds in a south-westerly arc, which loops back along the Ashgrove Road, with alternative options for users via either Hopgarden Lane or Oak Lane, depending on whether they're on foot or wheels.

Existing Conditions

The roads in and around West Heath southwest of Sevenoaks town centre benefit from low traffic volumes and provide a residential network linking to the town. The road widths do not allow for separated cycle tracks, but the low volumes make it easier for mixed traffic cycle and walking.

Route Opportunities

- A point closure at the bottom of Solefields road will reduce through traffic beyond the cricket pitches
- Assess the feasibility of introducing a Low Traffic Neighbourhood (LTN) for the whole of West Heath*
- Quiet Road interventions will help raise awareness of the presence of a walking and cycling route

* Sevenoaks has numerous private roads, restricting access for all, the precedent to limit through traffic is something many residents will be accustomed to, and so full engagement may see support for an LTN.

Route Constraints

- The width is limited at Oak Lane, due to the sunken high verged parameters of this section.
- The steep verges restrict options to widen and inhibit any ability to install a footway.
- A public footpath link (0221/SU35/4) at to Glebe Lane from Hopgarden Lane also limits this alignment option for cyclists but provides a welcome short cut for pedestrians.
- 85% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile.

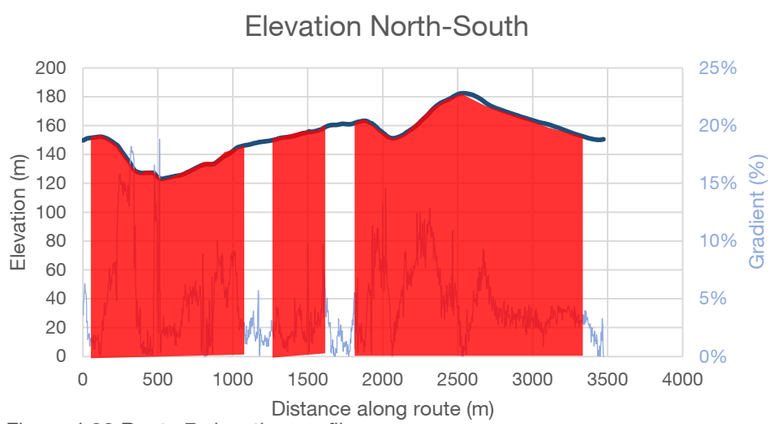


Figure 4.38 Route 7 elevation profile

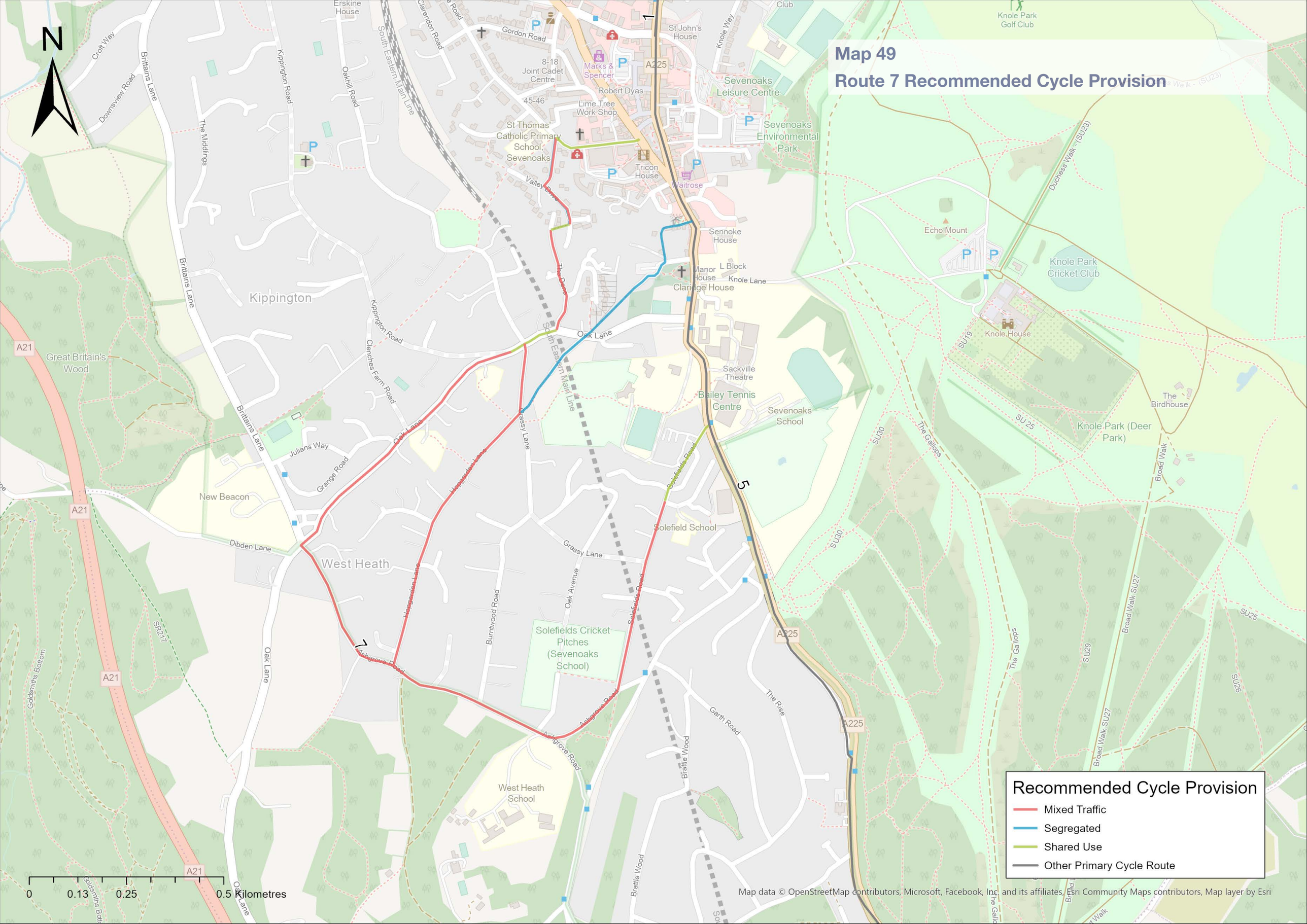

Figure 4.35 Solefields Road

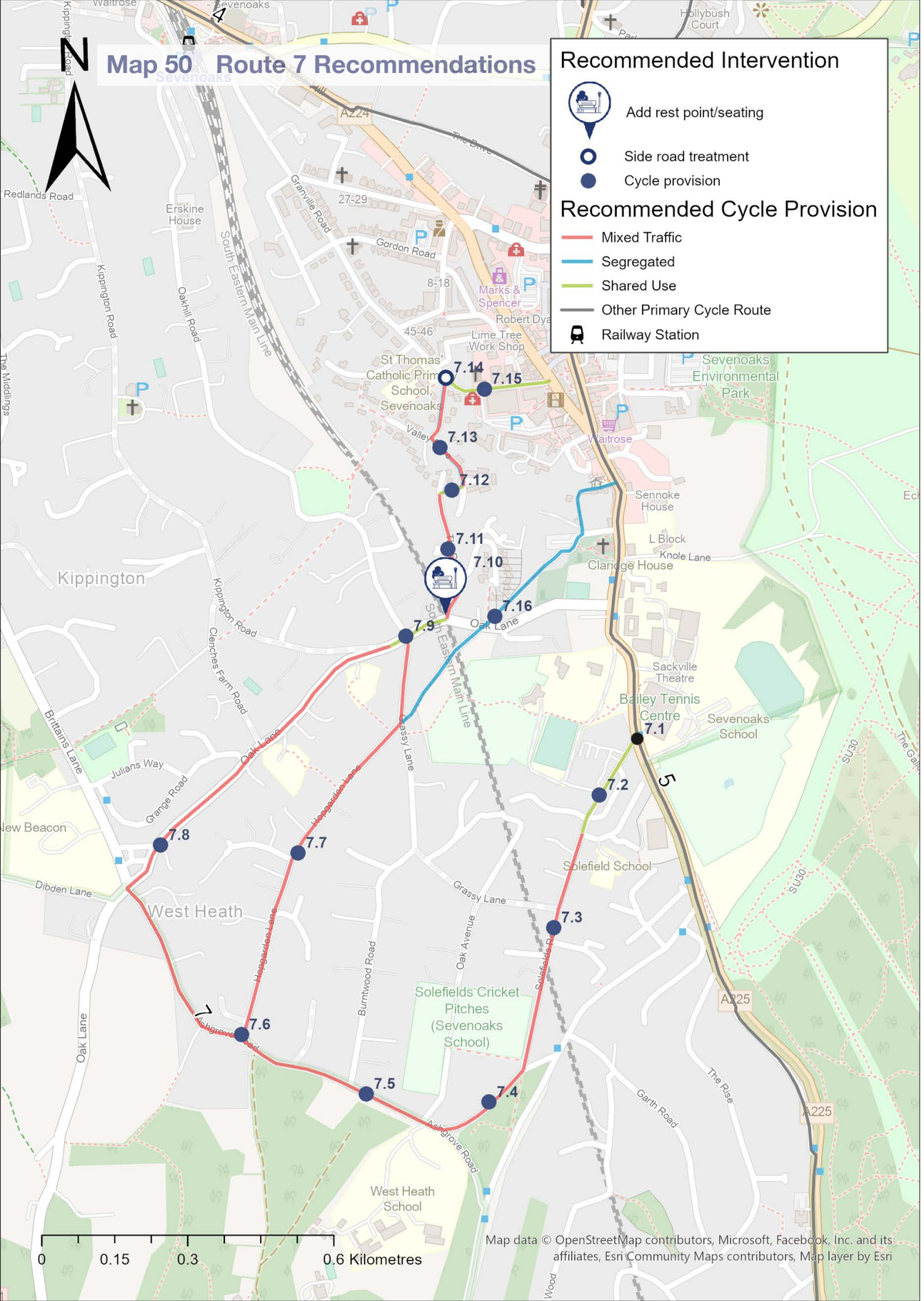

Figure 4.36 Ashgrove Road, with a public woodland adjacent


Figure 4.37 Public Footpath between the Dene and Valley Drive

Map 49

Route 7 Recommended Cycle Provision





Intervention Number	Location	Recommendation
7.1	Junction of Solefields Road with A225	Potential requirement for controlled turning light system to allow for right turning cyclists. Alternatively, replace crossing staged uncontrolled crossing with parallel crossing.
7.2	Solefields Road A225 to Fiennes Way	Widen the footway to allow shared use, space could potentially be gained from the verge opposite.
7.3	Solefields Road from Fiennes Way to Ashgrove Road	Subject to traffic volumes and average speeds, allow mixed traffic if too high, suggest a point closure at the bottom of the road with consultation.
7.4	Ashgrove road adjacent to woodland	Shared with highway unless town council can agree for a shared use path through adjacent woodland.
7.5	Ashgrove road to Oak Lane	Subject to traffic volumes and speeds, consider reducing speed limit to 20mph, or Quietway status.
7.6	Ashgrove Road junction with Hopgarden Lane	Consider point closure at some point along the road to reduce traffic volumes.
7.7	Length of Hopgarden Lane/ Grassy Lane	Consider taking Route 7 alignment via Hopgarden and joining Oak lane where it is wider, reduce to 20mph or point closure.
7.8	Oak Lane, from Ashgrove Road to Kippington Road	Space disallows any other recommendation to be applied. Suggest 20mph to encourage safer user of road for walkers and cyclists. Consider Hopgarden Lane alternative as primary route instead.
7.9	Oak Lane, from Kippington Road to The Dene	Width could allow for increased path width, with the loss of on-road parking
