Three Rivers District Local Cycling and Walking Infrastructure Plan

MOTT MACDONALD | Hertfordshire | THREE RIVERS DISTRICT COUNCIL

Aspects of this report were developed by Mott MacDonald Limited
10 Fleet Place London EC4M 7RB United Kingdom
T +44 (0)20 7651 0300
mottmac.com

Mott MacDonald Limited.
Registered in England and Wales no. 1243967.
Registered office: Mott MacDonald House,
8-10 Sydenham Road, Croydon CR0 2EE, United Kingdom

TABLE OF CONTENTS

Tables

Figures

Appendix

- Appendix A - Key Destinations
- Appendix B – Detailed District Cycle Route Map
- Appendix C – Glossary of Potential Route Interventions
- Appendix D – Policy Context

1 Introduction

This Local Cycling and Walking Infrastructure Plan (LCWIP) covers Three Rivers district and has been developed by Hertfordshire County Council (HCC) and Three Rivers District Council (TRDC).

This document was originally developed in partnership with Watford Borough Council as a joint document to study cycling and walking routes across both district areas. However, Watford Borough Council and Three Rivers District Council have since progressed their LCWIP separately. An LCWIP focussing on routes and schemes within Watford Borough was finalised in early 2022 and approved and adopted in March 2022.

1.1 LCWIP background

In April 2017, the Department for Transport (DfT) published the first National Cycling and Walking Investment Strategy (CWIS).[1]

The CWIS is based around the ambition to make cycling and walking 'the natural choices for shorter journeys, or as part of longer journeys'. The strategy is seeking to support the transformation of local areas where the dominance of the motorised vehicle will be reduced to tackle congestion, support local economies, and improve physical and mental health.

The CWIS identified short to long term objectives for cycling and walking with short term targets focusing on increased journeys by active modes including an increase in the percentage of children that walk to school. Short term safety targets have also been identified which will reduce the rate of cyclists killed or seriously injured on England's roads.

Table 1.1 presents the long term (by 2040) DfT aspirations relating to cycling and walking.

Table 1.1 DfT Cycling and Walking Long Term Aspirations

Government Ambition	Objectives
Better Safety – *'A safe and reliable way to travel for shorter journeys'*	Streets where cyclists and pedestrians feel they belong and are safe Better connected communities Safe traffic speeds, with low-speed limits where appropriate Cycle training opportunities for all children
Better Mobility – *'More people cycling and walking – easy, normal and enjoyable'*	More high-quality cycling facilities. More urban areas that are considered walkable. Rural roads which provide improved safety for cycling and walking. More networks of routes around public transport hubs and town centres. Better links to schools and workplaces. Technological innovations that can promote more and safer cycling and walking. Behaviour change opportunities to support increased walking and cycling. Better integrated routes for those with disabilities or health conditions.
Better Streets – '*Places that have cycling and walking at their heart'*	Places designed for people of all abilities and ages. Improved public realm. Better planning for walking and cycling. More community-based activities such as led rides. A wider green network of paths, routes, and open spaces.

Source: Department for Transport Local cycling and walking infrastructure plans technical guidance

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/603527/cycling-walking-investment-strategy.pdf

To achieve the objectives set out within the CWIS, it is imperative that local bodies across England develop high quality cycling and walking infrastructure to encourage mode shift towards active modes. To achieve the Government's ambition to normalise both modes of active travel, guidance has been developed to support local authorities to produce Local Cycling and Walking Infrastructure Plans (LCWIP).

LCWIPs are a new, strategic approach developed to support the aims and objectives of CWIS. The LCWIP process enables the identification of cycling and walking improvements required at the local level. The process enables a long-term approach to developing local cycling and walking networks, ideally over a 10-year period, and form a vital component of the Government's strategy to increase the number of trips made by both forms of active travel.

The key outputs of LCWIPs are[2]:

- 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

Figure 1.1 shows the key benefits of local bodies developing a strategic approach to cycling and walking infrastructure through LCWIPs.

Figure 1.1 Benefits of the LCWIP Process

Identify cycling and walking infrastructure improvements from quick wins to long term aspirational schemes
Integrate LCWIP into local planning policy and strategies to ensure cycling and walking infrastructure is at the forefront of the transport network
Provide a case for future funding for walking and cycling infrastructure

Source: Mott MacDonald

[2]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/607016/cycling-walking-infrastructure-technical-guidance.pdf

1.2 The LCWIP process

The recommended process for creating an LCWIP is set out in the LCWIP Guidance from DfT, and comprises six stages, outlined in Table 1.2.This broadly reflects the process undertaken for Three Rivers district. This report follows this structure and explains how it has been applied in the development of this document.

Table 1.2 The LCWIP Process

Stage	Name	Description
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.
6	**Integration and Application**	Integrate outputs into local planning and transport policies, strategies, and delivery plans.

Source: LCWIP Technical Guidance for Local Authorities, DfT, April 2017

2 LCWIP Stage 1 – Determining Scope

2.1 Overview

Taking advantage of the strong geographical links between Watford borough and Three Rivers district, this LCWIP began as a joint document for the two authorities – allowing the development of a cohesive active travel network.

However, Watford Borough Council and Three Rivers District Council have since progressed their LCWIP separately. An LCWIP focussing on routes and schemes within Watford Borough was finalised in early 2022 and approved and adopted in March 2022.

This LCWIP will represent the Three Rivers district routes and associated links to adopted Watford borough routes.

This LCWIP includes a study detailing the existing walking and cycling networks and the existing infrastructure, to inform a programme of walking and cycling network improvements.

2.2 Objectives

In addition to the production of an LCWIP setting out the strategic walking and cycling networks in the study area, the following supplementary objectives and aspirations were identified by the HCC and TRDC at the project inception meeting on 6 April 2020:

- The LCWIP needs to build up ‘a bigger picture’ of the cycling network to ensure that local areas are ultimately connected into the strategic LCWIP network.
- A ‘whole network’ approach to ensure that the network is completely joined up.
- Any routes should enhance the existing local route network throughout Three Rivers district.

2.3 Geographical Extent

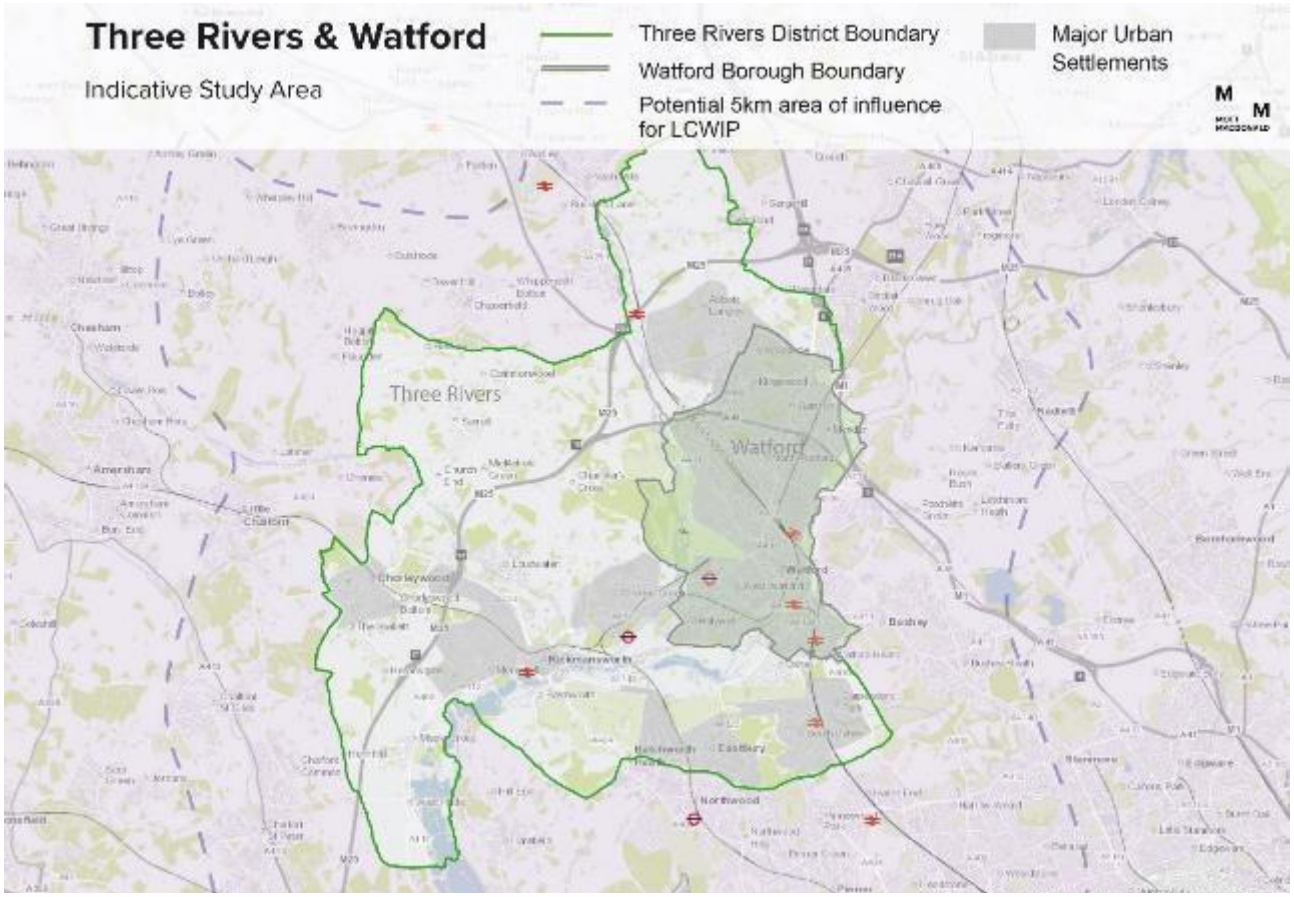
The LCWIP is for TRDC local authority. TRDC sits within the County of Hertfordshire, with the County Council responsible for the management of the highway network.

Three Rivers District is located on the West of the study area and has more suburban and rural characteristics with strategically important transport corridors. Both Three Rivers and Watford have high transport accessibility with a high proportion of commuter travel.

When defining the geographical scope of the LCWIP, origins and destinations within a reasonable cycling distance (approximately 5km) have been included. Therefore, some of these origins and destinations are beyond the immediate local authority boundaries.

Figure 2.1 sets out the geographical extents of the LCWIP.

Figure 2.1 Geographical Scope

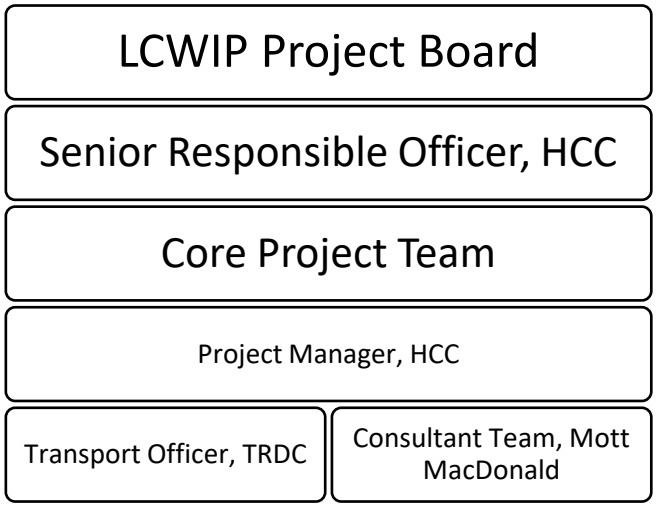


Source: Mott MacDonald

2.4 Governance Structure

As outlined in the DfT's LCWIP guidance, the governance and delivery arrangements need to be proportionate to the scale and complexity of the LCWIP. This LCWIP is categorised within the LCWIP guidance as a joint local authority delivery model, as there are a significant number of potential trips occurring between neighbouring authorities.

Figure 2.2 Governance Structure



Source: Three Rivers District Council

2.5 Consultation Approach

Engagement with the public and local stakeholders is an important element of developing a robust LCWIP. Feedback from members of the public, local authority officers, councillors, and stakeholder groups is a vital way of incorporating local experience into the plan.

Several stages of consultation and stakeholder engagement were held during the development of the LCWIP of which an overview is provided below:

October 2020 – An introductory workshop was held with key stakeholders, setting out the context for the work, the process of the LCWIP, and outlining the work completed as part of LCWIP stages 1 and 2, and introducing the emerging walking and cycling networks.

October 2021 – An update workshop was held with key stakeholders on the Three Rivers network planning stages, including an overview of the pre-prioritisation process, and discussion of the audited routes in both areas.

October 2022 – The draft LCWIP was taken to the TRDC Infrastructure, Housing & Economic Development Committee where it was approved to be taken to public consultation. The report outlined the process of the LCWIP and the indicative cycle routes and the consultation approach.

22 May 2023 to the 17 July 2023 – A public consultation was held to encourage residents, businesses, and stakeholders to provide feedback on the draft LCWIP document and proposed priority cycling routes. Participants were given multiple ways to provide feedback and a total of 1,542 responses were received across all methods. In-person engagement sessions were also held during this time to facilitate direct interaction between residents and council officers including:

- 28th May 2023 Rickmansworth Market Day
- 25th June 2023 Rickmansworth Market Day
- 4th July 2023 Public consultation briefing with Chorleywood Residents Association, Chorleywood Parish Council and local members.
- 8th July 2023 Chorleywood Village Day

September and October 2024 – Council officers engaged further with stakeholders of the Chorleywood area including District Councillors, Chorleywood Parish Council and Chorleywood Residents Association.

October 2024 – A report was brought to the TRDC General Public Services, Community Safety & Infrastructure committee to provide an update following the LCWIP public consultation and to agree changes to the routes based on the analysis of the public consultation.

July 2025 – An updated LCWIP with changes made following the public consultation and the further engagement with Chorleywood stakeholders was brought to the TRDC Policy and Resources committee and Full Council for adoption.

The engagement throughout the process has allowed the project team to better understand the views of the people who are likely to use the networks under development and gather local knowledge on routeing and prioritisation. The LCWIP has been amended to reflect the feedback from all consultation. To find out more about the feedback and subsequent changes view:

- 4.10 Consultation – Cycle Route Feedback
- 5.7 Consultation - Walking Route Feedback

3 LCWIP Stage 2 – Gathering Information

3.1 Policy context

In developing this LCWIP, we considered a total of 10 policy documents at the national, county, and district levels. Table 3.1 will summarise all 10 policy documents and for each one; it will provide the name, publisher, date published, policy level, and a description highlighting its relevance to the LCWIP.

Any additional information required to understand the implications of the policy documents for this LCWIP will be provided separately in Appendix D – Policy Context, which will also include links to all policy documents for further reference.

Table 3.1 Policy Documents Considered During Development

Document	Publisher and Date Published	Policy level	Description
Local Cycling and Walking Infrastructure Plans: Technical Guidance for Local Authorities	Department for Transport (DfT) 2017	National	Provides a framework for developing strategic walking and cycling networks, including data collection processes.
Cycling and Walking Investment Strategy (CWIS)	Department for Transport (DfT) 2017	National	Aims to double cycling trips and reverse the decline in walking trips by 2025, promoting benefits like cheaper travel and better health.
Local Transport Plan 4	Hertfordshire County Council (HCC) 2018-2031	County	Identifies several corridors impacting Three Rivers, including the Aylesbury-Watford-London Corridor and the A414 Corridor, aiming to improve transport connectivity, reduce congestion, and promote sustainable travel modes.
South West Hertfordshire Growth and Transport Plan (SWGTP)	Hertfordshire County Council (HCC) 2019	County	Emphasises enhancing cycling and walking infrastructure in Three Rivers, with projects like Ebury Way improvements and new cycle links in Rickmansworth, supporting sustainable development and healthier communities.
Sustainable Modes of Travel Strategy	Hertfordshire County Council (HCC) 2024/25	County	Focuses on promoting sustainable travel to schools in neighbouring areas like Watford and St Albans, indirectly impacting Three Rivers by improving road safety and developing school travel plans.
Hertfordshire Place and Movement Planning and Design Guide	Hertfordshire County Council (HCC) (2023)	County	Provides a technical approach to managing road user interfaces and translating LTP4 policies into practice, mentioning the Three Rivers' Preferred Local Plan Lower Housing Growth Option to protect Green Belt land.

A414 Corridor Strategy	Hertfordshire County Council (HCC) 2019	County	Focuses on improving transport connectivity and reducing congestion in Three Rivers, particularly in Leavesden, Abbots Langley, and South Oxhey, through a Mass Rapid Transit system and enhanced cycle and pedestrian routes.
Maintenance for Active Travel Strategy	Hertfordshire County Council (HCC) 2019	County	Outlines how highway maintenance programs can support active travel by maintaining infrastructure standards, indirectly benefiting Three Rivers.
South West Hertfordshire Cycle Study	Hertfordshire County Council (HCC) 2013	County	Identifies gaps in the cycling network and areas for improvement in Three Rivers based on cycle audits, supporting the wider HCC Active Travel Strategy.
Three Rivers District Council Local Plan	2011 Under review	District	The current Local Plan is in the process of being updated, with the council preparing a new Local Plan which will provide the planning policies and proposals for future sustainable growth in the district up to 2041.

3.2 Other Scheme Developments

Table 3.2 summarises some of the recent major scheme developments in Three Rivers district. These proposals are considered in the network development in LCWIP stages 3 and 4.

Table 3.1 Other Scheme Developments

Scheme Name	Details	Status
Cycle Hire	The Beryl Bike Share scheme now operates in Watford, providing 24/7 access to hire bikes around the borough. The scheme has been extended into Croxley Green in Three Rivers. The scheme provides both traditional and e-bikes, which are bookable via the Beryl app.	Commenced

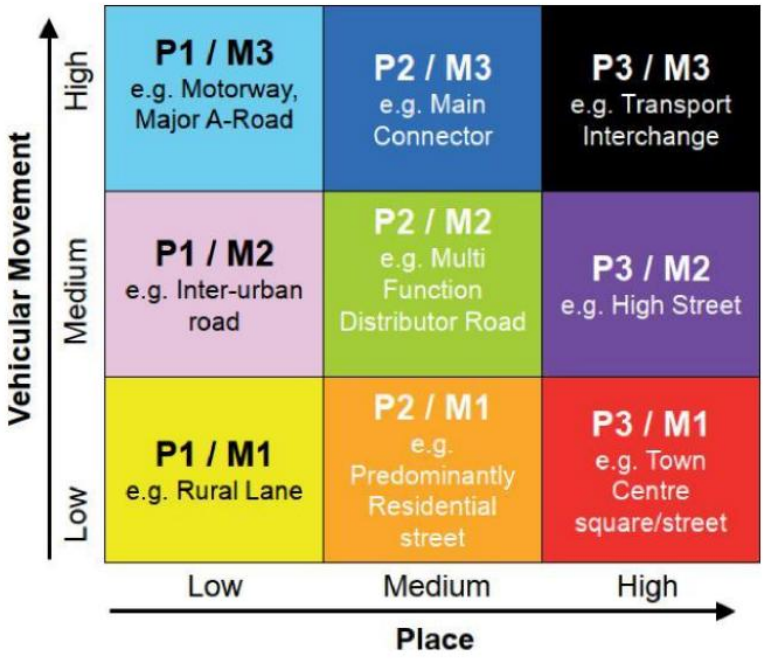
3.3 Adoption of the Place & Movement Approach

HCC has adapted Transport for London's (TfL) Street Types matrix[6] to develop a Place and Movement matrix as a way of categorising each section of the highway by the needs of different roads users by understanding how people interact with the space around them.

HCC has created nine categories based on factors such as road type and rural or urban areas.
Modifications to the TfL matrix have been undertaken to reflect the more diverse nature of Hertfordshire's highway networks, such as 'Rural Lane', this is shown in Figure 3.1.

[6] TfL Streetscape Guidance, https://content.tfl.gov.uk/streetscape-guidance-.pdf

Figure 3.1 Hertfordshire Place and Movement Matrix



Source: Hertfordshire County Council, Adoption of Place and Movement Approach

All of HCCs highway network has been categorised into these nine categories. This was then validated through a series of workshops involving officers from different services across the Highways Department.

Through categorising the highways network, a standard design toolkit can be developed for each of the nine categories. Appropriate design solutions are incorporated into the new version of the 'Roads in Herts' design guide that is currently under review.

This approach is also being used to support the Highway strategy work through identifying where there are 'clash points' of differing movements and place functions. User prioritisation is being reviewed at these sections of the highway and helps to inform scheme identification for these areas.

This categorisation has helped to inform the network assessments in section 4.

3.4 Other LCWIPs

When developing an LCWIP for Three Rivers it is important to understand if there are any neighbouring authorities that have developed or are developing an LCWIP. This will establish if there are any plans to connect walking and cycling routes into the area, ensuring there is consistency across the local network.

During the initial development of this LCWIP, there were no completed and published LCWIPs for neighbouring local authorities or boroughs to Three Rivers, nor were there any TfL Cycleway schemes connecting the London Boroughs of Hillingdon or Harrow to the study area.

Two adopted LCWIPs were identified within a 20-mile proximity to Three Rivers, these being LCWIPs for Aylesbury Garden Town and Stevenage, but these were not considered to impact on this document.

Since the initial development of this LCWIP (in 2020), Stevenage, Watford, Welwyn and Hatfield, North Herts and

St Albans have adopted LCWIPs within Hertfordshire County. East Herts, Hertsmere and Dacorum LCWIP's are currently being developed.

3.5 Baseline Travel and Transport Context

Understanding how people travel within Hertfordshire, specifically in Watford and Three Rivers is an important aspect of developing the LCWIP. This can provide an understanding of the most popular modes of travel within and outside of the boroughs. This section brings together publicly available information on existing travel patterns within Hertfordshire.

The LTP4 indicates that Hertfordshire's population is estimated to grow to 1.43 million people by 2039, up from 1.18 million people in 2016, an increase of 21% in 23 years. Household growth is also predicted to grow in each of the ten districts within Hertfordshire, with significant housing development planned. This is in addition to housing development planned in neighbouring authorities, such as Aylesbury Vale, Luton, Central Bedfordshire, South Cambridgeshire, Enfield, and Barnet.

Data from the wider county of Hertfordshire shows that many shorter journeys are undertaken on foot, with a small proportion undertaken by bike, but a significant minority of short journeys are undertaken by car, suggesting that with appropriate network improvements through the LCWIP, there is scope for several of these short journeys to shift to active modes.

3.5.1 Travel to Work

118,000 Hertfordshire residents work in Greater London, with 51% of these residents travelling there by rail or tube. The proximity of Hertfordshire to London is an important aspect of understanding travel to work within the county, with many people commuting into London, particularly from St Albans, Watford, Cheshunt, Harpenden, Welwyn Garden City, Hemel Hempstead, Borehamwood, and Stevenage. Prior to the pandemic, much of the county's rail network operated at full capacity at busy times due to the high demand.

The 2021 Census collected travel to work data by mode and by district. This is shown in Table 3.3. It is clear in Three Rivers district that driving in a car or van to work is the most common mode of travel to work. Travel to work by rail/underground is the next most popular mode, which is expected due to the number of commuters into London. There are low levels of cycling journeys.

Table 3.2 2021 Census travel to work mode

Location		Work mainly at or from home	Underground, metro, light rail, tram	Train	Bus, minibus, or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other
	Number	19,608	1,698	1,101	491	153	165	19,817	1,170	403	1,948	395
Three Rivers	Rounded %	42%	4%	2%	1%	0%	0%	42%	3%	1%	4%	1%

Source: 2021 Census – Travel to Work, England and Wales

3.5.2 Existing Cycle Network

Five National Cycle Network (NCN) routes pass through Hertfordshire - NCN 1, 6, 12, 57 and 61 - however, some are incomplete and are a mixture of quality and type. NCN 6 is the only route which passes through Three Rivers district, following the Ebury Way. The route is largely off-road through the study area.

These routes link with urban and rural cycle links within the county. There are two waterways in Hertfordshire which are cyclable, including the Grand Union Canal in the Three Rivers area. They are used predominantly for leisure purposes for both pedestrians and cyclists.[8] HCC has produced a cycle network map for the County - see Figure 3.5[9] focussing mainly on leisure routes, rather than cycle routes for utility journeys.

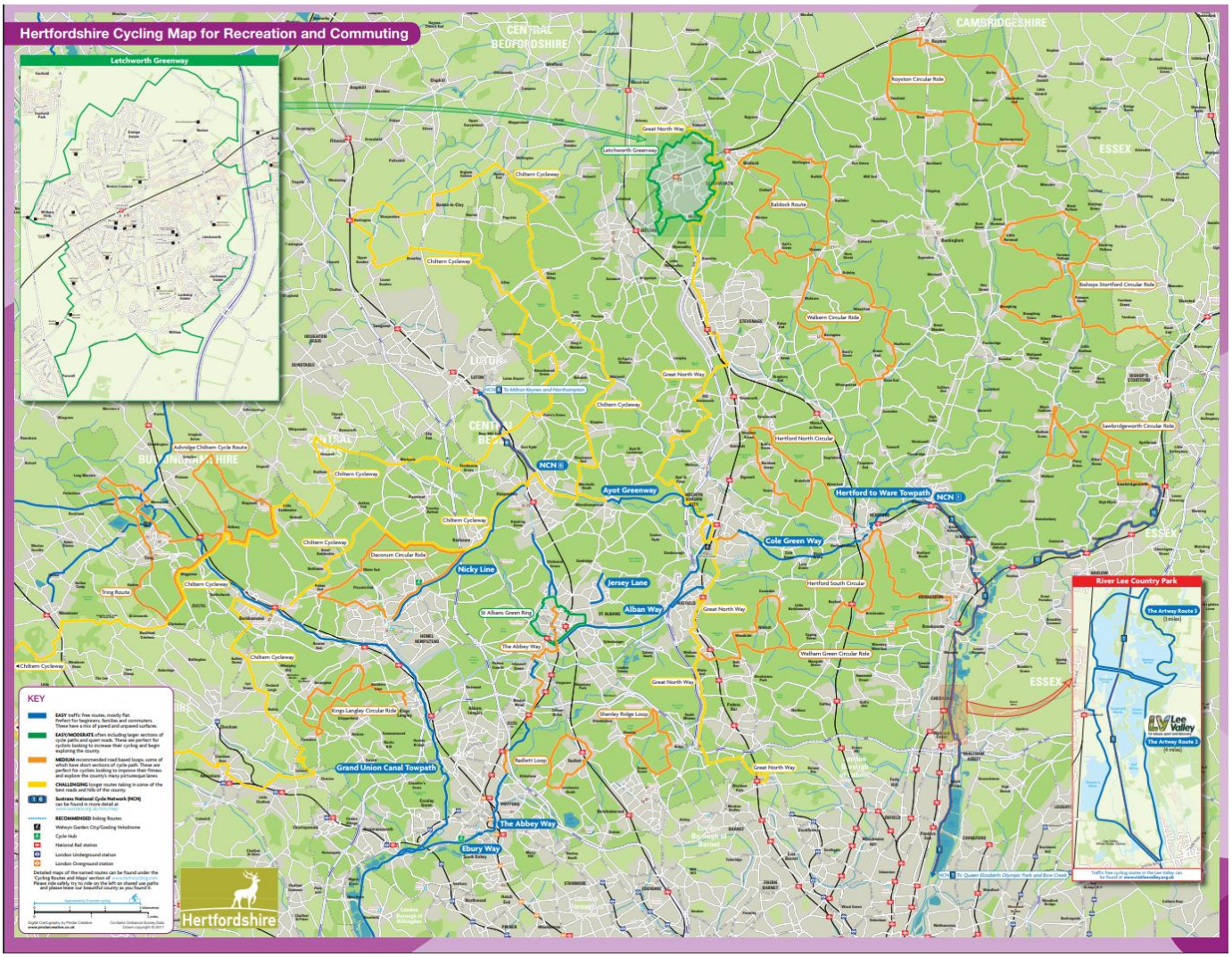
Three Rivers District Council have a local route network which will remain and has been referenced in this document. A high-level assessment of the extent and quality of the existing cycle network is set out in Chapter 4.

[8] https://www.hertfordshire.gov.uk/media-library/documents/about-the-council/consultations/ltp4-local-transport-plan-4-complete.pdf

[9] https://www.hertfordshire.gov.uk/media-library/documents/public-health/health/cycle-routes-in-hertfordshire-map.pdf#

Figure 3.2 Hertfordshire Cycling Map for Travel and Leisure

Source: Hertfordshire County Council - https://www.hertfordshire.gov.uk/media-library/documents/public-health/health/cycle-routes-in-hertfordshire-map.pdf#

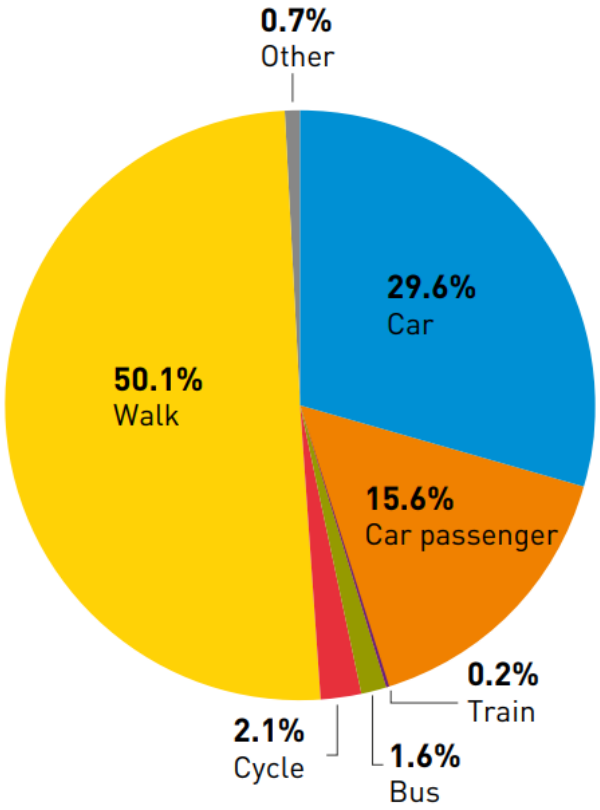


3.5.3 Cycling Trends

The 2024 Hertfordshire Traffic and Transport Data Report indicates that current cycling mode share is 2.1% for all trips that are less than 3 miles in length in Hertfordshire. The is slightly higher than the mode share of 2.0% in 2018, see table 3.7.

HCC has set out ambitious cycle targets for all trips under 3 miles, these being 8% by 2026, and 11% by 2031, as shown below in Table 3.7.

Figure 3.3 Journeys less than 3 miles 2022



Source: 2022 HCTS Executive Summary

Table 3.3 HCC Cycle targets

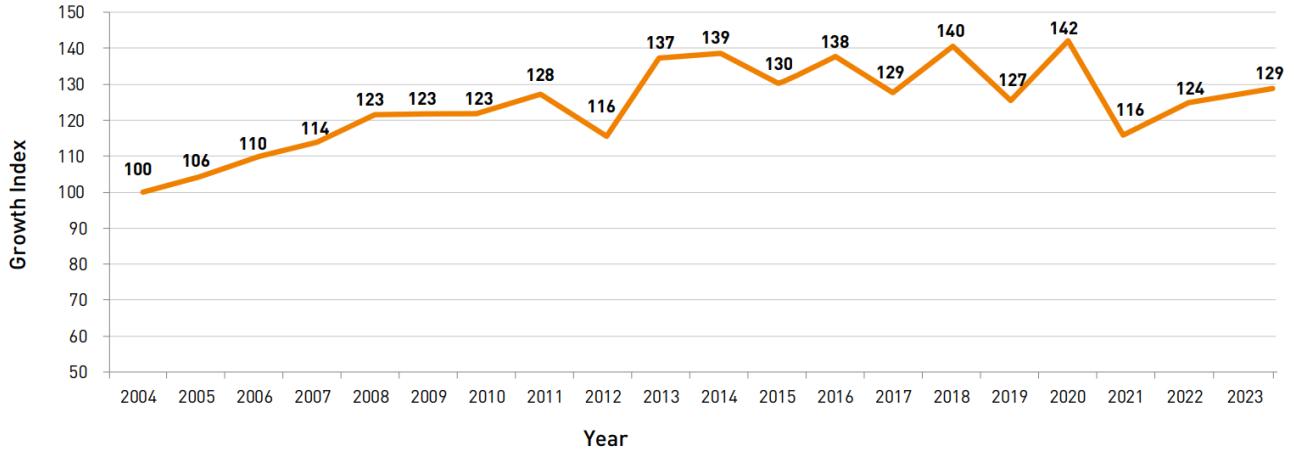
Source: 2022 HCTS Executive Summary

Performance Indicator	2018 Current Level	2022 Current Level	2021 Target	2026 Target	2031 Target
% of all trips (under 3 miles) made by cycling	2.0%*	2.1%	5%	8%	11%

Figure 3.7 shows the cycle level trends for Hertfordshire since 2004 when cycle monitoring was first introduced. Cycling has increased at the HCC monitoring sites since 2004 and are 20% busier now.

[10] 2024 Hertfordshire Traffic and Transport Data Report

Figure 3.4 Cycle Level Trends in Hertfordshire



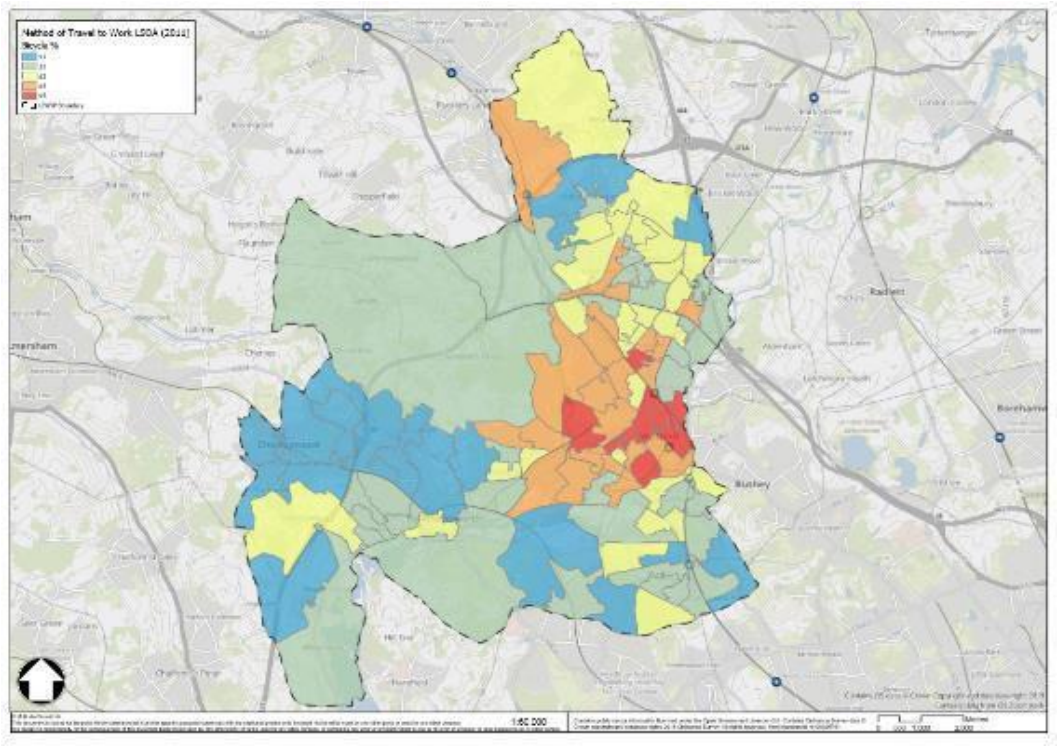
Source: Hertfordshire Traffic and Transport Data report

Cycle to work mode share in Three Rivers

Figure 3.9 sets out a summary of the cycle to work mode share from the 2011 Census broken down to Lower Layer Super Output Areas (LSOA). This shows that there is a wide variation between 0 and 5% cycle mode share in specific LSOA areas across Three Rivers area. Cycle to work share is highest (4-5%) in LSOA areas around Croxley Park, and Nash Mills/Kings Langley. Cycle to work mode share is particularly low in the Three Rivers settlements of Rickmansworth (3%), Carpenders Park (2%) and Chorleywood (1%).

3.5.4 Walking Trends

Figure 3.5 Cycle to work mode share

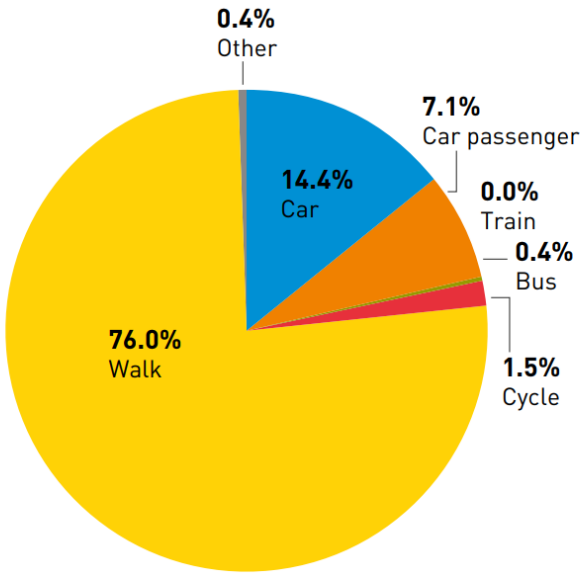


Source: Census 2011

The 2024 Hertfordshire Traffic and Transport Data Report suggests that in 2022, journeys of less than 1 mile were mostly undertaken on foot (76%), with 21.5% of journeys less than 1 mile undertaken by car (see Figure 3.8).

HCC has set out targets for of achieving 77% of all trips less than 1 mile to be undertaken by walking across the whole of Hertfordshire. Although the 2018 baseline was 76.3% (see Table 3 . 8), there were some local authorities across Hertfordshire with significantly lower mode shares, impacting the overall statistic.

Figure 3.6 Mode share of journeys less than 1 mile in length in Hertfordshire



Source: Hertfordshire Traffic and Transport Data report

Table 3.4 HCC walking targets

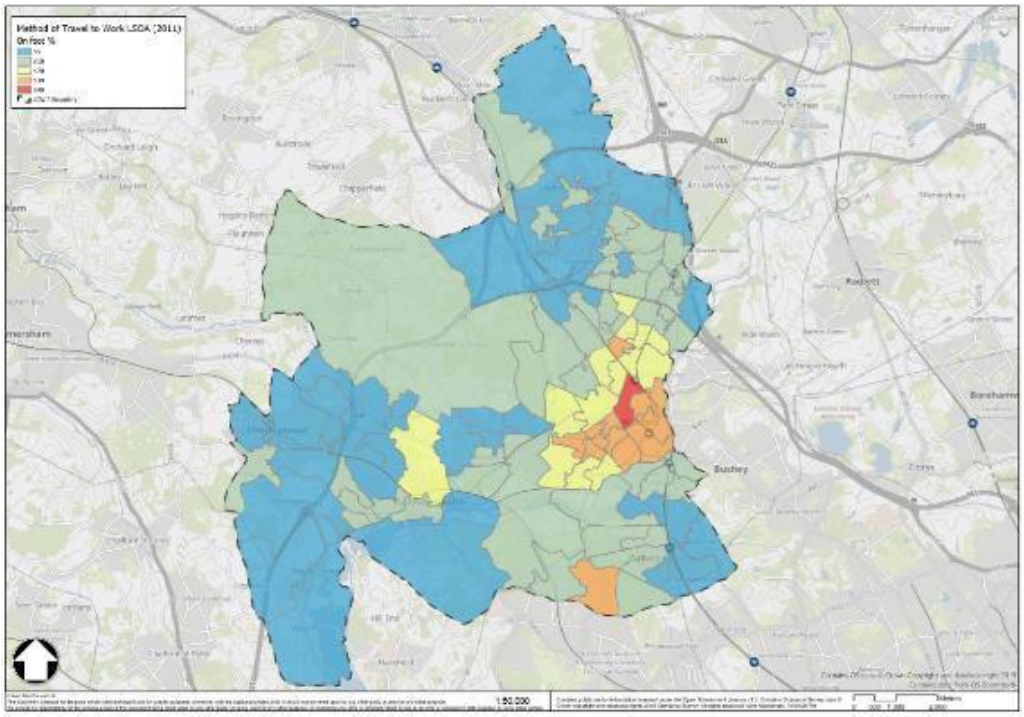
Performance Indicator	2018 Current Level	2022 Current Level	2026 Target	2031 Target
% of all trips (under 1 mile) made by walking	76.3%	76.0%	73%	77%

Source: Hertfordshire Traffic and Transport Data report

Walk to work mode share in Three Rivers

Figure 3.10 sets out a summary of the walk to work mode share from the 2011 Census broken down to LSOA. The Eastbury LSOA has the highest share (30%). Rickmansworth (c20%). Carpenders Park and Chorleywood LSOAs typically have 10% or lower walk to work mode share.

Figure 3.7 Walk to work mode share



Source: Census 2011

[12] 2019 Hertfordshire Traffic and Transport Data Report

4 LCWIP Stage 3 - Network Planning for Cycling

This section sets out the findings from the evidence collected and analysed for the information gathering information stage of the LCWIP (Stage 2). These findings aid in the identification and prioritisation of a cycling network in Three Rivers district.

4.1 Propensity to Cycle Tool

The LCWIP guidance recommends that the Propensity to Cycle Tool (PCT) is used as one method to understand the potential for cycling alongside other locally important evidence.

The PCT[13] is a DfT tool which shows the current and potential future distribution of commuter cycling trips under different growth scenarios. It estimates the amount of cycling in an area along straight desire lines (trip distribution) as well as allocating cycling trips to specific routes (trip assignment). The PCT uses open-source data, such as the census.

The PCT, while a useful tool, has limitations and outputs should be interpreted as an indicative representation of potential demand only. The data underpinning it is for example based on the 2011 census journey to work data and so does not take into account other journey types such as leisure trips. Proposed future development sites are also not included, so collectively this means that future demand for cycling is likely to be underestimated both in quantum and in distribution. The PCT is therefore used as just one input tool for the LCWIP.

Within the PCT, several different scenarios have been developed for commuting trips by cycle. These scenarios are summarised in Table 4.1 below.

The outputs from the PCT are expressed in terms of one-way daily cycling flows, and the outputs can be shown as:

- Straight Lines - representing the desire lines or origin-destination pairs. Each line has information showing the distance between the origin-destination point, how many commuters in total take this route, how many of these commuters currently cycle and what the propensity for cycling is.
- Route Network – aggregates all the cycling flows using the fastest legally cyclable routes (or alternative quieter streets) derived from Cyclestreets journey planner). This prioritises the fastest and most direct routes which have greatest potential for cycling. Using the LSOA's provides a higher accuracy in the detail of the origins and destinations.

Table 4.1 PCT Scenarios

PCT Scenario	Details
Government Target	The Government Target scenario models a doubling of cycling nationally, corresponding to the proposed target in the English Department for Transport's draft Cycling Delivery Plan to double cycling in England between 2013 to 2025
Go Dutch	The Go Dutch scenario is an ambitious vision for what cycling in England and Wales could look like. People in the Netherlands make

[13] https://www.pct.bike/

PCT Scenario	Details
	28% of trips by bicycle, fifteen times higher than the figure of 1.6% in England and Wales. In addition, cycling in England and Wales is skewed towards younger, male cyclists. By contrast in the Netherlands cycling remains common into older age, and women are more likely to cycle than men. This means that the difference between England and the Netherlands is particularly large for women and older people.
Ebikes	The Ebikes scenario models the additional increase in cycling that would be achieved through the widespread uptake of electric cycles ('ebikes'). This scenario is built as an extension of the Go Dutch scenario, making the further assumption that all cyclists in the Go Dutch scenario own an ebike. It builds on the Go Dutch scenario by applying three additional ebikes scaling factors to account for the increased willingness of ebike users to cycle long distance, hilly and simultaneously long distance and hilly routes.
Gender Equality	In the 2011 Census, women accounted for 48% of all English and Welsh commuters but only 27% of all cycle commuters. This gender disparity is seen across the country, with no local authority having a proportion of female cyclists greater than 50%. Places in England and Wales with higher overall levels of commuter cycling also tend to have smaller gender inequalities in commuter cycling. It does not use distance and hilliness data to model propensity to cycle. Instead, it assumes that male propensity to cycle remains unchanged – i.e. there is no change in the number of male cycle commuters – and that female propensity to cycle rises to match male propensity. This scenario has the greatest relative impact in areas where the rate of cycling is highly unequal across gender

Source: Propensity to cycle tool

For the purposes of the Three Rivers LCWIP, the 'Government Target' and 'Go Dutch' scenarios have been used. This combination helps to illustrate the most likely local scenario for potential cycle demand, and what could be achieved with high levels of ambition and mode share.