7.10	Junction of The Dene with Oak Lane	Consider additional seating, interpretation or planting to enhance historical feature.
7.11	The Dene	Apply a 20mph speed limit, speeds should be low as residential cul-de-sac.
7.12	Footway between The Dene and Valley Drive	Full width will need to be cleared, removing grounds maintenance but reducing aesthetic. However improved visibility will help quiet path feel safer.
7.13	Valley Drive and Crownfields	Light separation may be possible on uphill for cycling, with some verge and parking loss.
7.14	Junction of Crownfields with South Park	A re-design is required to the road layout for Right Turn cyclists merging onto South Park.
7.15	South Park from the junction of Crownfields to A224	Required space could be provided by relocating on-street parking to where recycling bank is at entrance to car park, recycling bank can be moved to pavement side by post office.
7.16	Footpath to Glebe Lane, then Rectory Lane, then Six Bells Lane (0221/SU35/4)	This alternative alignment will be suitable for walking only. The could be signed as a pedestrian link as part of signing network.

Route 8

Route Description

This route travels south from Pilgrims Way West/High Street in Otford along Rye Lane to Dunton Green. The route would connect with Route 4 at the junction of Campion Square and Rye Lane. North of the Sevenoaks Wildlife Reserve there is the opportunity for a new traffic-free active travel link between Dunton Green and Otford Road. The proposed route shown is conceptual, but it would generally follow paths along the River Darent, as shown in Figure 4.42.

Previous Plans/Studies

- The proposed cyclist/pedestrian link between Bat and Ball Station and Dunton Green Station is shown in Sevenoaks' Town Neighbourhood Plan (2022) along the alignment proposed for Route 8

Existing Conditions

Rye Lane is a generally quiet and low trafficked rural lane with low vehicle speeds and volumes. The northern end of the route travels through a residential area, with some narrow sections bounded by hedgerows as well as narrow turns with lack of visibility. The route crosses under the M26, one of the few crossings to the north of Sevenoaks. The route is national speed limit between the built up areas and returns to 30mph as Rye Lane enters Dunton Green. The route also broadly follows the route of the Darent Valley Path a popular walking route through Kent. The proposed traffic free route between Dunton Green and Otford Road is an ecologically sensitive area in a floodplain of the River Darent.

Route Opportunities

- Connect Otford to Dunton Green via a quiet lane
- New traffic-free link between Dunton Green and Bat and Ball Station

Route Constraints

- Ecological impacts of new traffic-free link will need further study
- Flood risk constraints on new traffic-free link – it is in a 'high risk' flood zone
- Land ownership and access rights will need to be secure for new traffic free link
- 53% of the route gradients are not LTN1/20 compliant. These sections are indicated in red in the elevation profile (Note: the shared use link between Rye Lane and Otford Road is not included in the elevation profile).

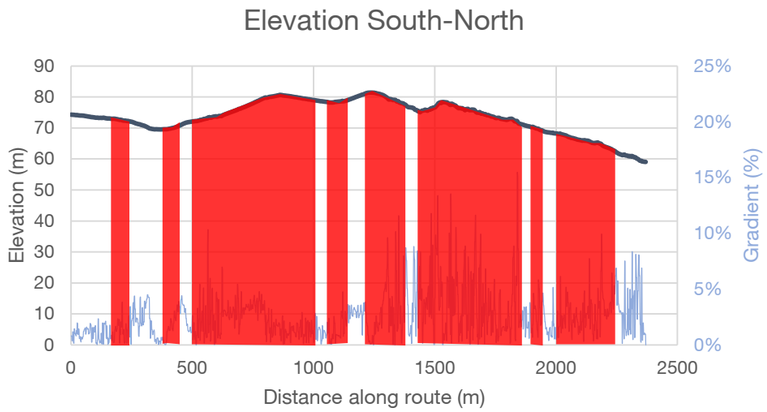


Figure 4.39 Route 8 elevation profile

Figure 4.40 Rye Lane looking north to M26 underpass

Figure 4.41 Rye Lane in Dunton Green

Figure 4.42 Conceptual alignment of traffic-free route (Source: Google Maps)

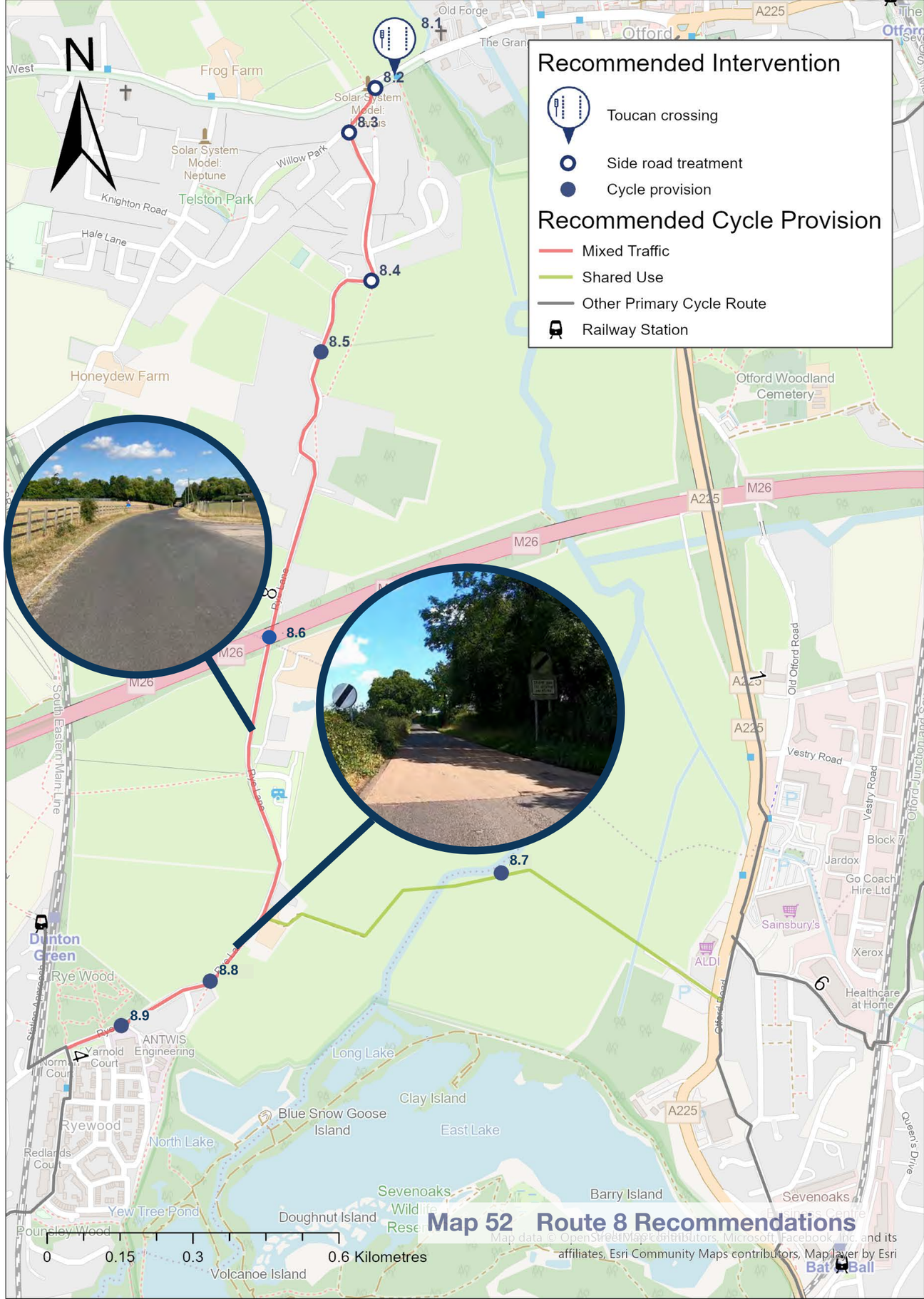
Map 51
Route 8 Recommended Cycle Provision

N

0 0.13 0.25 0.5 Kilometres

Recommended Cycle Provision
- Mixed Traffic
- Shared Use
- Other Primary Cycle Route
- Railway Station

Intervention Number	Location	Recommendation
8.1	Pilgrims Way West/ High Street	Investigate feasibility upgrading existing uncontrolled crossing to a toucan or other controlled crossing. Whilst not part of Route 8, it is it part of the Darent Valley Path, a popular walking route.
8.2	Rye Lane at Pilgrims Way West	Consider installing a raised table or continuous footway across Rye Lane. Tighten kerb radii.
8.3	Willow Park at Rye Lane	Tighten kerb radii at Willow Park, add dropped kerbs.
8.4	Rye Lane	Sharp blind turn. Investigate options to improve visibility for all users.
8.5	Rye Lane from Pilgrims Way West to Darent Valley Footpath (near The Coopers)	Implement 'Quiet Lane' treatment on Rye Lane. Will require signage and speed limit reduction to 40mph or lower. Also, consider adding lighting along the entire route.
8.6	M26 underpass	Investigate installing lighting within underpass to improve safety and visibility of cyclists.
8.7	River Darent Path between Rye Lane and Otford Road	Conduct a feasibility study to evaluate the potential to construct a shared use path between Rye Lane and Otford Road. This would provide a key link between Dunton Green and Bat and Ball. This link was recommended as part of Sevenoaks Town Council's Neighbourhood Plan. Note: This is a 'high risk' flood area. Also, an ecological impact assessment may need to be undertaken.
8.8	Darent Valley Footpath	Improve wayfinding signage for Darent Valley Path and links to Sevenoaks Wildlife Reserve.
8.9	Rye Lane - Darent Valley Footpath to Campion Square	Quietway treatment. Reduce speed limit to 20mph and implement traffic calming measures as required.



Core Walking Zone Recommendations

Map 53 Core Walking Zones

Core Walking Zones

Three core walking zones were identified in the Sevenoaks Urban Area, based on clusters of pedestrian trip generators and attractors, as well as areas with a high number of pedestrian/ vehicle collisions. Sevenoaks town centre, Bat and Ball junction and Riverhead have high levels of pedestrian activity, but lack a high-standard of pedestrian provision.

Common themes across all three areas include: narrow footways with guardrailing, large junctions with limited or no pedestrian crossing provision and high levels of air pollution (all are located in AQMAs).

Recommended interventions are outlined on the following pages, incorporating infrastructure improvements described in the 'Walking Interventions Toolkit' on the following page. All three zones will require a significant re-allocation of carriageway space in order to prioritise the needs of people walking and wheeling in Sevenoaks Urban Area.

3 Riverhead

2 Bat and Ball junction

1 Sevenoaks town centre

Core Walking Zone

Railway Station

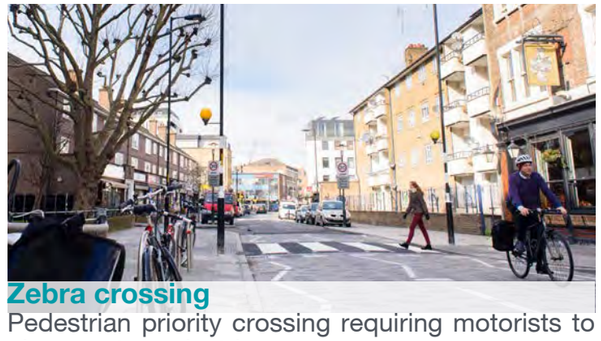
0 0.25 0.5 1 Kilometres

Walking Interventions Toolkit

All images provided by Sustrans unless otherwise noted.

Dropped kerbs w/ tactile paving

Necessary to create inclusive, accessible crossing points for pedestrians.



Zebra crossing

Pedestrian priority crossing requiring motorists to give way to pedestrians.

Parallel crossing

Similar to a zebra crossing, but with a separate parallel cycle crossing alongside the zebra crossing.

Continuous footway

Continuous footways extend across side roads at the same level and use coloured paving materials, pedestrians have priority over motor vehicles.

Signalised crossing

Signal-controlled crossings comprising either a Pelican/Puffin for pedestrians or a Toucan which can be shared between pedestrians and cyclists.

Raised table

Raised tables at junctions reduce speeds of turning vehicles at side roads or across the entire junction.

20mph speed zones

Lower speed limits and lower speed zones create safer environments for all, may need to be combined with infrastructure and enforcement changes to ensure compliance.

One-way systems

Reallocating space from the carriageway to support wider footways, cycle facilities and vehicle parking.