4.2 Propensity to Cycle Analysis

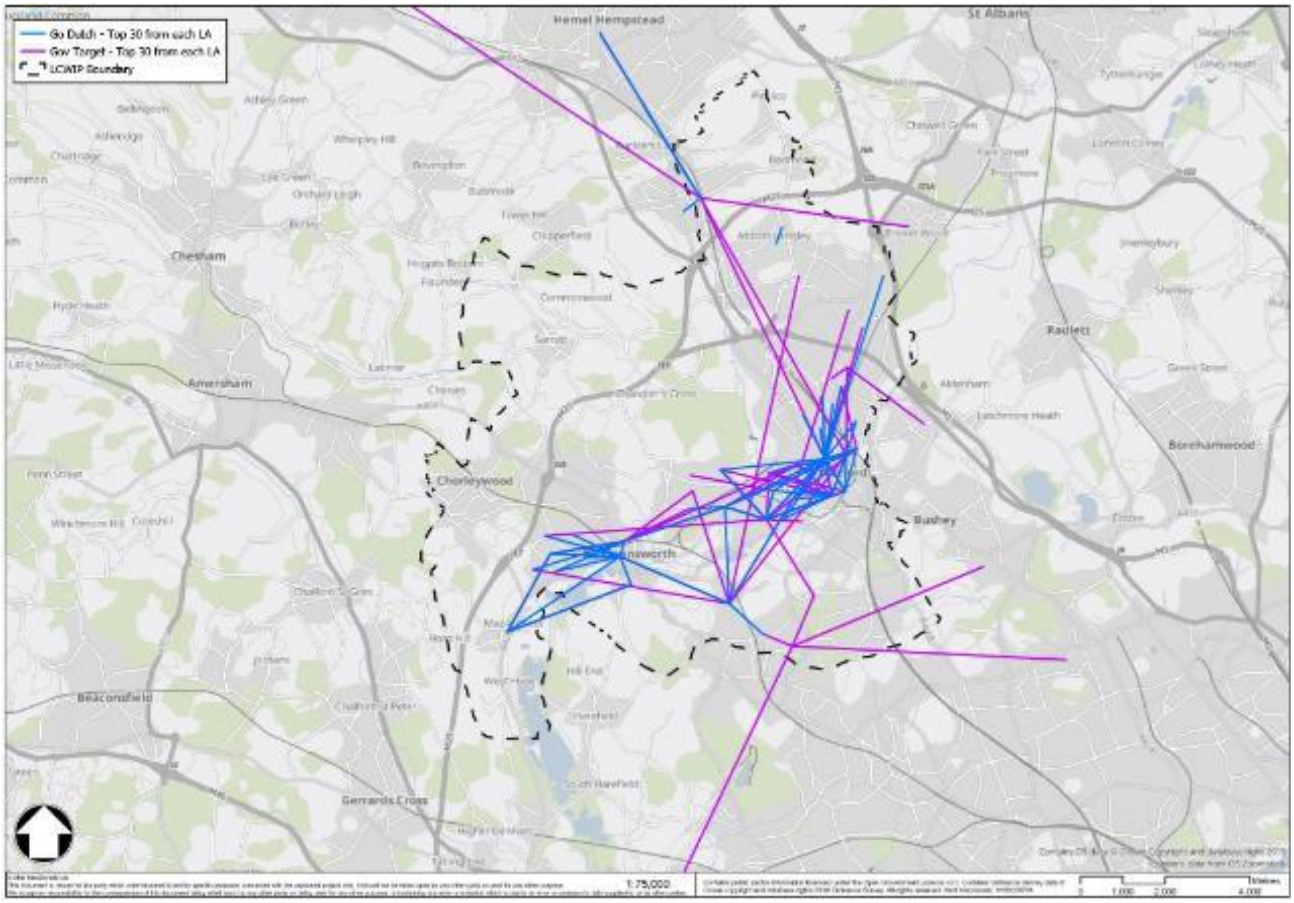
Trip distribution

The PCT has been used to show where existing cycle trips are and where there is potential to increase cycle trips to replace short trips made by other transport modes.

Figure 4.1 below shows, for each authority, the straight 'desire' lines when the Government Target and the Go Dutch scenarios are modelled in the PCT.

Within Three Rivers, there are key desire lines into and out of Rickmansworth in particular, but there are also desire lines from Kings Langley/Nash Mills, Eastbury and Moor Park. There are a number of desire lines linking to external areas from Three Rivers, notably Watford, Hemel Hempstead, Berkhamsted, Bushey, Stanmore, and North Hillingdon.

Figure 4.1 PCT Outputs for Watford and Three Rivers (Go Dutch and Government Target assignment scenarios)



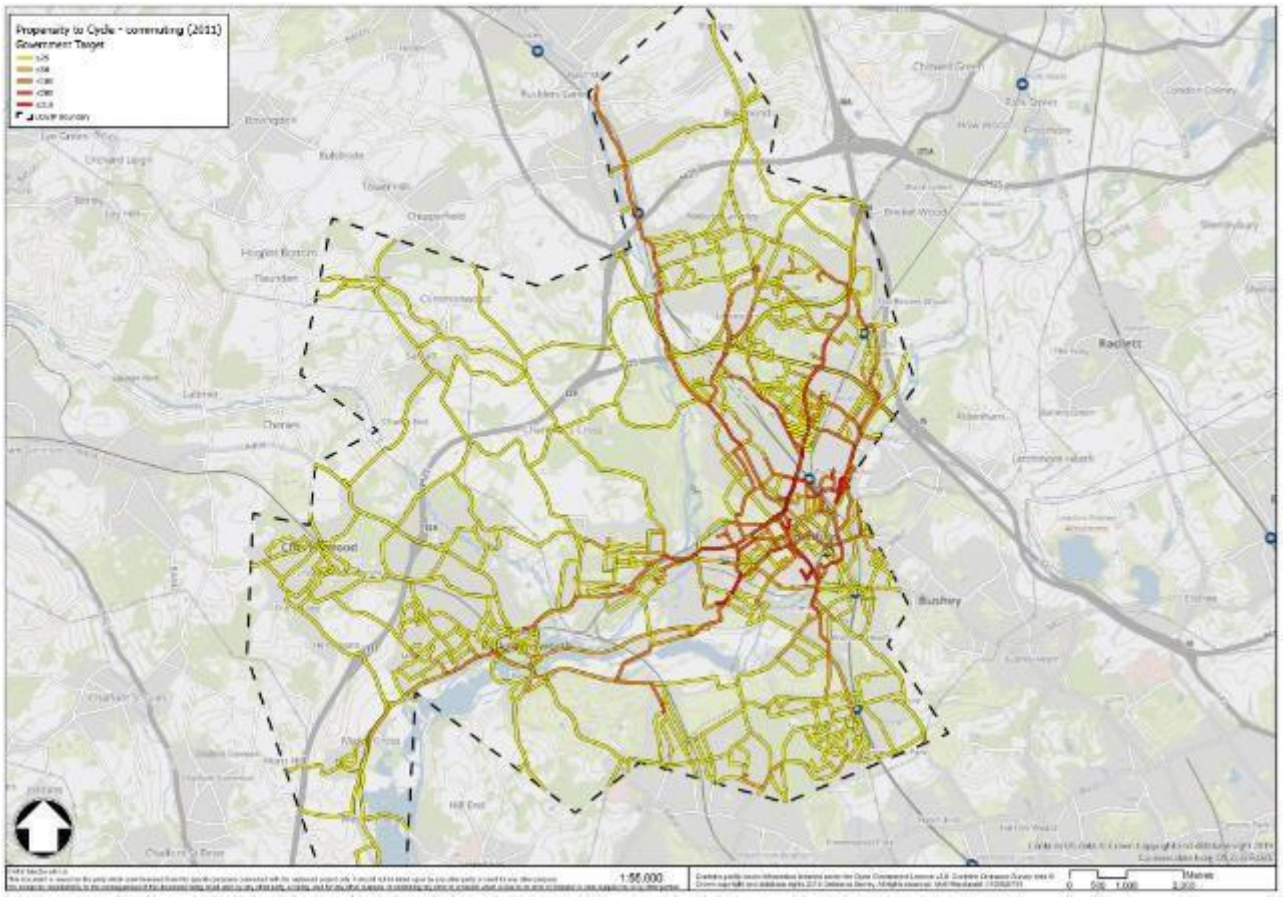
Source: Mott MacDonald, Propensity to Cycle Tool

Trip assignment

Figure 4.2 below matches these desire lines onto the existing road network in Watford and Three Rivers. This shows particular hotspots of cycling potential:

- West - east demand between Rickmansworth and Watford Centre via Croxley and West Watford (A412 and Tolpits Lane)
- N North-south demand between North Watford and Watford Centre (A412)
- North-south demand between Garston and Watford Centre
- North-south demand between Leavesden and Watford Centre
- North-south demand between Kings Langley/ Nash Mills and Watford Centre (A411)

Figure 4.2 PCT Analysis - cycle demand mapped onto the route network (trip assignment)



Source: Mott MacDonald, Propensity to Cycle Tool

4.3 Origin and Destination Analysis

This section sets out the analysis of the origins and destinations in and around Three Rivers, including the method used.

Origins are identified as trip attractors, which are largely residential areas. LSOA residential population weighted centroids were selected to represent existing residential areas in Three Rivers. In addition, new and draft allocated development sites have also been taken into consideration. Any developments planned to provide over 50 dwellings have been included in this analysis.

Destinations have been identified as trip attractors, which include the following:

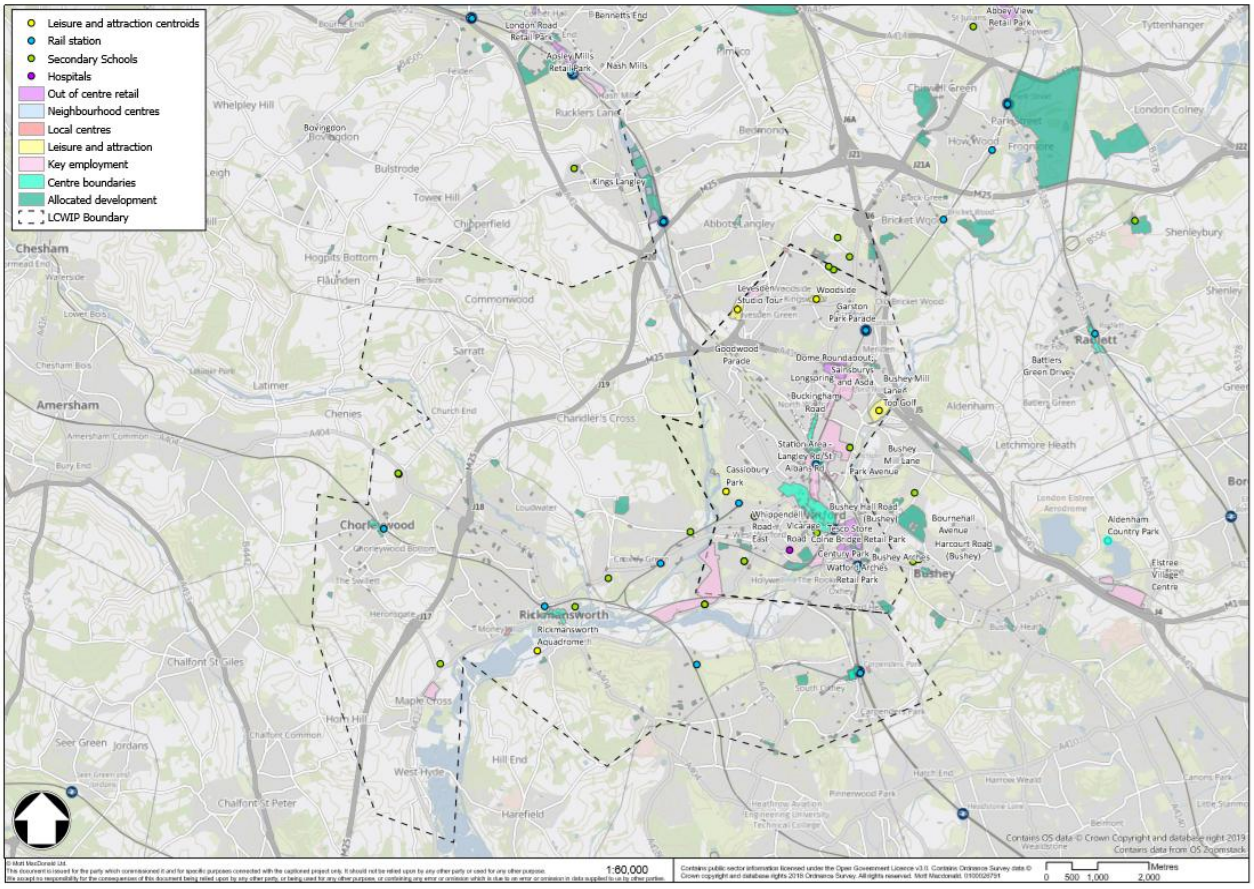
- Town and district centres.
- Employment sites, business parks or large employers.
- Secondary schools.
- Hospitals with accident and emergency departments.
- Retail facilities including out of town sites; and
- Leisure, including major visitor attractions such as Warner Brothers Studios.

The identification of origins and destinations has been developed through an iterative process with officers at HCC and TRDC.

The information was initially provided as GIS polygons of the origin and destination points, which has then been sense checked by the project team and supplemented with further information including local promotional maps. For the purposes of the analysis, the geographical centre of a development has then been used as the origin point.

A full list of agreed key destination points assumed is set out in Appendix A. Figure 4.3 shows a summary of the origins and destinations in Watford and Three Rivers.

Figure 4.3 Key trip origins and destinations in Watford and Three Rivers (December 2021)



Source: Mott MacDonald

4.3.1 Identified cycling corridors

Figure 4.4 shows the origins connected to destinations, and the representation of potential cycling corridors. This analysis has been undertaken using a GIS model, based on the following assumptions:

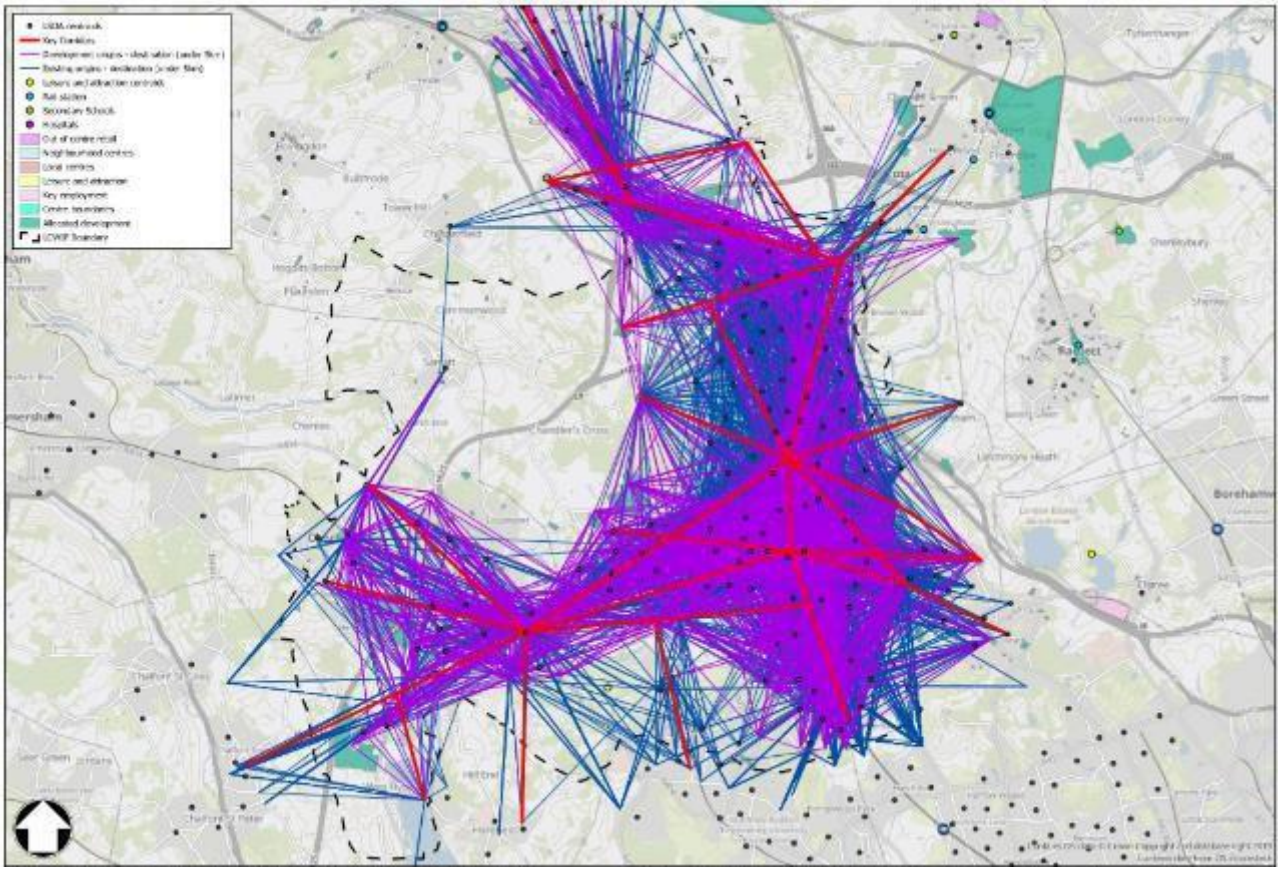
Every origin connects to every destination within a 5km distance (approximately a 25-minute cycle) which is considered a reasonable cycle distance. The exception is at local centres, hospitals, and rail stations where there is an assumption that an individual would typically travel to the closest of these amenities[14].

Origins and destination corridors are shown in blue and purple on the map, with key corridors of demand shown in red. The blue lines show the connections between existing origins and

[14] Approach agreed at scoping stage.

destinations, with the purple showing connections from allocated developments and destinations. The key corridors, shown in red, were identified by looking at the trends from the desire lines. Where a number of desire lines appeared to travel in a similar direction, this was seen as a key corridor, which was then sketched onto the map.

Figure 4.4 Connecting origins and destinations



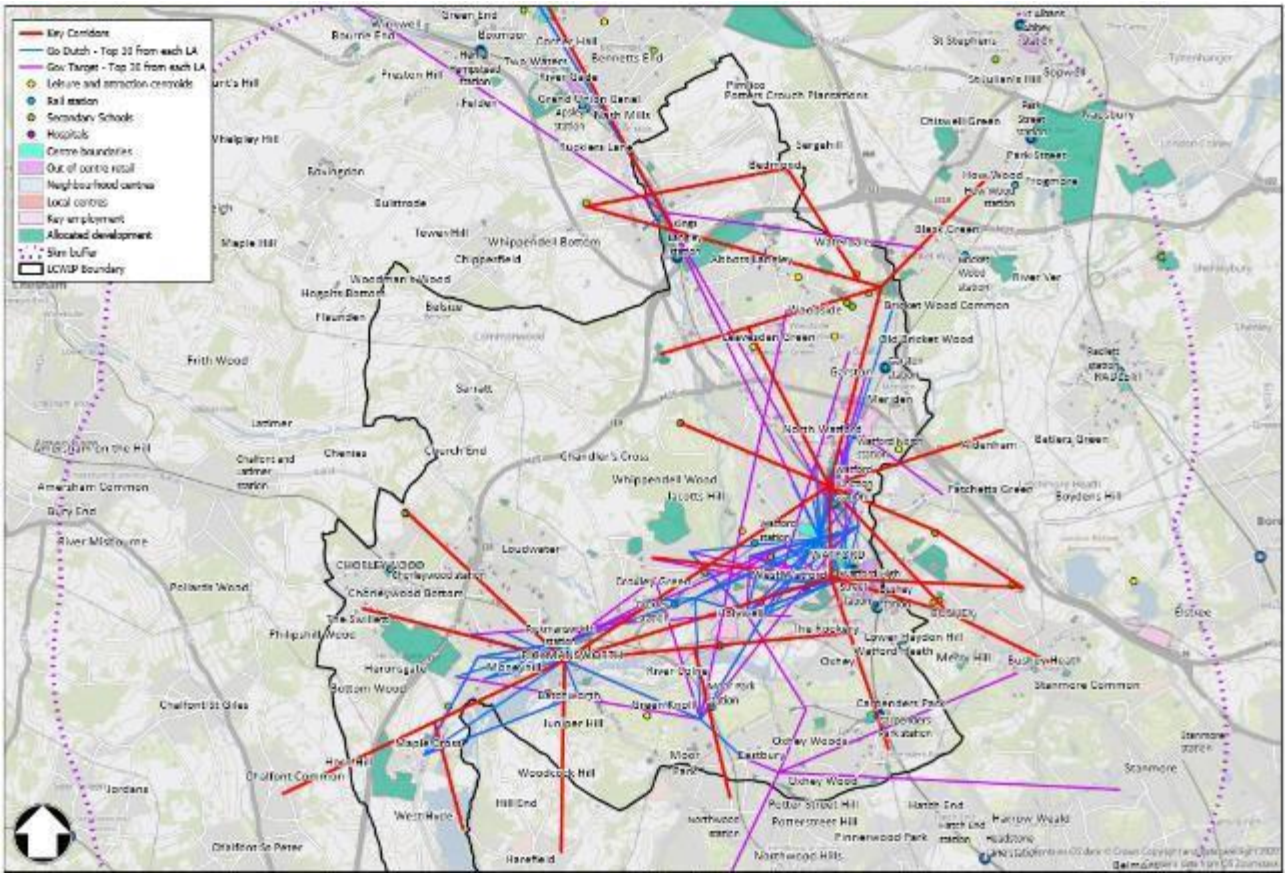
Source: Mott MacDonald

4.3.2 Key cycling corridors

Figure 4.5 shows a summary of the key corridors identified for Three Rivers based on this origin and destination analysis. The key corridors of demand are focussed in particular into and out of Rickmansworth, and Garston.

In addition, the PCT outputs drawn from the previous section are also shown to provide a comparison between the datasets. The PCT demand shows additional desire lines north-south which were not designated as a key corridor. It should be noted, the PCT shows only commuting trips, whereas the origin-destination analysis takes into consideration a wider spread of trips, including commuting, travel to school, leisure and shopping.

Figure 4.5 Identification of key corridors of demand



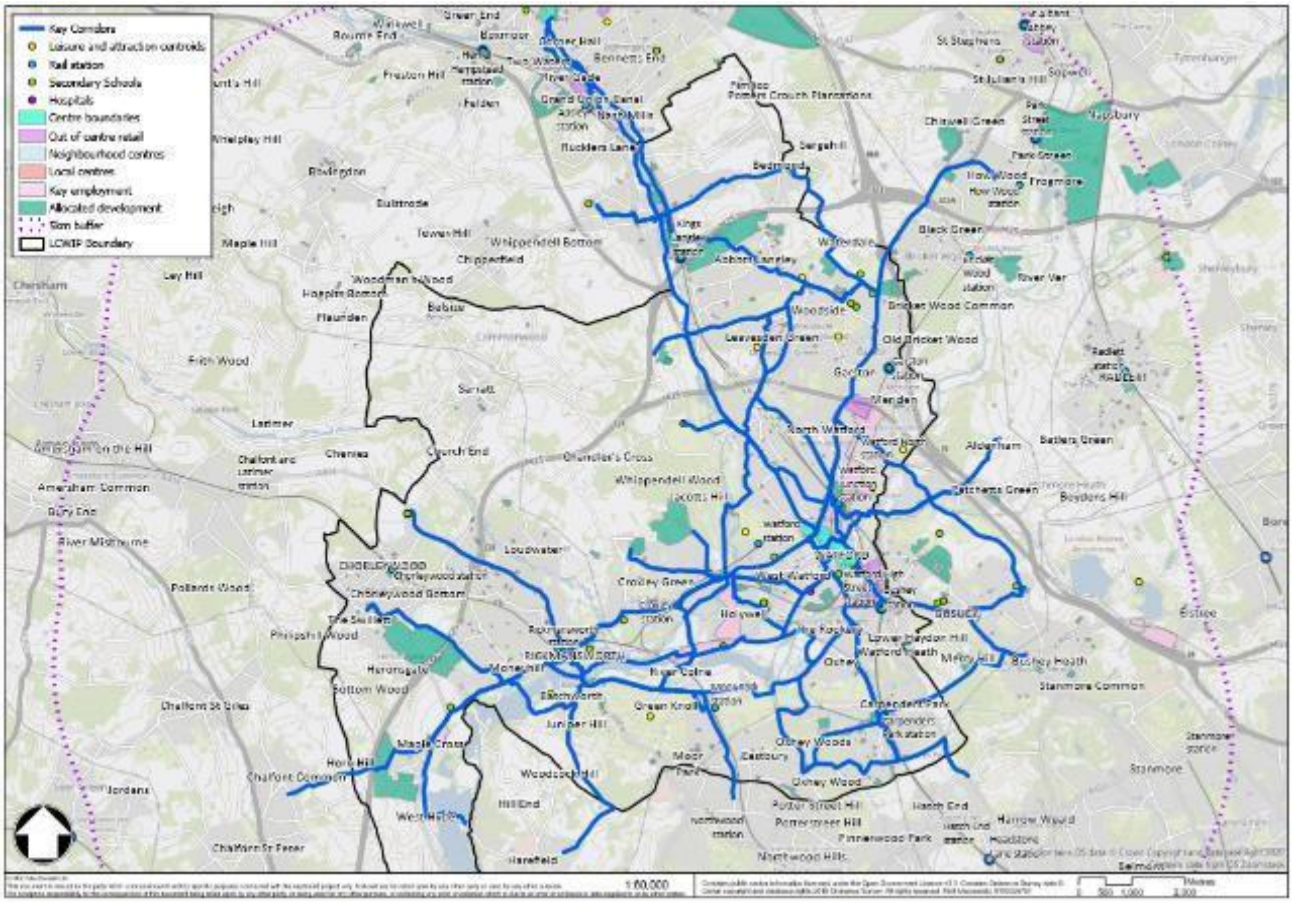
Source: Mott MacDonald

4.3.3 Cycle corridors and the road network

The corridors identified by the PCT analysis in section 4.1 and the origin-destination analysis in 4.2 have been mapped onto the road and path network in GIS using the shortest possible route, to illustrate what the straight-line network would look like when mapped to the road network across Three Rivers (see Figure 4.6). It should be noted that these initial outputs are purely indicative at this stage, with the exact alignments of shortlisted priority routes determined in the next stages of the LCWIP.

The network identified in Figure 4.6, and the process to arrive at this network, was presented at stakeholder engagement sessions (in June 2021). Stakeholders included elected representatives, local groups with an interest in walking and cycling; and national and regional statutory consultees and NGOs, identified in the Stakeholder Engagement Plan. These workshops allowed stakeholders to feed back on the draft proposed Networks and the background data used to inform the draft network of proposed routes.

Figure 4.6 Cycle demand mapped onto the network



Source: Mott MacDonald

4.4 Pre-prioritisation

The LCWIP process includes an element of prioritisation, in recognition of the long-term nature of the LCWIP, and that it will not be feasible to improve all routes in the immediate future.

As a large number of routes were identified through the network planning process, the decision to 'pre-prioritise' the network was taken at LCWIP stage 3, allowing the more detailed work to focus on those higher priority routes. The rationale for this pre-prioritisation was that:

- Assessing/auditing all routes would be time-consuming and would likely extend the programme and budget required significantly.
- There is unlikely to be sufficient future funding available to implement all routes over the short term, therefore there is a need to focus on those that will provide the most benefit.

Therefore, the purpose of pre-prioritisation is to identify the routes that are most likely to score highly in stage 5, so that time and effort is focused on auditing and assessing those routes that will provide the most benefit. It is envisaged that all routes will eventually be audited and assessed but this will need to be undertaken over time as part of future iterations of the LCWIP, and as funding becomes available.

4.4.1 Methodology

The LCWIP Guidance recommends three elements should be considered when looking at the prioritisation of schemes.

- Effectiveness
- Policy
- Deliverability

The effectiveness and policy aspects of prioritisation were considered in the pre-prioritisation exercise.

A number of datasets were gathered to inform the effectiveness of the routes, these datasets were decided upon by TRDC and informed by Mott MacDonald:

- Indices of multiple deprivation (IMD)
- PCT Government Target
- HCC's Place and Movement dataset
- Key severance factors (major roads, rail, waterways)

All of the above datasets were analysed in GIS and scored on the basis of how effective improvements to the cycle network would be in improving these aspects of the route.

The IMD dataset is classified by Lower Super Output Area (LSOA) and therefore covers the whole LCWIP area. The areas with higher indicators of deprivation are considered a higher priority.

The PCT was used to establish the links which could potentially attract the largest numbers of users for both commuting and school travel.

The Place and Movement scores for links proximate to the routes were assessed, with P2 and P3 links – those with a higher Place function – given a higher priority.

Severance was assessed though the number of severance points per kilometre on links, with sections overcoming the greatest number of severance points scoring most highly.

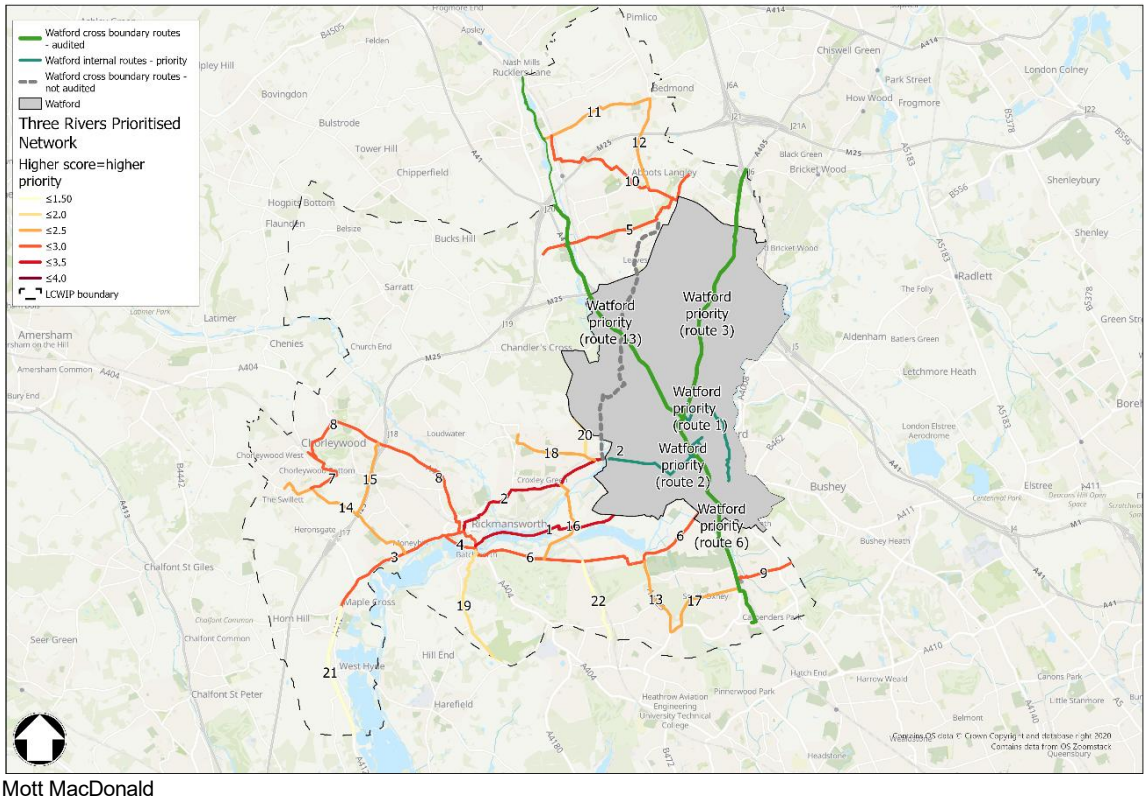
The proposed cycle network was broken into sections, a new section was created at every junction. For each section, a score was calculated for each of the four datasets. A final score was then derived for each section based on the cumulative score of all datasets.

In order to form routes out of the sections, the highest scoring section was selected first. The adjacent sections were included as part of the route until it came to a logical end. This means that the priority of the route at a different point can be much lower than the highest priority section. The next priority section was then selected to create the next priority route.

4.4.2 Pre-prioritisation Routes

The pre-prioritisation of the strategic cycling network was undertaken in Three Rivers, providing a network across the local authority areas. The pre-prioritisation results for Three Rivers are shown in Figure 4.8.

Figure 4.7 Three Rivers pre-prioritisation routes



Source: Mott MacDonald

4.5 Priority Cycling Routes

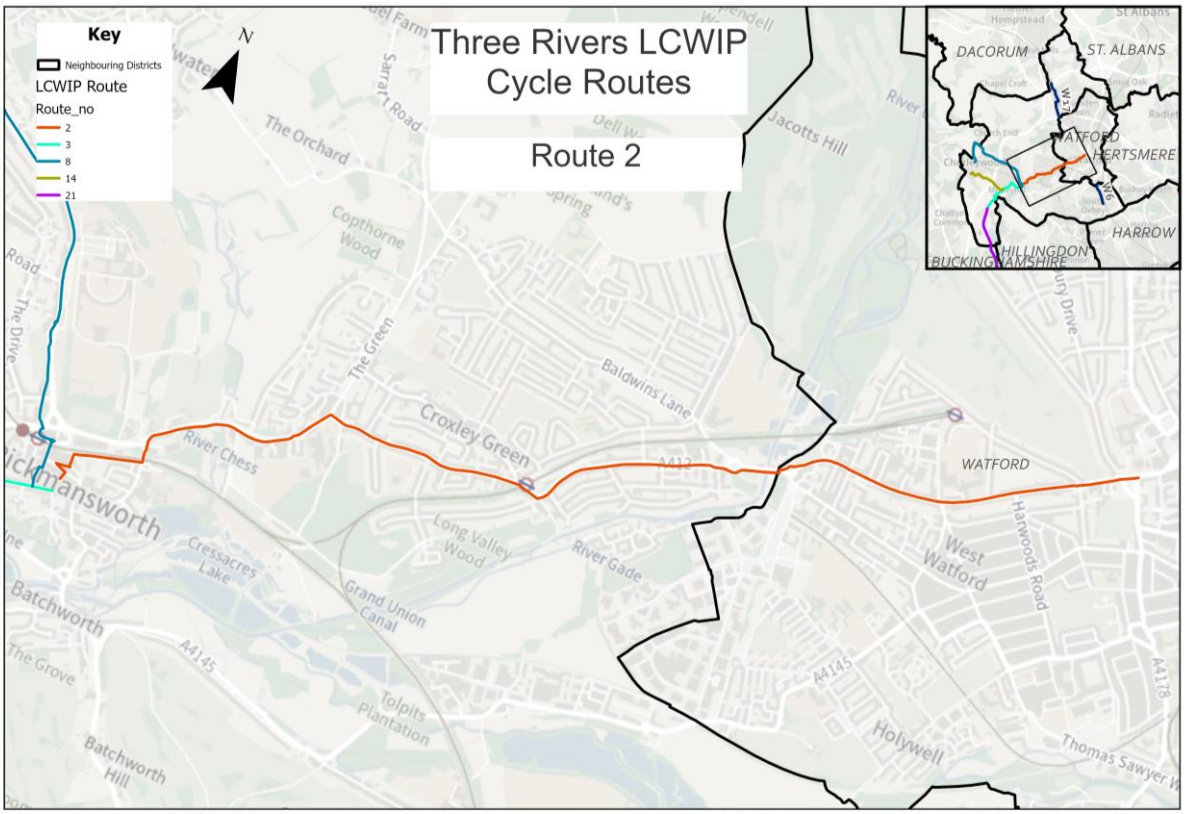
Following the pre-prioritisation process outlined in Section 4.4, a more detailed assessment was undertaken to identify the highest priority routes for further development. This next stage involved a structured evaluation of all routes using a multi-criteria assessment framework. Officers ranked all routes based on the following criteria:

- **Effectiveness and policy ranking**: building on the datasets and policy alignment considered in the pre-prioritisation stage, as outlined in Section 4.4.1. This included reference to datasets such as Indices of Multiple Deprivation (IMD), the Propensity to Cycle Tool (PCT), and Place and Movement scores.
- **Technical feasibility**: assessing the practical deliverability of each route.
- **Overall support for the scheme**: considering stakeholder and public support.
- **Alignment with known funding or existing schemes**: evaluating how well each route fits with current or upcoming funding opportunities and related infrastructure projects.

Each route was scored against these criteria, and the scores were combined to produce an overall ranking. This process enabled a transparent and evidence-based selection of the most promising routes for investment. As a result of this assessment, five routes were prioritised for the Three Rivers district. These are detailed below as Routes 2, 3, 8, 14, and 21, and are illustrated in the maps that follow.

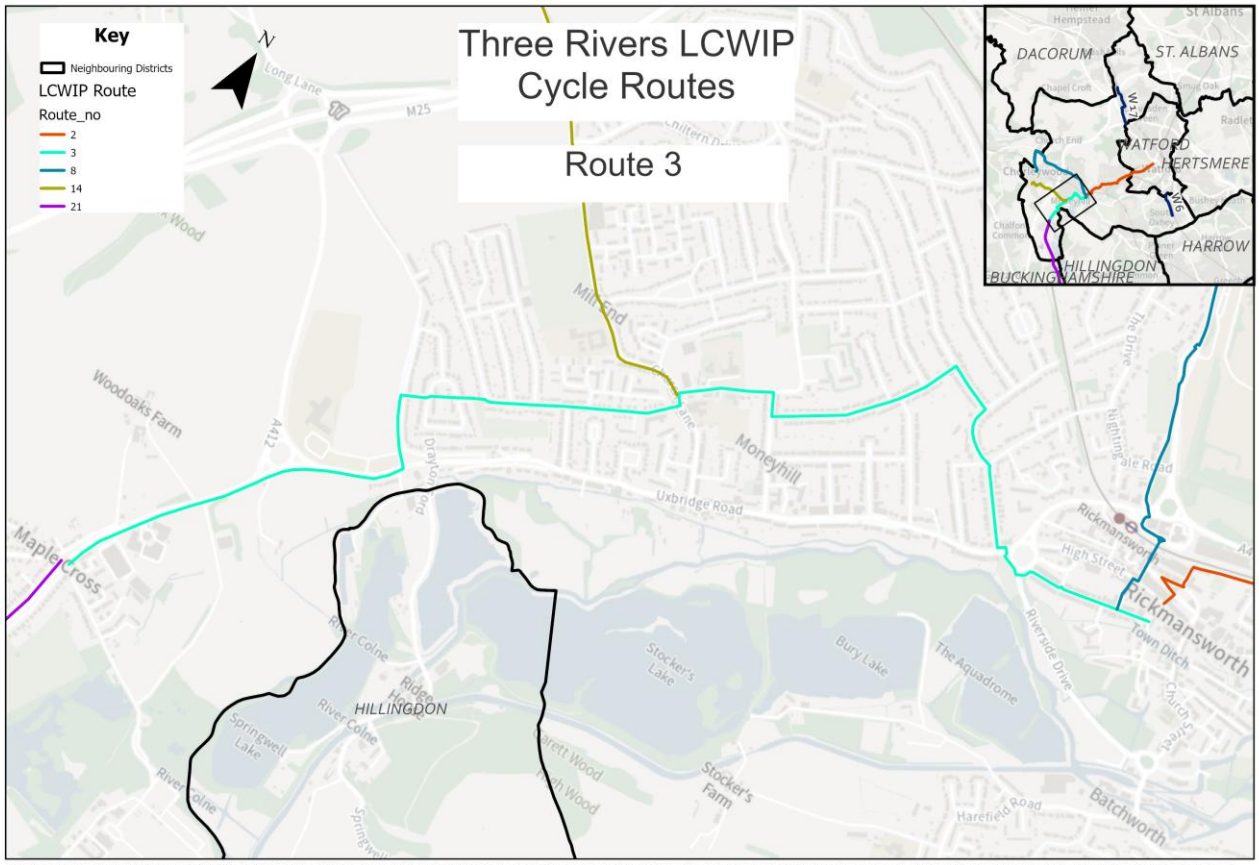
Further information on this process is detailed in section 6.