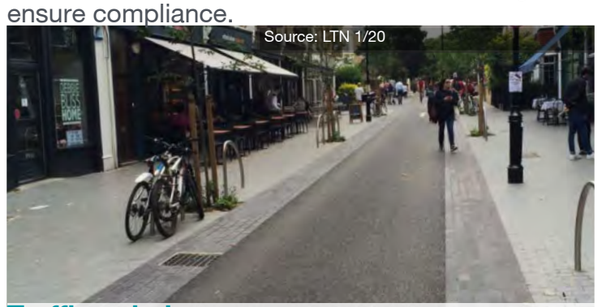
Can help increase cycle network permeability.

Wayfinding

Providing signage with key destinations helps improve the legibility of the pedestrian network.

Public realm improvements

Adding green infrastructure such as planters, rest areas, cycle parking and other placemaking interventions creates a more welcoming environment for pedestrians.



Traffic calming

Measures to create slower speed environments can include build-outs, road humps, chicanes and planters.

Modal filter

A bollard or planter in the carriageway which people can travel past be walking or cycling. Helps create a low traffic environment by restricting access to motorised through-traffic.

5 Sevenoaks town centre Core Walking Zone (CWZ)

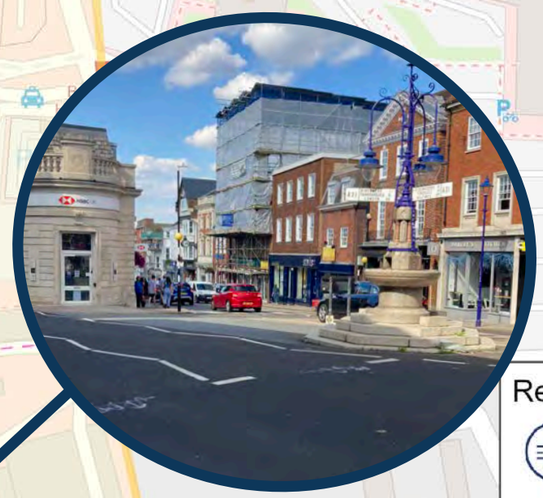
The Sevenoaks town centre Core Walking Zone (CWZ) extends from the junction of B2019 south to beyond the point the High Street and A224 merge. It includes all the town centre car parks as far as St. Thomas Catholic Primary School extending east to Sevenoaks Leisure centre.

The town centre is a concentrated retail area offering eating, shopping and entertainment. Focused in The Shambles the pedestrian precinct is an attractive hub.

Reviewing interventions to enable a reduction in vehicle volumes along High Street will enhance the experience offered to visitors and residents of Sevenoaks Town Centre.

Intervention Number	Location	Recommendation
W1.1	A224 junction with Argyle Road and Pembroke Road	This junction will require a complete redesign with interventions such as a raised table and priority given to pedestrians
W1.2	A224 Bligh's Meadow Car Park entrance	Consider installing a continuous footway across car park entrance to ensure pedestrian priority.
W1.3	A224 junction with South Park	Install a raised table and tighten the junction to provide more footway and reduced carriageway. Shortening crossing distance.
W1.4	Sevenoaks Post Office	Space available to install Cycle Parking
W1.5	Rockdale Road/A224	Consider installing a continuous footway across Rockdale road to ensure pedestrian priority.
W1.6	The Chequers Junction, High Street with A224	A redesign of this junction is required, with emphasis on reallocating footway space for pedestrians. It also presents an opportunity to plant greenery/rain garden and placemaking
W1.7	The Shambles footway crossing point	Additional cycle parking will link walking and cycling network
W1.8	High Street junction with Bus Station entrance	Wayfinding sign location
W1.9	Bligh's Meadow Car Park	Secure cycle parking should be installed on Bligh's Walk corner of the car park
W1.10	High Street public footpath entrance opposite Blighs Road	Wayfinding sign location and recommend street lighting to Suffolk Way will make footpath safer
W1.11	High Street - Pembroke Road to A224/London Road junction	In conjunction with Route 5, a review of how traffic volumes can be reduced within the town centre will improve the pedestrian experience.
W1.12	A225/Pembroke Road/ Suffolk Way junction	Complete junction re-design required with emphasis on reallocating footway space for pedestrians and cyclists.
W1.13	Bligh's Meadow Car Park entrance on Pembroke Road	Investigate feasibility of tightening kerb radii and adding continuous footway or raised table across entrance to car park.

Map 54 Sevenoaks town centre



W1.1
W1.2
W1.3
W1.4
W1.5
W1.6
W1.7
W1.8
W1.9
W1.10
W1.11
W1.12
W1.13

Recommended Intervention
- Junction improvements
- Add cycle parking
- Wayfinding
- Side road treatment
- Public Footpath
- Core Walking Zone
- Primary Cycle Route

0 0.05 0.1 0.2 Kilometres

6 Bat and Ball Core Walking Zone

The Bat and Ball Core Walking Zone (CWZ) has been defined as the area immediately surrounding the A225 and A25 crossroads, incorporating the shopping parade at St. John's Hill, extending north to include Bat and Ball Train station.

The CWZ has a hospital and local supermarket within it, as well as the Sevenoaks Enterprise Centre as an employment centre. The zone also provides a key link for access to Sevenoaks Football Club, Trinity School and Knole Academy, all accessed along the A25 Bradbourne Vale Road.

Locations identified for improvement are shown on the adjacent map. Key potential options are detailed on the following pages.

Intervention Number	Location	Recommendation
W2.1	Bat and Ball Road junction with A225	Reduce junction width reprioritise crossing for walkers and cyclists
W2.2	Bat and Ball Road	Widen footway to accommodate school foot traffic
W2.3	Bat and Ball junction	Controlled crossing required, consider allowing on traffic phase to allow all pedestrians to cross in any direction at once
W2.4	Bat and Ball junction, NW corner	Seating opportunity for pedestrians also potentially incorporate tree planting on verge and residential green space
W2.5	Bat and Ball junction, all corners	Railings obstruct pedestrians removal recommended as part of redesign and drop curb in the process, with tactiles
W2.6	A25 St. John's Road Bus Stop	Bus stop could benefit from shelter and seating
W2.7	A225 junction with Wickenden Road	Opportunity for placemaking at the parade of shops and seating is vital
W2.8	A225 Between Westfield and Wickenden Road South	Requirement for crossing point at the southern section as there is nothing to assist road crossing for pedestrians
W2.9	Hospital Road	Investigate possibility of a point closure, traffic surveys would be required
W2.10	Hospital Road junction with Hillingdon Avenue and A25	Junction requires tightening and the addition of some form of facilitated crossing, remove island prioritise pedestrians
W2.11	Hospital Road junction with Hillingdon Avenue and A26	Remove railing from junction corner, this restricts pedestrians accessing the pavement
W2.12	A25 Otford Road (A225) junction to Greatness Lane	Recommend widening for pedestrians as a minimum
W2.13	A25 Seal Road from Greatness Lane to Grove Road	Footway inadequate width, widen to provide better provision

Map 55 Bat and Ball

W2.1
W2.2
W2.3
W2.4
W2.5
W2.6
W2.7
W2.8
W2.9
W2.10
W2.11
W2.12
W2.13

Recommended Intervention
- Zebra crossing
- Junction improvements
- Add rest point/seating
- Remove/redesign barrier
- Modal filter
- Side road treatment
- Footway Widening
- Public Footpath
- Core Walking Zone
- Primary Cycle Route
- Railway Station