Route 2 - Watford via Croxley Green A412 to Rickmansworth High Street
Figure 4.8 LCWIP priority route 2 overview



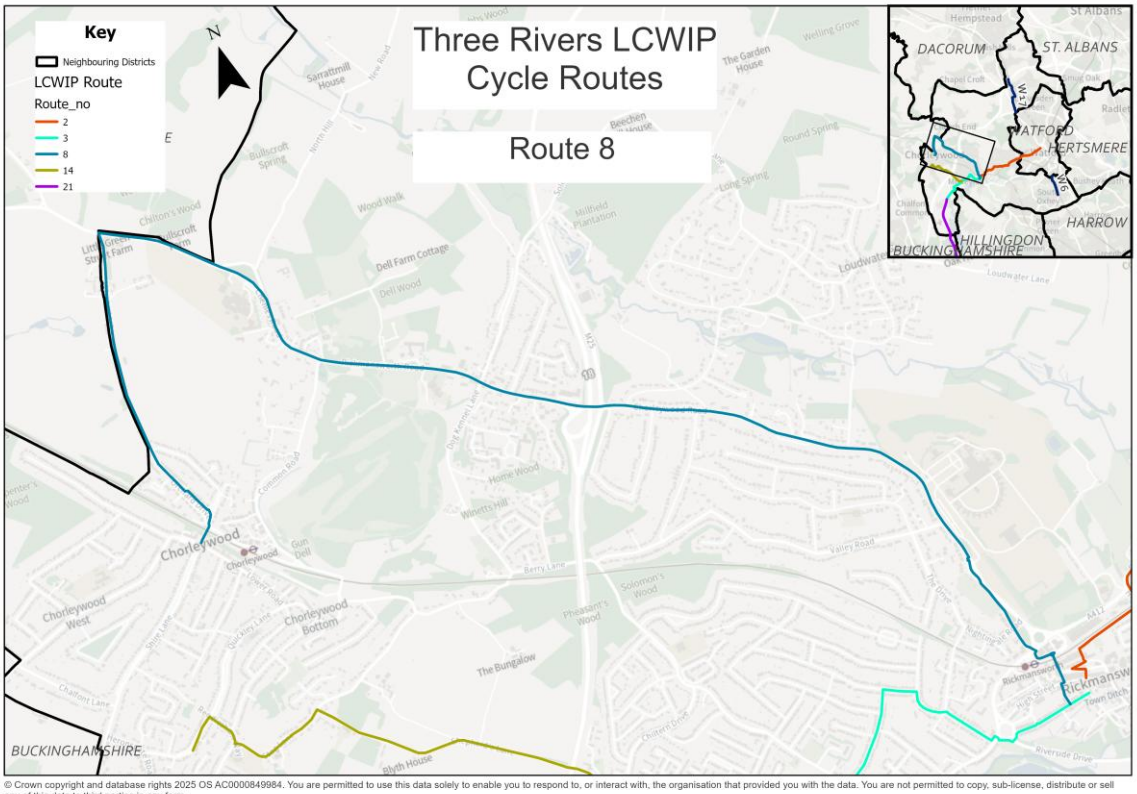
Route 3 – Ebury Road, parallel with Uxbridge Road and then next to A412

Figure 4.9 LCWIP priority route 3 overview



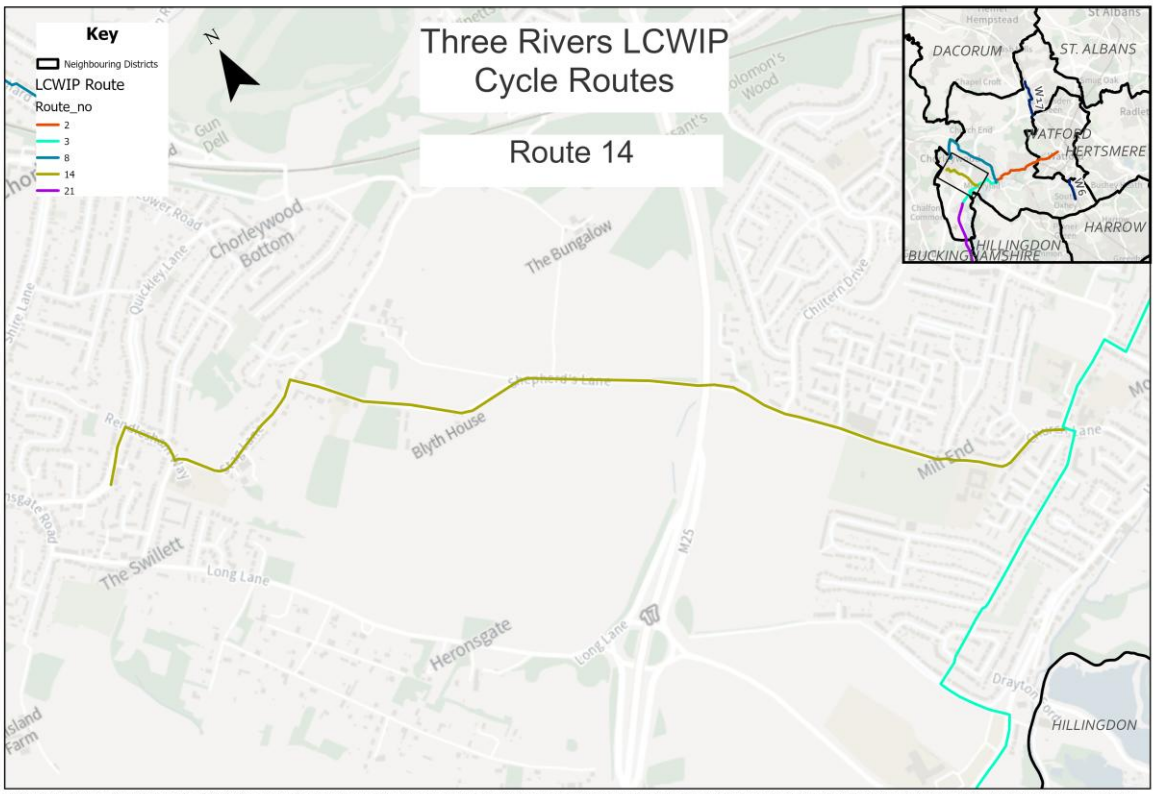
Route 8 - A404 route between Rickmansworth Station and Chorleywood

Figure 4.10 LCWIP priority route 8 overview



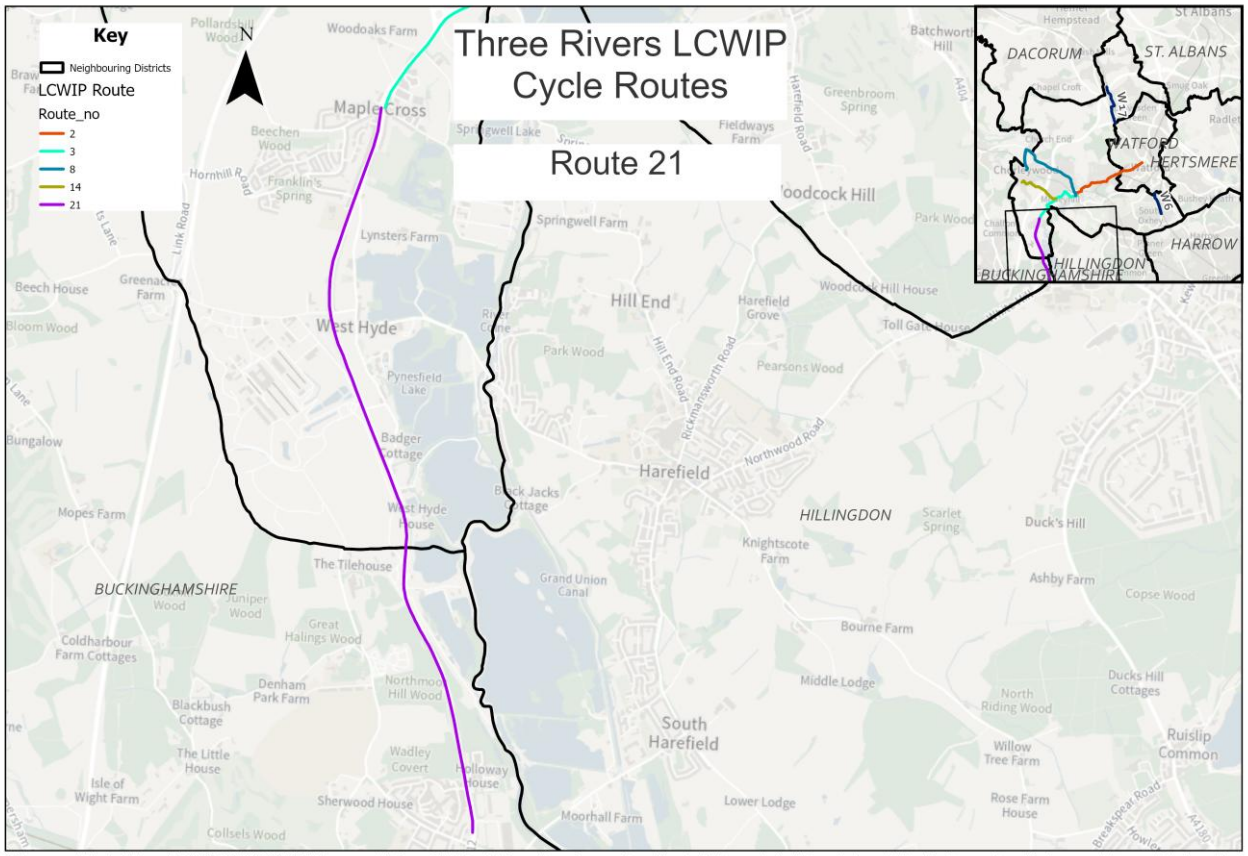
Route 14 – Starts on Stag Lane in Chorleywood and comes out via Shepherds Lane towards William Penn Leisure Centre

Figure 4.11 LCWIP priority route 14 overview



Route 21 – Chalfont Road to towards Denham and Buckinghamshire border

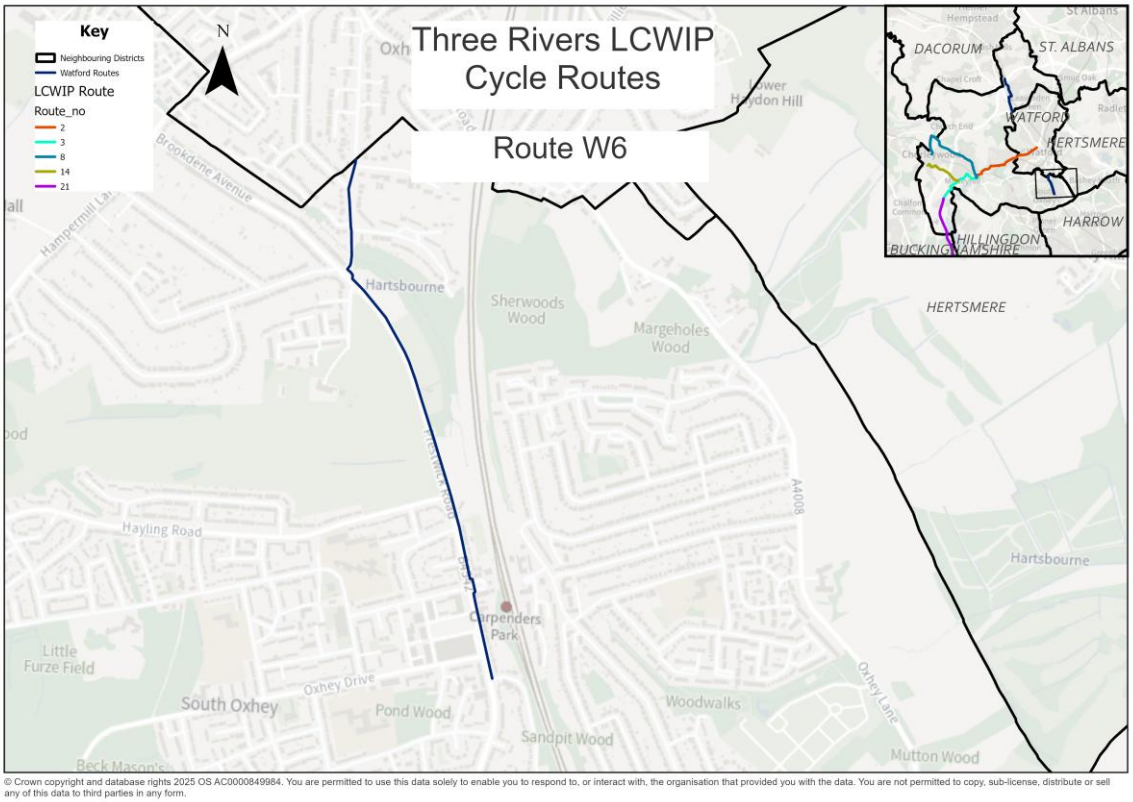
Figure 4.12 LCWIP priority route 21 overview



Two routes from the Watford Borough Council LCWIP also cross into Three Rivers district which are outlined below as routes W6 and W17.

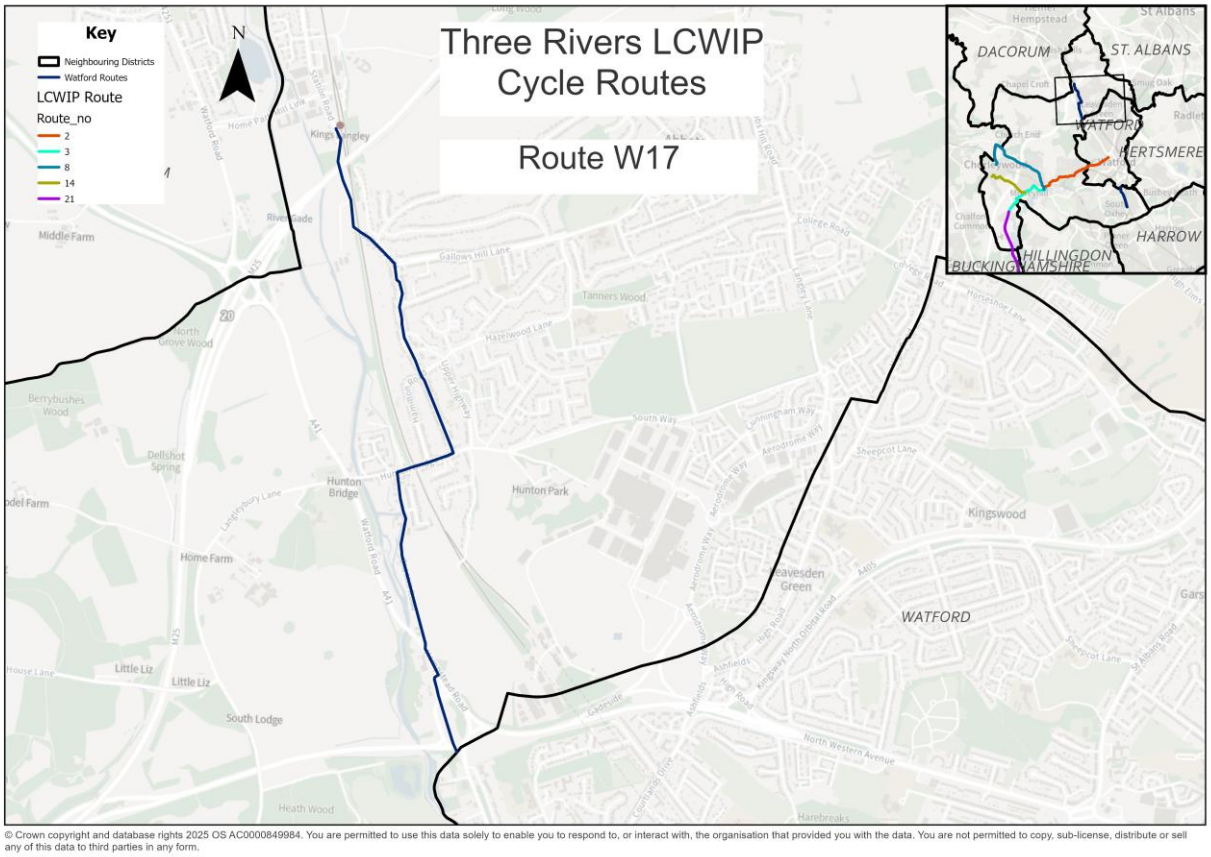
Route W6 – Along Green Lane and Prestwick Road towards Carpenders Park train station

Figure 4.13 Watford LCWIP priority route W6 overview



Route W17 – Along Old Mill Road, Lauderdale Road and Gallows Hill towards Kings Langley train station

Figure 9



4.6 Primary, Secondary and Local Routes

Other routes identified in the pre-prioritisation process but not chosen as a priority route will remain under consideration and may be progressed later or through separate workstreams. These are marked as ‘primary’ and ‘secondary’ routes on the map below.

All routes are also supported by Three Rivers District Council designated routes which have been chosen for providing key local connections from the strategic cycling network. As with all routes, these may not currently be safely passable by bicycle, but by designating these routes, it indicates an ambition to explore possible improvements. These are marked as ‘local’ routes which show on the map below.

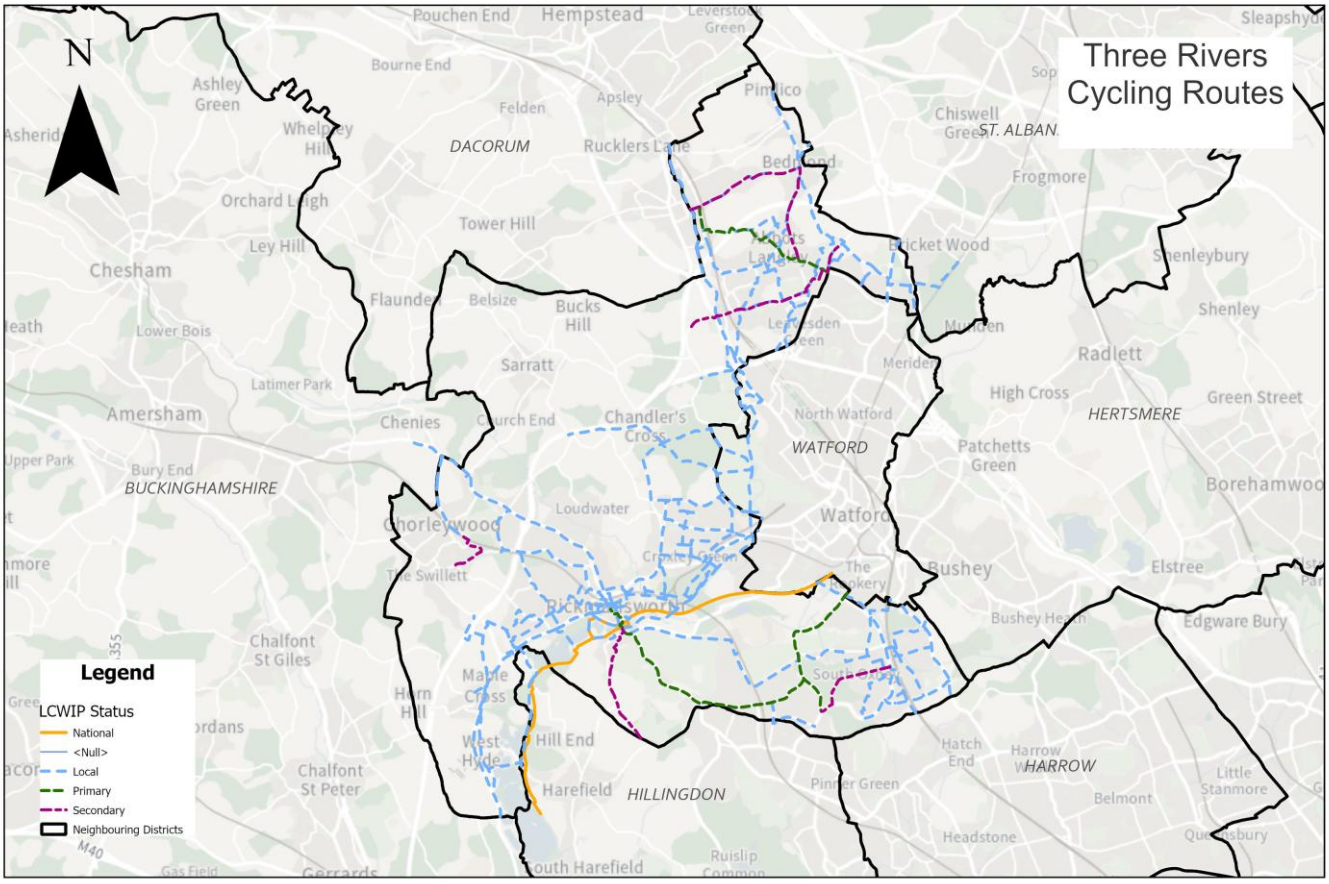
These are shown in more detail in Appendix B – Detailed District Cycle Route Map

4.7 National Cycle Network routes

The Ebury Way route, has been distinctly marked as the only National Cycle Network route in Three Rivers district. This is a higher profile route and was not selected for prioritisation. Although the need for resurfacing the route and vegetation cutback is noted, no significant work on interventions is needed so improvements to this route are being progressed separately. These are marked as a ‘national’ route on the map below.

This is shown in more detail in Appendix B – Detailed District Cycle Route Map

Figure 4.16 – District Cycle Route Map Overview



4.8 Route Selection Tool

Each of the prioritised routes has been assessed using the LCWIP Route Selection Tool[15] (RST) which scores the route against five key criteria:

- **Directness**: How direct a cycle route is in relation to the route travelled by private motor vehicles.
- **Gradient**: How steep a route is.
- **Safety**: How safe a route is, taking account of separation between cyclists and vehicles and motor vehicle
- speed and volumes.
- **Connections**: The number of points at which a route can be joined.
- **Comfort**: How comfortable the space is for cycling based on width and surface treatment.

The RST also considers the number of junctions along the route considered to be particularly hazardous or unattractive for cyclists, usually due to high traffic volumes or speeds, and a lack of separated cycling facilities. These are defined as 'critical' junctions.

The RST was applied firstly to consider the baseline conditions across the five criteria, with each route broken down into sections of distinct character. An overall baseline score of 0-5 for each criterion across the route is established.

The route is then re-assessed based on the potential conditions across the five criteria – scoring the route sections on the basis that they were improved, where possible, to standards identified in the DfT's Local Transport Note 1/20 (LTN 1/20) – the latest design guidance for cycle infrastructure. More detail on the LTN 1/20 principles is provided in section 4.9.

DfT's LCWIP Guidance states that the aim is to achieve a score of at least three and significantly reduce the number of critical junctions, potentially removing these completely.

Owing to COVID-19 restrictions the initial RST assessment was largely desktop based with assessment sheets completed remotely using online mapping and satellite imagery. However, spot checks were undertaken on site in June 2021 at locations where information was not readily available, or more detail was required to complete the audits.

Scores were assigned using the DfT's LCWIP Route Selection Tool, with gradient calculated using online mapping as recommended in this guidance. In cases where traffic data was not available for a specific street the road characteristic has been used as a proxy for daily vehicle flows. Speed limit was based on the posted speed limit for all routes.

The summary of the baseline audits is shown in Table 4.3. The scores for the five core design principles are a function of the conditions across the whole route. The number of critical junctions on each route are also listed.

Table 4.2 Three Rivers baseline results audits summary

Route No.	Name	Directness	Gradient	Safety	Connectivity	Comfort	Critical Junctions (no)
2	Rickmansworth - Watford A412	5.0	2.6	1.7	4.6	1.3	5
3	Rickmansworth – West	5.0	4.3	2.3	5.0	1.6	0
8	Rickmansworth – Chorleywood	5.0	2.9	0.7	4.6	0.6	3
14	Shepherds Lane	5.0	3.1	1.5	4.2	2.1	1
21	Maple Cross South	5.0	5.0	0.6	3.4	1.0	3

The prioritised routes in Three Rivers generally follow the main corridors of movement – meaning high scores for the directness of the routes, but lower safety scores due to higher traffic volumes and speeds on these major routes. Lower comfort scores reflect the fact that cyclists currently move with general traffic on several higher traffic sections of the routes.

[15] https://www.gov.uk/government/publications/local-cycling-and-walking-infrastructure-plans-technical-guidance-and-tools

4.9 Types of cycling interventions

The Department for Transport's (DfT) Local Transport Note (LTN) 1/20 Cycle Infrastructure Design guidance[16] was introduced in 2020 and should be referred to for detail on cycling infrastructure.

LTN 1/20 states that cycling infrastructure should meet five core design principles as follows:

- **Coherent**: Routes are consistent and simple to follow from origin to destination.
- **Direct**: Routes are at least as direct as those for private vehicles and do not require cyclists to stop and start at junctions.
- **Safe**: Infrastructure should be safe, and people should feel safe using it.
- **Comfortable**: Good quality, wide routes.
- **Attractive**: Infrastructure is well designed.

In addition, the guidance provides more specific principles including:

- Cycle infrastructure should be inclusive and usable by people of all ages and abilities.
- Cycles must be treated as vehicles and not as pedestrians with physical separation provided between pedestrians and cyclists, including at junctions.
- Physical separation from high traffic volumes, including at junctions.
- Widths should cater for high growth and non-standard cycles.
- All highway schemes should include consideration of opportunities to improve provision for cycling.
- Schemes should be more than cosmetic public realm schemes and include restrictions to traffic or reallocation of road space.
- Cycle infrastructure should form a connected and holistic network.
- Cycle parking should be included in large schemes.
- Schemes must be legible and understandable.
- Clear and comprehensive wayfinding should be provided.
- Flagship infrastructure such as new cycle bridges should form part of a joined-up network.
- Schemes should be properly maintained which is as important as the infrastructure itself.
- Surfaces must be smooth and durable.
- Trials may be important in making sure a permanent scheme works from the start; however, good design is still required for trial schemes to maximise their chances of success.
- Access controls such as barriers should not be used.
- Lower cost, pragmatic schemes such as bollards to close a road are preferred where they can be effective.
- Routes must be direct and logical.
- Cycle routes should be comfortable to ride, minimising the need to stop and start and the need for traffic calming with vertical deflection (e.g. speed humps).
- Schemes must be consistent and not switch between different types of provision such as carriageway lane and footway.

[16] https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120

The fact that the LTN 1/20 guidance was introduced so recently means that, in common with most of the country, much existing cycling infrastructure in the study area would not meet the latest requirements. The prioritisation of interventions in the LCWIP process takes account of which improvements are most urgently required.

The level of design for the LCWIP is necessarily high-level. For example, at this stage, the plans indicate where there is potential for protected cycle facilities; however, the exact nature of the facility would be subject to further design work and will be subject to circumstances specific to the route. Types of facility include:

- Hybrid stepped track.
- Kerb separated track.
- Separation provided by locating parking on the outside of the cycle lane (note LTN 1/20 also recommends kerb or light separation).
- Bi-directional track.
- Light separation such as wands, as have been used in the recent temporary schemes. It is, however, recommended that the type of design is consistent within each scheme.

A glossary of possible interventions can be found in Appendix C.

4.10 Identified cycling interventions

In identifying measures, the interventions that have been suggested reflect the aspirations outlined in LTN 1/20. This is necessary in order to provide the quality of infrastructure that will have the greatest chance of achieving mode shift.

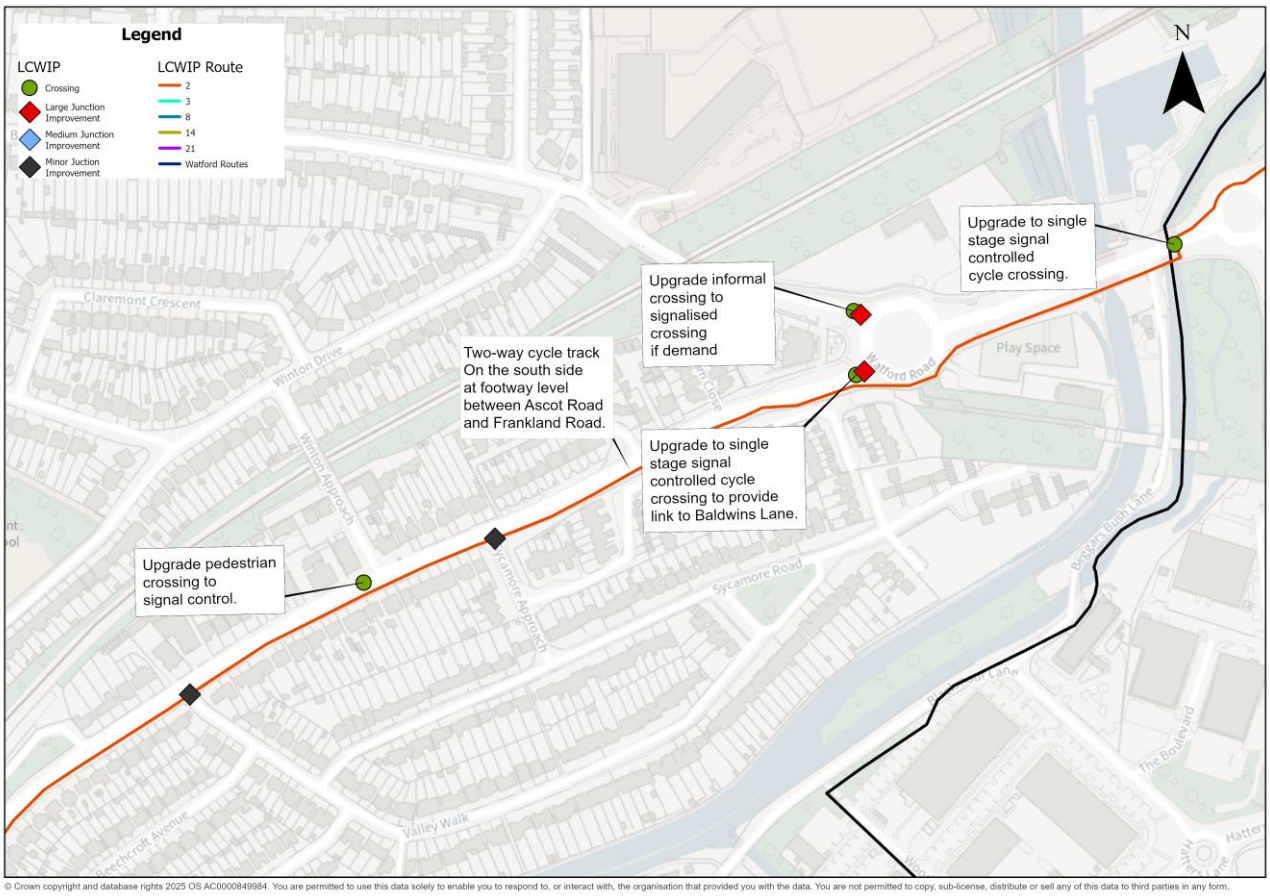
The LCWIP is intended to provide a high-level overview of potential designs only. The deliverability of the schemes has been considered; however, in all cases, the measures identified will need to be subject to a full feasibility assessment, safety review and detailed consideration of the impacts on other road users, including buses and emergency vehicles. On some sections of the routes, very constrained pinch points have been identified where we are unable to recommend potential interventions at this stage – in these cases further study is required to identify potential solutions for continuing the cycle route. The deliverability of the schemes is considered in LCWIP Stage 5 – Prioritising Improvements.

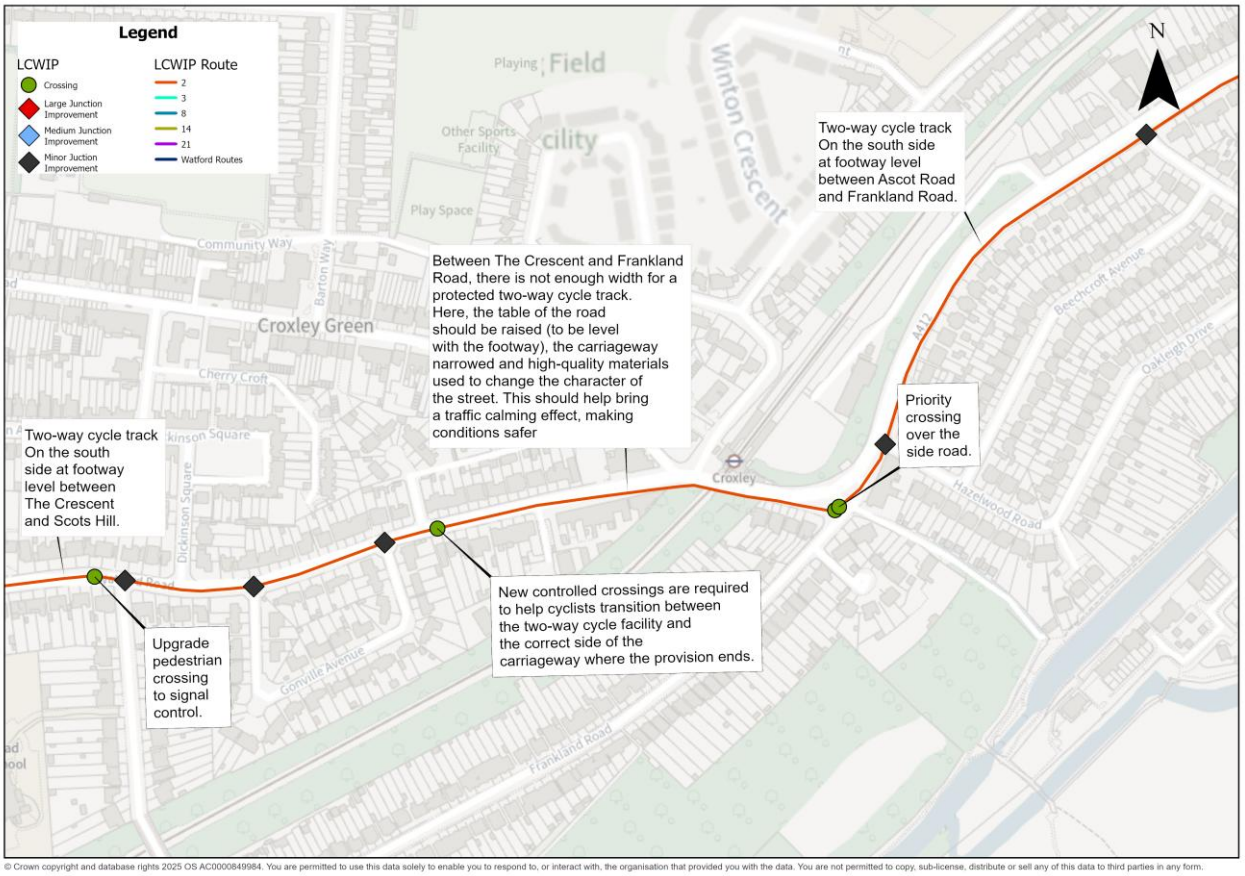
The measures proposed focus on the main links and junctions. In addition, it is recommended that the following interventions be included when designing schemes in more detail:

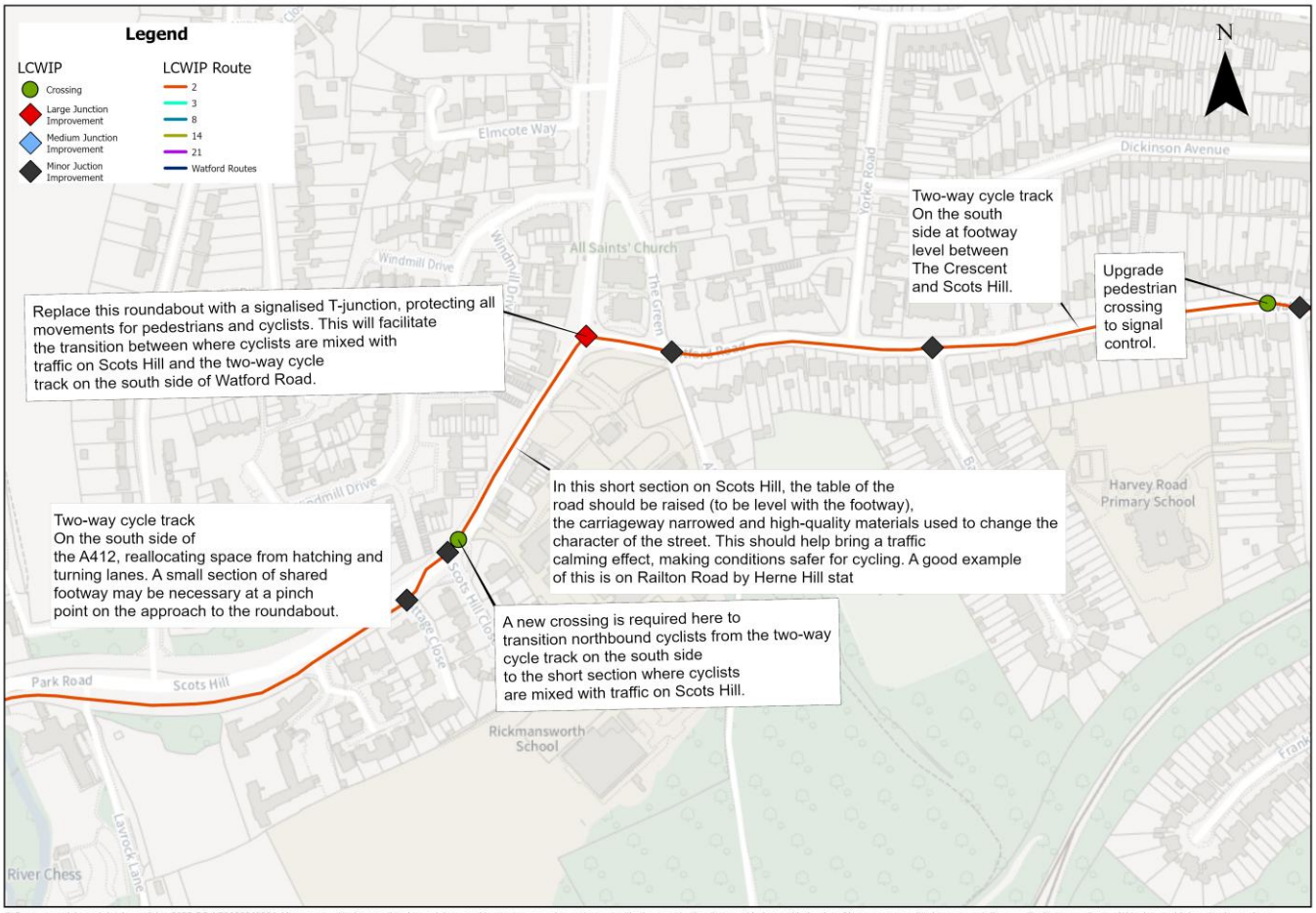
- Side road entry treatments, including priority for cyclists, reducing radii and providing raised tables or continuous footways for pedestrians. The plans provide some examples; however, as it is recommended that this would be a standard design consideration, the majority of locations are not highlighted.
- Traffic management measures, such as traffic filtering, to support the introduction of cycle schemes on strategic routes and to create low-traffic connector routes through residential areas. These may include modal filters (a method of traffic filtering that restricts through motor traffic while allowing access for cyclists and pedestrians), banned turns, or one-way systems. Some potential examples are provided; however, it is recommended that these measures be given wider consideration during the design development stage. For more info, please see Appendix C.
- Permitting of two-way cycling on one-way streets to improve permeability to and from the core network, subject to individual safety assessment.
- Signalised junctions should be reviewed on a case-by-case basis at feasibility stage, but dedicated signal stages for cycles should be the first consideration in most cases, with other options considered during the review, depending on space, junction capacity and safety factors.
- Cycle parking, including secure storage in residential areas and at destinations. Signage and wayfinding to provide for easy understanding of cycle facilities for cyclists, pedestrians, and other road users, especially at more complex junctions, and to provide navigation and route reassurance. Redundant signage – particularly ‘Cyclists Dismount’ – should be removed.
- Decluttering of spaces to provide suitable useable widths and remove obstructions where possible should be carried out on all routes.

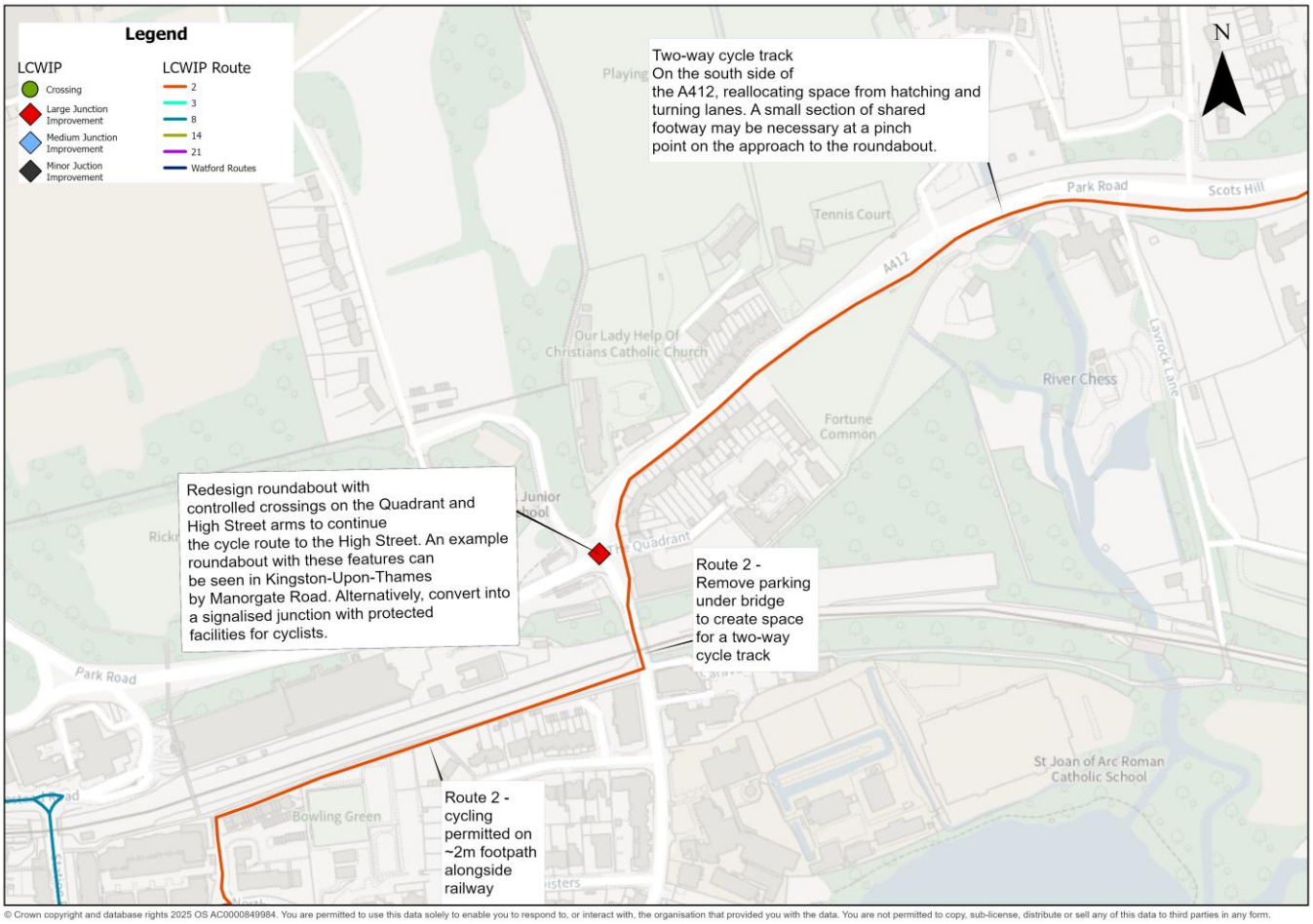
The indicative interventions on the 5 priority routes are shown below.

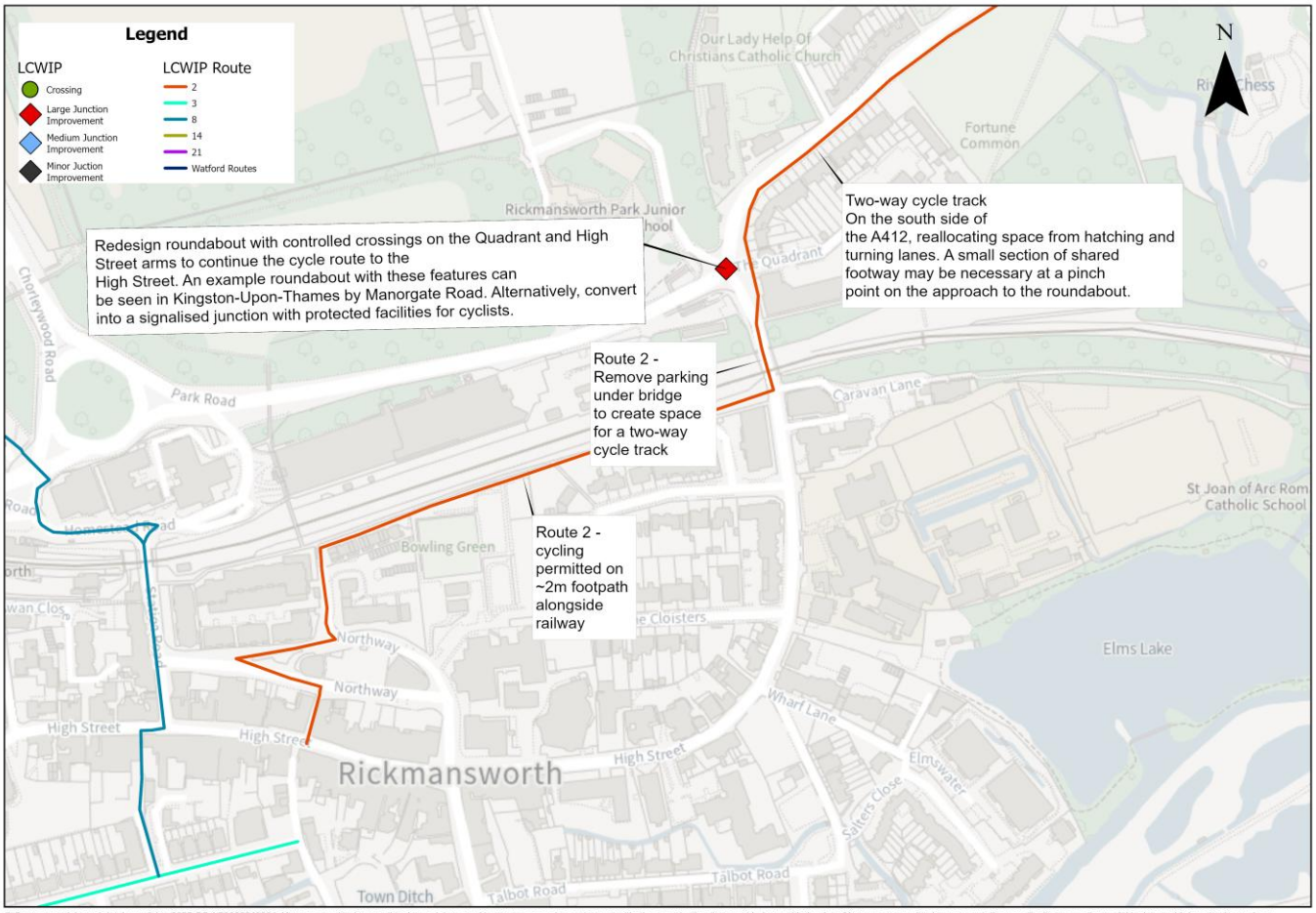
Route 2 - Watford via Croxley Green A412 to Rickmansworth High Street



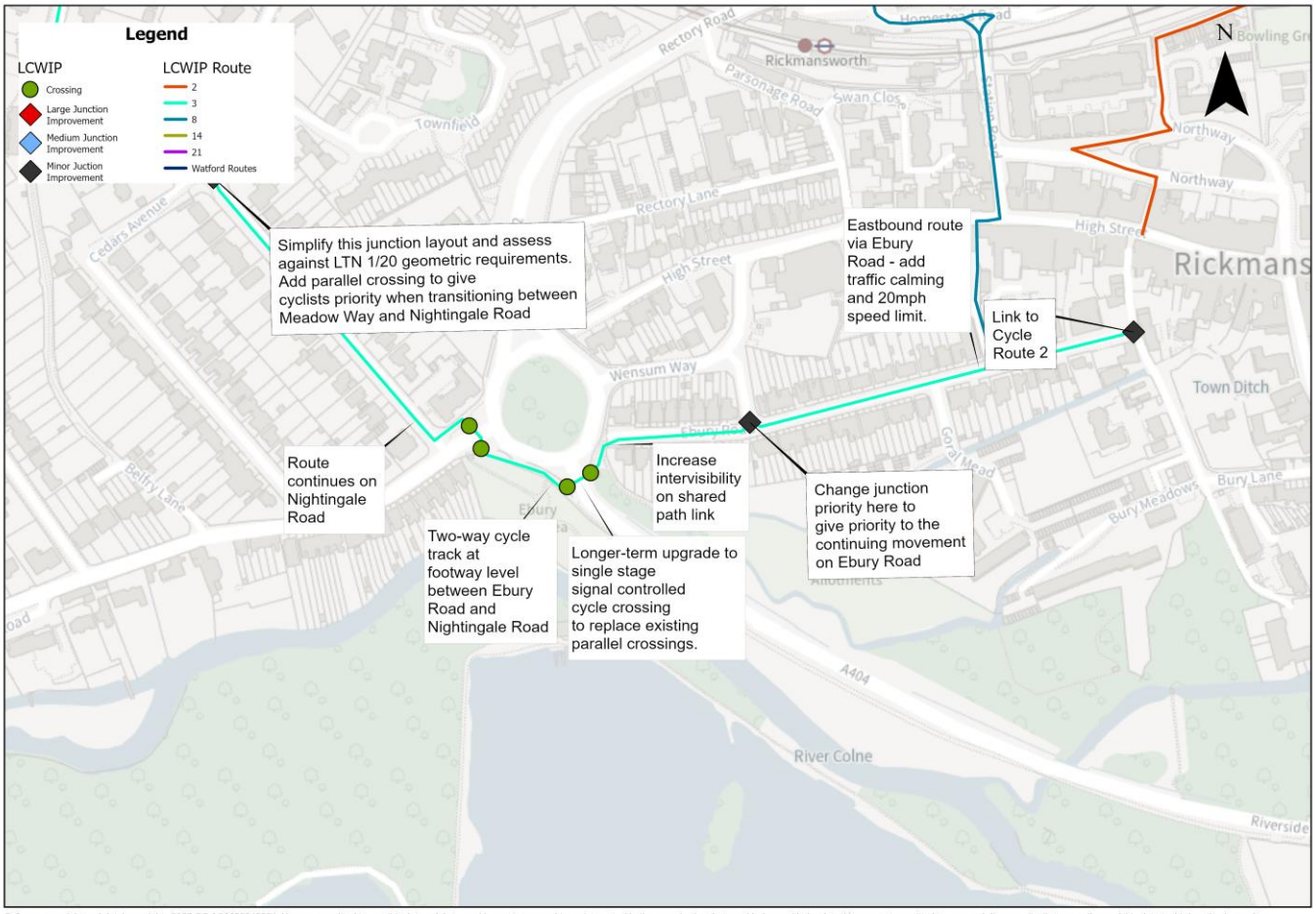


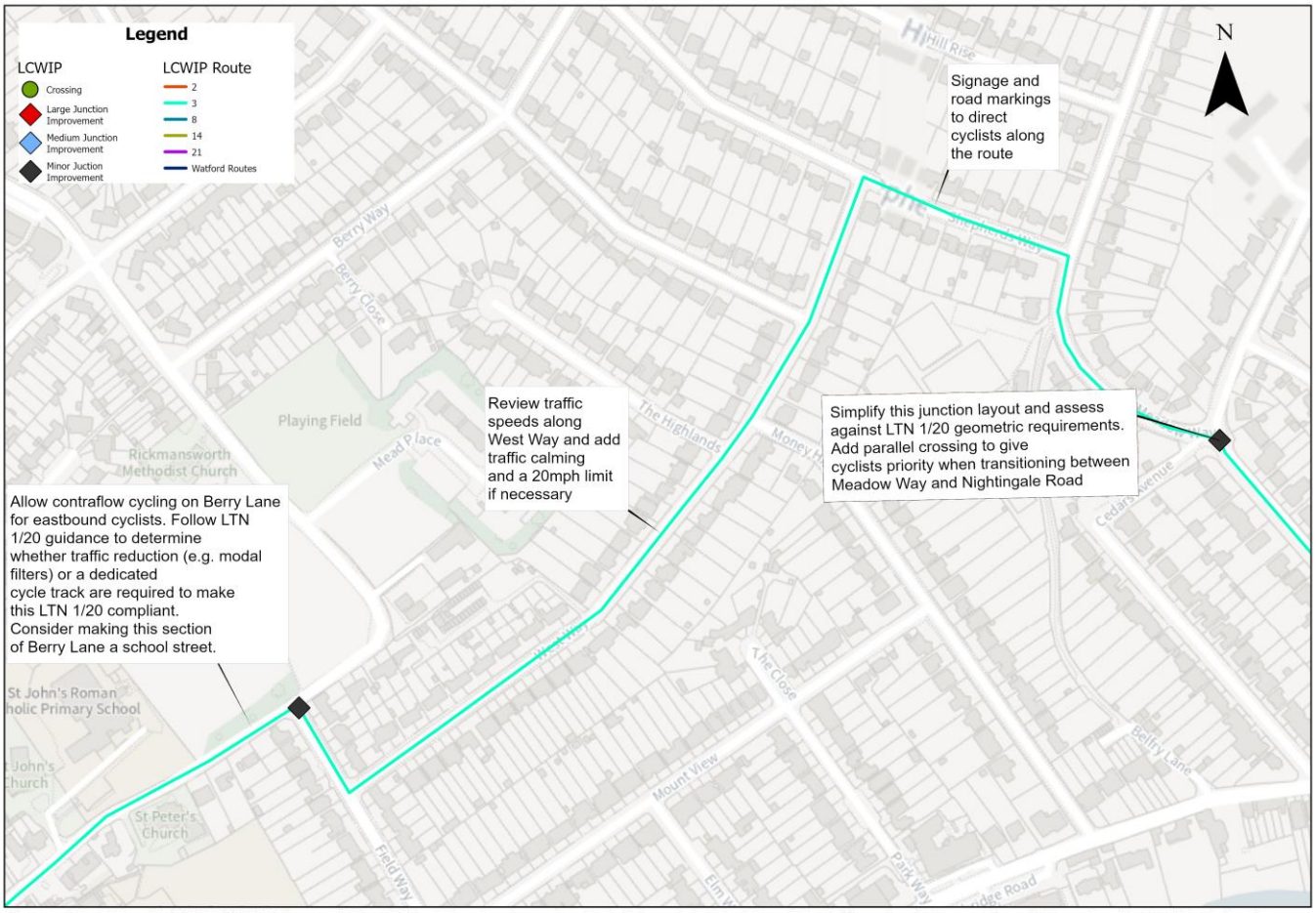


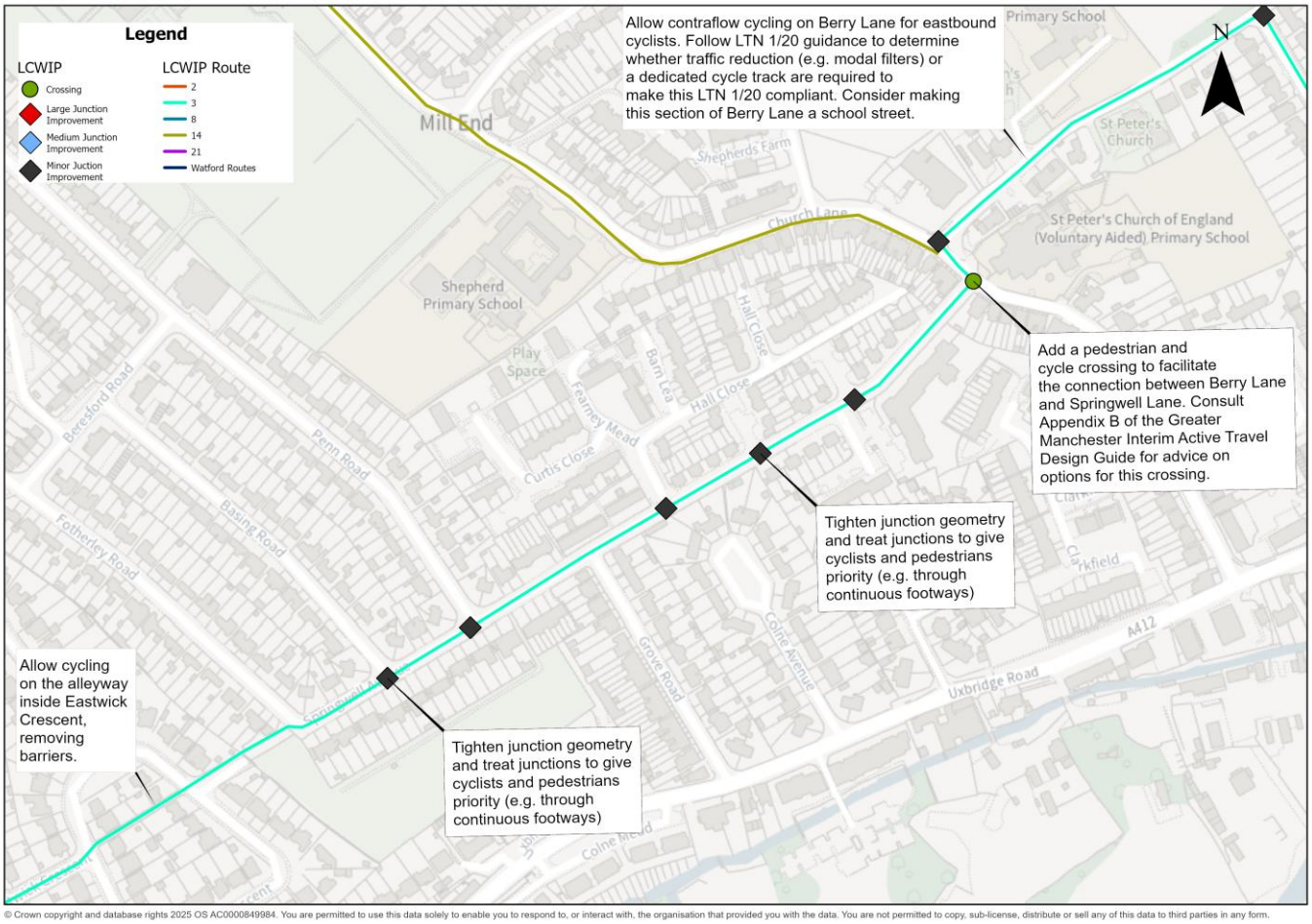


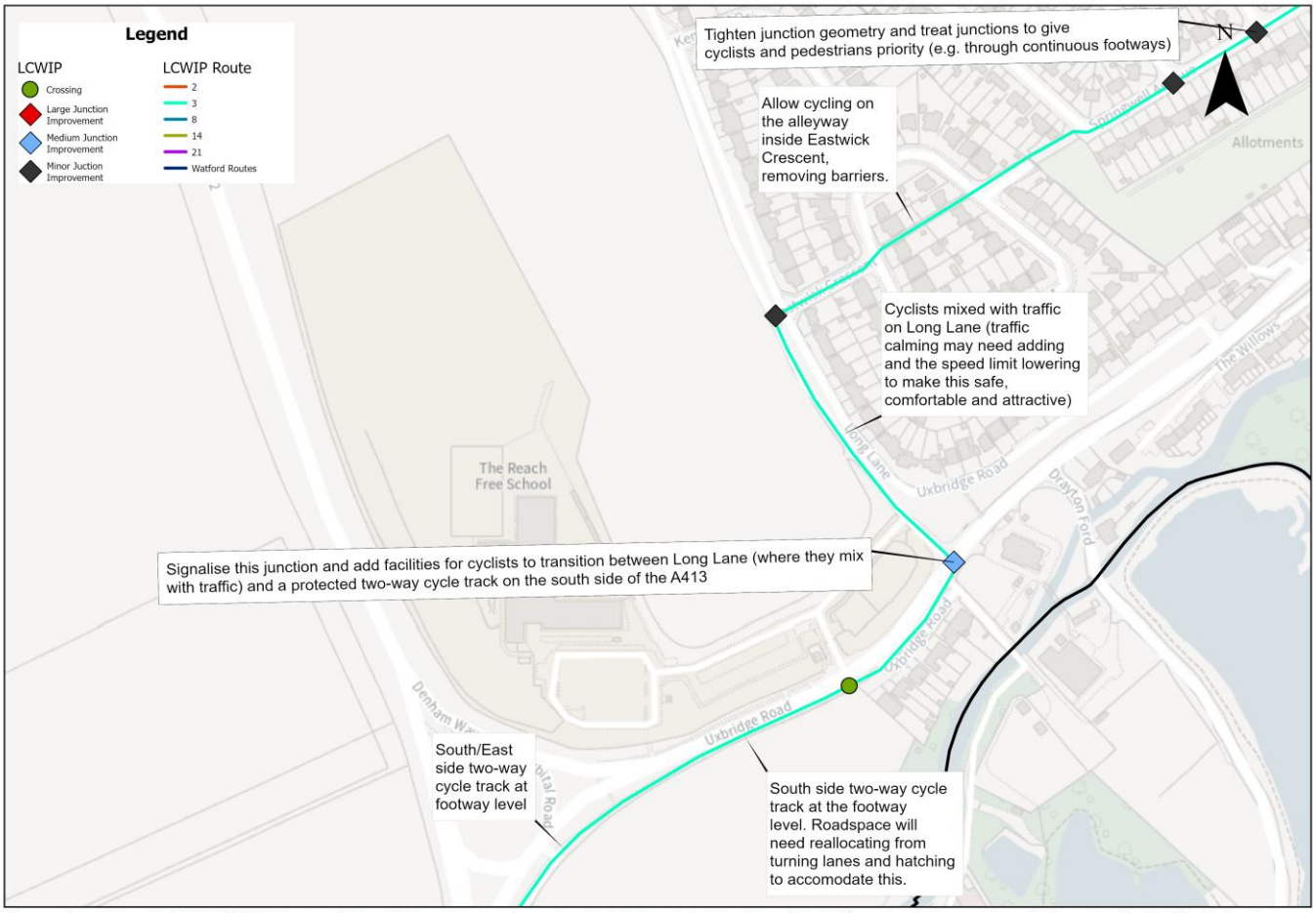


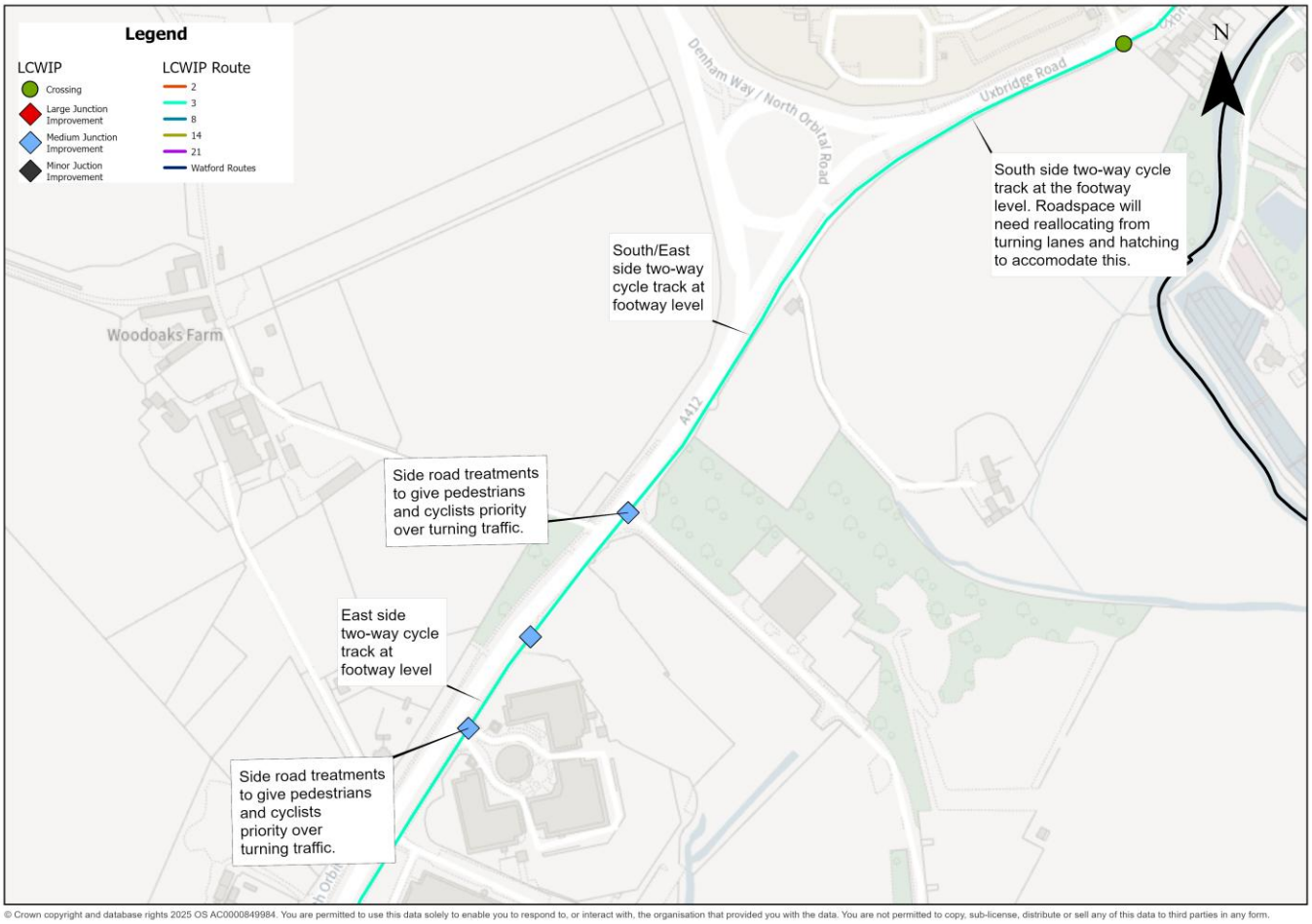
Route 3 – Ebury Road, parallel with Uxbridge Road and then next to A412

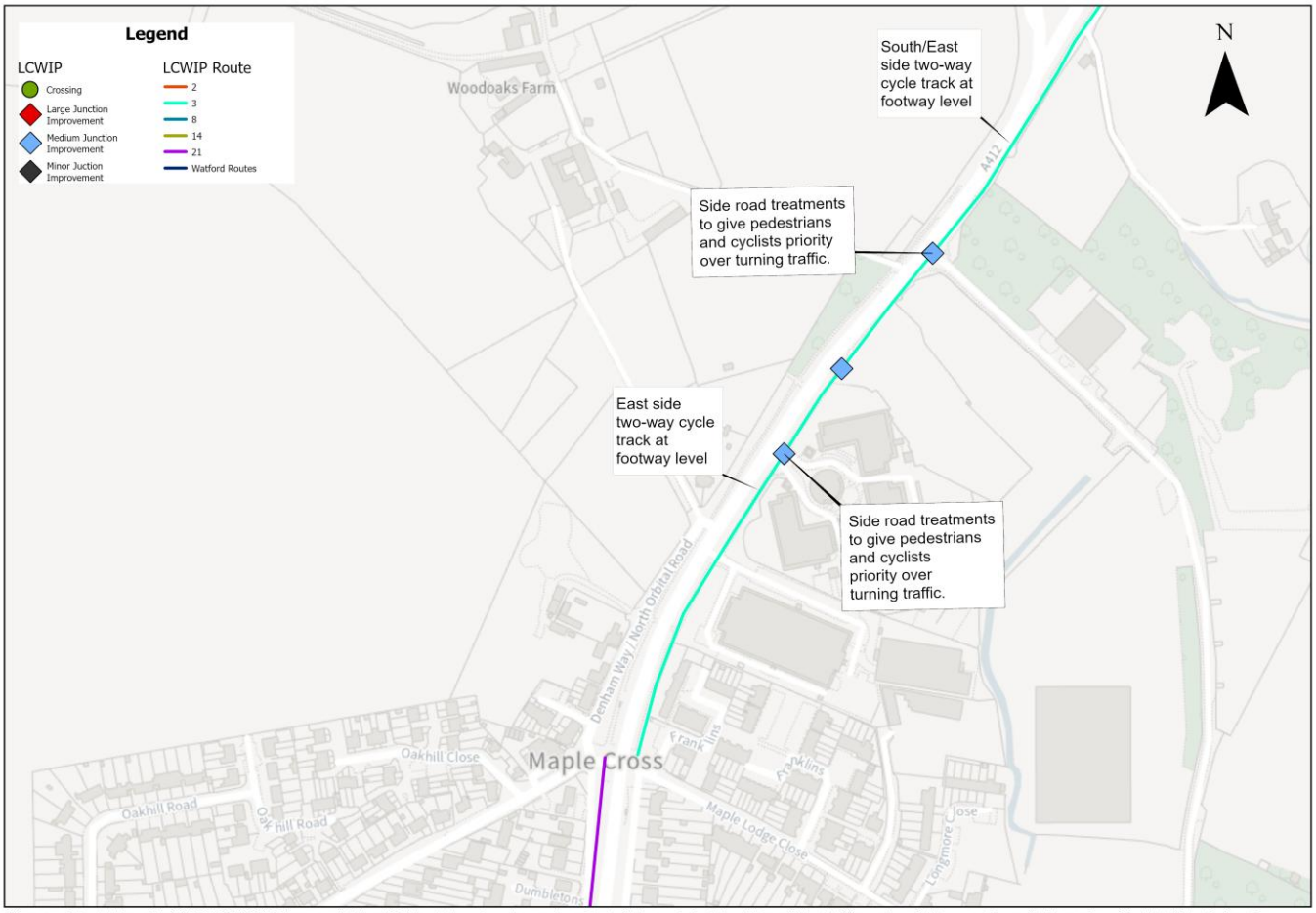




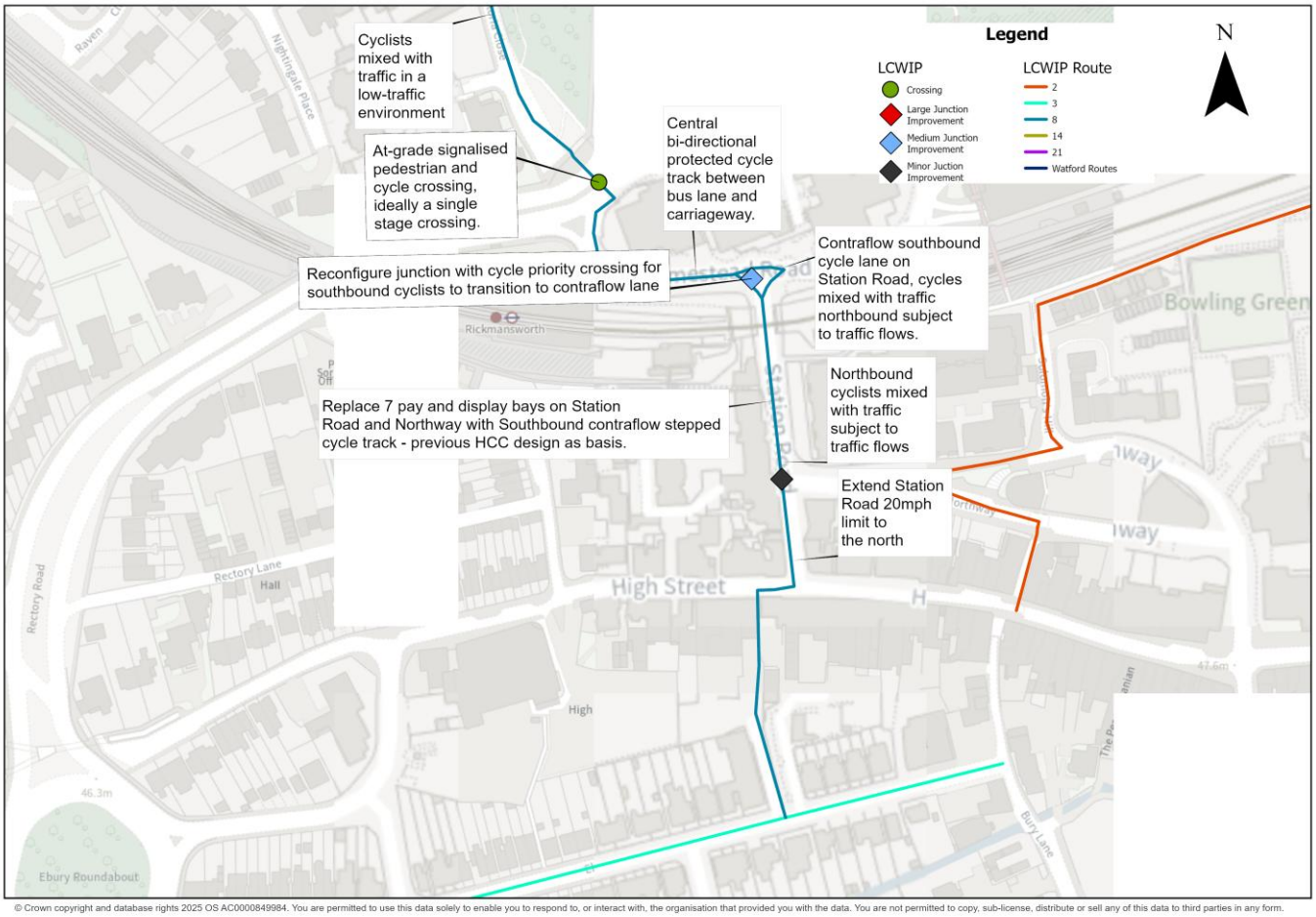


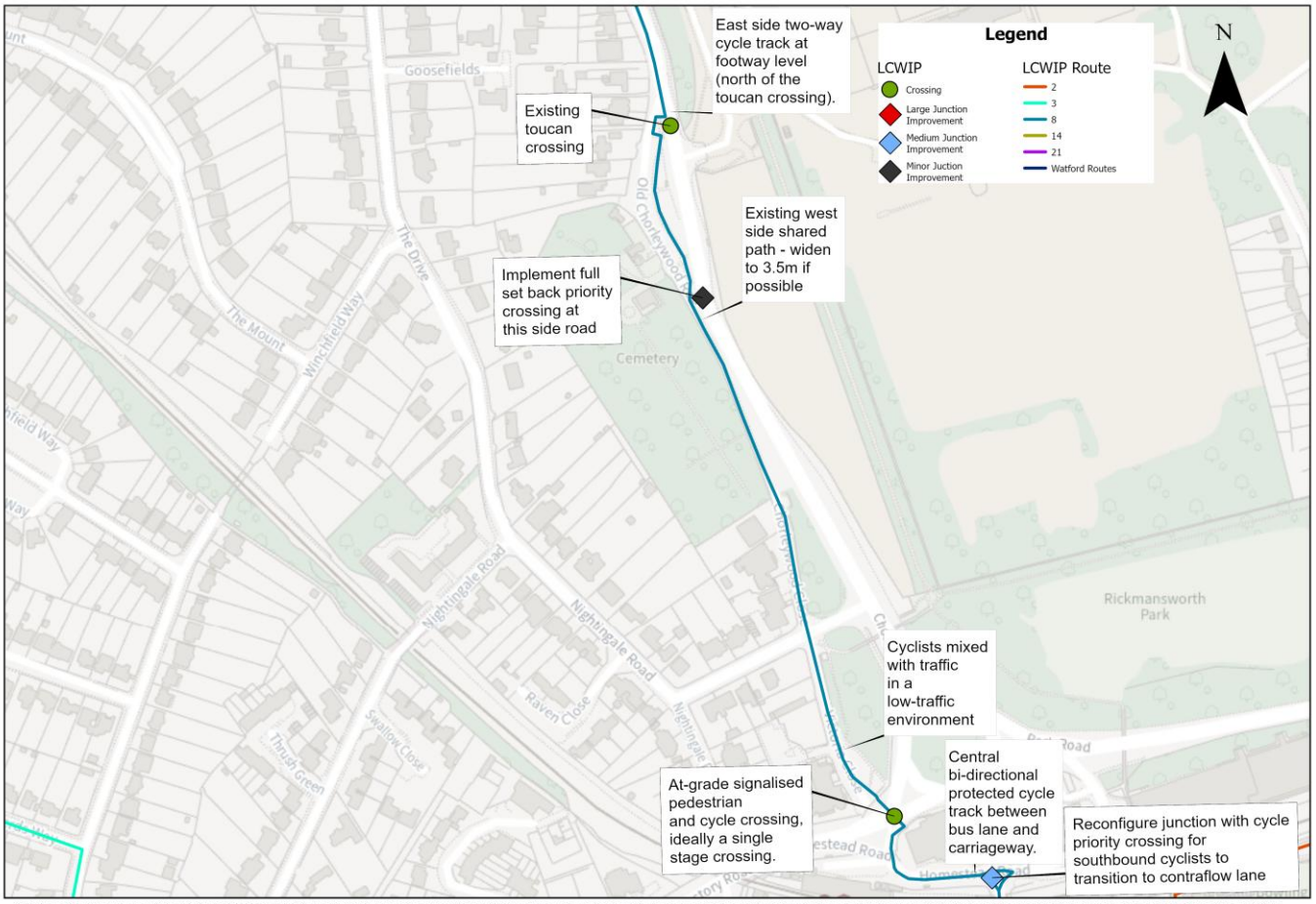


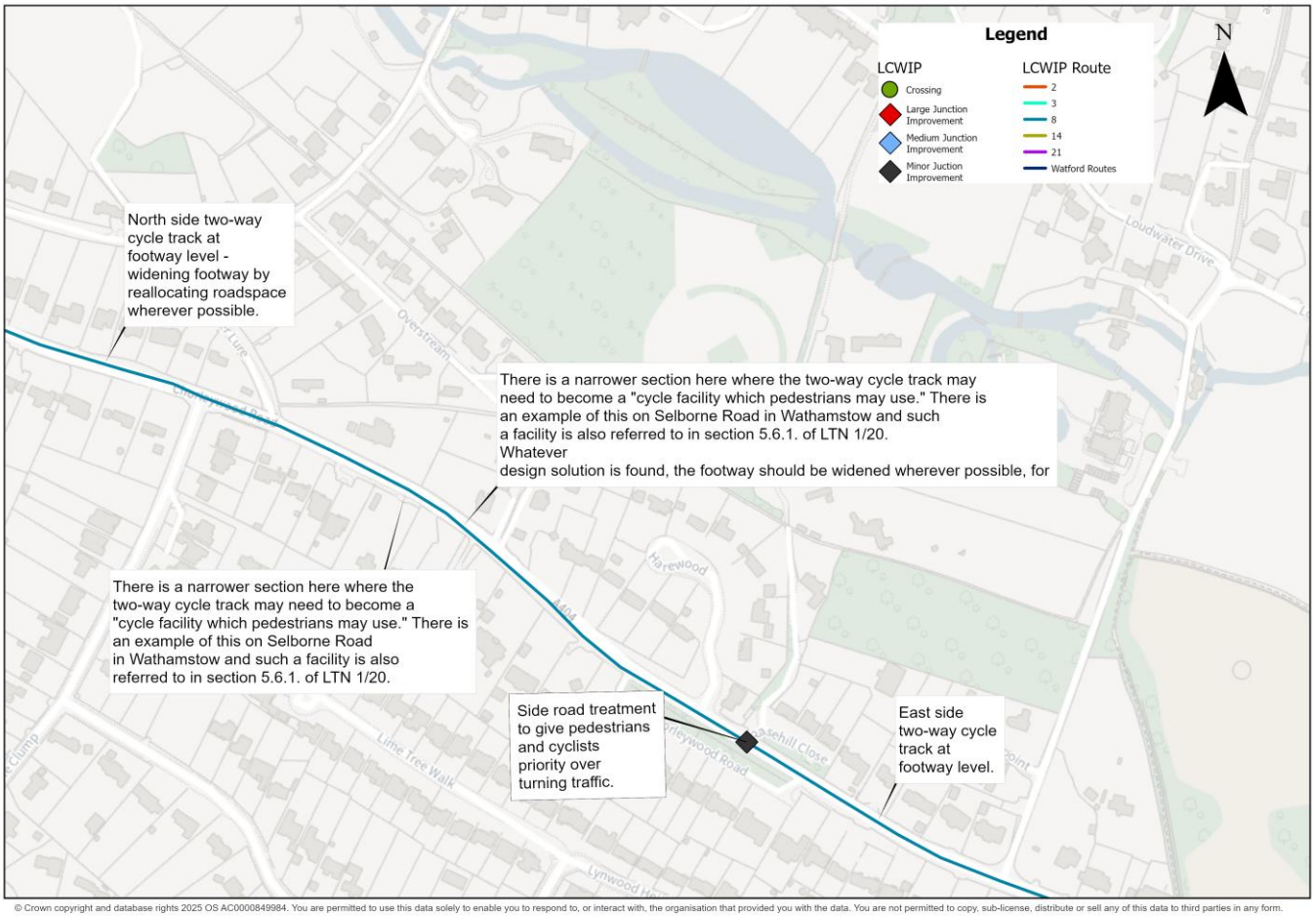


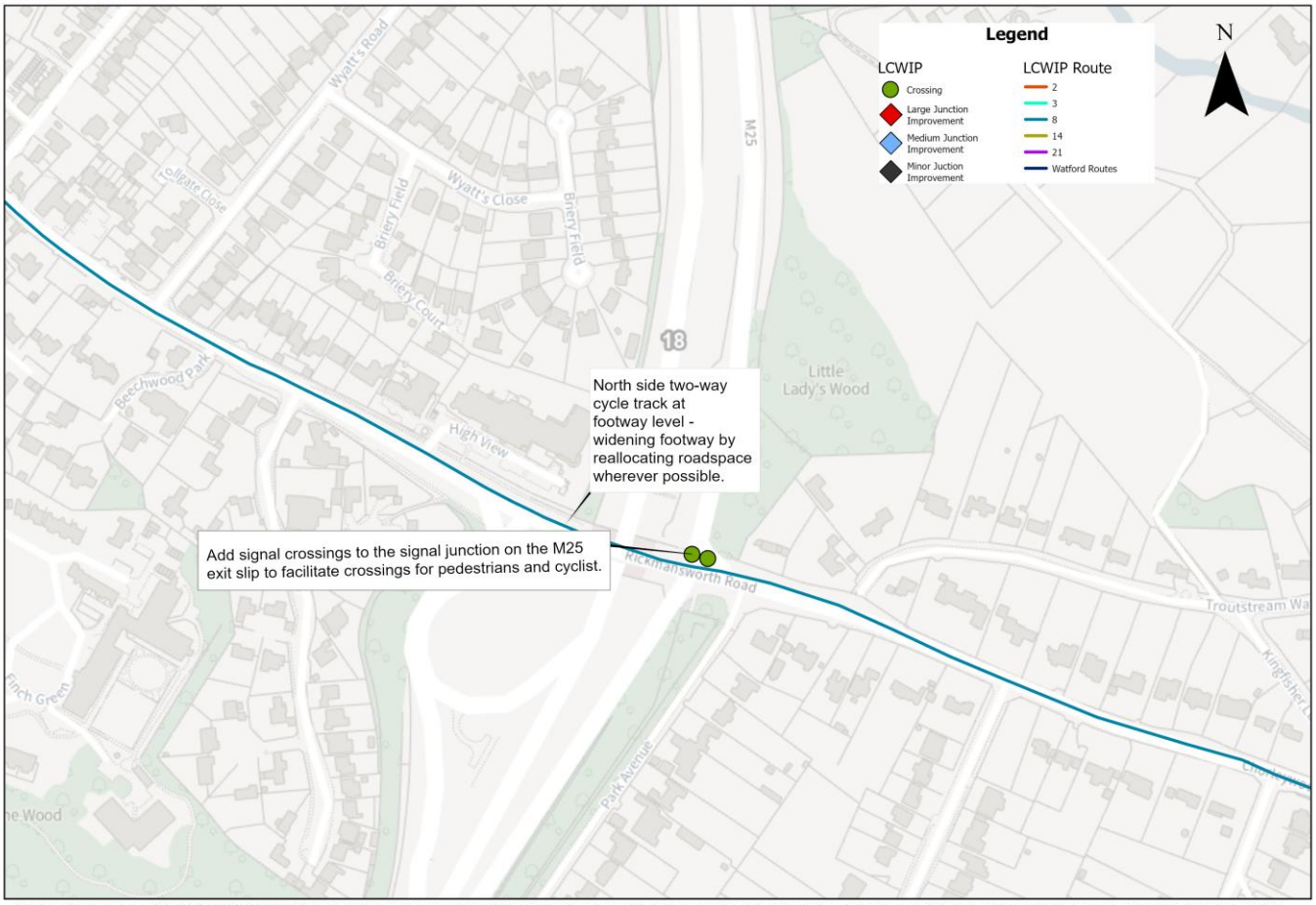


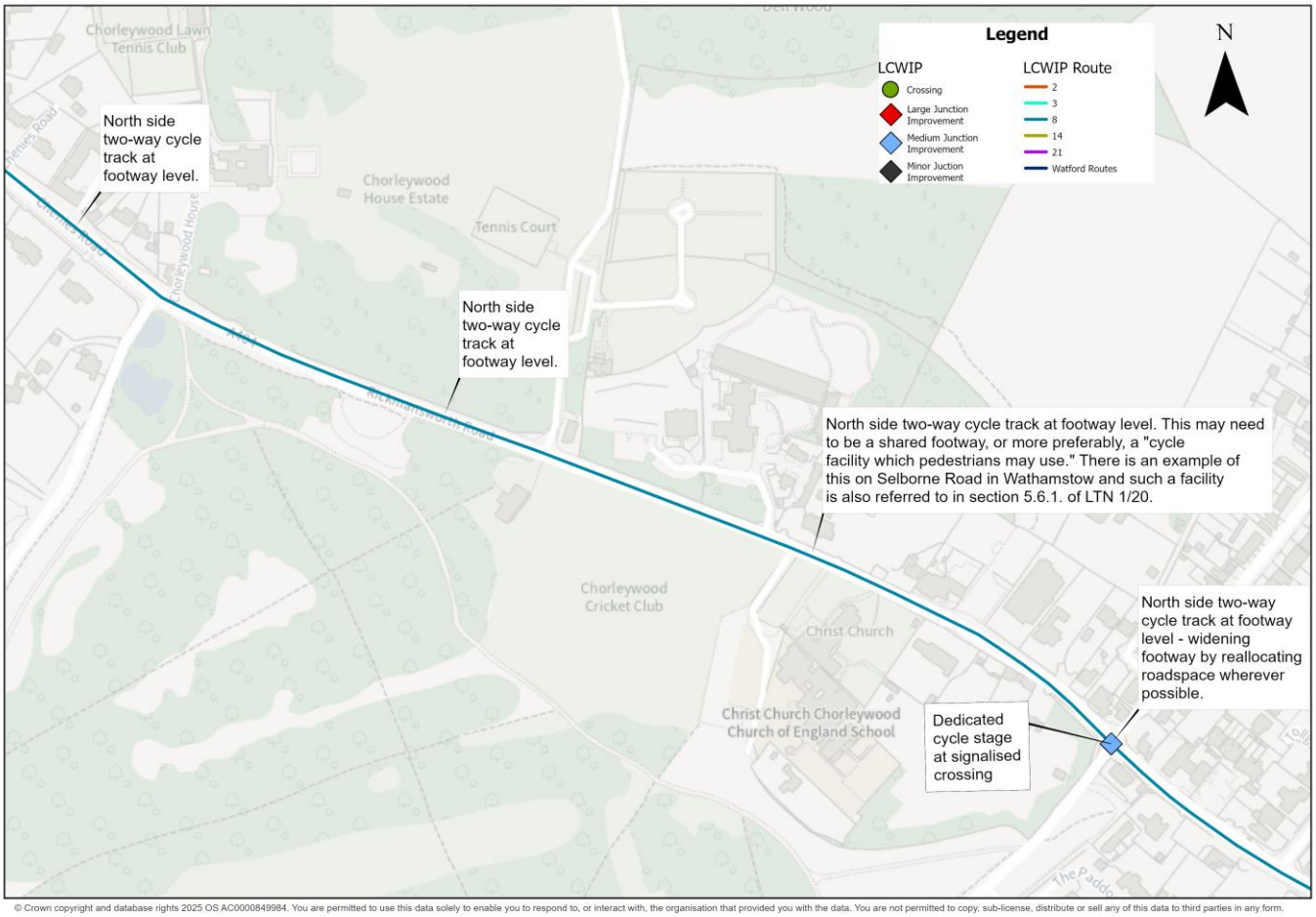
Route 8 - A404 route between Rickmansworth Station and Chorleywood