0 0.05 0.1 0.2 Kilometres

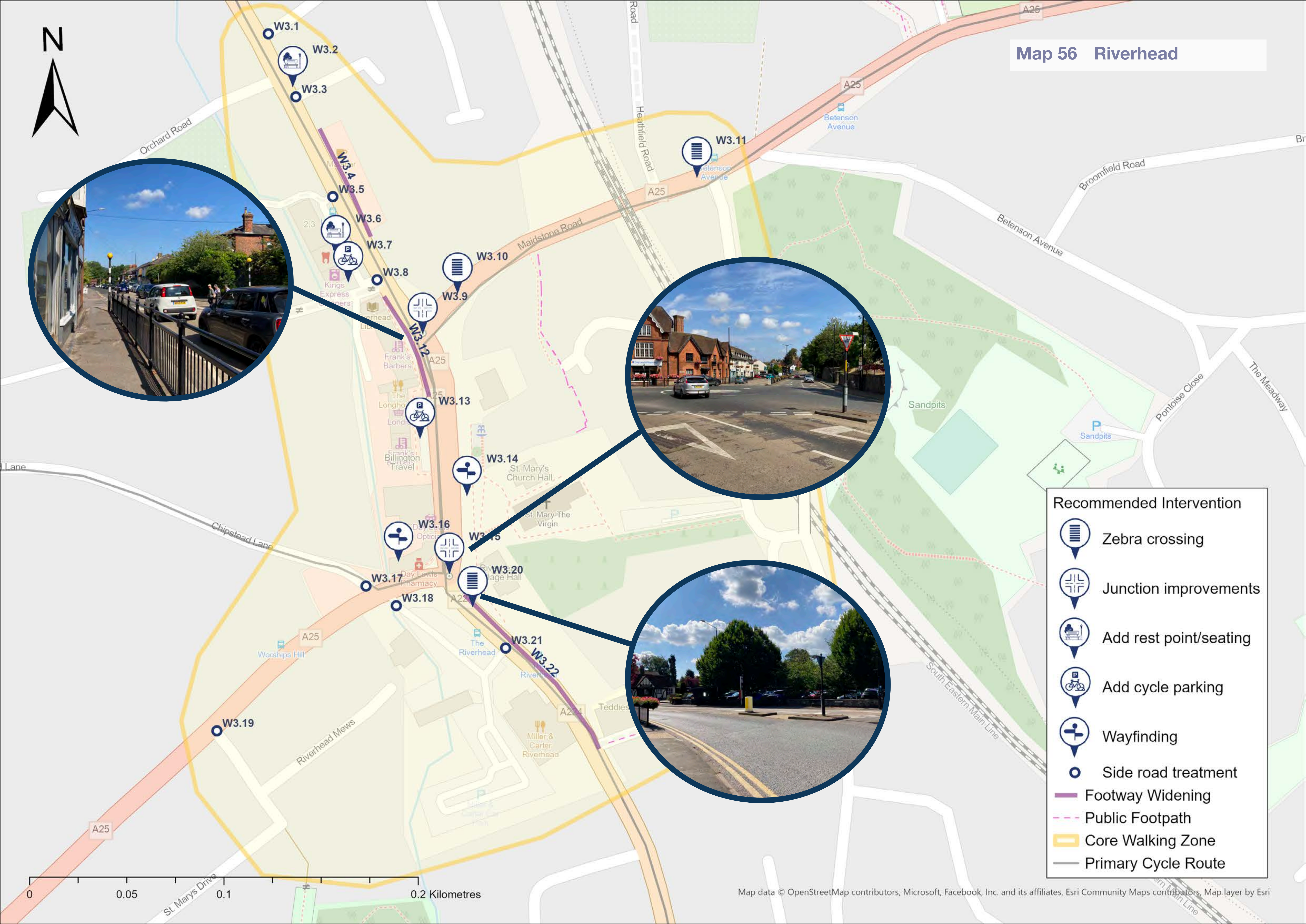
7 Riverhead Core Walking Zone

The Riverhead Core Walking Zone (CWZ) is defined by the area encompassing London Road and its junctions with the A25/ Maidstone Road and Worships Hill.

The CWZ includes several shopping parades, with the major shopping parade located on the western side of London Road's two large roundabouts. The area also includes Riverhead Library, Riverhead Village Hall, St Mary's Church. The Sandpits and Riverhead Parkland are located on the periphery of the CWZ boundary.

Locations identified for improvement are shown on the adjacent map. Key potential options are detailed in the adjacent table.

Intervention Number	Location	Recommendation
W3.1	Scotts Way	Consider installing a raised table or continuous footway across Scotts Way.
W3.2	London Road	Add rest point/seating at bus stop on London Road
W3.3	Linden Square	Consider installing a raised table or continuous footway across Linden Square.
W3.4	London Road - Linden Square to north of Maidstone Road	Very narrow footway in this location. Investigate opportunities to reallocate space from the carriageway to accommodate a wider footway.
W3.5	London Rd access drive - north	Consider installing a raised table or continuous footway across access road.
W3.6	Parade of shops	Install additional seating/rest point.
W3.7	Parade of shops	Add cycle parking.
W3.8	London Road access drive - south	Consider installing a raised table or continuous footway across access road.
W3.9	London Rd/Maidstone Road/A25 Roundabout	Complete re-design required to prioritise people walking, wheeling and cycling. In coordination with cycling improvements, investigate feasibility of installing Dutch-style roundabout. This should help improve compliance with existing zebra crossing on north side of roundabout.
W3.10	Maidstone Road/A25	As part of the roundabout re-design, consider installing zebra crossing on Maidstone Road.
W3.11	Maidstone Road/A25 near Betenson Avenue	High frequency of pedestrian crossings in this location. Consider installing zebra crossing of A25 near Betenson Avenue.
W3.12	London Road near Riverhead Library	Very narrow footway in this location, in part due to guardrail. Widen footway and remove guardrail as part of roundabout re-design described in W3.9.
W3.13	London Road	Add cycle parking near Londis.
W3.14	St Mary's Church	Install pedestrian wayfinding, including signage for route to Sandpits via Church Field and Shoreham Lane.
W3.15	A25/Worships Hill/Amherst Hill Roundabout	Complete re-design required to prioritise people walking, wheeling and cycling. In coordination with cycling improvements, investigate feasibility of installing Dutch-style roundabout.
W3.16	A25/Worships Hill/Amherst Hill Roundabout	Install pedestrian wayfinding signage for destinations on the London Road corridor, and routes to Riverhead Parkland
W3.17	Chipstead Lane	Consider installing a raised table or continuous footway across Chipstead Lane.
W3.18	Worships Hill car park access road	Consider installing a raised table or continuous footway across car park entrance.
W3.19	St Marys Drive	Consider installing a raised table or continuous footway across St Marys Drive. Tighten kerb radii.
W3.20	Amherst Hill	Upgrade existing uncontrolled crossing to zebra crossing, in coordination with re-design described in W3.16
W3.21	Amherst Hill car park access road	Consider installing a raised table or continuous footway across car park entrance.
W3.22	Amherst Hill	Very narrow footway in this location, in part due to guardrail. Widen footway and remove guardrail as part of roundabout re-design described in W3.16.



Map 56 Riverhead
N
W3.1
W3.2
W3.3
W3.4
W3.5
W3.6
W3.7
W3.8
W3.9
W3.10
W3.11
W3.12
W3.13
W3.14
W3.15
W3.16
W3.17
W3.18
W3.19
W3.20
W3.21
W3.22
Orchard Road
Maidstone Road
Heathfield Road
Broomfield Road
Betenson Avenue
Pontoise Close
The Meadway
Chipstead Lane
Riverhead Mews
St. Marys Drive
South Eastern Main Line
A25
A224
Sandpits
St. Mary's Church Hall
St. Mary The Virgin
The Riverhead
Worships Hill
Miller & Carter Riverhead
Recommended Intervention
Zebra crossing
Junction improvements
Add rest point/seating
Add cycle parking
Wayfinding
Side road treatment
Footway Widening
Public Footpath
Core Walking Zone
Primary Cycle Route
0
0.05
0.1
0.2 Kilometres
Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

Prioritising Improvements

8 Prioritising improvements

Route prioritisation is the final step of the LCWIP process and aims to identify the routes that are more likely than others to present higher benefits and achieve modal shift.

This section is focussed solely on cycle route prioritisation. Walking zones were not included in the prioritisation exercise. Since only three walking zones were identified in the study area, a prioritisation exercise was deemed unnecessary at this stage.

A robust prioritisation methodology is required to identify which of the primary cycle routes are likely to be of the greatest importance and have the highest impact. Combining the information derived from all previous LCWIP steps, routes were appraised based on Sevenoaks District Council's priorities, considering each route's alignment with policy, planned strategic growth, deliverability and funding status.

- **Policy alignment** is a critical factor in the prioritisation process, as the implementation of a route needs to fit with the wider transport objectives at a national, regional and local level. Stakeholder consensus and political support also need to score high for the implementation of a route.
- **Strategic priorities** concern a number of factors that ensure the route ties in with existing activity, trip generators and attractors in the area and would enable future activities to be undertaken in a seamless way. Connectivity with the existing public transport network was evaluated through a route's distance from rail stations and existing bus stops. Centres of population and employment were assessed on existing population and employment density data plus allocated development sites that a route would link to in the future. The contribution of a route to improving air quality and road safety, reducing deprivation, increasing access to educational institutions and the forecast increase in cycle trips for the routes were criteria that were also included.
- **Deliverability** was evaluated by considering practical feasibilities, such as the need for land acquisition and construction risks that would affect the construction and completion of a route. In some cases, a number of alternative alignments are proposed to connect a pair of trip generators and further feasibility study is required to determine the most appropriate course of the route. This was included in the assessment, as it will have an impact on route deliverability. Public acceptability was also taken into account, by considering the feedback received through public engagement.
- **Financial** priorities concern the affordability and funding availability for the implementation of a route. The cost for the proposed interventions is included in the table, but is not included in the prioritisation weighting. The committed availability of funding is the driver of route prioritisation for the 'Financial' criterion.

A scoring system of 1 to 5, with 1 being the worst and 5 being the best score that a route could receive, was put in place. Given that the number of criteria assessed under each of the four priority categories differ (three criteria for 'Policy Alignment', nine criteria for 'Strategic Priorities', two criteria for 'Deliverability', and one criterion for 'Financial'), it was important to account for the weight each of the criterion carried in the entire assessment.

Using relative weighting factors (equal proportion per criterion), the importance of the 'Strategic Priority' category (60%) would outweigh the combined importance of the other three categories (40%). Although the 'Strategic Priorities' category is the most important, as it reflects the extent to which local communities and visitors will benefit from the proposed cycling routes, a more balanced approach was necessary. Therefore, to achieve a realistic and practical path to implementation, it was decided to apply balanced weighting factors, which maintain the importance of the 'Strategic Priorities' category higher than the other three categories, but reduce its weight. The applied balanced weighting factors are shown in the table below.

Priority Category	Criteria Assessed	Relative Weighting Factors	Balanced Weighting Factors
Policy Alignment	3	20%	20%
Strategic Priorities	9	60%	40%
Deliverability	2	13%	20%
Financial	1	7%	20%

Figure 8.1 Weighting Factors

The overall score of a route over the four priority categories was compared against the score of another route and the routes in the cycle network were ranked, revealing where priority should be given. The description of each criterion and score can be found in Appendix 2.

Prioritisation of Cycling Routes

The table below presents the results of the cycle route prioritisation process, with scores across the four priority categories and their final ranking based on the overall score.

Route	Cost estimates	Priority Scores				Overall Score	Ranking
		Policy	Strategic	Deliverability	Financial		
		20%	40%	20%	20%		
Route 1	£13,780,000	2	2.84	1.8	0.40	7.04	2
Route 2	£16,440,000	1.6	3.02	1.2	0.40	6.22	4
Route 3	£1,500,000	2	2.58	1.6	2.00	8.18	1
Route 4	£4,100,000	1.3	2.4	1.4	0.40	5.53	6
Route 5	£4,040,000	1.5	3.11	1.2	0.40	6.18	5
Route 6	£4,370,000	1.3	2.31	1.6	1.20	6.44	3
Route 7	£350,000	1.3	1.51	1.8	0.40	5.04	8
Route 8	£730,000	1.3	2.31	1.2	0.40	5.24	7

Figure 8.2 Prioritisation of Cycling Routes

The prioritisation process suggests that Route 3 should be prioritised over other routes, as it scored higher overall. Route 1 was ranked second, followed by Route 6 ranked third.

Route 7 is suggested as the route that has the weakest overall case when assessed against the prioritisation criteria.

A complete table, presenting detailed scores and descriptions for each category, is included in Appendix 2.

High level cost estimates for each route are included in Figure 8.2. A detailed breakdown of the cost estimates is included in Appendix 3.

Next Steps

Next Steps

Short and immediate term:

• Funding opportunity to progress Route 3

Sevenoaks District Council has been awarded funding to construct Route 3.

The development of Route 3 will benefit from an in-depth feasibility study of the Bat and Ball junction to explore the best solution for all users at this junction.

Medium to longer term:

• Further stakeholder and community engagement

This should fit into all stages of the design process. An example could include a mini-engagement package over two or three days involving members of the public in the street with targeted discussion of the results of route audits and the LCWIP. Testing the conclusions of the report will help ensure the solutions being advanced are appropriate as well as ensuring there is appetite and support for such change.

Stakeholder engagement will also involve consultation with internal officers such as Public Rights of Way.

• Community Network Panel priorities and developer schemes

The Network Panel identified and consulted on a number of local highway improvements focused on High Street and Bat and Ball junction. Schemes to be delivered by Sevenoaks DC will improve conditions for walking, and cycling but previously designed and unfunded schemes could be progressed to further compliment the LCWIP recommendations.

Further s106 and s278 funding from developers and held by Sevenoaks DC focused on Otford Road and Bat and Ball also has the potential to complement interventions recommended in the LCWIP.

• Identify sources of funding

Potential sources include:

- DfT LCWIP funding stream
- DfT Capability Fund
- DfT Active Travel Fund
- Sevenoaks Council Local Transport Plan funding
- Community Infrastructure Levy (CIL) & s106 contributions from developers

• Integration into local policy and planning documents

Promote the LCWIP outputs for inclusion into local planning and transport policies, strategies and delivery plans and continually review and update the LCWIP as a working document.

• Further studies and surveys

Consider commissioning further studies and surveys required as part of scheme development process and help de-risk schemes, for example:

- Business Case (making the case for investment for prospective funders, especially relevant if bringing the whole network forward together).
- Feasibility design:
  - Engineering design review
  - Traffic count surveys
  - Traffic modelling
  - Topographic surveys
  - Land registry searches
  - Ecological surveys

• Making the Case

Schemes that involve significant change to the existing highway network to improve cycling and walking provision can be a challenge in a car-centric context. The political, economic and policy element is often pivotal; therefore, ensuring any schemes are underpinned by strong and robust arguments that join up with the local political and community context is key.

• Other local walking & cycling ambitions

There is currently strong support for an Otford to Sevenoaks route (Route 1) and so when developing Route 3, incorporating sections of other route in close proximity to it will be of mutual benefit to those routes. LCWIP route and network priorities ensure a more extensive and better connected level of provision for accelerated delivery.

Appendices

Appendices

Appendix 1: Participating Organisations - LCWIP Stakeholder Workshop

Appendix 2: Primary Cycle Route Prioritisation Table

Appendix 3: Primary Cycle Route Cost Estimates

Appendix 1: Participating Organisations - LCWIP Stakeholder Workshop

- Otford to Sevenoaks Cycle Campaign
- Sevenoaks Bike User Group (S-BUG)
- James Ball – 20mph Speed limit campaign
- Darent Valley Community Rail Partnership
- DTA Transport Planning Consultants on behalf of TARMAC
- Network Rail
- Kent Velo Girls
- Wildernesse Avenue Road Trustees
- Oakhill Road Sevenoaks Ltd.
- Kippington Roads (Sevenoaks) Limited
- Sevenoaks Town Councillors
- Sevenoaks District Councillors
- Sevenoaks District Parish Councils