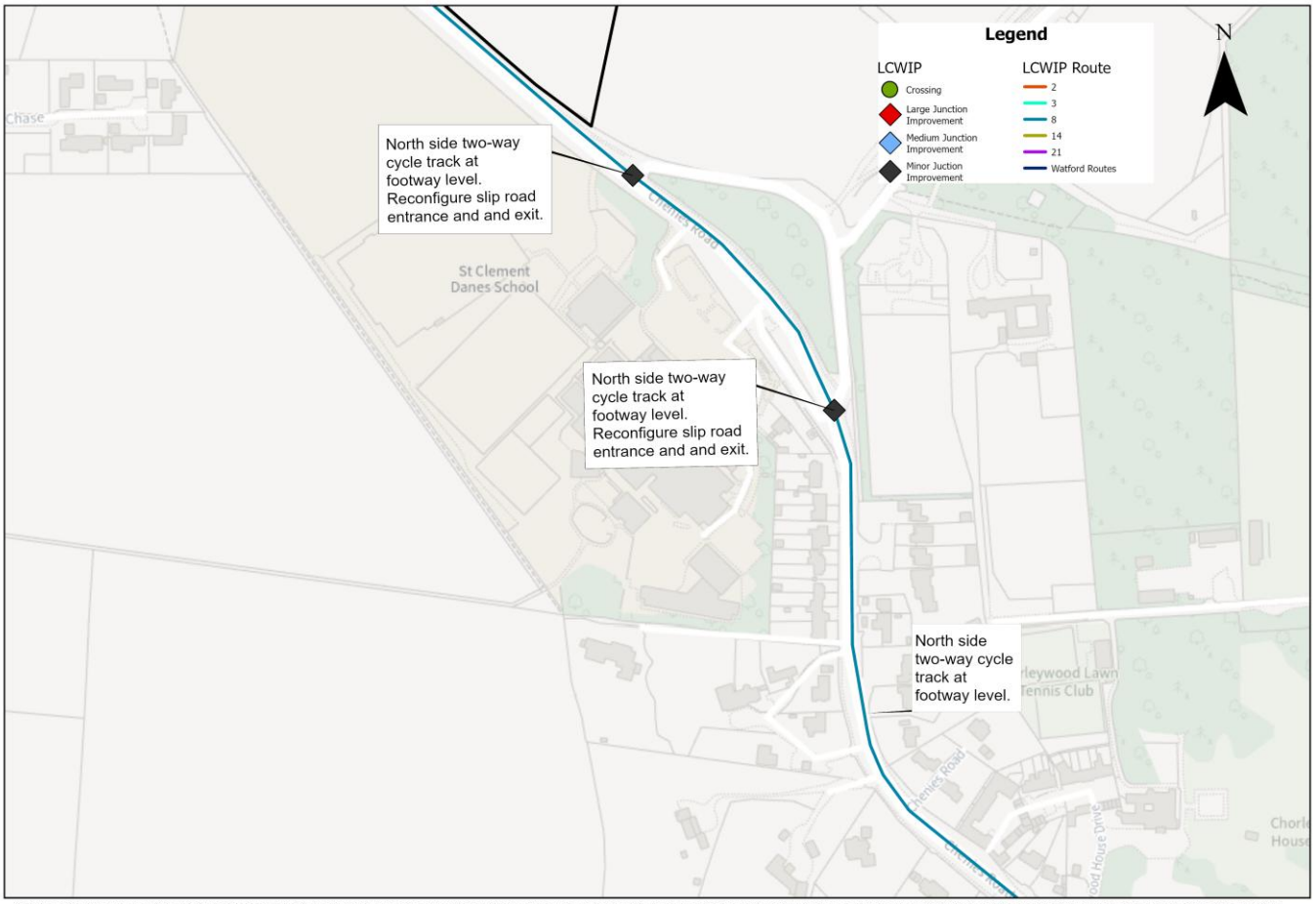


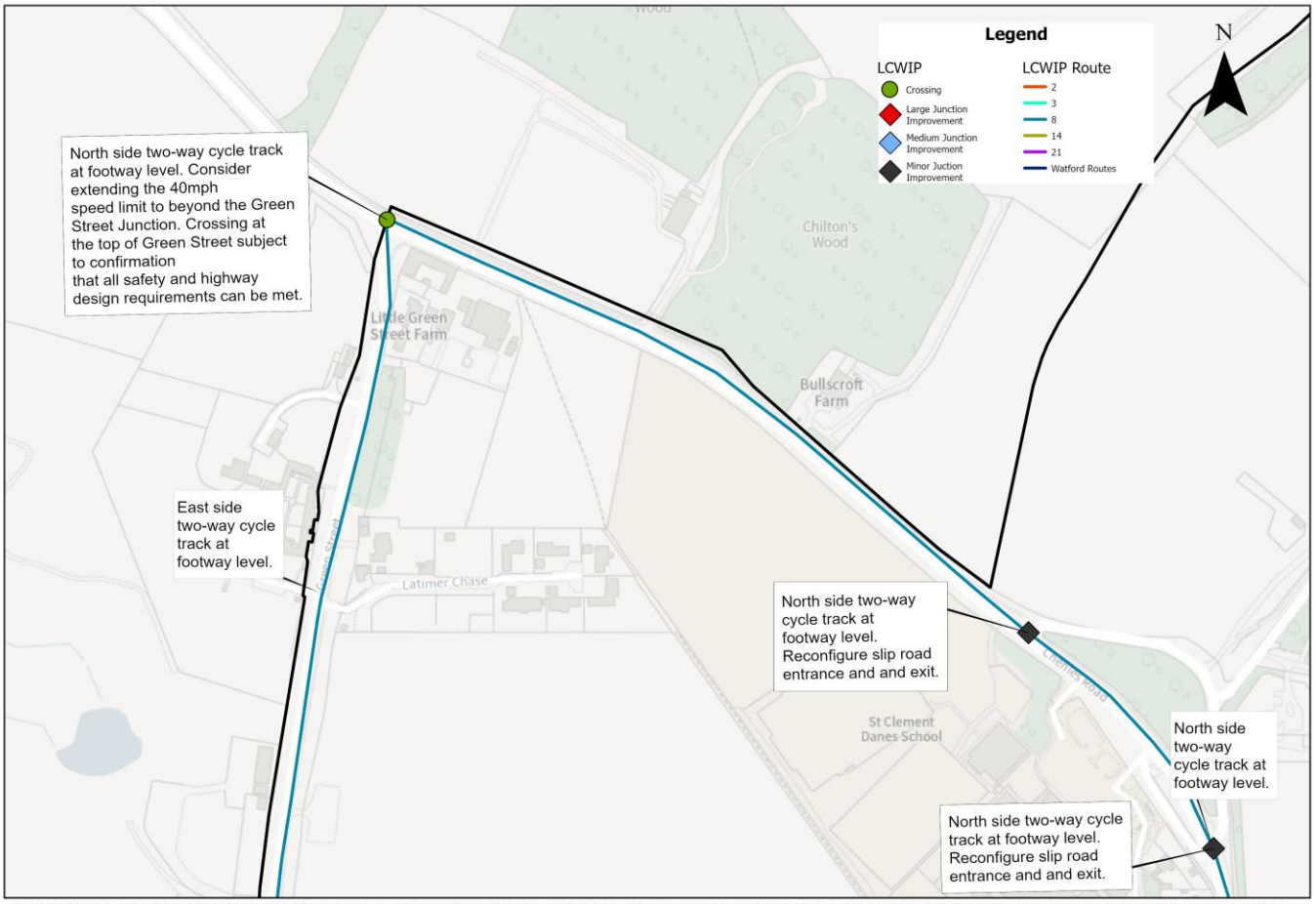


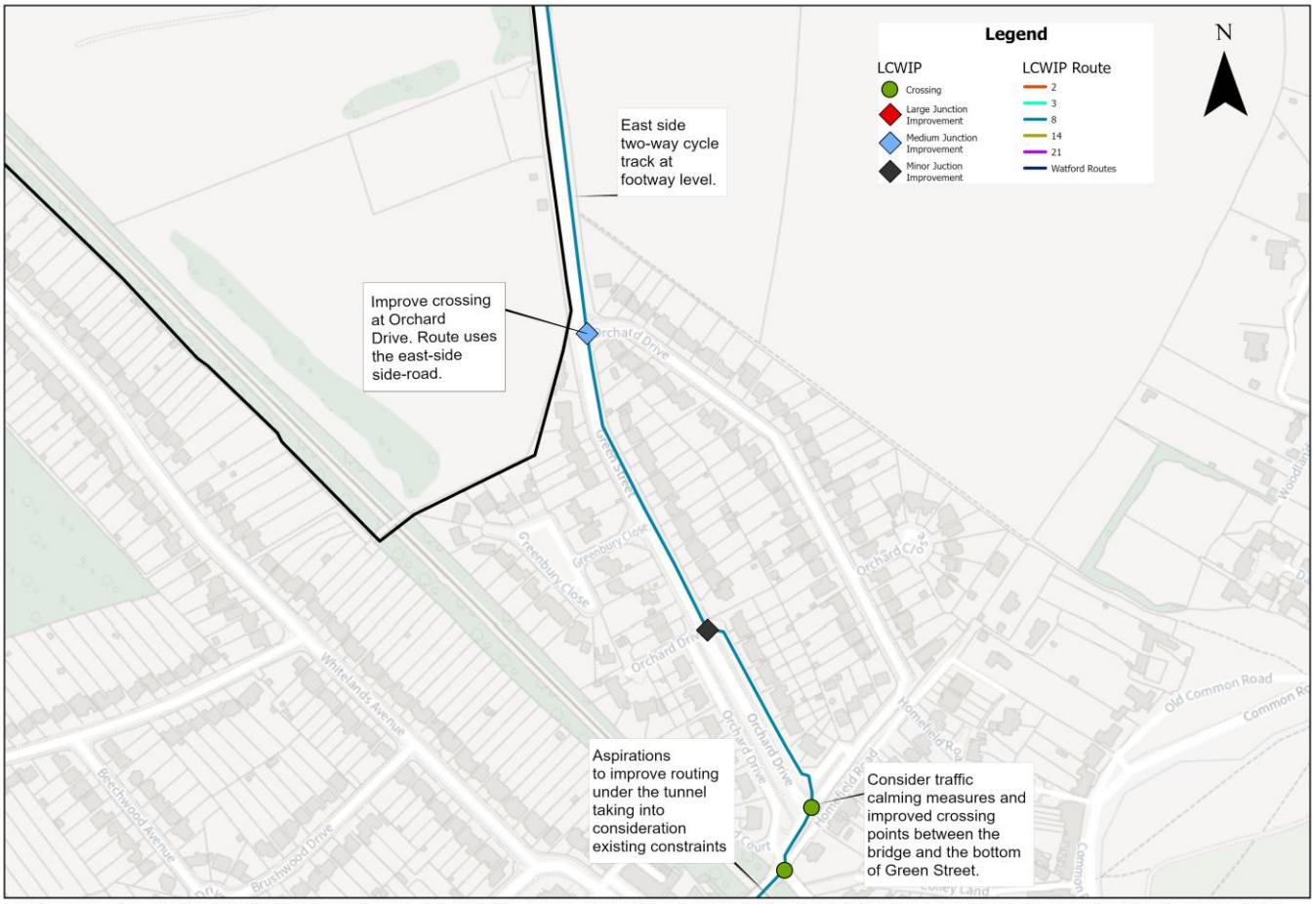


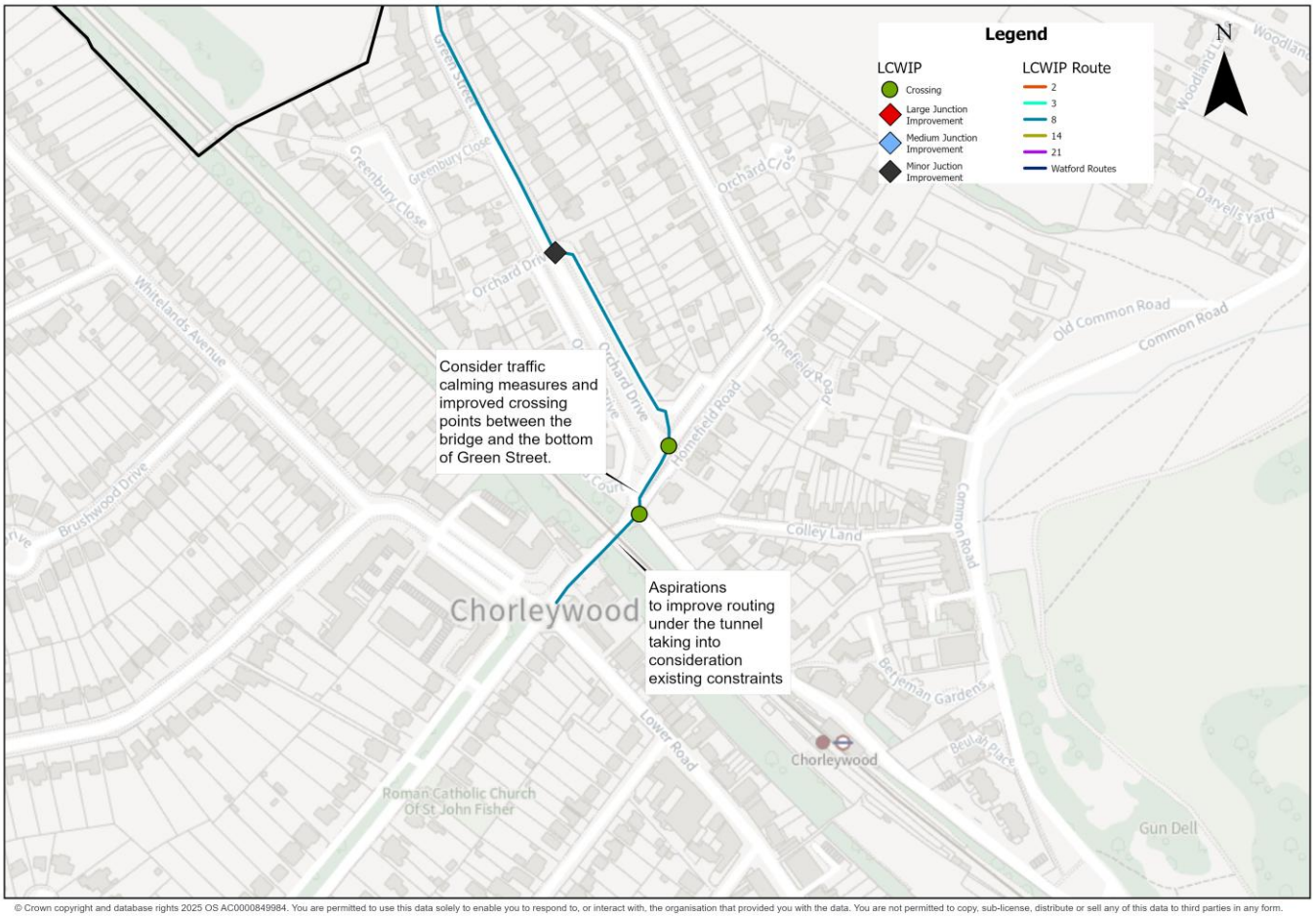




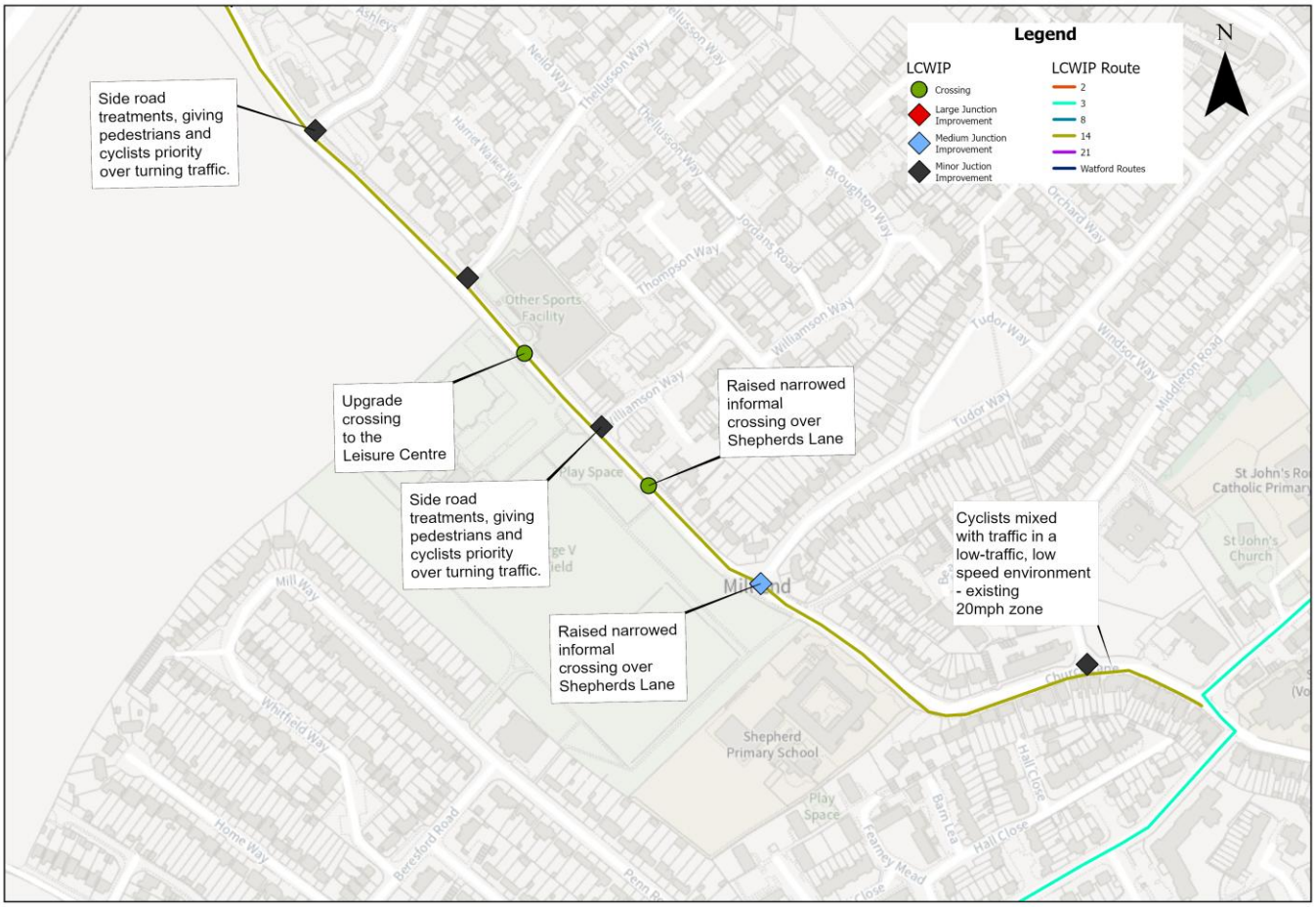


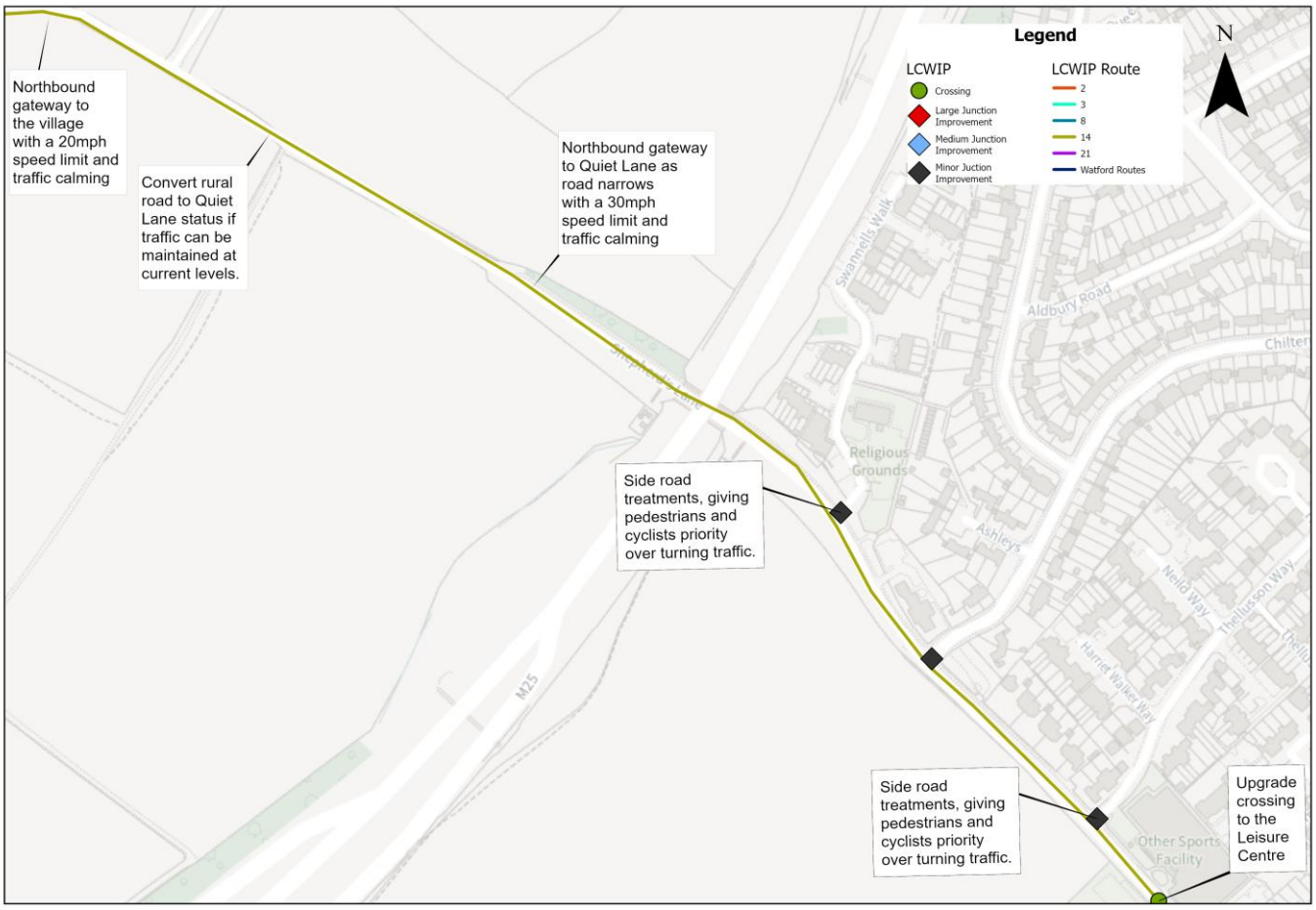


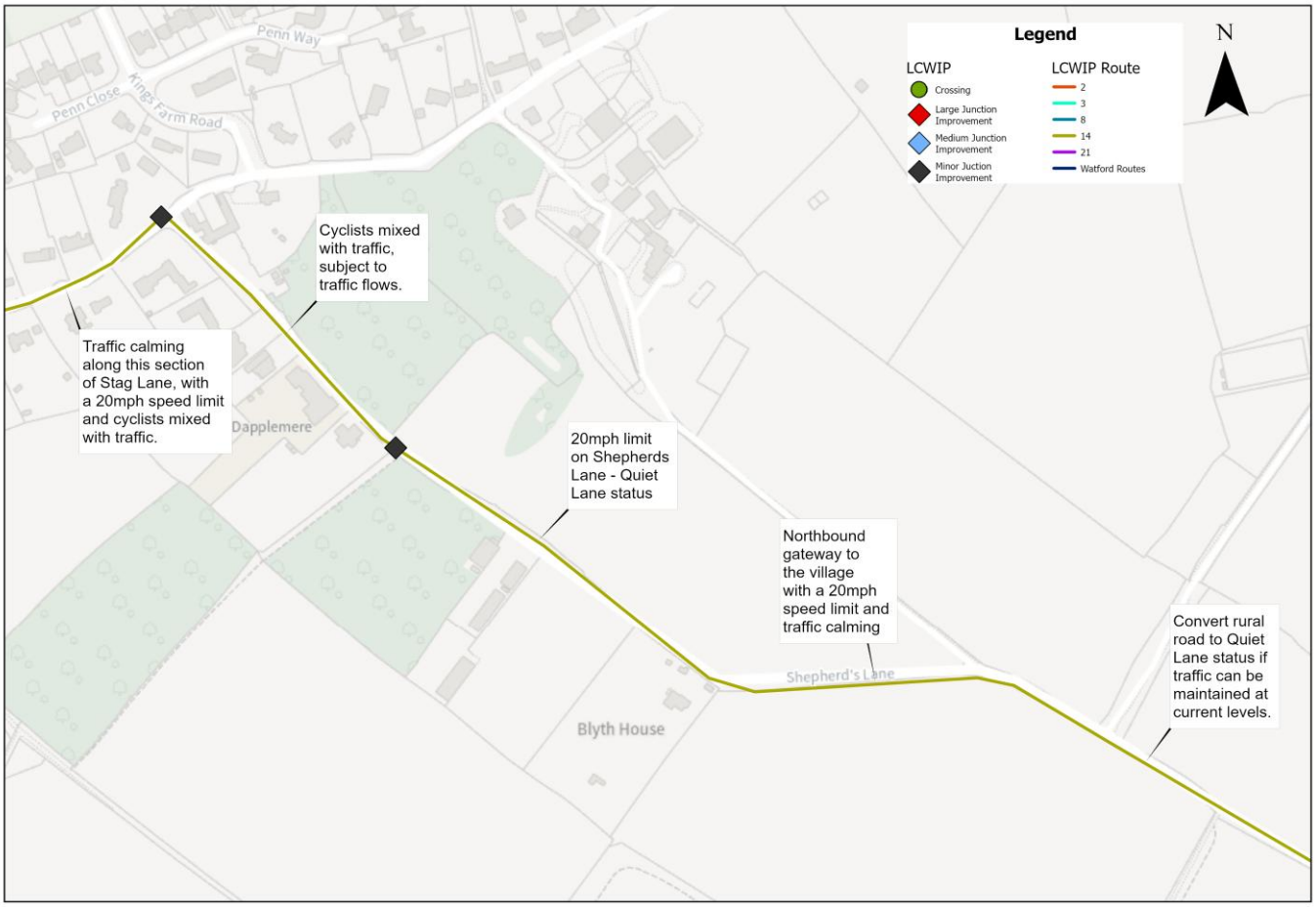


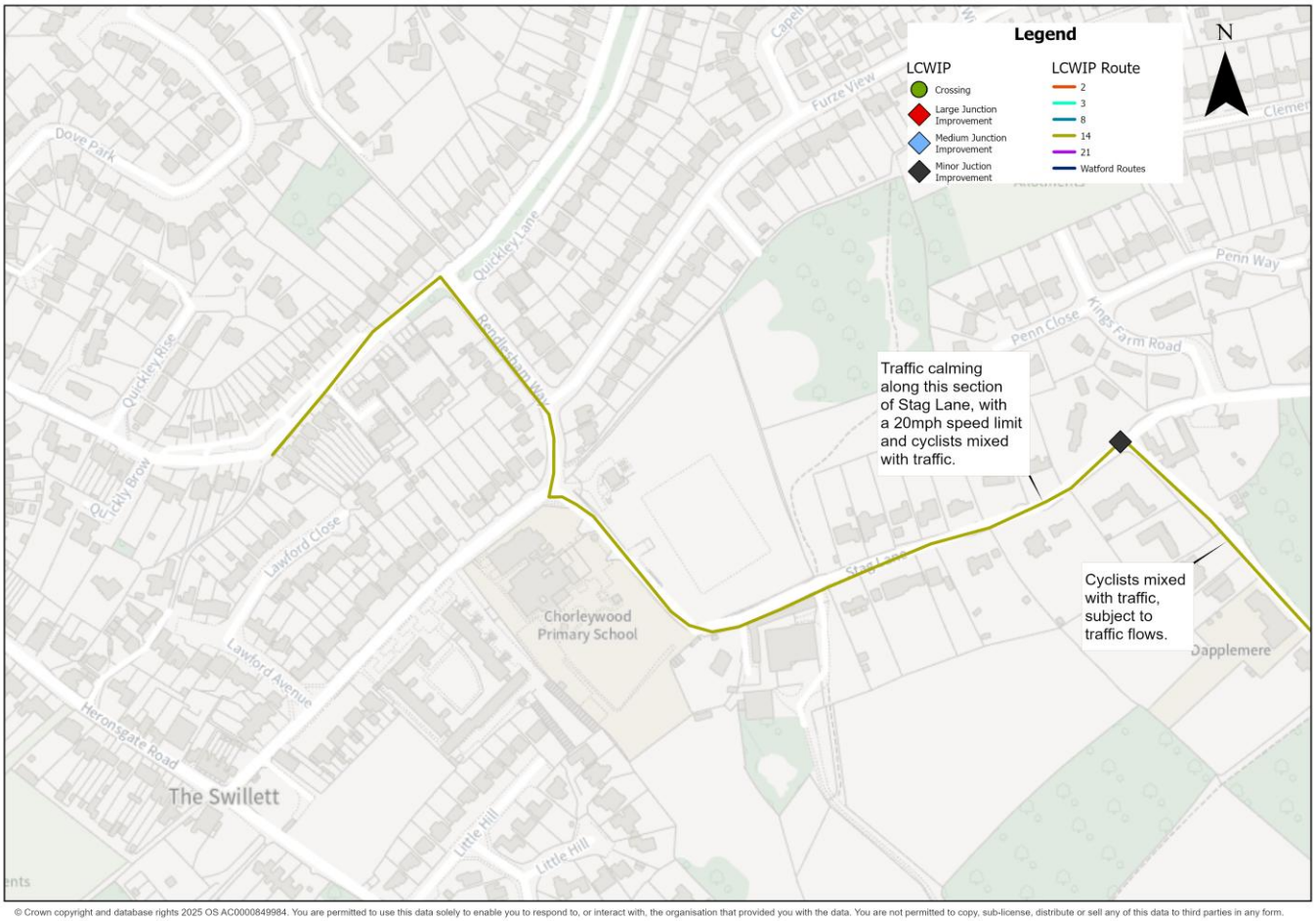


Route 14 – Starts on Stag Lane in Chorleywood and comes out via Shepherds Lane towards William Penn Leisure Centre

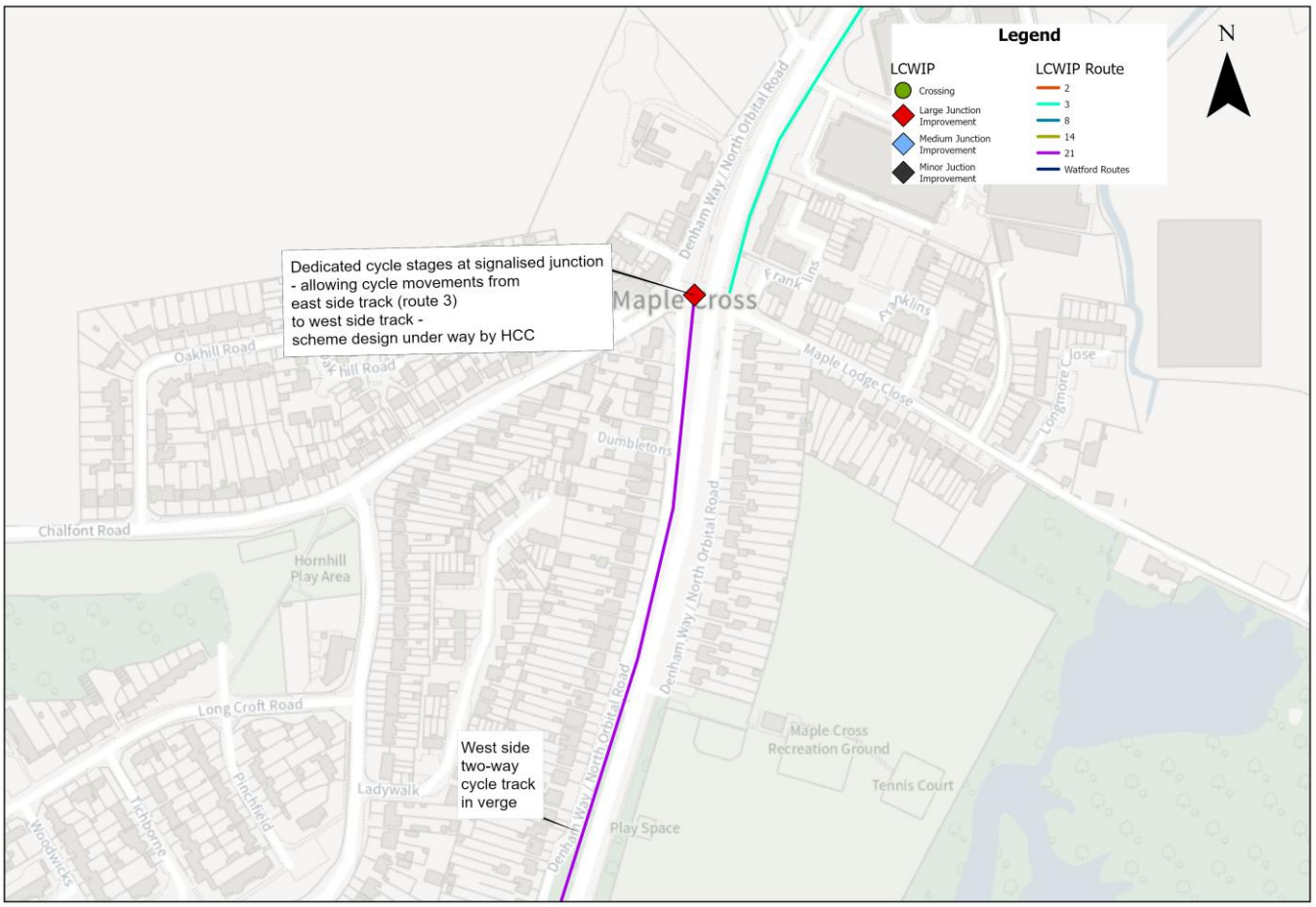


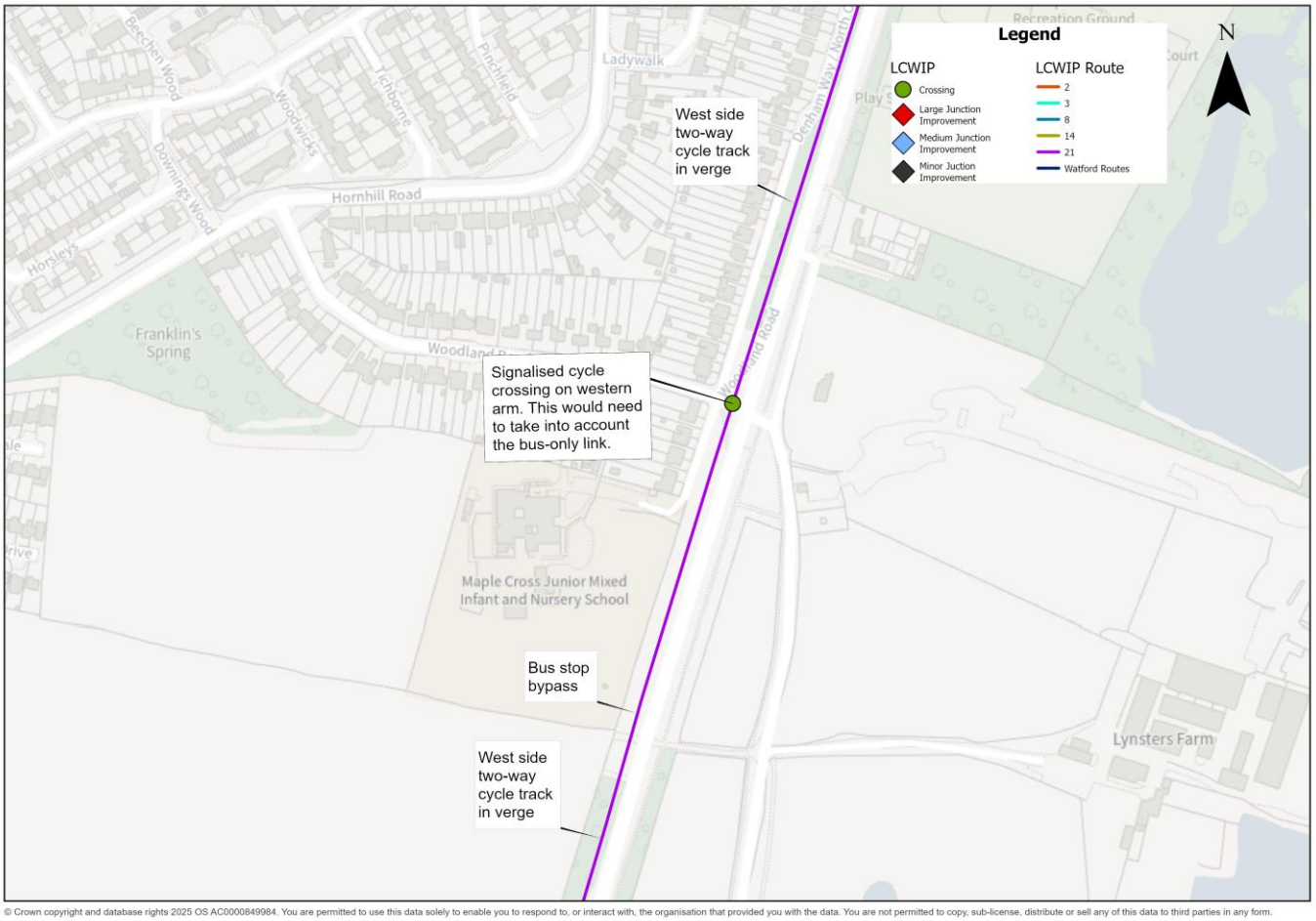


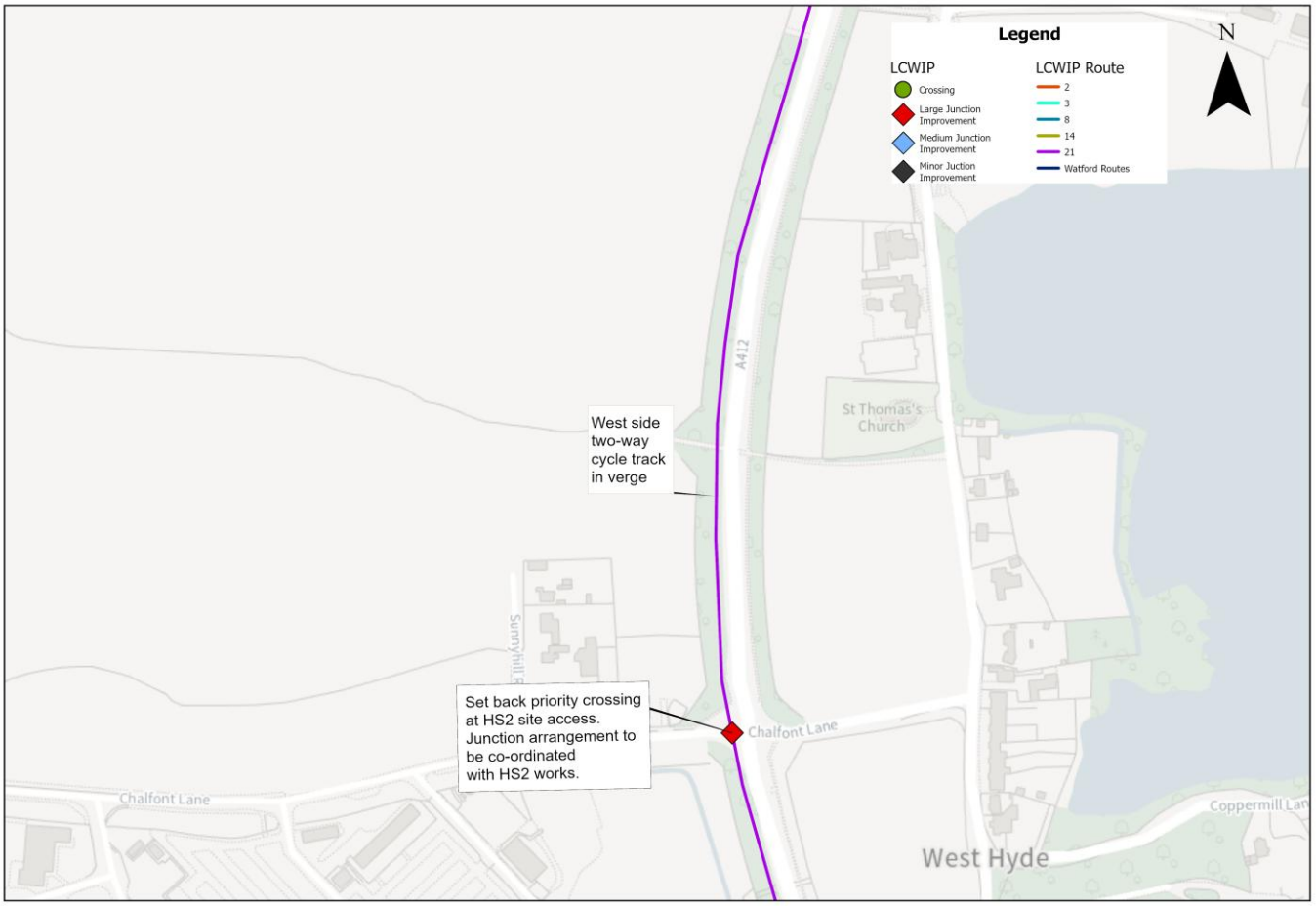


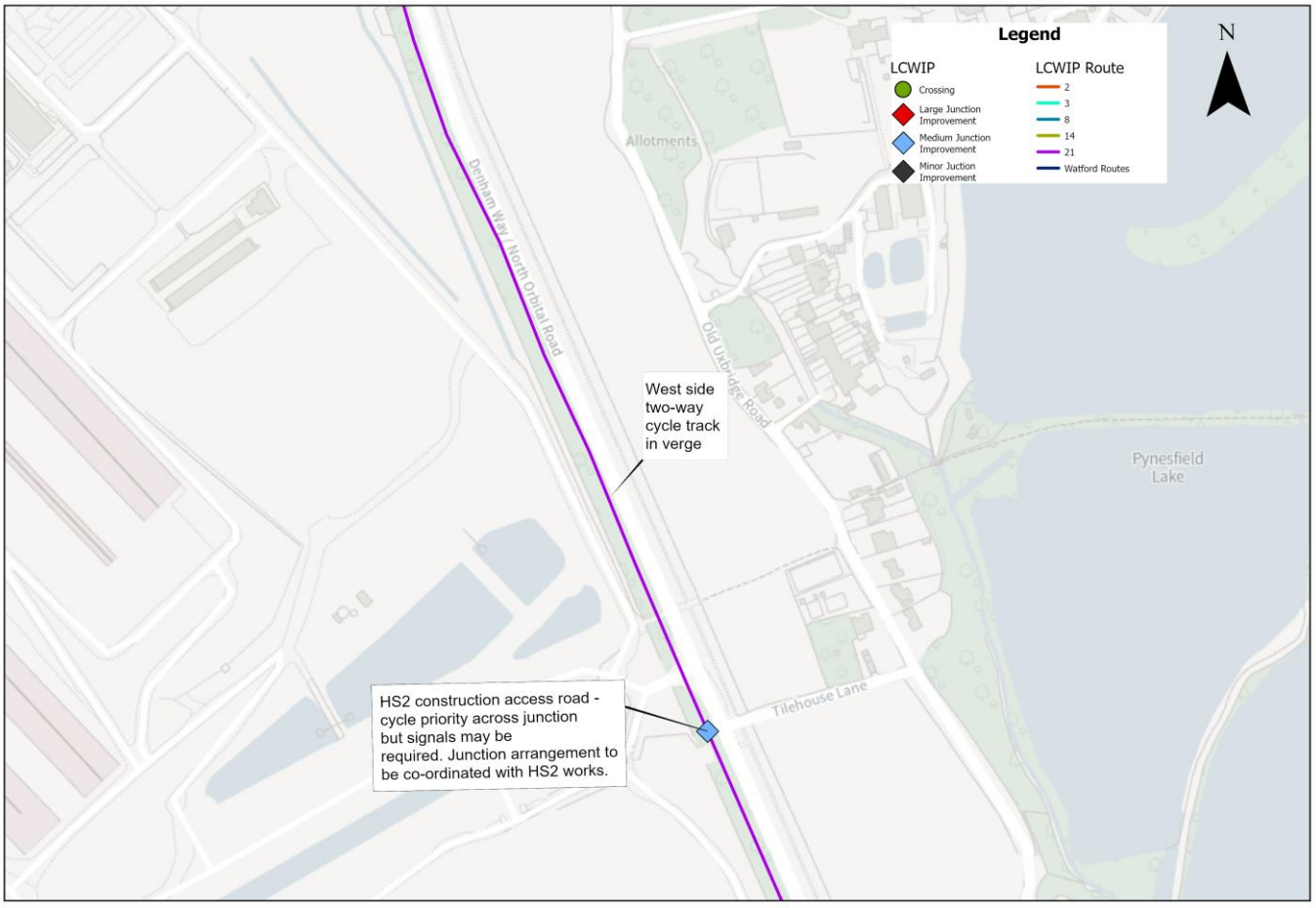


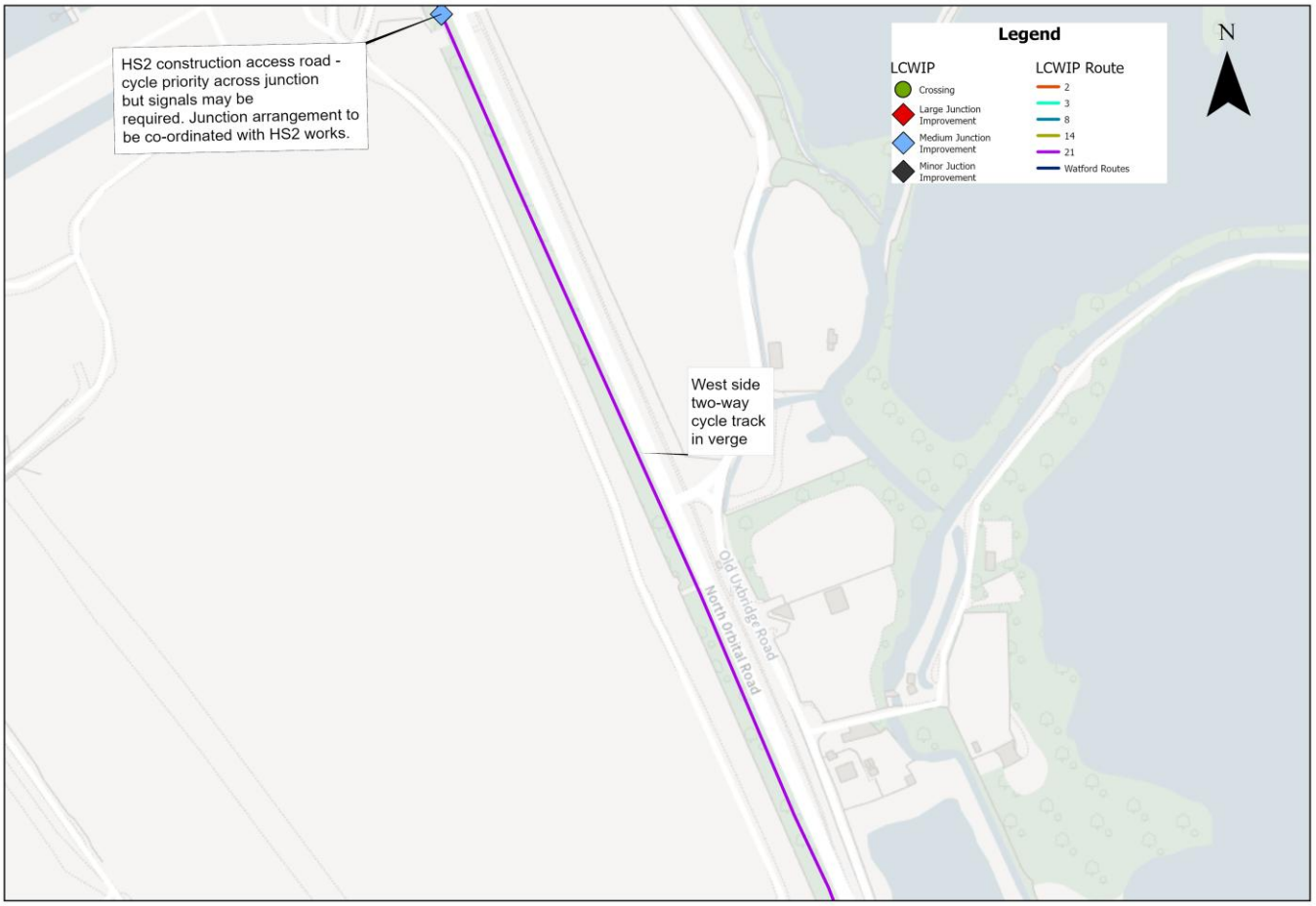
Route 21 – Chalfont Road to towards Denham and Buckinghamshire border