Appendix 2: Primary Cycle Route Prioritisation Table

Score	
1	Very poor
2	Poor
3	Fair
4	Good
5	Very good

	Policy Alignment						Deliverability Priorities				Financial Priorities			Priority Scores					
	1. Fits with wider transport and government objectives		2. Performance against Local Transport Plan		3.Importance of the intervention for particular user groups		1. Public Acceptability		2. Practical Feasibility		1. Funding		Cost	Max scores	15	45	10	5	
Route	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	£	Policy 0.2	Strategic 0.4	Deliverability 0.2	Financial 0.2	Overall Score	Ranking
Route 1	5	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan, Sevenoaks District Cycling Strategy	5	Aligns with the cycling and walking initiative	5	18 comments plus 3 likes on Communi	5	Supported in Community Mapping Tool Round 2 and cllr community support.	4	Only short segment in private ownership - as part of development site on Cramptons Road	1	Not funded yet	£13,775,579	2	2.844	1.8	0.40	7.04	2
Route 2	2	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan (partially)	5	Aligns with the cycling and walking initiative	5	12 comments plus 3 likes on Community Mapping Tool	3	Medium level of support in Community Mapping Tool Round 2	3	Short segment near bradbourne riding is in private ownership. Ownership at railway bridge underpass poses challenges	1	Not funded yet	£16,439,405	1.6	3.022	1.2	0.40	6.22	4
Route 3	5	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan, Sevenoaks District Cycling Strategy	5	Aligns with the cycling and walking initiative	5	10 comments plus at 3 likes on Community Mapping Tool	5	High level of support in Community Mapping Tool Round 2	3	Riverhead Parkland sections challenging with landownership and ecology, private roads on Clock House Lane	5	Funded	£1,502,711	2	2.578	1.6	2.00	8.18	1
Route 4	4	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan, Sevenoaks District Cycling Strategy (Partially)	5	Aligns with the cycling and walking initiative	1	3 comments on Community Mapping Tool	3	Mediumlevel of support in Community Mapping Tool Round 2	4	very short segment under railway bridge	1	Not funded yet	£4,103,463	1.3	2.4	1.4	0.40	5.53	6
Route 5	3	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan (Partially), Sevenoaks Distric Cycling Strategy (Partially)	5	Aligns with the cycling and walking initiative	3	10 comments - and barrier flagged on Community Mapping Tool	3	Medium-high level of support in Community Mapping Tool Round 2	2	Approximately 50 per cent of route would require some highway verge reallocation, especially in southern section	1	Not funded yet	£4,038,549	1.5	3.111	1.2	0.40	6.18	5
Route 6	2	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks District Cycling Strategy (Partially)	5	Aligns with the cycling and walking initiative	3	12 commennts on Community Mapping Tool	3	Medium-high level of support in Community Mapping Tool Round 2	4	A25 section and areas around Trinity School are in private ownership.	3	Partially funded	£4,374,767	1.3	2.311	1.6	1.20	6.44	3
Route 7	4	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan (Partially), Sevenoaks District Cycling Strategy	5	Aligns with the cycling and walking initiative	1	3 comments on Community Mapping Tool	4	Medium-high level of support in Community Mapping Tool Round 2	5	None required	1	Not funded yet	£350,650	1.3	1.511	1.8	0.40	5.04	8
Route 8	2	Aligns with: Gear Change policy, Net Zero 2030, Sevenoaks Town Neighbourhood Plan (Partially)	5	Aligns with the cycling and walking initiative	3	8 comments on Community Mapping Tool	4	Medium-high level of support in Community Mapping Tool Round 2	2	Approximately 45 per cent of route would need private land acquisition. Also located in flood zone with likely ecology challenges.	1	Not funded yet	£732,281	1.3	2.311	1.2	0.40	5.24	7

Route	1. Connectivity - Linking to the Existing Public Transport Network		2. Improving Housing Connectivity		3. Providing Access to Employment		4. Potential to Improve Air Quality		5. Impact on Multiple Deprivation		6. Supporting Strategic Growth		7. Access to Education/ Training		8. Improving Road Safety		9. Forecast in Walking and cycling trips	
	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment
Route 1	5	14.13670981	2	417.2216978	3	165.0755049	4	10.50215052	4	26178.67	5	4.067640981	3	1.1	4	17.94274706	2	16.12
Route 2	4	12.35331583	4	538.5521648	4	175.5302676	5	47.17616862	4	26846.5	1	0.737531836	5	1.5	4	18.52997374	3	17.69
Route 3	4	12.02074833	5	1495.285385	5	601.944675	2	1.750853892	3	27604.57	2	1.529909262	4	1.2	3	13.41445829	1	11.79
Route 4	5	13.05705455	1	326.6212256	2	164.8008984	5	34.09852132	2	28981.8	4	2.528201792	2	1.0	5	23.7705352	1	11.74
Route 5	3	11.15429074	5	784.2133884	5	877.8866997	4	25.58839506	2	29952.89	4	2.987900487	5	1.4	5	21.16455166	2	14.40
Route 6	2	8.747223089	3	482.6995535	2	151.9794422	3	9.463029766	5	24823.83	5	3.235597245	2	0.8	2	11.76899106	2	14.70
Route 7	2	8.33712165	2	463.8676863	1	112.1226338	1	0.283686581	1	30778.17	3	2.342438582	4	1.3	1	7.034446393	2	15.87
Route 8	1	6.464778272	4	564.9300815	4	360.8236473	2	4.247051467	5	21636.67	2	2.055657129	1	0.0	2	7.934046061	5	23

Prioritisation - Strategic Criteria

Criteria	Data Source	Analysis
TotalWorkplacePopulationWithin400MPerKM	Census 2011 - https://www.nomisweb.co.uk/census/2011/wp101ew	Census data was attached to English LSOAs only. For each route, the number of workplace population were summed for each LSOA which lay within 400 m of the route, in proportion to the area of LSOA which they intersected . For example, if 50% of an LSOA lay within 400 m of a route, then 50% of the workplace population would be summed to the routes total. Finally, the total was divided by the length (km) of the route.
TotalResidentPopulationWithin400MPerKM	Census 2011 - https://www.nomisweb.co.uk/census/2011/ks101uk	Census data was attached to English LSOAs only. For each route, the number of resident population were summed for each LSOA which lay within 400 m of the route, in proportion to the area of LSOA which they intersected . For example, if 50% of an LSOA lay within 400 m of a route, then 50% of the resident population would be summed to the routes total. Finally, the total was divided by the length (km) of the route.
NumberOfSchoolsWithin400MPerKM	ArcGIS Online (https://sustrans-uk.maps.arcgis.com/home/item.html?id=a4fc41256fc74525a567c8cdad8ca1b6#overview)	The number of schools within 400 m of each route was calculated, and then divided by the length (km) of the route.
TotalNumberOfBusStopsAndTrainStationsWithin400MPerKM	Bus Stops: NaPTAN point features with a "BusStopType" recorded against them Train Stations: ArcGIS Online (https://sustrans-uk.maps.arcgis.com/home/item.html?id=4ed6fce83b2840158a75443a98028c44#overview)	The number of bus stops and train stations within 400 m of each route was calculated, and then divided by the length (km) of the route.
AverageIMDRankWithin400M	English IMD - https://data-communities.opendata.arcgis.com/datasets/indices-of-multiple-deprivation-imd-2019-1	The average rank of all the English IMDs which lay within 400 m of a route was calculated.
DevelopmentHectaresWithin400MPerKM	New developments provided by Sustrans	Area of new development which lies within 400 m of each route, divided by the length (km) of the route.
NumberOfCollisionsPerKM	STATS19 Data - https://data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data	Number of collisions within the last five years (2016 - 2020 inclusive) within 400 m of each route, divided by the length (km) of the route.
PercentageOfRouteInAQMA	Air Quality Management Areas 2020 - https://uk-air.defra.gov.uk/aqma/	The proportion of route which lies within an Air Quality Management Area.

Appendix 3: Primary Cycle Route Cost Estimates

Route 1	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£7,971,979	£11,479,649
New traffic-free route (incl path adjacent to road)	m	£160	£192		£0	£0
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	3194.5	£5,750,100	£8,280,144
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120	646.7	£77,604	£111,750
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000	2	£180,000	£259,200
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	505.8	£6,070	£8,740
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598	3	£130,795	£188,345
Seating	item	£2,000	£2,400		£0	£0
Countdown timers	item	£120,159	£144,191		£0	£0
Side road treatment	item	£12,300	£14,760	4	£59,040	£85,018
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design (minor)	item	£240.06	£288	1	£288	£415
Cycle parking	item	£4,206	£5,047		£0	£0
Ancilliary items, fencing, drainage, signs	%	10%			£620,361	£893,320
Contractor preliminary works	%	17%			£1,054,662	£1,518,714
Surveys (Topographical, utilities etc.)	%	1.50%			£93,058	£134,004
VAT	%	20.00%			£1,594,396	£2,295,930
Total					£9,566,374	£13,775,579

Route 2	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£9,513,545	£13,699,504
New traffic-free route (incl path adjacent to road)	m	£160	£192		£0	£0
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	1749.7	£3,149,460	£4,535,222
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120		£0	£0
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000	2	£180,000	£259,200
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	2000	£24,000	£34,560
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598	2	£87,197	£125,563
Seating	item	£2,000	£2,400		£0	£0
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760	8	£118,080	£170,035
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design (major)	item	£1,602,000	£1,922,400	2	£3,844,800	£5,536,512
Cycle parking	item	£4,206	£5,047		£0	£0
Ancilliary items, fencing, drainage, signs	%	10%			£740,354	£1,066,109
Contractor preliminary works	%	17%			£1,258,601	£1,812,386
Surveys (Topographical, utilities etc.)	%	1.50%			£111,053	£159,916
VAT	%	20.00%			£1,902,709	£2,739,901
Total					£11,416,254	£16,439,405

Route 3	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£869,624	£1,252,259
New traffic-free route (incl path adjacent to road)	m	£160	£192	515.3	£98,938	£142,470
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	12.4	£22,320	£32,141
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120	1266.4	£151,968	£218,834
Resurface existing traffic-free route	m	£80	£96	179.9	£17,270	£24,869
New toucan crossing (or similar)	item	£75,000	£90,000	3	£270,000	£388,800
New bridge (small, span < 5 m)	item	£40,000	£48,000	1	£48,000	£69,120
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	2002.07	£24,025	£34,596
Barrier removal	item	5000	£6,000	4	£24,000	£34,560
Parallel crossing/Zebra	item	£36,332	£43,598		£0	£0
Seating	item	£2,000	£2,400	2	£4,800	£6,912
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760		£0	£0
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design (minor)	item	£240.06	£288	1	£288	£415
Cycle parking	item	£4,206	£5,047	3	£15,142	£21,804
Ancilliary items, fencing, drainage, signs	%	10%			£67,675	£97,452
Contractor preliminary works	%	17%			£115,048	£165,669
Surveys (Topographical, utilities etc.)	%	1.50%			£10,151	£14,618
VAT	%	20.00%			£173,925	£250,452
Total					£1,043,549	£1,502,711

Route 4	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£2,374,689	£3,419,553
New traffic-free route (incl path adjacent to road)	m	£160	£192	979.8	£188,122	£270,895
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	831.6	£1,496,880	£2,155,507
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120	36.6	£4,392	£6,324
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000		£0	£0
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	1055.9	£12,671	£18,246
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598	2	£87,197	£125,563
Seating	item	£2,000	£2,400	3	£7,200	£10,368
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760		£0	£0
Raised Junction	item	£34,543	£41,452	1	£41,452	£59,690
Junction Re-design	item		£0			
Cycle parking	item	£4,206	£5,047	2	£10,094	£14,536
Ancilliary items, fencing, drainage, signs	%	10%			£184,801	£266,113
Contractor preliminary works	%	17%			£314,161	£452,392
Surveys (Topographical, utilities etc.)	%	1.50%			£27,720	£39,917
VAT	%	20.00%			£474,938	£683,911
Total					£2,849,627	£4,103,463

Route 5	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£2,337,123	£3,365,457
New traffic-free route (incl path adjacent to road)	m	£160	£192	650	£124,800	£179,712
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	820	£1,476,000	£2,125,440
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120		£0	£0
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000	1	£90,000	£129,600
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	1900	£22,800	£32,832
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598	1	£43,598	£62,782
Seating	item	£2,000	£2,400	3	£7,200	£10,368
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760	3	£44,280	£63,763
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design	item		£0			
Cycle parking	item	£4,206	£5,047	2	£10,094	£14,536
Ancilliary items, fencing, drainage, signs	%	10%			£181,877	£261,903
Contractor preliminary works	%	17%			£309,191	£445,236
Surveys (Topographical, utilities etc.)	%	1.50%			£27,282	£39,285
VAT	%	20.00%			£467,425	£673,091
Total					£2,804,548	£4,038,549

Route 6	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£2,531,694	£3,645,640
New traffic-free route (incl path adjacent to road)	m	£160	£192	770	£147,840	£212,890
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800	826.9	£1,488,420	£2,143,325
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120	684.7	£82,164	£118,316
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000	2	£180,000	£259,200
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	1347.3	£16,168	£23,281
Barrier removal	item	5000	£6,000	2	£12,000	£17,280
Parallel crossing/Zebra	item	£36,332	£43,598	1	£43,598	£62,782
Seating	item	£2,000	£2,400		£0	£0
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760		£0	£0
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design	item		£0		£0	£0
Cycle parking	item	£4,206	£5,047		£0	£0
Ancilliary items, fencing, drainage, signs	%	10%			£197,019	£283,707
Contractor preliminary works	%	17%			£334,932	£482,303
Surveys (Topographical, utilities etc.)	%	1.50%			£29,553	£42,556
VAT	%	20.00%			£506,339	£729,128
Total					£3,038,033	£4,374,767

Route 7	Unit	Rate-base	Rate	Quantity	Cost - uplifted	Cost-uplifted+optimism bias
Works sub-total					£202,923	£292,209
New traffic-free route (incl path adjacent to road)	m	£160	£192	400.8	£76,954	£110,813
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800		£0	£0
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120		£0	£0
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000		£0	£0
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	3113.7	£37,364	£53,805
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598	1	£43,598	£62,782
Seating	item	£2,000	£2,400		£0	£0
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760		£0	£0
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design	item		£0		£0	£0
Cycle parking	item	£4,206	£5,047		£0	£0
Ancilliary items, fencing, drainage, signs	%	10%			£15,792	£22,740
Contractor preliminary works	%	17%			£26,846	£38,658
Surveys (Topographical, utilities etc.)	%	1.50%			£2,369	£3,411
VAT	%	20.00%			£40,585	£58,442
Total					£243,507	£350,650

Route 8	Unit	Rate-base	Rate	Quantity	Cost - uplif	Cost-uplifted+optimism bias
Works sub-total					£423,774	£610,235
New traffic-free route (incl path adjacent to road)	m	£160	£192	1100	£211,200	£304,128
New separated on-road route (kerb separated or stepped)	m	£1,500	£1,800		£0	£0
Widen existing traffic-free route by 1m, full width resurface	m	£100	£120		£0	£0
Resurface existing traffic-free route	m	£80	£96		£0	£0
New toucan crossing (or similar)	item	£75,000	£90,000	1	£90,000	£129,600
New bridge (small, span < 5 m)	item	£40,000	£48,000		£0	£0
New bridge (large, span > 5 m)	m	£7,500	£9,000		£0	£0
Quiet-way treatment (or Mixed traffic)	m	£10	£12	2382.1	£28,585	£41,163
Barrier removal	item	5000	£6,000		£0	£0
Parallel crossing/Zebra	item	£36,332	£43,598		£0	£0
Seating	item	£2,000	£2,400		£0	£0
Countdown timers	item	£0	£0		£0	£0
Side road treatment	item	£12,300	£14,760		£0	£0
Raised Junction	item	£34,543	£41,452		£0	£0
Junction Re-design	item		£0			£0
Cycle parking	item	£4,206	£5,047		£0	£0
Ancilliary items, fencing, drainage, signs	%	10%			£32,979	£47,489
Contractor preliminary works	%	17%			£56,063	£80,731
Surveys (Topographical, utilities etc.)	%	1.50%			£4,947	£7,123
VAT	%	20.00%			£84,755	£122,047
Total					£508,529	£732,281