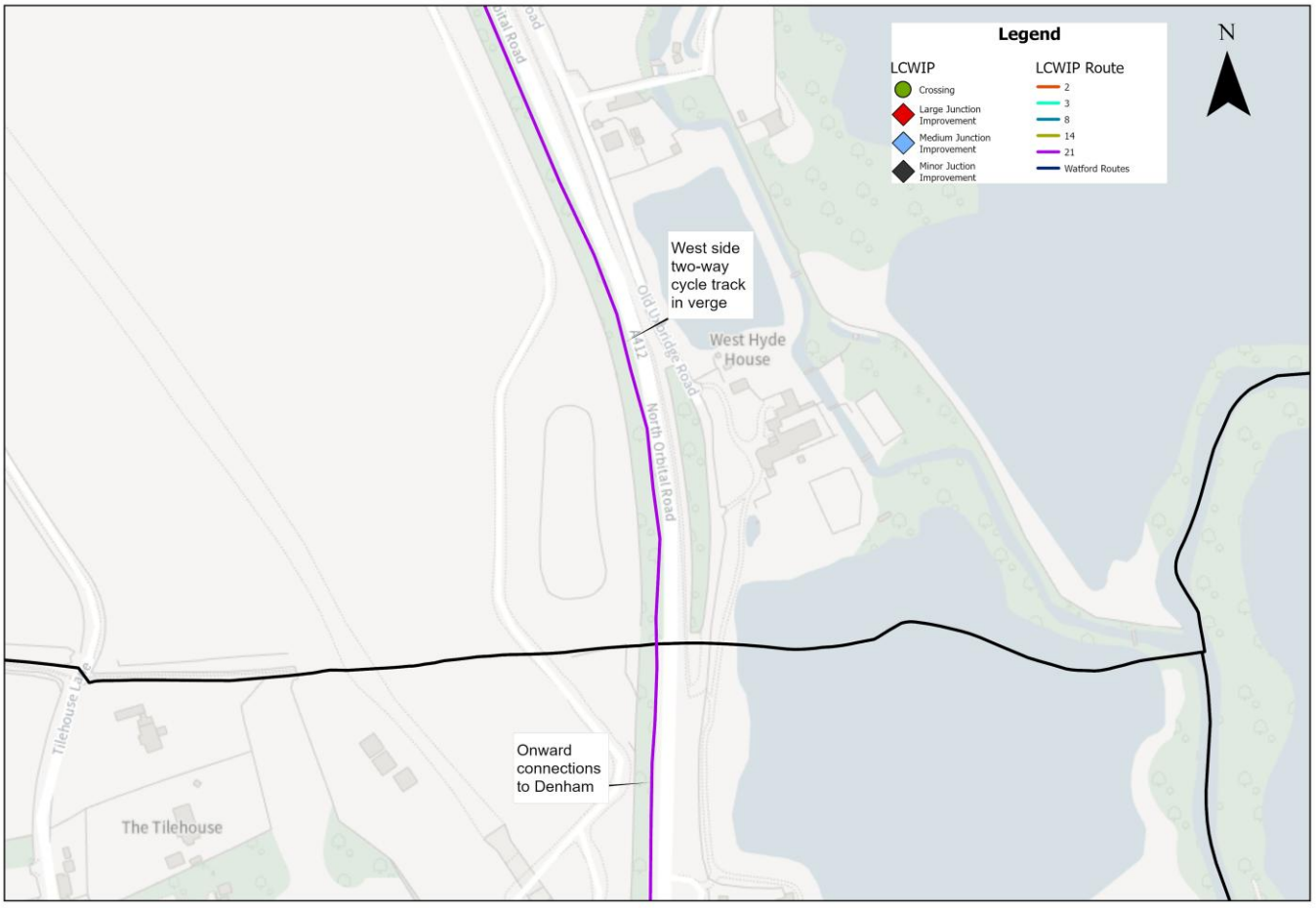




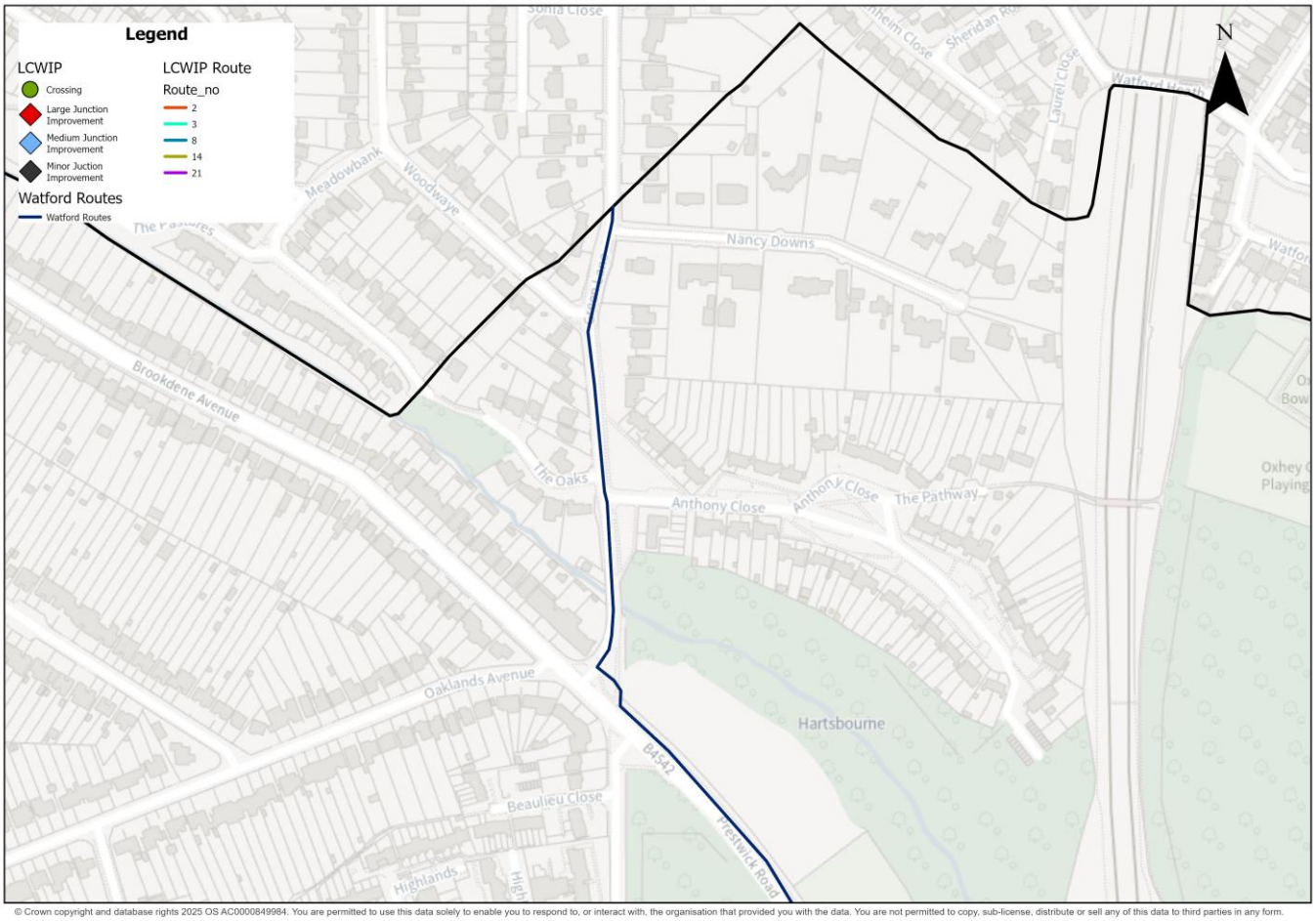


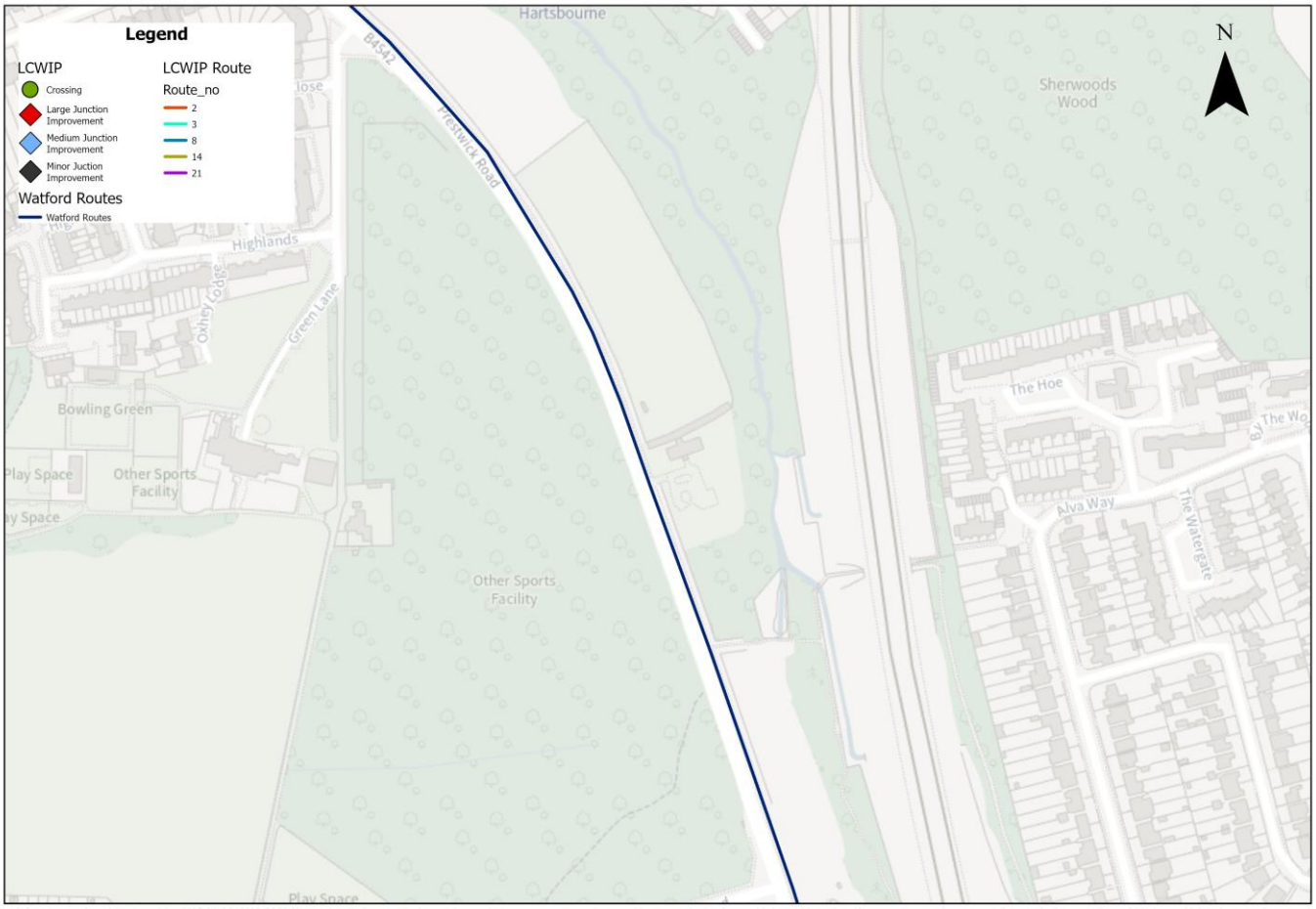


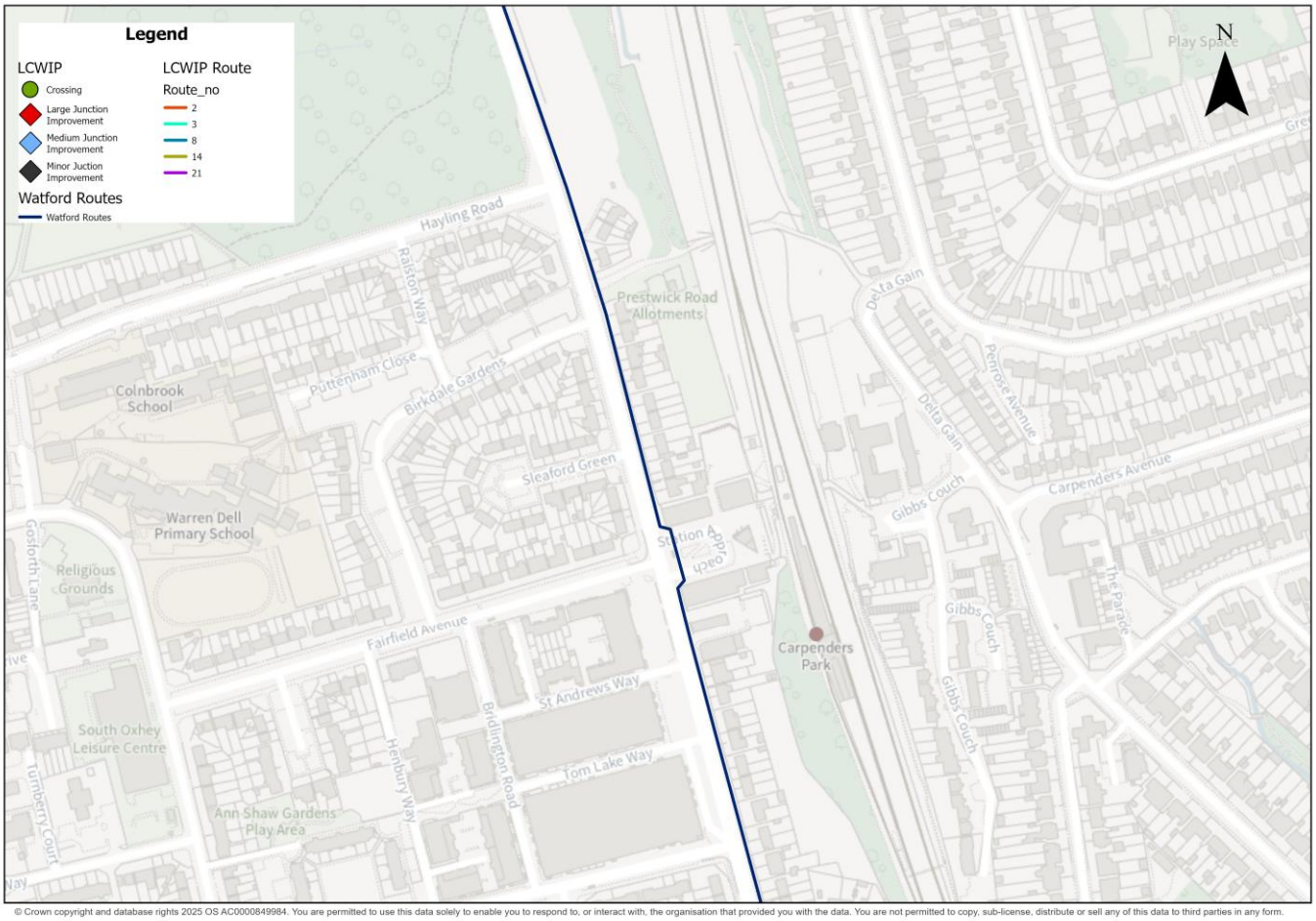




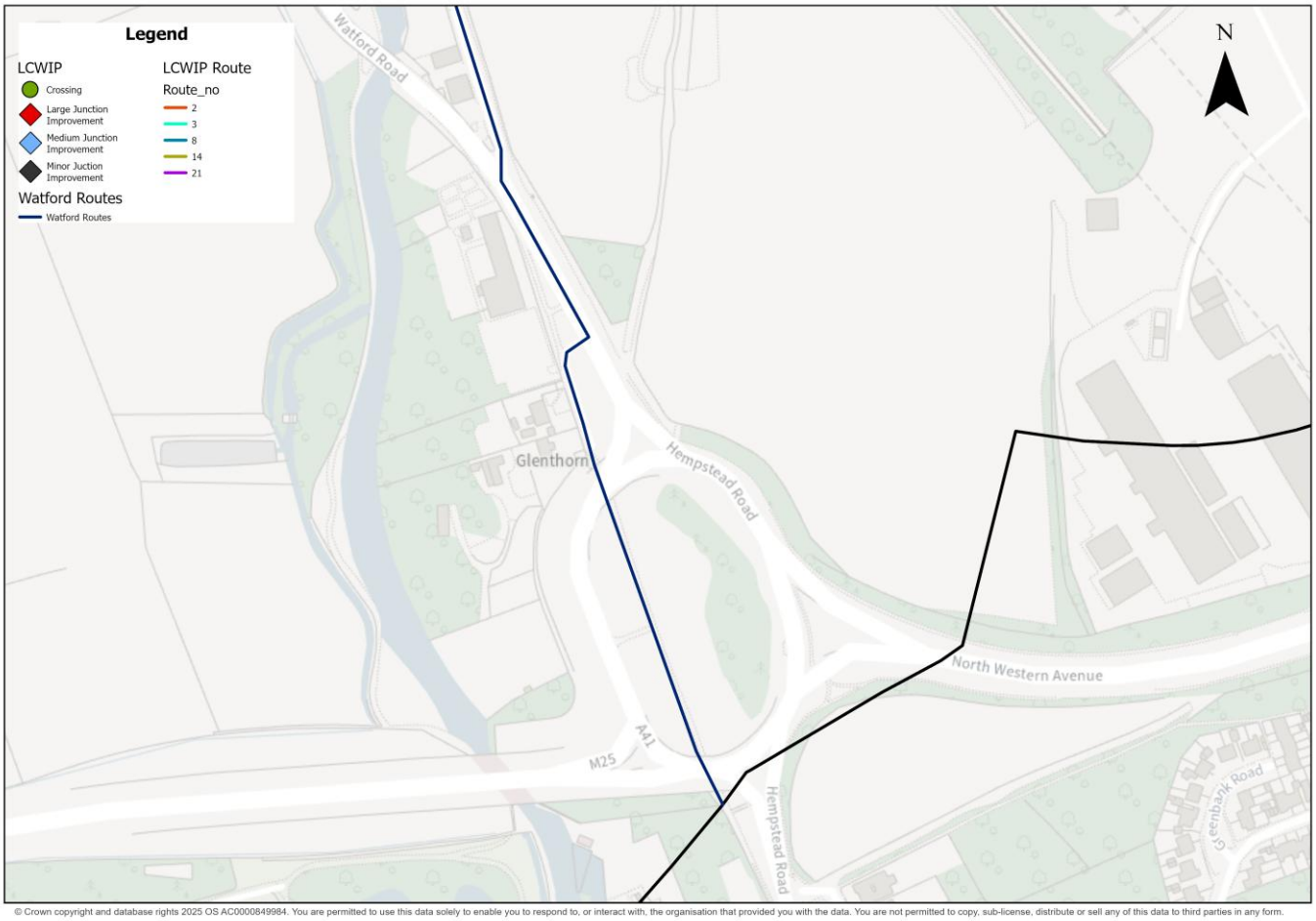
Watford Route W6

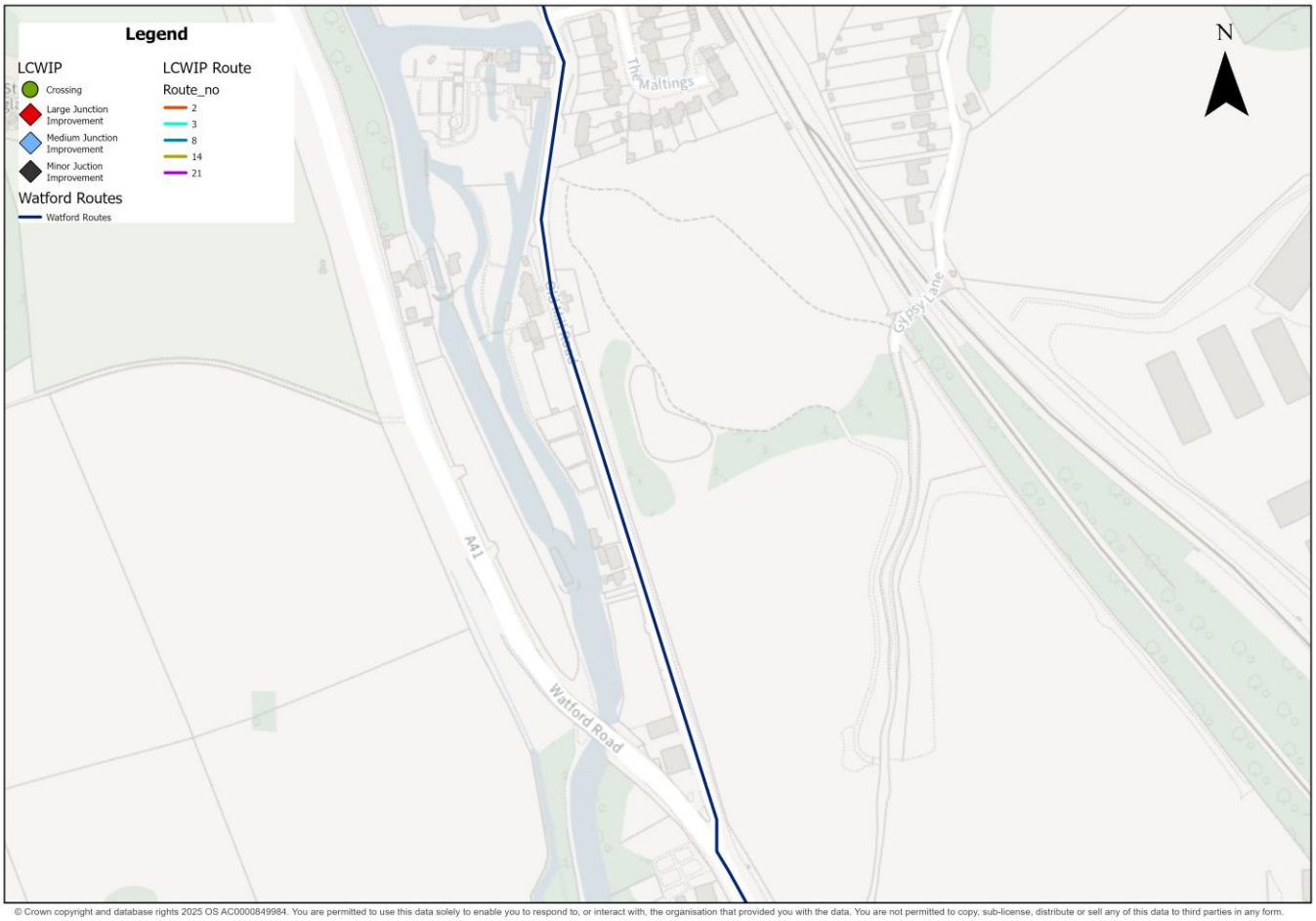


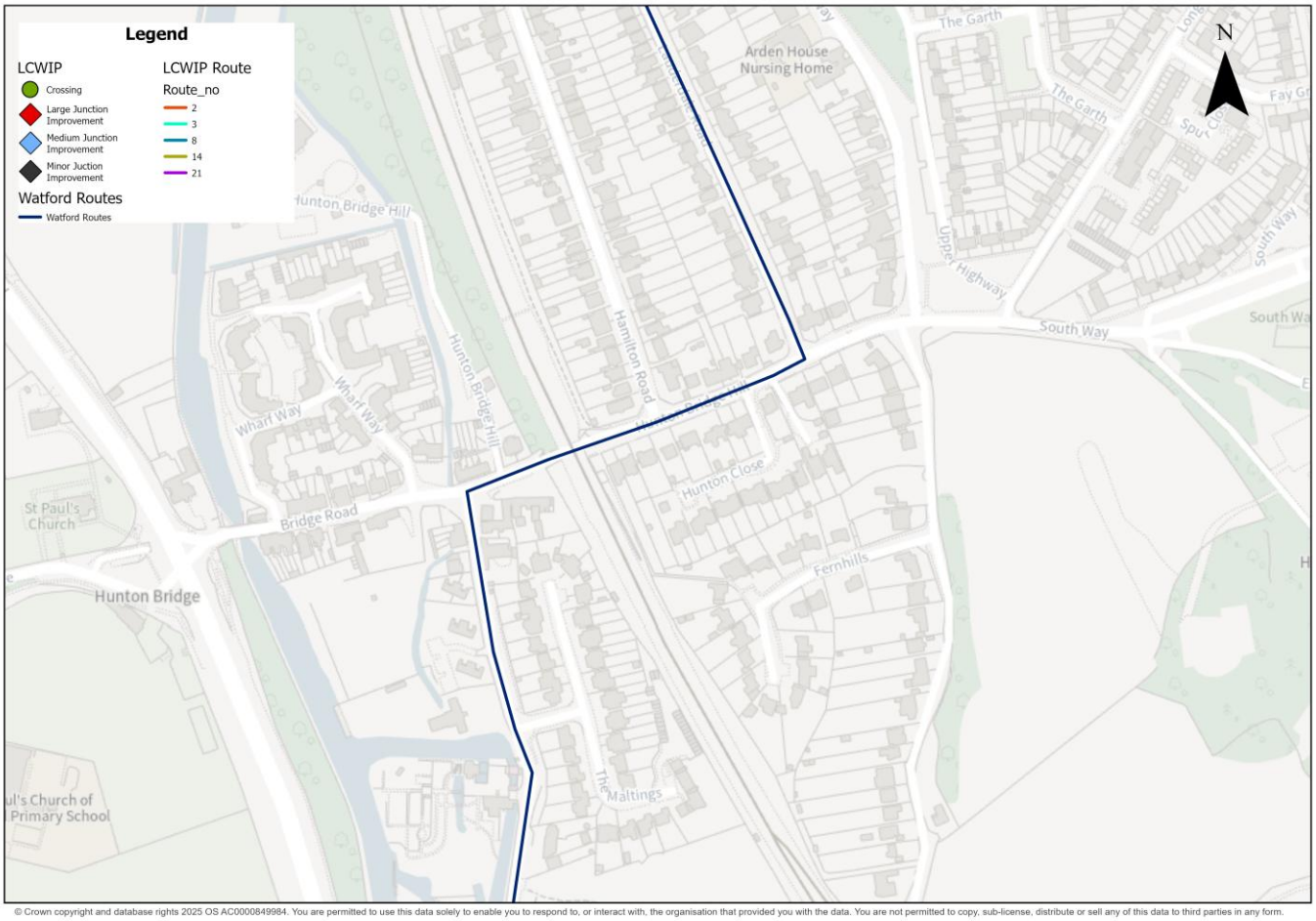


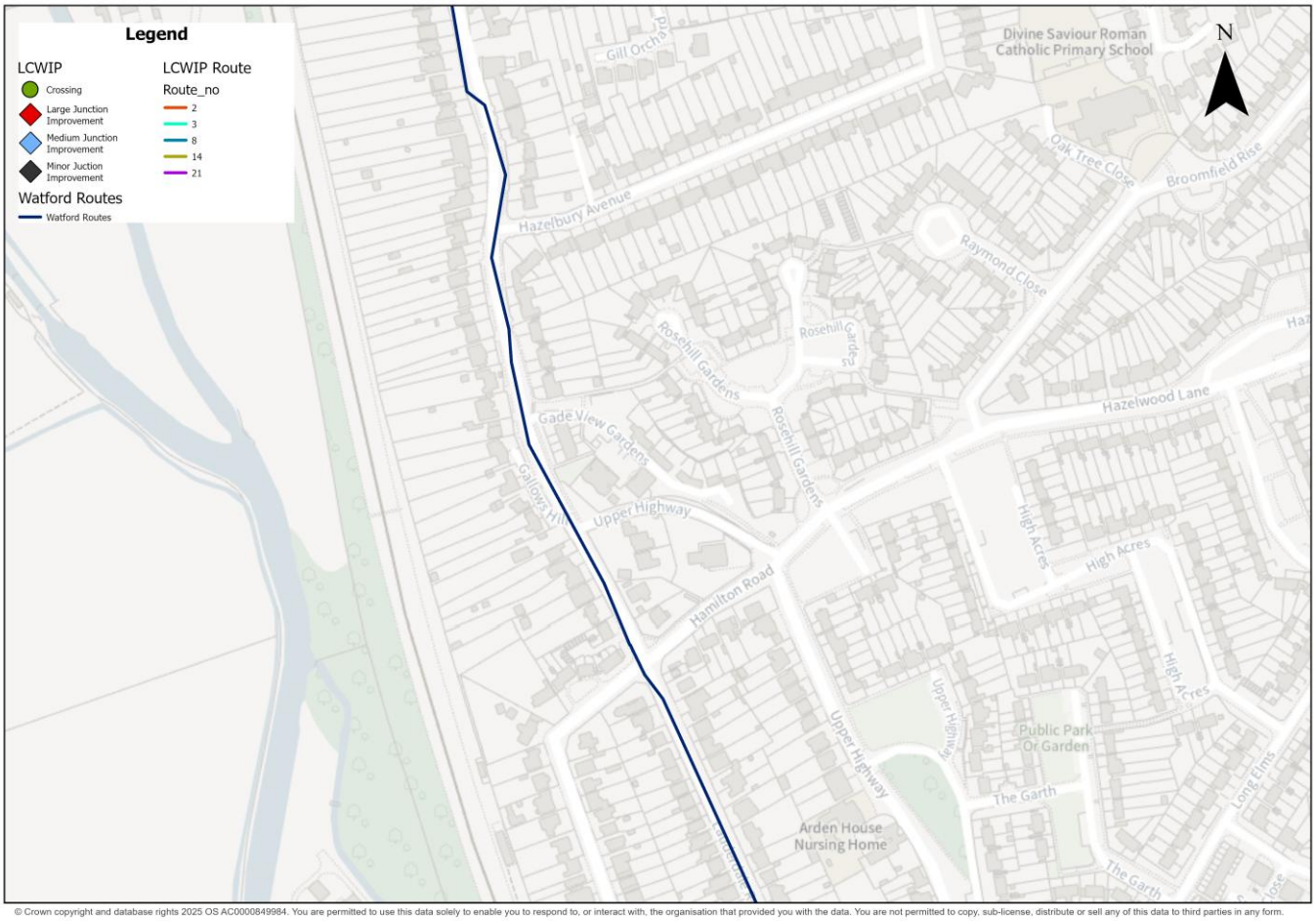


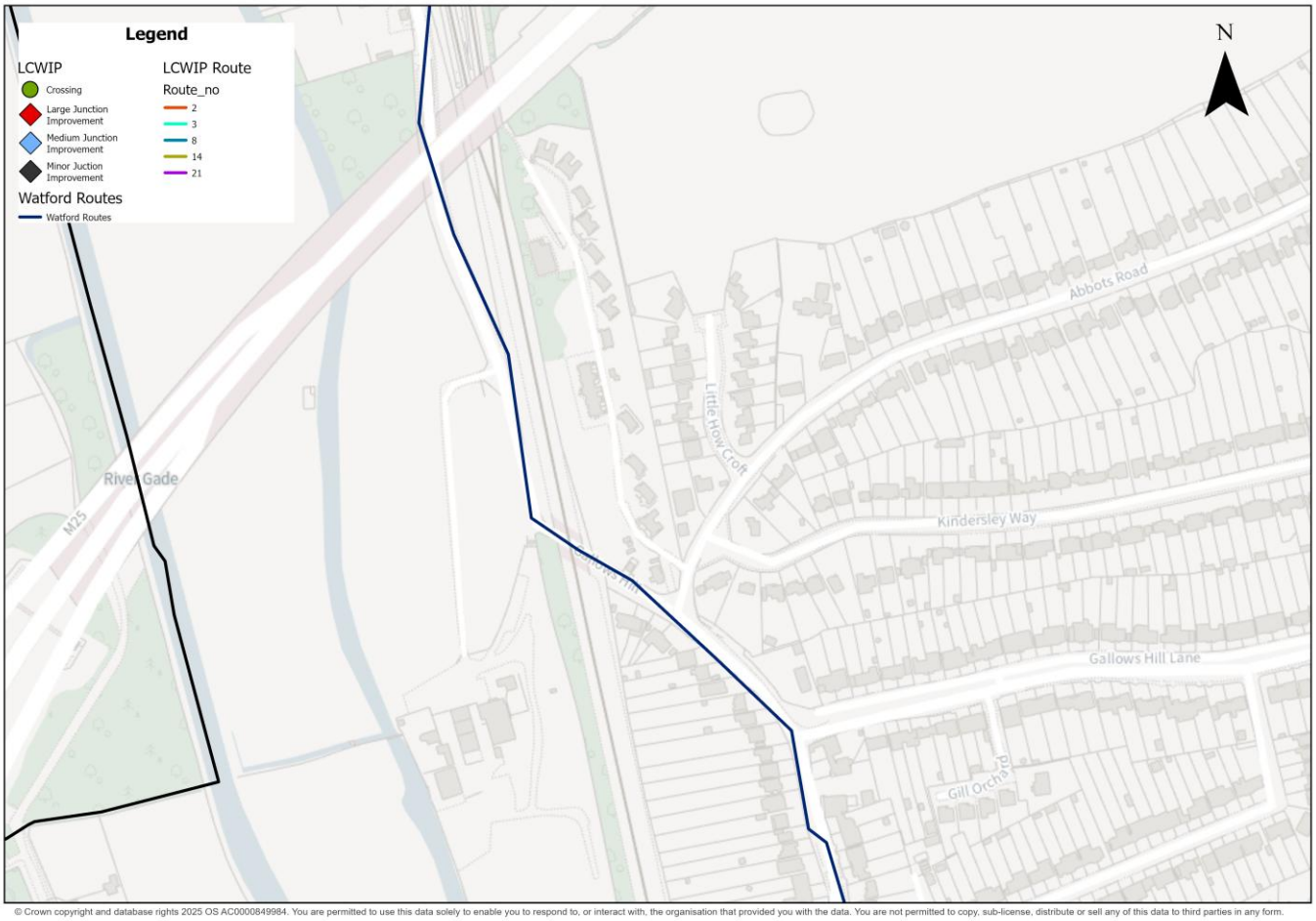
Watford Route W17











4.11 Route Score Improvement

Table 6.2 provides the revised RST (Route Selection Tool) scores assuming the measures identified are implemented along these cycle routes. This indicates that there is significant potential to address the current issues and provide high quality cycle routes. There is expected to be scope to introduce facilities which can achieve at least the minimum standard against most criteria. It is acknowledged that on some links there are existing cycle facilities, and while these may not provide the highest level of service, they may provide a useable cycle link. Where links like this exist, further improvement here may be considered as a longer-term goal. This is considered in the Stage 5 Prioritisation process where the local priorities and acceptability are scored.

Table 4.3 RST results summary (with interventions)

Route No.	Name	Score	Directness	Gradient	Safety	Connectivity	Comfort	Critical Junctions (no)
		Existing Score	5.0	2.6	1.7	4.6	1.3	5
2	Rickmansworth – Watford A412	Potential Score	5.0	2.6	4.8	4.6	2.7	0
		Existing Score	5.0	4.3	2.3	5.0	1.6	0
3	Rickmansworth – West	Potential Score	5.0	4.3	4.9	5.0	3.2	0
		Existing Score	5.0	2.9	0.7	4.6	0.6	3
8	Rickmansworth – Chorleywood	Potential Score	5.0	2.9	4.2	4.6	2.3	0
		Existing Score	5.0	3.1	1.5	4.2	2.1	1
14	Shepherds Lane	Potential Score	5.0	3.1	3.2	4.2	3.2	0
		Existing Score	5.0	5.0	0.6	3.4	1.0	3
21	Maple Cross South	Potential Score	5.0	5.0	4.2	3.4	3.0	0

4.12 Consultation – Cycle Route Feedback

The LCWIP and associated routes have been amended following the consultation detailed in section 2.5. A summary of the feedback received on cycle routes and the response has been included in the table below.

Table 4.4 Cycle Route feedback and responses summary

Route 2 – Rickmansworth Watford A412

Comment	Response
Suggestion for Caravan Lane and Ebury Way as alternatives.	Caravan Lane and Ebury Way are leisure routes, not suitable for all users.
Parallel routes like Frankland Rd proposed.	Frankland Rd deviates too far from desire line.
Concerns about 2-way tracks and access.	2-way tracks are viable with dropped kerbs; details to be addressed in feasibility.
Footpath 30 too narrow; alternative via The Cloisters or High Street.	Alternatives noted; feasibility to explore options.
Requesting this route should be given highest priority within the LCWIP.	Acknowledged.
Signalising the junction A412/Scots Hill could interfere with traffic lights at the crossing nearest to Rickmansworth School.	Acknowledged.
Suggestion to implement speed humps on approach to existing crossing location on Scots hill to reduce speed rather than change to signals.	Acknowledged.
Concerns raised about the conflict between pedestrians and cyclists at the alleyway running between the High Street to Station Road, (behind Cloisters) due to the restrictive width.	Acknowledged.
A suggested alternative route along Lavrock Lane/Caravan Lane, instead of across fortune common, which cyclists already use as a route into the High Street. This is an existing TRDC Local route.	Caravan Lane is considered a leisure route, not suitable for all users and not as direct.
The route improves links to Watford and Rickmansworth from Croxley Green but does not suggest connecting to routes within Croxley Green.	Local routes identified in Croxley intersect with the priority route.
Cycle UK - Consider limitations of cycle route using Fortune Common due to width restriction of path at rear of flats, suggest two-way cycle way on south side of Park Road.	Incorporated into proposals
Cycle UK – Park Road/Watford Road junction operating with cycle lane – options to consider. Cross route over and investigate via Windmill Drive link to north side of Watford Road Obtain land around Rickmansworth school with crossing provided further Watford Road, Change to T junction iso roundabout	Junction proposal to T junction
WSP – feasibility of Croxley Green proposals due to width restrictions. Consider using Frankland Road/ Harvey Road for cycle route	Not taken forward, Frankland Rd deviates too far from desire line.
WSP – feasibility of Croxley Green proposals due to width restrictions. Consider raised table along Watford Road and change character of the area allowing for cycling with traffic.	Incorporated into proposals

Route 3 – Rickmansworth West

Comment	Response
General support but corridor is constrained.	Constraints acknowledged; further study needed.
Suggestion to use housing estate near Moneyhill Parade.	Route amended to use housing estate.
One-way section on Berry Lane; route not direct.	Acknowledged.
Townfield and Rectory Road path suggested.	Feasibility to explore Townfield route.
Footpath 65 needs improvement.	FP65 to be addressed outside LCWIP.
Long wait at Riverside Drive crossing.	Signal phasing to be addressed outside LCWIP.
The Path between Springwell Avenue and Colne Avenue needs widening for cycling.	Acknowledged.

During peak periods of travel there is congestion along Berry Lane which is a key route between Rickmansworth and Chorleywood.	Acknowledged.
The Route should be directed through the High Street to bring additional people to shop, buy a coffee and dwell.	Acknowledged.
This provides a good route travelling west towards Mill End from Rickmansworth, but Berry Lane is currently one way so cyclists cannot cycle in the opposite direction.	Acknowledged.
An alternative route suggestion was proposed from Nightingale Road to Townfield.	Acknowledged.
Cycle Uk – Identifying alternatives to Uxbridge Road route due to width restrictions and traffic volume. Through Aquadrome but would this be year round route due to lighting restrictions. Through Money Hill residential area, consideration needed around gradient of route.	Money Hill routing incorporated in plans.

Route 8 – Rickmansworth to Chorleywood

Comment	Response
Strong opposition to using Chorleywood Common.	Remove routes on or near Chorleywood Common.
Common Road one-way not suitable due to buses.	Common Road one-way removed due to bus use.
Colley Land suggested but steep and narrow.	Colley Land not viable.
Speed concerns near Clement Danes.	Speed zone and crossing to be considered in feasibility.
Suggestion to widen footpath at Station Approach/Shire Lane.	Widening and signalising bridge not viable.
Suggested crossing opposite Parish Council.	Speed zone and crossing to be considered in feasibility.
Route along edge of common proposed.	Edge-of-common route also removed.
Extension down A404 and Green Street supported by Chorleywood stakeholders.	Extension down A404 and Green Street accepted.
Support for a continuous route along A404 on the west side to the M25.	Acknowledged.
Extend the route along the A404 to St Clement Danes for a safe cycle route to the school from Chorleywood.	Acknowledged.
Request to move cycle path location adjacent to Common road - less intrusive.	Acknowledged.
Chorleywood common is part of a conservation area.	Acknowledged.
Encouraging cycling across the common would destroy wildlife and habitat.	Acknowledged.
Alternative to Common Road would create more traffic and pollution.	Acknowledged.
Common Road is a bus route and relied upon by the elderly residents.	Acknowledged.
This proposal will lead to a significant increase in traffic accessing Chorleywood to use Green Street.	Acknowledged.
Cycle UK – considering issues with width restrictions Chorleywood Road. Consider East side two-way cycle track with thought of how shared use can be accommodated for narrow sections.	Incorporated into proposals
Extension to Green Street if The Common option is removed. Speed reduction needs to be removed Crossing required Options for segregated cycle facility presented	Incorporated into proposals

Route 14 – Shepherds Lane

Comment	Response
Modal filter under M25 opposed.	Modal filter removed.
Alternative via gravel paths on north side of M25.	Bridleway 19 flagged for future development.
Concerns about buses, footway parking, and traffic.	Further study needed for junctions, crossings, and speed.
Modal filter will significantly increase traffic on alternative routes.	Modal filter removed.
Modal filter will impact access to William Penn Leisure Centre.	Modal filter removed.
Suggestion to allow car access but reduce speeds.	Acknowledged.
Add speed humps to keep speeds under 20mph.	Acknowledged.

Modal filter would gridlock Long Lane during M25 issues.	Modal filter removed.
Berry Lane would be overburdened.	Acknowledged.
Catnips Farm access issues for large vehicles.	Acknowledged.
Suggest width and speed restrictions instead of modal filter.	Acknowledged.
Suggest upgrading adjacent footpaths/bridleways as alternatives.	Acknowledged.

Route 21 – Maple Cross

Comment	Response
General support.	Acknowledged.
Alternative via Old Uxbridge Rd proposed.	Main road preferred for connectivity.
Request for onward connections to Buckinghamshire.	Acknowledged.
Improve crossing points.	Acknowledged.
Suggest continuous cycle track on one side.	Acknowledged.

Route 7 – Chorleywood Bottom (Secondary Route)

Comment	Response
Opposition to modal filter on Shepherds Bridge.	Modal filter removed.
Suggestion to signalise bridge.	Signalising not feasible due to highway conflicts.

5 LCWIP Stage 4 - Network Planning for Walking

This section sets out the process for identifying core walking zones across the LCWIP area and identifying the most appropriate areas for walking interventions. It should also be noted that walking improvements will also be made alongside the cycling improvements across the strategic network identified in section 4.

5.1 Core Walking Zones

The first stage of the development of a walking network is to identify the Core Walking Zones (CWZ). The LCWIP guidance recommends that:

- CWZs should consist of a number of walking trip generators that are located close together - such as a town centre or business parks.
- An approximate five-minute walking distance of 400m should be used as a guide to the minimum extents of CWZs.
- All pedestrian infrastructure should be deemed as important within the CWZs.
- Once the CWZs have been identified, the important pedestrian routes (key walking routes) that serve them should then be located and mapped.

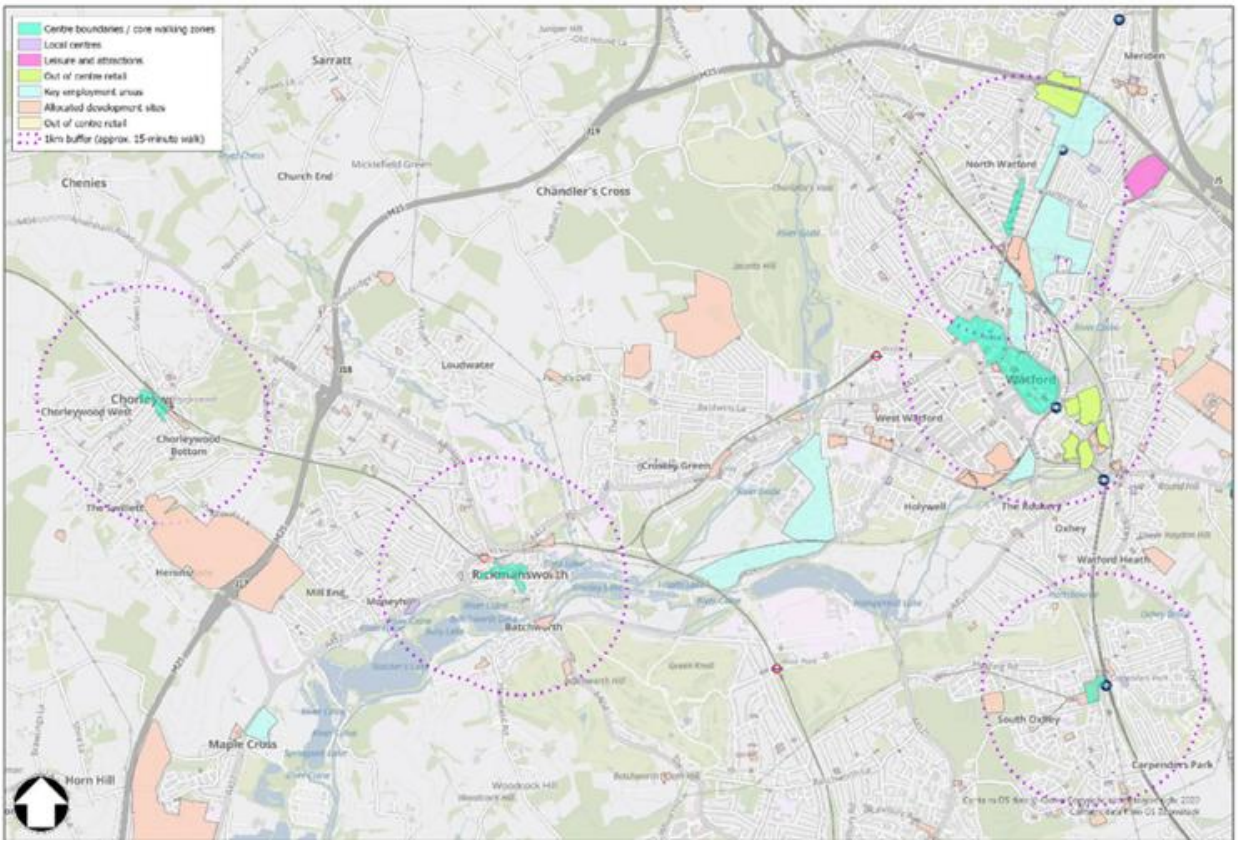
The origin and destination analysis undertaken in section 4 has helped to identify the key walking trip generators in Three Rivers district. From this analysis the following CWZs have been identified, these are shown in Figure 5.1:

- Rickmansworth Town Centre
- Carpenders Park
- Chorleywood

These CWZs align with the designation of these locations in Three Rivers as ‘designated key centres’ within the district, and therefore these have been assigned as the initial set of core walking zones. It is envisaged that as the LCWIP is revised, more core walking zones will be identified to help to create a more comprehensive, coherent walking network.

It was agreed by council officers that the extents of the important routes that serve the CWZs should be within 1km of the CWZs. These extents are visible on Figure 5.1.

Figure 5.1 Core Walking



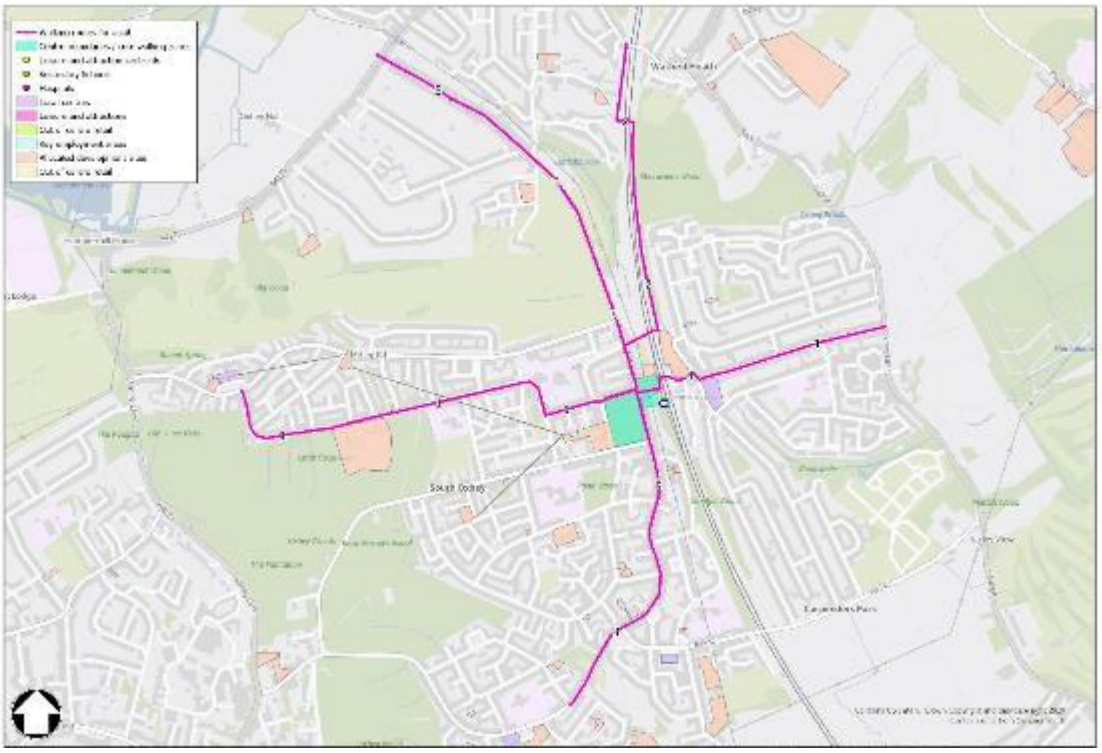
Source: Mott MacDonald

5.2 Priority Walking Routes

Carpenders Park was identified by TRDC as the local priority CWZ. Five priority walking routes connecting Carpenders Park were identified as priorities. These routes connect the station to a number of residential areas, development sites and key destinations such as schools. Figure 5.3 shows the identified key walking routes, and can be summarised as follows:

- Walking Route 1 – Carpenders Park Station to Hayling Rd
- Walking Route 2 – Carpenders Park Station to Watford Heath
- Walking Route 3 – Prestwick Rd (South) Carpenders Park Station to Greenfields School
- Walking Route 4 – Carpenders Park Station to Oxhey Lane
- Walking Route 5 – Prestwick Rd (North) Carpenders Park Station to Hampermill Lane

Figure 5.2 Key walking routes around South Oxhey and Carpenders Park



Source: Mott MacDonald

5.3 Walking Route Audit Tool

Using the Department for Transport's (DfT) Walking Route Audit Tool (WRAT), on-site audits were undertaken on the agreed routes by trained WSP and HCC personnel. The WRAT assesses existing pedestrian infrastructure against five core design outcomes: attractiveness, comfort, directness, safety, and coherence. It considers the needs of all users, including vulnerable pedestrians such as older adults, people with visual or mobility impairments, and those using buggies or walking with children. The audit process also integrates safety inclusion assessments with a gender-inclusive lens, helping to identify targeted infrastructure improvements.

A summary of the WRAT baseline audits is shown in Table 5.1, with the scores reflecting existing conditions across each route. These assessments informed the development of walking infrastructure improvement plans, which were subsequently integrated with cycling infrastructure proposals.

Table 5.1 Three Rivers Key walking routes - Existing WRAT results summary

Route No.	Name	Attractiveness %	Comfort %	Directness %	Safety %	Coherence %	Overall score %
1	Carpenders Park Station to Hayling Rd	74	32	81	89	0	61
2	Carpenders Park Station to Watford Heath	46	55	71	33	50	54
3	Prestwick Rd (South) Carpenders Park Station to Greenfields School	44	50	81	67	0	56
4	Carpenders Park Station to Oxhey Lane	67	60	75	83	50	68
5	Prestwick Rd (North) Carpenders Park Station to Hampermill Lane	45	54	70	78	50	60

The Three Rivers walking routes are generally direct – with fewer busy roads meaning that desire lines are well catered for. The lower traffic volumes and speeds are also reflected in the higher safety scores – although the lack of natural surveillance on route 2 impacts on this safety score. The lower comfort scores are a result of poorer path

condition, and particularly on route 1, where there is footway parking. The coherence scores are generally low, reflecting the lack of dropped kerbs and tactile paving on some routes.

5.4 Types of walking interventions

Whilst design guidance for walking schemes is more limited than for cycle design guidance, the CIHT Designing for Walking guidance[17] provides a good framework for the principles to apply. Well-designed walking facilities should enable walking journeys and improve the experience of those already walking by following desire lines, being clutter-free and being legible to all users. They should take into account the volumes of people walking along the streets (actual or desired) or crossing the streets and should take into account the needs of all users. The specific design solutions will therefore depend on a variety of considerations.

Potential interventions could include:

- Increasing the width of footways
- Public realm improvements, including:
  - Continuous level footways
  - Raised tables.
- Provision of high-quality street furniture and provision of benches
- Improving of pedestrian facilities at traffic signal junctions, including:
  - Additional pedestrian crossings
  - Reduction in crossing distances
  - Changing ‘staggered’ to ‘straight across’ pedestrian crossings.
- Street lighting improvements
- Decluttering and maintenance
- Dropped kerbs and tactile paving.
- Wayfinding
- Measures to assist with access to/by other modes – i.e. bus stops, stations, disabled parking.
- Area wide treatments such as Low Traffic Neighbourhoods.

[17] https://www.ciht.org.uk/media/4460/ciht_-_designing_for_walking_document_v2_singles.pdf

Provision should aim to achieve good design outcomes for pedestrians – routes should be attractiveness, comfort, directness, safety, and connectivity. See section 4.1 for further details.

There is some overlap between the cycle network and walking routes and measures proposed for cycling, such as junction improvements, can clearly also benefit pedestrians. It is recommended that all cycle schemes consider the needs of pedestrians and incorporate design measures that will benefit pedestrians as well as cyclists.

5.5 Identified Walking Interventions

In identifying measures for walking, Mott MacDonald has sought to reflect the principles outlined in CIHT's Designing for Walking guidance. This is necessary to provide the quality of infrastructure that will have the greatest chance of achieving mode shift.

As with the cycling interventions, the LCWIP is intended to provide a high-level overview of potential walking designs only. Effort has been made to consider the deliverability of schemes. However, in all cases, the measures identified will need to be subject to a full feasibility assessment, safety review and detailed consideration of the impacts on other road users, including buses and emergency vehicles. WBC, TRDC and HCC may wish to consider deliverability and acceptability during the prioritisation process in LCWIP Stage 5.

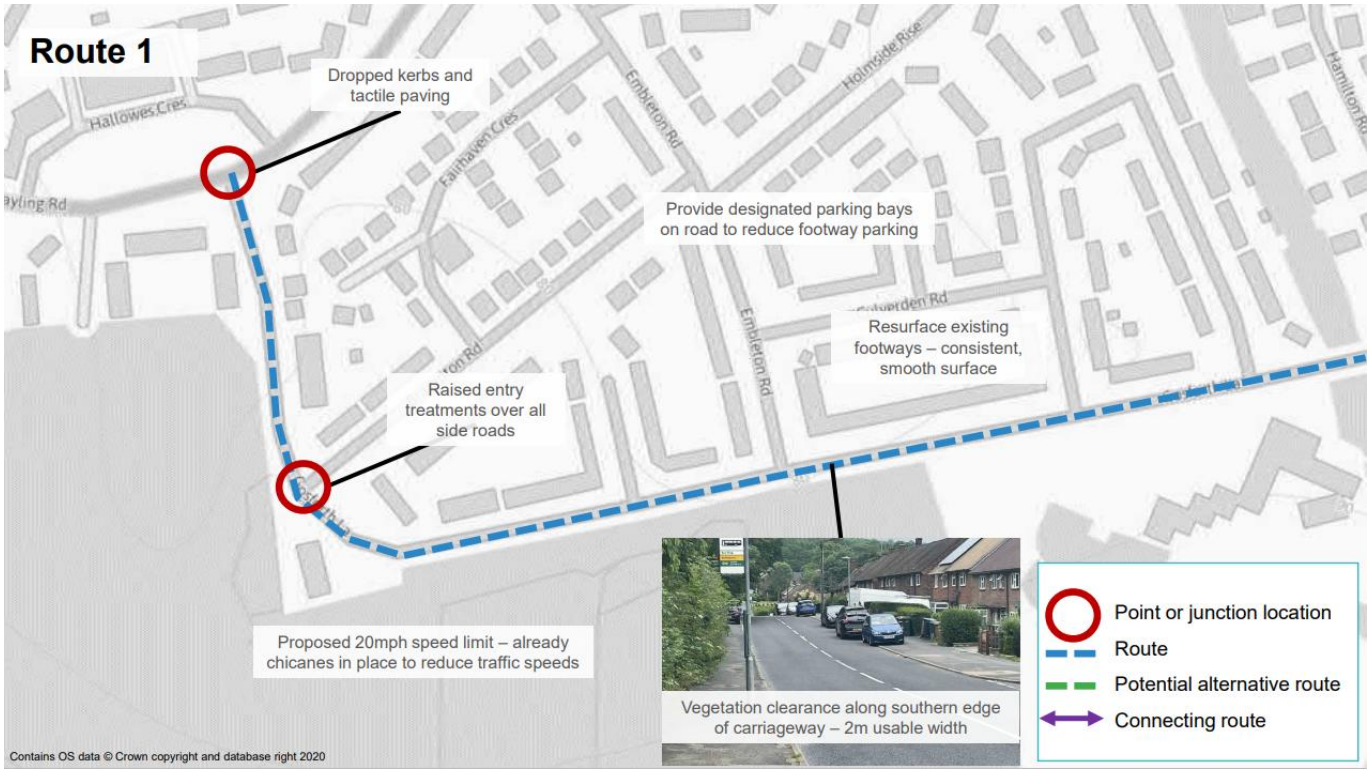
The measures proposed focus on the main links and junctions. In addition, it is recommended that the following interventions and measures are also considered, with consideration given to the urban or rural nature of the local environment:

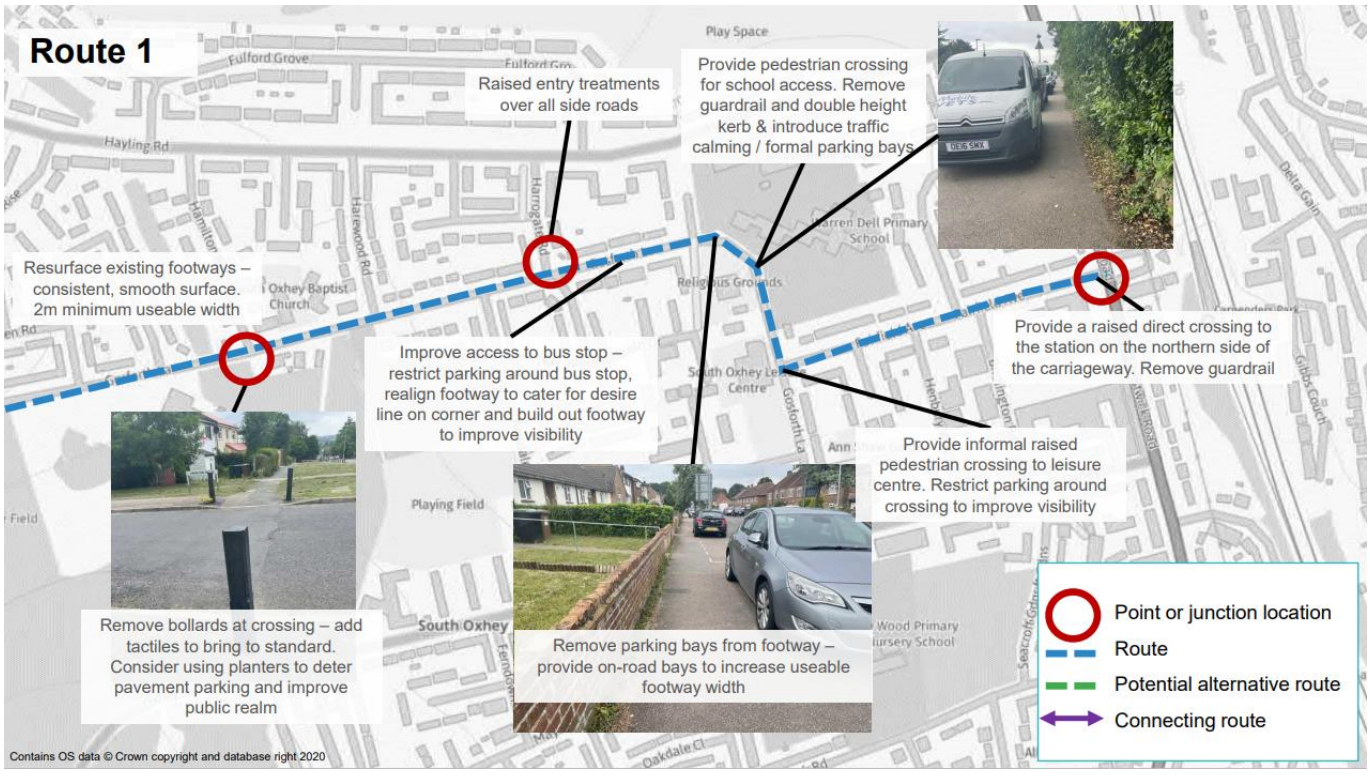
- Usable footway widths of at least two metres in all locations. Where there is high footfall, such as in the town centre, this should be increased further.
- Crossings should be single stage to reduce pedestrian crossing times. Where this is not feasible due to the number of traffic lanes, pedestrian wait times should be minimised and green man time should be maximised.
- Footways should be maintained to the same standard they were designed to. If any works are undertaken, the surface should be replaced to the same standard it was designed to.
- Side road entry treatments, including reducing radii and providing raised tables or continuous footways. These are noted in some circumstances however, it is recommended that this would be a standard design consideration.
- Tactile paving and dropped kerbs should be provided at all points pedestrians are expected to cross the road.
- Car parking should be restricted around formal and informal pedestrian crossing points, and where pedestrian movement is higher (e.g., around bus stops).
- General upkeep and maintenance of the pedestrian environment should be ongoing to ensure the quality of the route does not deteriorate. This includes litter picking, ongoing maintenance of street furniture and surfaces e.g., removal of graffiti on walls, as well as trimming vegetation to maintain useable footway widths and to preserve visibility.

Routes that scored over 70% in the WRAT assessment are not considered to need additional interventions to bring them to a suitable standard.

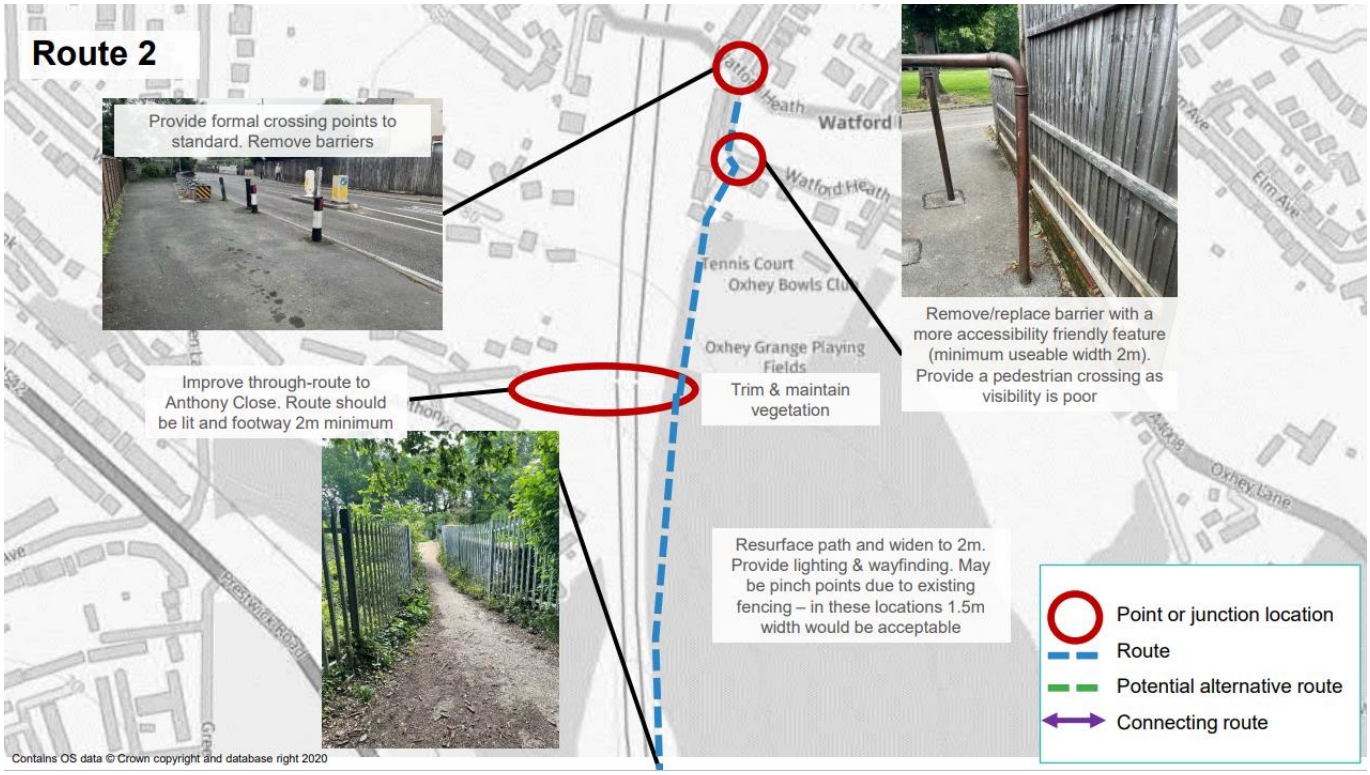
Potential interventions have been created for the walking routes which scored less than 70% when using the WRAT. However, in many cases it has not been possible to address issues associated with the volume of traffic on the adjacent highway. Reducing traffic on these walking routes would significantly improve the pedestrian environment.

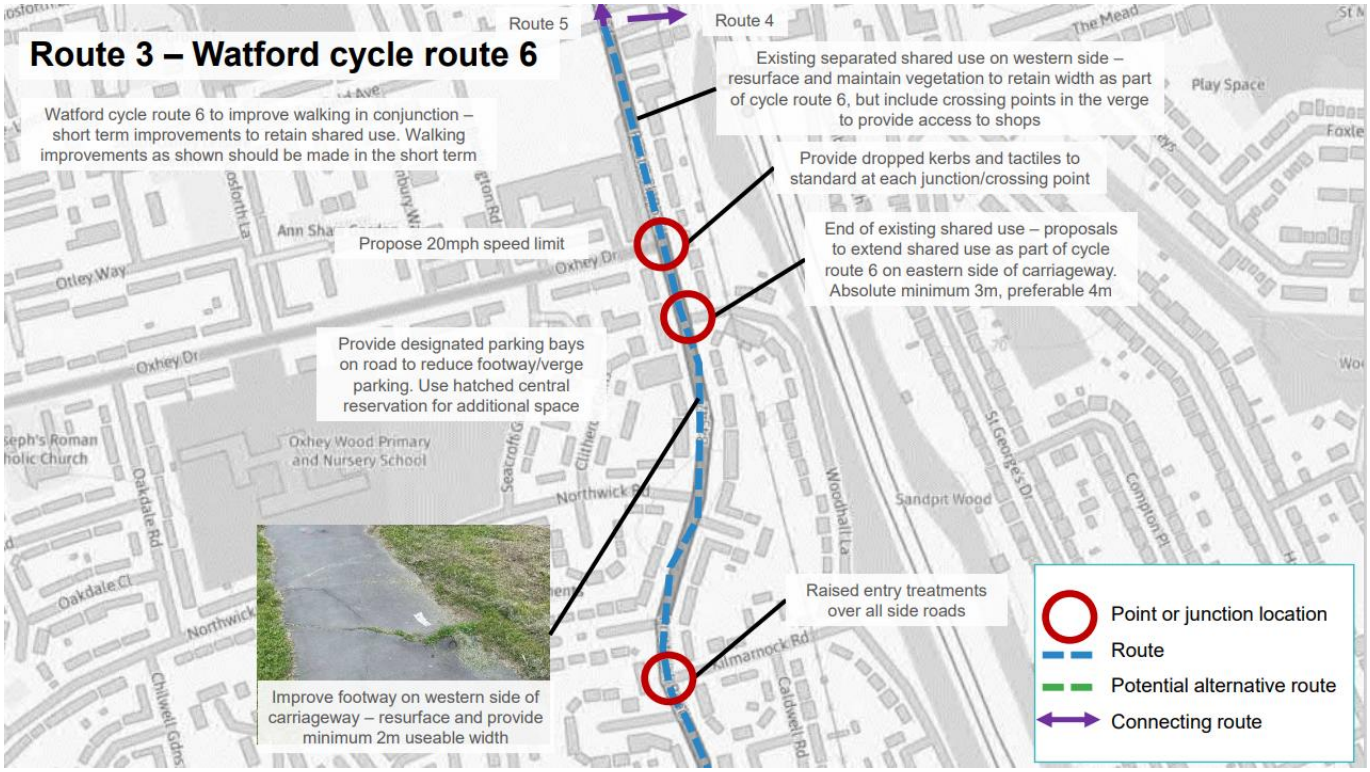
The indicative interventions on the 5 priority routes are shown below.

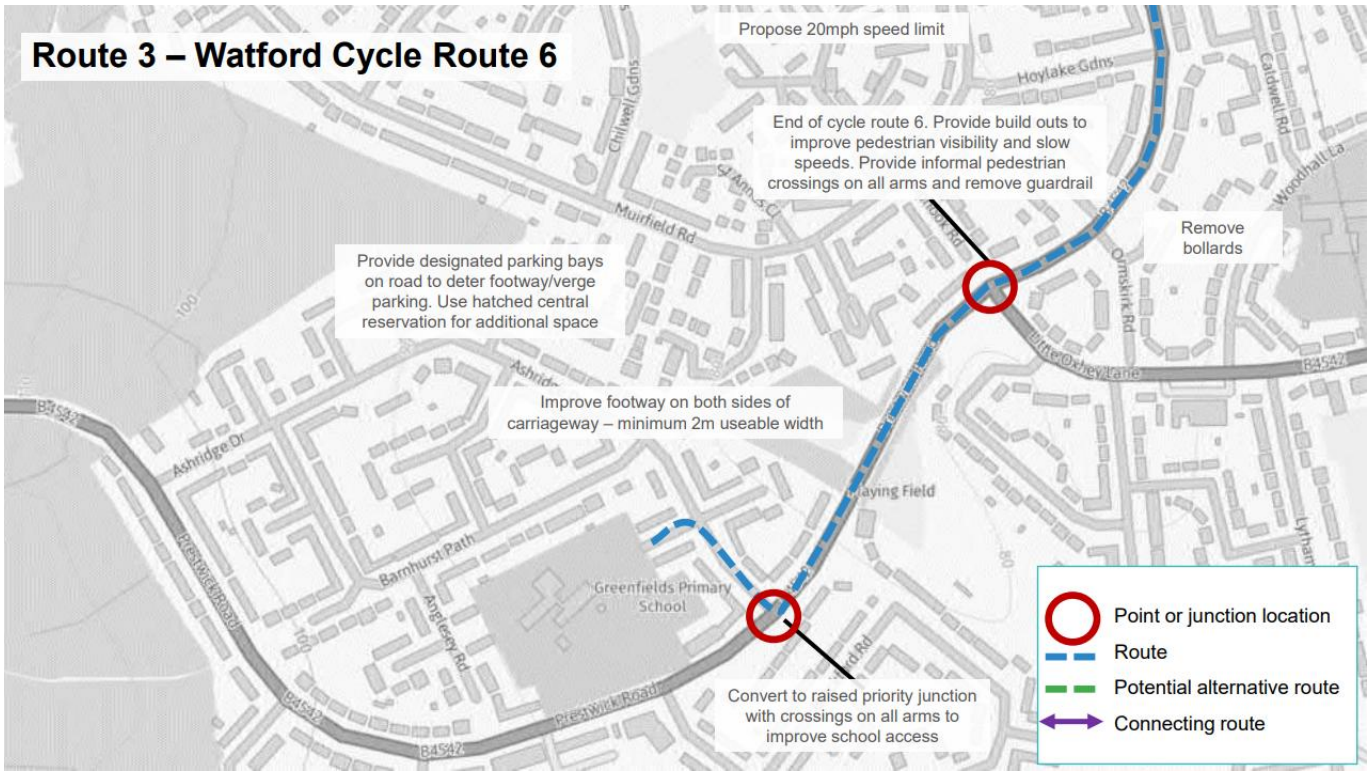

Route 1
Dropped kerbs and tactile paving
Provide designated parking bays on road to reduce footway parking
Resurface existing footways – consistent, smooth surface
Raised entry treatments over all side roads
Proposed 20mph speed limit – already chicanes in place to reduce traffic speeds
Vegetation clearance along southern edge of carriageway – 2m usable width
Point or junction location
Route
Potential alternative route
Connecting route
Contains OS data © Crown copyright and database right 2020

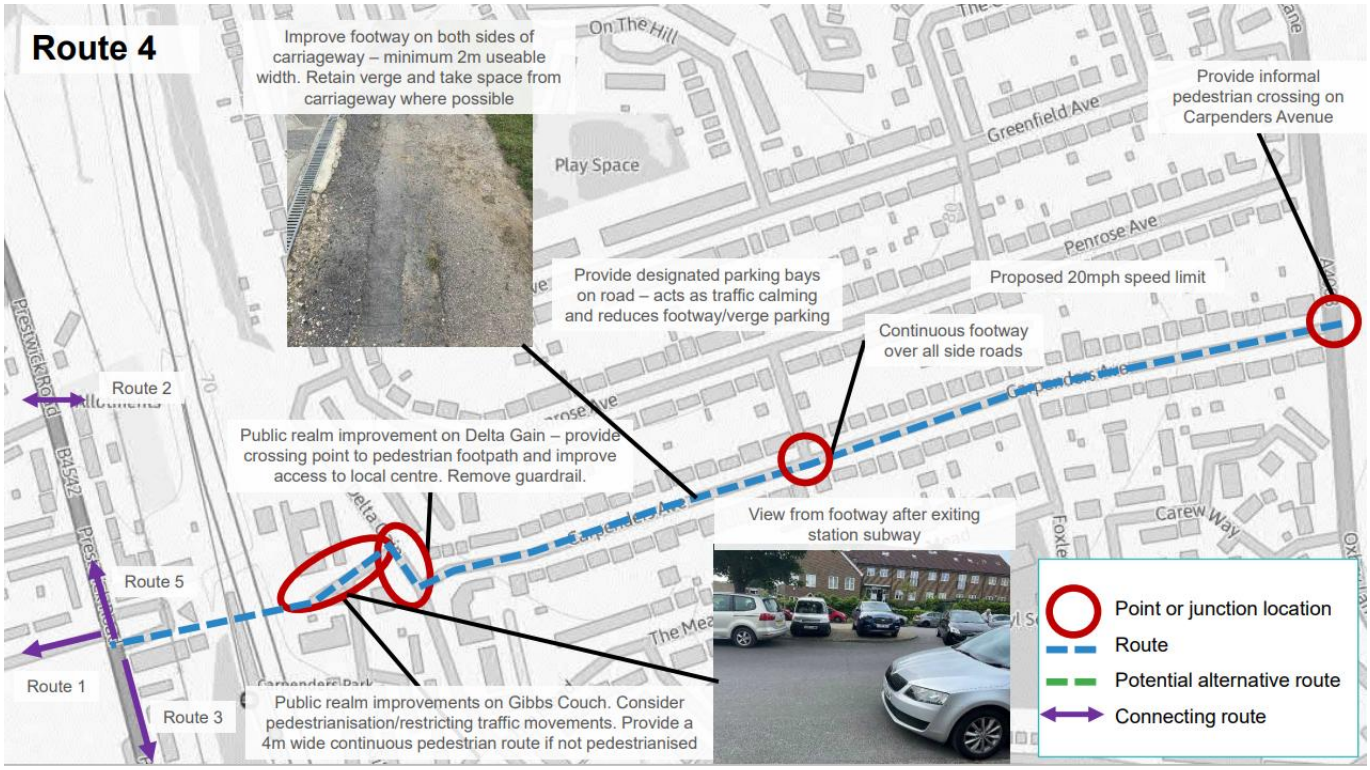

Route 1
Raised entry treatments over all side roads
Provide pedestrian crossing for school access. Remove guardrail and double height kerb & introduce traffic calming / formal parking bays
Resurface existing footways – consistent, smooth surface. 2m minimum useable width
Improve access to bus stop – restrict parking around bus stop, realign footway to cater for desire line on corner and build out footway to improve visibility
Provide a raised direct crossing to the station on the northern side of the carriageway. Remove guardrail
Provide informal raised pedestrian crossing to leisure centre. Restrict parking around crossing to improve visibility
Remove bollards at crossing – add tactiles to bring to standard. Consider using planters to deter pavement parking and improve public realm
Remove parking bays from footway – provide on-road bays to increase useable footway width
Point or junction location
Route
Potential alternative route
Connecting route
Contains OS data © Crown copyright and database right 2020

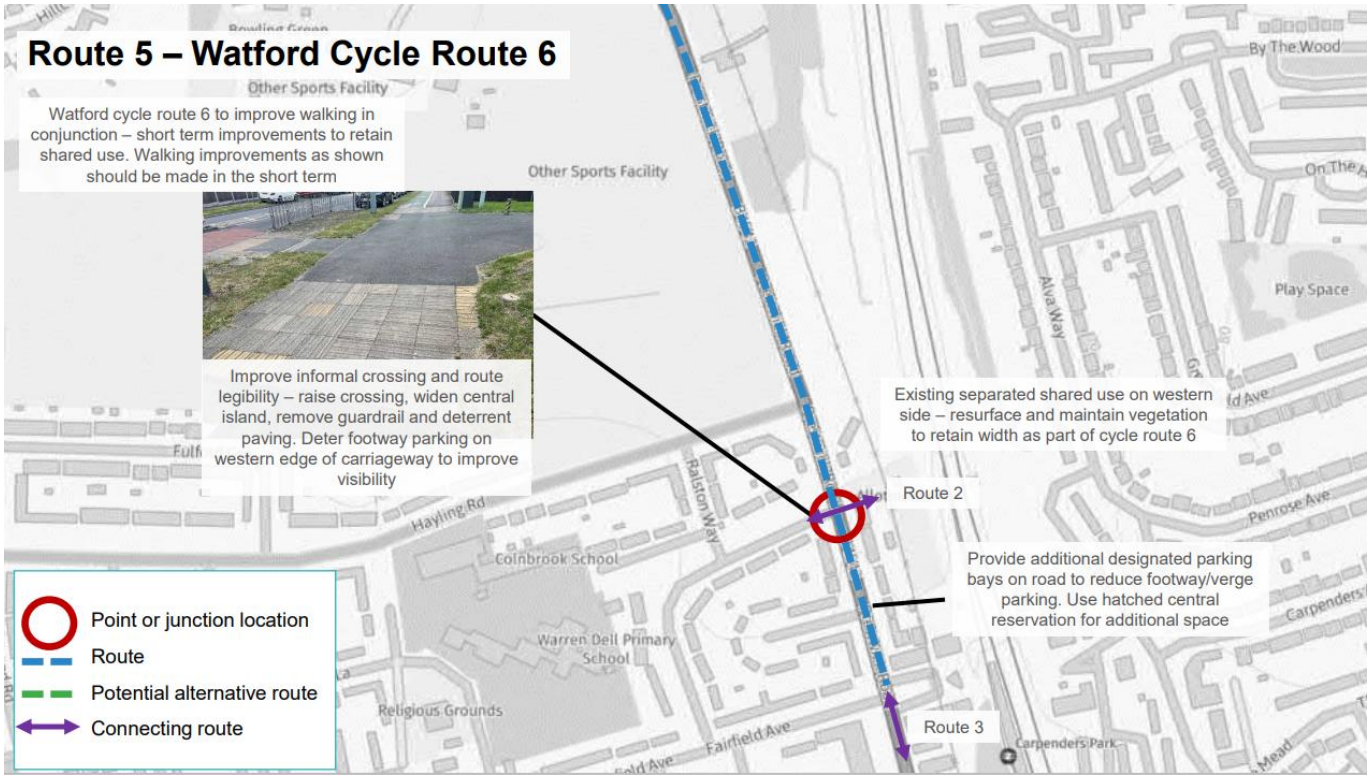

Route 2
Sherwoods Wood
Golf Course
Trim & maintain vegetation
Evidence of previous surfacing
Resurface path and widen to 2m. Provide lighting & wayfinding
Improve informal crossing – widen central island, remove guardrail and deterrent paving. Deter footway parking on western edge of carriageway to improve visibility. Improve wayfinding to route
Route 5
Trim vegetation & improve lighting (especially in tunnel)
Point or junction location
Route
Potential alternative route
Connecting route
Contains OS data © Crown copyright and database right 2020

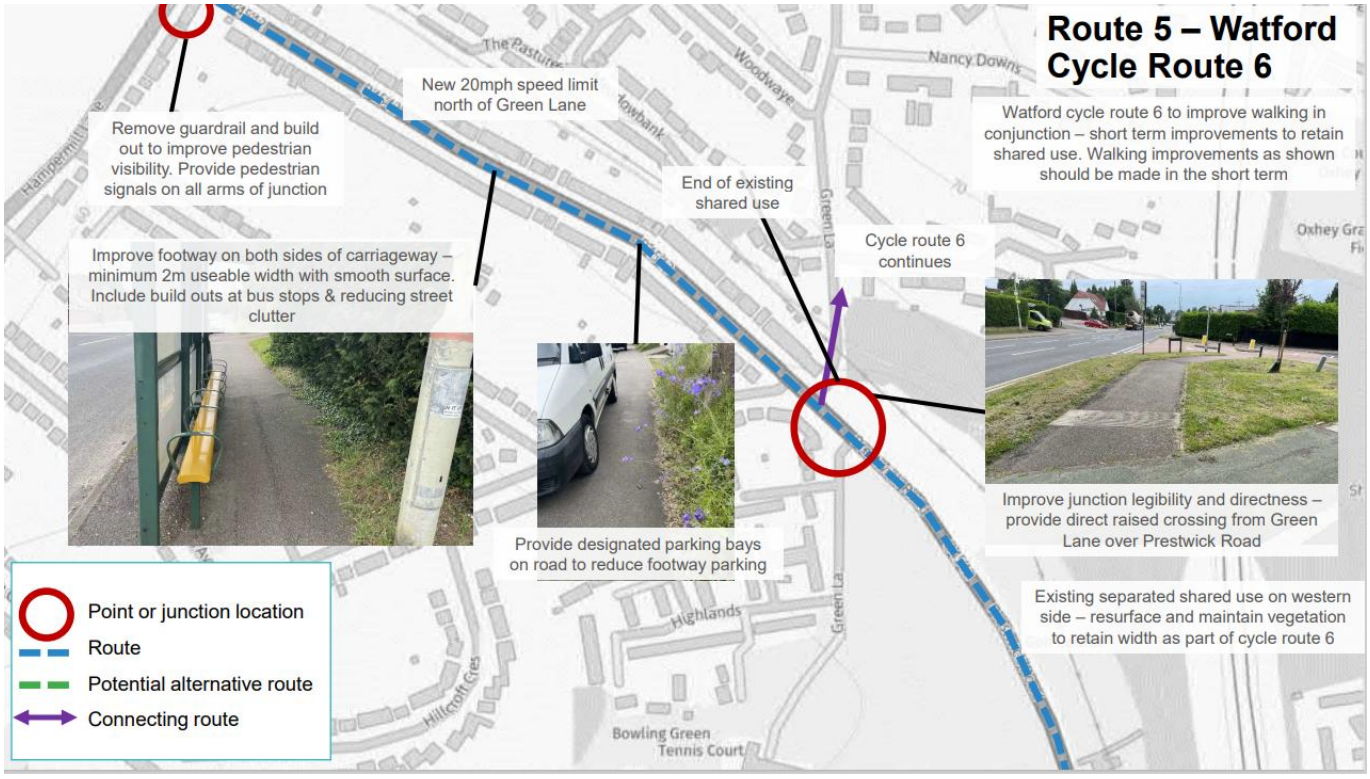

Route 2
Provide formal crossing points to standard. Remove barriers
Watford
Watford Heath
Tennis Court
Oxhey Bowls Club
Oxhey Grange Playing Fields
Remove/replace barrier with a more accessibility friendly feature (minimum useable width 2m). Provide a pedestrian crossing as visibility is poor
Improve through-route to Anthony Close. Route should be lit and footway 2m minimum
Trim & maintain vegetation
Resurface path and widen to 2m. Provide lighting & wayfinding. May be pinch points due to existing fencing – in these locations 1.5m width would be acceptable
Point or junction location
Route
Potential alternative route
Connecting route
Contains OS data © Crown copyright and database right 2020


Route 3 – Watford cycle route 6
Route 5
Route 4
Watford cycle route 6 to improve walking in conjunction – short term improvements to retain shared use. Walking improvements as shown should be made in the short term
Existing separated shared use on western side – resurface and maintain vegetation to retain width as part of cycle route 6, but include crossing points in the verge to provide access to shops
Provide dropped kerbs and tactiles to standard at each junction/crossing point
Propose 20mph speed limit
End of existing shared use – proposals to extend shared use as part of cycle route 6 on eastern side of carriageway. Absolute minimum 3m, preferable 4m
Provide designated parking bays on road to reduce footway/verge parking. Use hatched central reservation for additional space
Oxhey Wood Primary and Nursery School
Raised entry treatments over all side roads
Improve footway on western side of carriageway – resurface and provide minimum 2m useable width
Point or junction location
Route
Potential alternative route
Connecting route


Route 3 – Watford Cycle Route 6
Propose 20mph speed limit
End of cycle route 6. Provide build outs to improve pedestrian visibility and slow speeds. Provide informal pedestrian crossings on all arms and remove guardrail
Remove bollards
Provide designated parking bays on road to deter footway/verge parking. Use hatched central reservation for additional space
Improve footway on both sides of carriageway – minimum 2m useable width
Greenfields Primary School
Convert to raised priority junction with crossings on all arms to improve school access
Point or junction location
Route
Potential alternative route
Connecting route


Route 4
Improve footway on both sides of carriageway – minimum 2m useable width. Retain verge and take space from carriageway where possible
Provide informal pedestrian crossing on Carpenders Avenue
Play Space
Greenfield Ave
Penrose Ave
Provide designated parking bays on road – acts as traffic calming and reduces footway/verge parking
Proposed 20mph speed limit
Continuous footway over all side roads
Route 2
Public realm improvement on Delta Gain – provide crossing point to pedestrian footpath and improve access to local centre. Remove guardrail.
View from footway after exiting station subway
Carew Way
Route 5
Route 1
Route 3
Public realm improvements on Gibbs Couch. Consider pedestrianisation/restricting traffic movements. Provide a 4m wide continuous pedestrian route if not pedestrianised
Point or junction location
Route
Potential alternative route
Connecting route


Route 5 – Watford Cycle Route 6
Other Sports Facility
Watford cycle route 6 to improve walking in conjunction – short term improvements to retain shared use. Walking improvements as shown should be made in the short term
Other Sports Facility
By The Wood
Play Space
Improve informal crossing and route legibility – raise crossing, widen central island, remove guardrail and deterrent paving. Deter footway parking on western edge of carriageway to improve visibility
Existing separated shared use on western side – resurface and maintain vegetation to retain width as part of cycle route 6
Route 2
Hayling Rd
Ralston Way
Penrose Ave
Colnbrook School
Provide additional designated parking bays on road to reduce footway/verge parking. Use hatched central reservation for additional space
Warren Dell Primary School
Religious Grounds
Route 3
Fairfield Ave
Carpenders Park
Point or junction location
Route
Potential alternative route
Connecting route



5.6 Route Score Improvement

Table 6.5 provides the revised WRAT scores assuming the measures identified are implemented along the key walking routes.

Table 5.2 Key walking routes - WRAT results summary (with interventions)

Route No.	Name		Attractiveness %	Comfort %	Directness %	Safety %	Coherence %	Overall score %
1	Carpenders Park Station to Hayling Rd	Existing	74	32	81	89	0	61
		Potential	95	43	92	97	100	79
2	Carpenders Park Station to Watford Heath	Existing	50	55	71	33	50	54
		Potential	83	91	86	67	100	83
3	Prestwick Rd (South) Carpenders Park Station to Greenfields School	Existing	44	50	81	67	0	56
		Potential	88	91	81	83	100	87
4	Carpenders Park Station to Oxhey Lane	Existing	67	60	75	83	50	68
		Potential	92	85	100	83	100	90
5	Prestwick Rd (North) Carpenders Park Station to Hampermill Lane	Existing	45	54	70	78	50	60
		Potential	82	86	90	83	100	86

5.7 Consultation - Walking Route Feedback

Relatively few comments on the walking routes were received from early stakeholders, but the importance of considering disabled users, including people with dementia, was raised. Changes intended to improve conditions for cyclists should not disadvantage people with disabilities.

In the public consultation, no comments were received on the walking routes across any of the platforms.

6 LCWIP Stage 5 - Prioritising Improvements

Stage 5 of the LCWIP guidance outlines the approach to prioritising improvements and/or routes. The purpose of prioritisation is to understand the relative importance of each route and how this will lead to the network being developed over time. This process is not intended to delete or discount any routes or improvements, merely to assign it a programme entry against the short, medium, and long-term timescales within the LCWIP.

The LCWIP guidance around prioritisation is limited as it allows authorities to be flexible with the prioritisation process as it should look to meet the individual requirements of each Local Authority. However, the guidance does suggest that three broad factors are used to help understand priorities and these are:

- Effectiveness – the impact on increasing levels of cycling and walking
- Policy – how the scheme meets/addresses key local policy objectives
- Deliverability – how deliverable the scheme is, public acceptability, risk, and constraints

It is suggested that whole routes should be prioritised rather than individual interventions or improvements as that ensures that the whole route is delivered rather than incremental improvements across multiple routes over time. Primarily routes should first be prioritised by their ability to increase levels of walking and cycling, however other key factors are also important such as alignment to other schemes/funding streams and deliverability. The approach to prioritisation in this case has been modified as described in section 4.4, with the Effectiveness and Policy aspects considered in the pre-prioritisation stage.

6.1 Methodology

The pre-prioritisation processes utilised mostly quantitative and available data to prioritise the routes, however the criteria around deliverability are in general more qualitative and are based on the best information/knowledge available at the time. But as noted previously this process is merely to provide an order to delivery rather than removal of any routes. The criteria agreed with the client team are outlined in Table 7.1 and have been used to inform the prioritisation of the walking and cycling routes.

Table 6.1 Deliverability Criteria

Criteria	How measured/assessed
Technical feasibility	Assessment of feasibility based on following key factors: • Can it be implemented within the highway boundary? • Does it require additional approvals/negotiations (i.e., other landowners) • Are there any environmental and/or heritage considerations
Scheme support	How likely is the scheme to be supported by the public and Political Members
Alignment with funding streams and/or other schemes	Assessed against: • Potential alignment/integration with another scheme/development • Potential for funding/funding stream identified (S278/CIL/EATF/LTP/FHSF etc)

6.2 Assessment

Routes have been prioritised based on these criteria, with the technical assessment based on the high-level interventions proposed in this report and the scheme support and alignment with funding criteria assessed by local authority officers.

The overall ranking of the cycling and walking routes for Three Rivers are shown in Table 7.4 and Table 7.5. These prioritisation rankings take into account all aspects of the prioritisation, including the Effectiveness and Policy aspects considered in the pre-prioritisation.

Prioritisation for the remainder of the cycle routes within the network remains as indicated following the initial pre-prioritisation process, as at this stage, no further assessment has been undertaken on these routes. Once these routes are developed further, they can be prioritised in a similar manner to the top 5 routes as shown below.

Table 7.4: Three Rivers Cycle Route Prioritisation

Prioritisation Status	Route Number	Route	Rank
Priority Route	2	Rickmansworth - Watford	1
Priority Route	3	Rickmansworth - West	2
Priority Route	21	Maple Cross South	3
Priority Route	14	Shepherds Lane	4
Priority Route	8	Rickmansworth - Chorleywood	5
Non-Priority Route	4	A404 Rickmansworth	
Non-Priority Route	5	South Way	
Non-Priority Route	6	Rickmansworth - Bushey	
Non-Priority Route	7	Chorleywood connection	
Non-Priority Route	9	Carpenders Park link	
Non-Priority Route	10	Abbots Langley (Horseshoe Lane)	
Non-Priority Route	11	Toms Lane	
Non-Priority Route	12	Bedmond Road	
Non-Priority Route	13	A4125 South Oxhey	
Non-Priority Route	15	M25 Verge	
Non-Priority Route	16	Tolpits Lane connection	
Non-Priority Route	17	Oxhey Drive	
Non-Priority Route	18	Baldwins Lane	
Non-Priority Route	19	Harefield Road	
Non-Priority Route	20	Rouseburn Lane	
Non-Priority Route	22	Moor Park Lane	

Table 7.5: Three Rivers Walking Route Prioritisation

Prioritisation Status	Route Number	Route	Rank
Priority Route	1	Carpenders Park Station to Hayling Rd	1
Priority Route	2	Carpenders Park Station to Watford Heath	2
Priority Route	3	Prestwick Rd (South) Carpenders Park Station to Greenfields School	3
Priority Route	4	Carpenders Park Station to Oxhey Lane	4
Priority Route	5	Prestwick Rd (North) Carpenders Park Station to Hampermill Lane	5

7 LCWIP Stage 6 - Integration and Application

Stage 6 of the LCWIP involves the integration of the findings into the wider policy context of the local authorities and embedding the network plans into future schemes and projects.

7.1 Timescales and Review

The LCWIP sets out the ambition for the strategic walking and cycling networks in Three Rivers district over the course of the next 10 years. The prioritisation exercise has shown that some elements will likely be brought forward ahead of others, allowing the local authorities to integrate the improvements with other planned works most effectively, and deliver on the council's priorities.

While this version of the LCWIP reflects the current position and ambition for the networks, the document does not stand still. As local and national circumstances change the local requirements for infrastructure will also need to be updated. The LCWIP guidance suggests as a guide that the document is refreshed every four to five years, or if there is a significant shift in local circumstances or funding.

7.2 Funding

The LCWIP will position the local authorities effectively to take advantage of future funding opportunities – indications from central government in 2021 have indicated that, while not a requirement, an adopted LCWIP will be increasingly important for local authorities bidding for active travel funds in the future.

The network plans and supporting documents show a clear commitment to improvements on the routes and will also support the direction of funding from other sources, providing a resource for developers to understand routes that may be funded or improved to facilitate future development.

7.3 Policy Integration and Application

The integration of the LCWIP into local policy is crucial for the success of the network. The LCWIP will support other local policy positions, particularly the Hertfordshire Local Transport Plan. As well as supporting transport policies, the plan will also support leisure plans such as the Public Rights of Way Improvement Plan, and health and wellbeing policies.

The LCWIP guidance suggests that the LCWIP could be incorporated into a Supplementary Planning Document (SPD) to provide more guidance to adopted policies in the Local Plan, strengthening its status with developers.

Informing key Council personnel of the LCWIP and its aims will help identify opportunities for elements of the plan to be brought forward in tandem with other schemes led by different parts of the council, potentially accelerating delivery.

Appendix A – Key destinations

1 Out of town retail

Waterfields Retail Park
Watford Arches Retail Park
Colne Bridge Retail Park
Century Park
London Road Retail Park
Apsley Mills Retail Park
Abbey View Retail Park
Dunelm & Wickes, London Road (London Road) B&Q,
Two Waters Road (Corner Hill)
London Road / Two Waters Way (Two Waters West)
Jarman Fields
Dome Roundabout; Sainsburys and Asda
Tesco Store

2 Leisure

Jarman Fields
Woodside
Bushey Mill Lane - Top Golf
Warner Bros. Studio Tour
Cassiobury Park
Rickmansworth Aquadrome
Aldenham Country Park
Leavesdon Country Park
Grove Park
Moor Park

3 Rail stations

Chorleywood London Underground Station, Chorleywood Station Croxley
London Underground Station
Watford High Street Station
Watford Junction Station
Watford North Station
Watford London Underground Station
Carpenders Park Station
Moor Park London Underground Station
Radlett Station
Garston Station
Rickmansworth London Underground Station,
Rickmansworth Station
Bushey Station

Park Street Station
Hemel Hempstead Station
Apsley Station
King's Langley Station
Bricket Wood Station
How Wood Station
St Albans Abbey Station

4 Secondary schools

Adeyfield
Parmiter's
Cavendish (The)
Hemel Hempstead (The)
Bushey Academy (The)
Watford Grammar School for Girls Westfield
Community Technology College St
Michael's Catholic High
Garston Manor
Marlborough School Science College St
Joan of Arc Catholic
Kings Langley
Rickmansworth Bushey
Meads
Francis Combe Academy St
Clement Danes Queens'
Longdean
Astley Cooper (The)
Watford Grammar School for Boys Falconer
Watford UTC
Reach Free School (The)
Westfield Academy Harperbury
Free School Croxley Danes
Reach Free School (The)
Adeyfield
Laureate Academy
Croxley Danes

5 Key employment

Maylands Business Park, Hemel Hempstead
Whiteleaf Road, Hemel Hempstead
Bourne End Mills, Bourne End Park Lane, Hemel Hempstead
Doolittle Meadows, Hemel Hempstead The Waterfront, Elstree
Centennial Park, Elstree

The Rivers Office Park, Maple Cross Home Park Estate, Kings Langley Kingley Park, Kings Langley Ovaltine, Kings Langley
Kings Park, Kings Langley
Abbots Business Park, Kings Langley Levesden Park, Watford
Clarendon Road / Station Road / Bridle Path, Watford Greycaine Road / Odhams / Sandown Road, Watford
Imperial Way / Colonial Way, Watford
Watford Business Park, Watford
Wiggenhall Road / Fishers / Trade City, Watford Moor Park Industrial Centre, Watford
Clancy Docwra Thames Water

6 Neighbourhood centres

Garston Park Parade Goodwood Parade Longspring
Station Area - Langley Rd/St Albans Rd Buckingham Road
Bushey Arches Vicarage Road Whippendell Road East Adeyfield
Apsley Bennetts End Boxmoor Bovingdon Maylands Chaulden Gadebridge Grovehill
Highfield (Bellgate) Highfield (The Heights) Kings Langley Leverstock Green Nash Mills
Warners End
Harcourt Road (Bushey) Bushey Hall Road (Bushey) Elstree Village Centre Aldenham Road
Bournehall Avenue Bushey Mill Lane Park Avenue Battlers Green Drive Verulamium Estate

7 Main centres

Watford Watford North Abbots Langley Chorleywood Rickmansworth South Oxhey
Hemel Hempstead
Hemel Hempstead Old Town Radlett
Bushey Bushey Heath

8 Local centres

Croxley Green (Watford Road) Croxley Green (New Road) Mill End (Money Hill Parade)
2-8 Chalfont Road, Maple Cross 57-63 High Street, Bedmond
61-65 Station Road, Kings Langley
15 Bridge Road and 5 Old Mill Road, Hunton Bridge 17-22 School Mead, Abbots Langley
5-7a and Sherwood News, College Road, Abbots Langley 1-14 Katherine Place, Abbots Langley
Sarratt Post Office, The Green, Sarratt
41-55 and 295-309 Baldwins Lane, Croxley Green 193-197 Watford Road, Croxley Green
4-12 Scots Hill, 1-3 The Green and 1-4 New Parade, Croxley Green 1-11 Tudor Parade, Mill End / Berry Lane, Mill End
68-82 Church Lane, Mill End 2-28 Main Avenue, Moor Park
10-24 Hallowes Crescent, South Oxhey 305-317 Prestwick Road, South Oxhey
1-18 The Parade, Delta Gain, Carpenters Park 18-48 Little Oxhey Lane, South Oxhey
46-52 Heronsgate Road, Heronsgate 2-4 Station Approach, Chorleywood
Wyatts House and Shell Filling Station, Rickmansworth Road, Chorleywood The Brow
Euston Avenue Leavesden Road Langley Way Orbital Crescent The Gossamers Tolpits Lane Tudor Avenue
Villiers Road Horseshoe Lane

Whippendell Road / Ascot Road St Johns Road

St James Road Harwoods / Hagden Lane Haines Way

Watford Fields North Approach Eastbury Road Woodhall Farm

34-41a Abbey Avenue, St Albans 23-39a Vesta Avenue, St Albans

28-38 Abbots Avenue West, St Albans 81-97 Old Watford Road, Bricket Wood

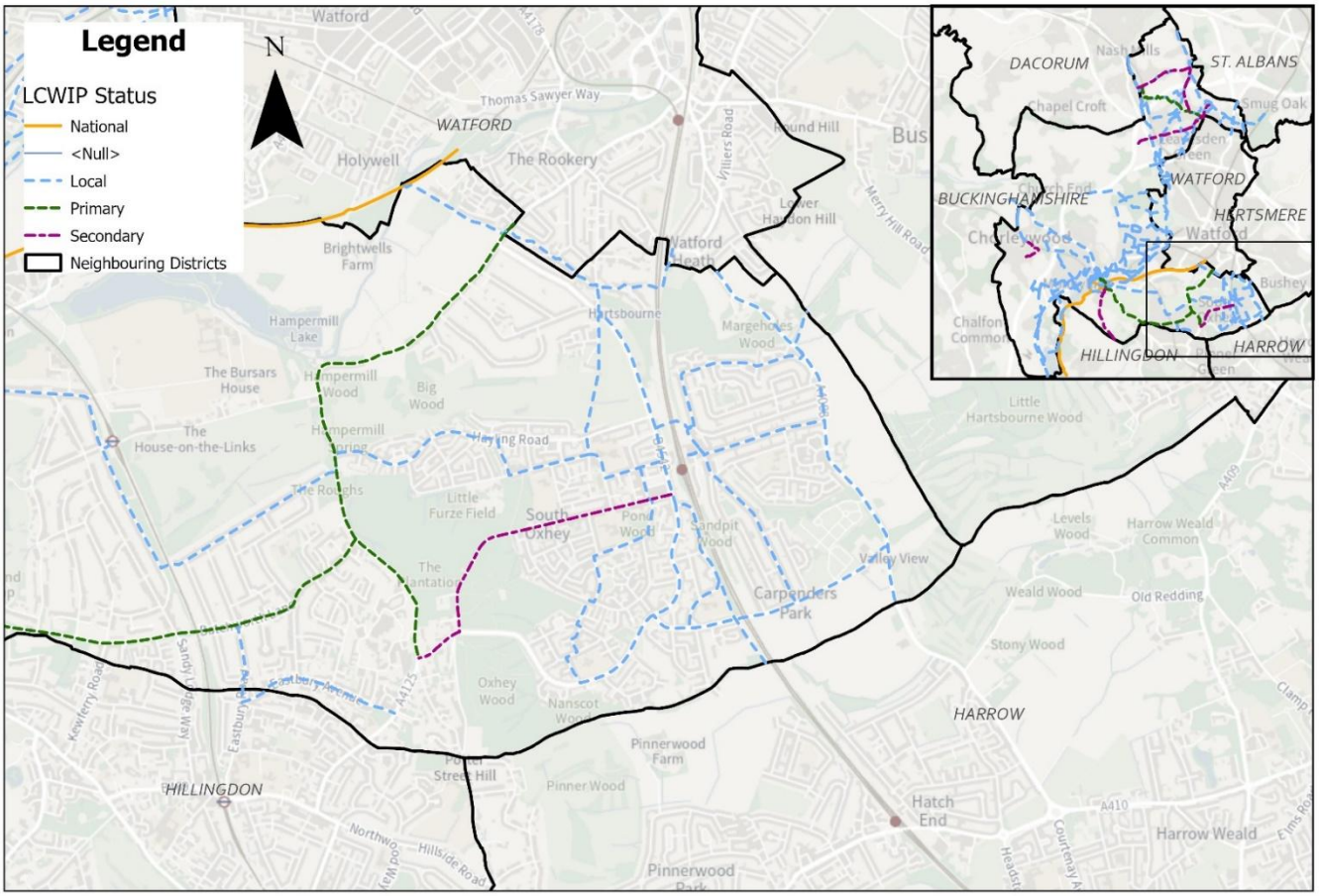
95-127 Oakwood Road, Bricket Wood

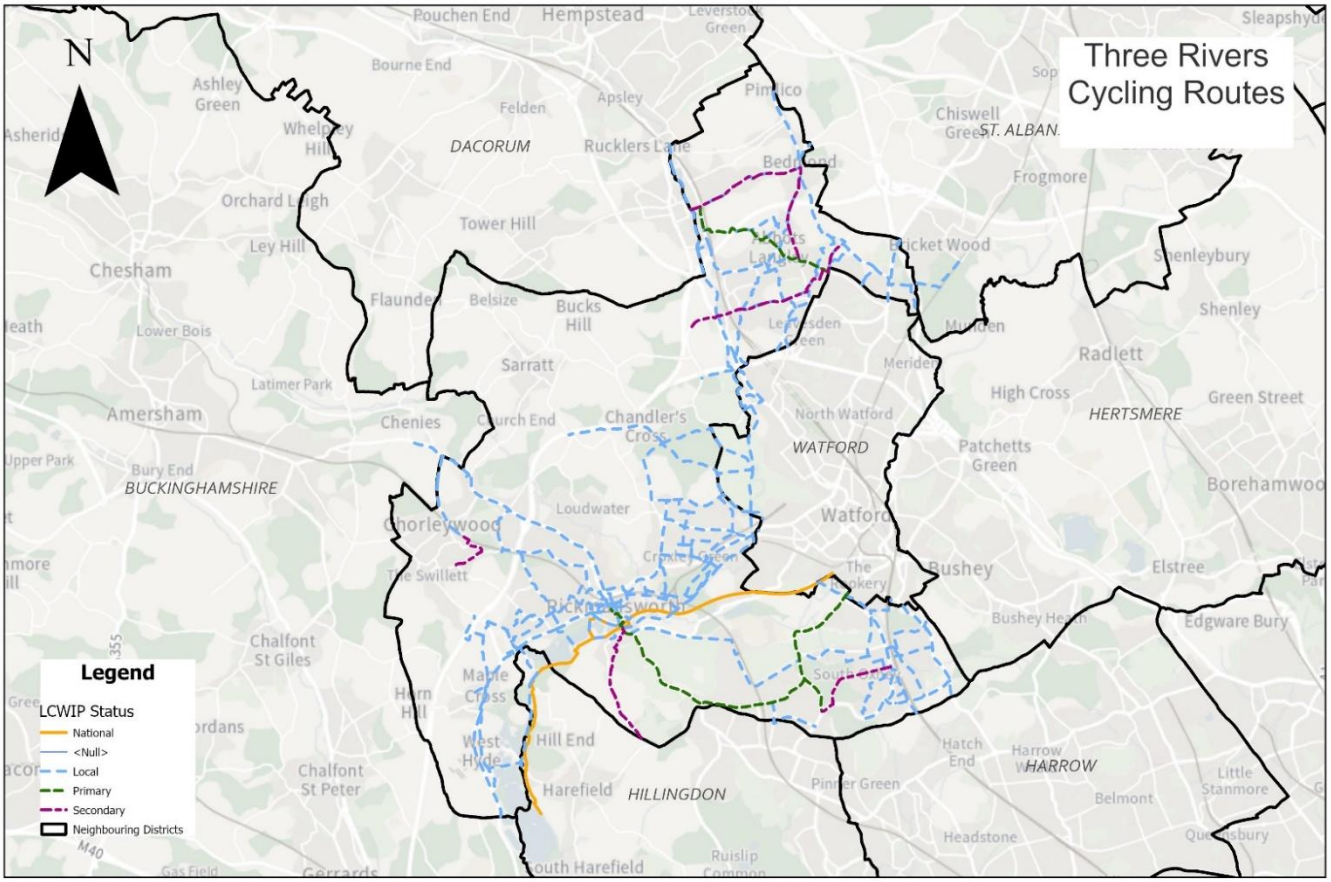
19-27 Blackboy Wood, Bricket Wood

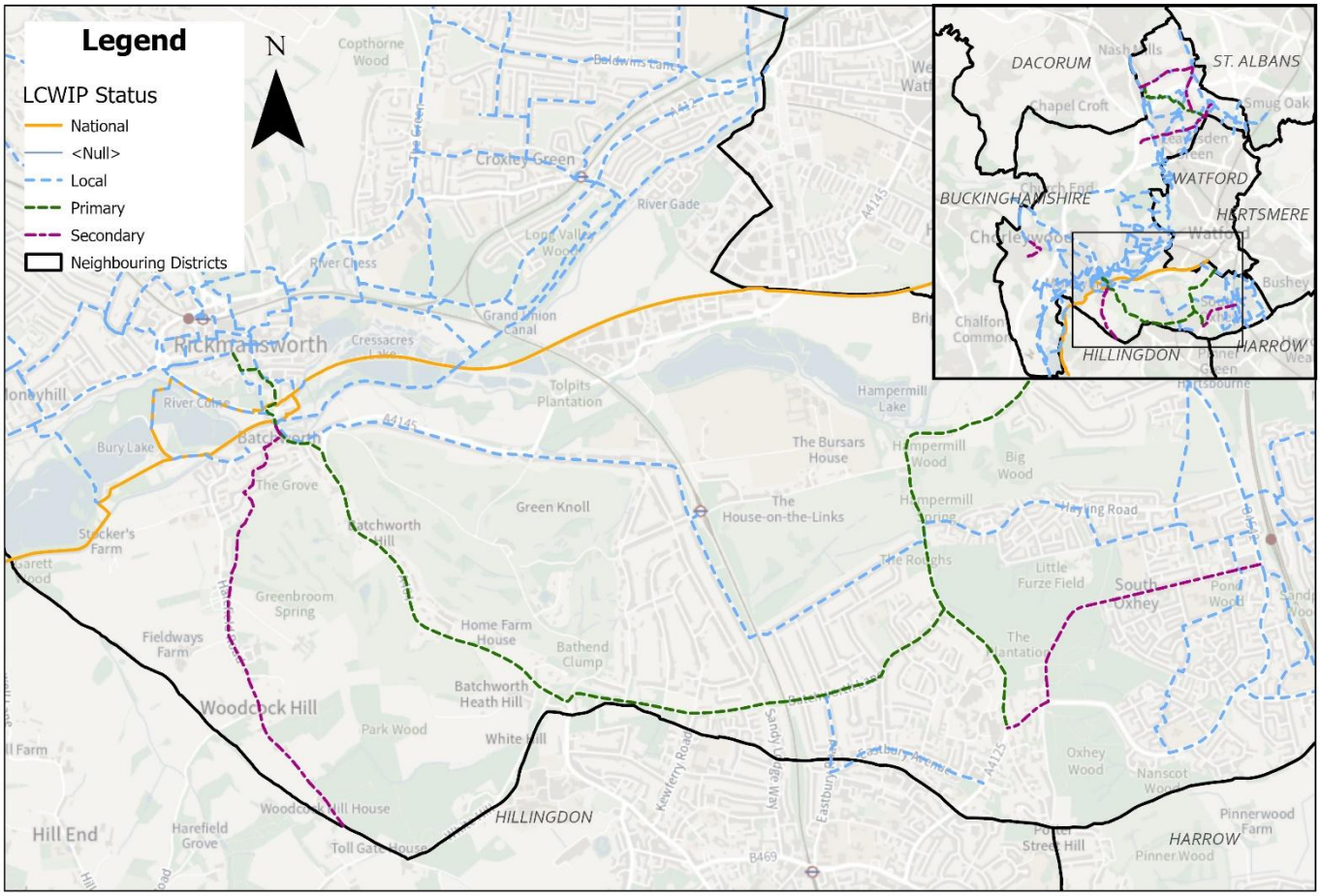
2a Tippendell Lane; 301-305, 337 & 192-204 Watford Road, Chiswell Green 2-30 How Wood

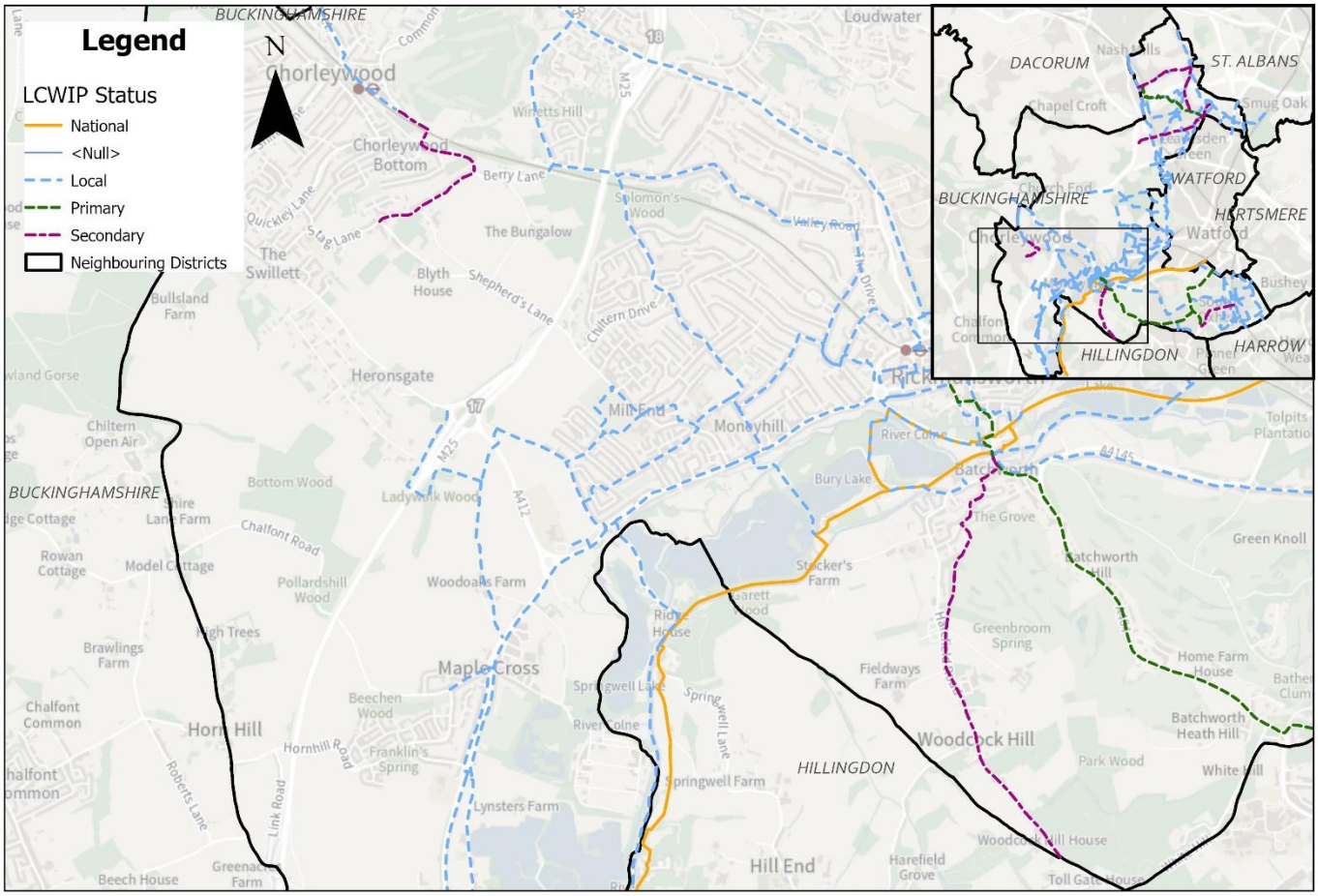
69-71, 68-76 & land south of 84 Park Street; 1-2 Park Street Lane, Park Street

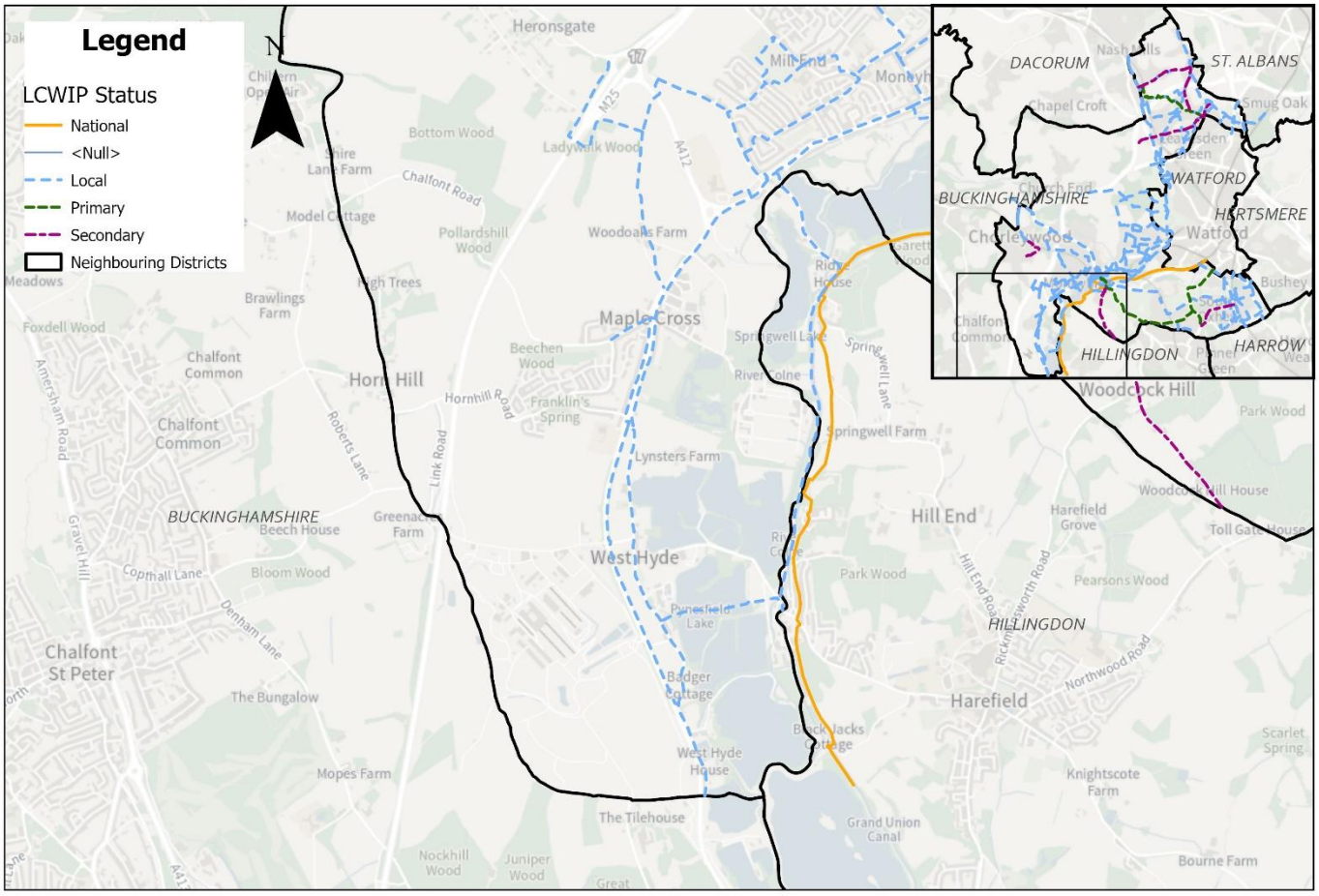
APPENDIX B – Detailed District Cycle Route Map

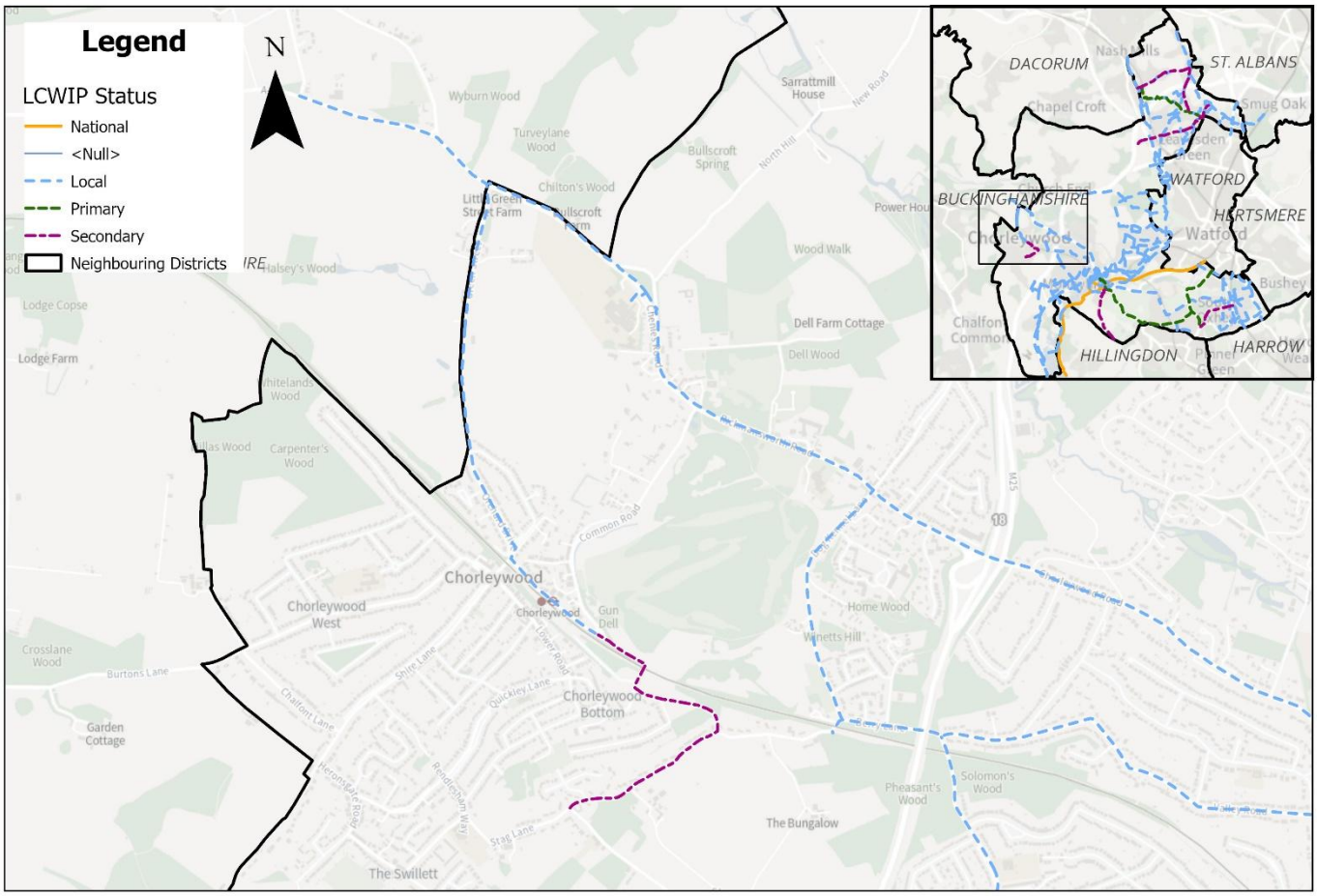


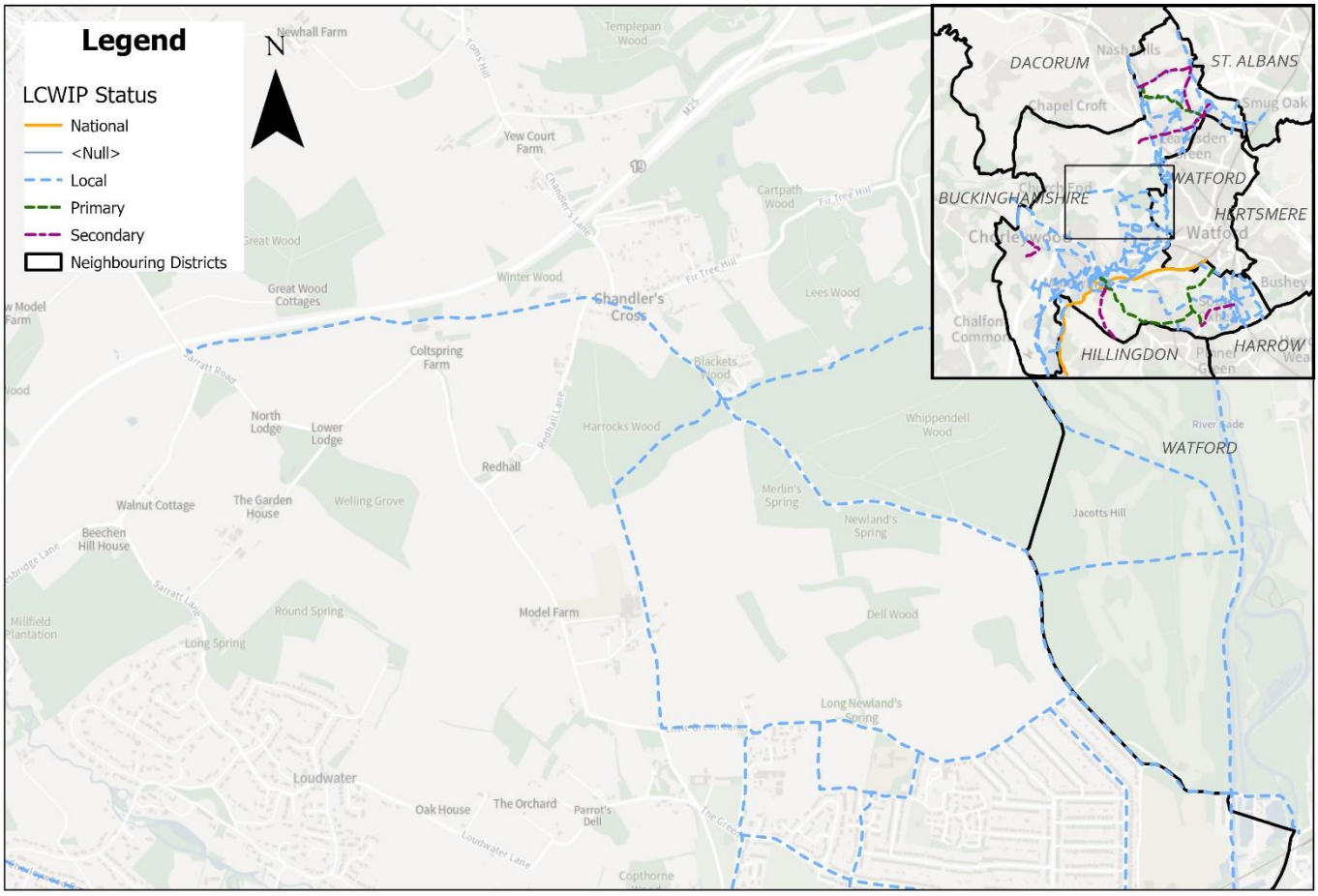


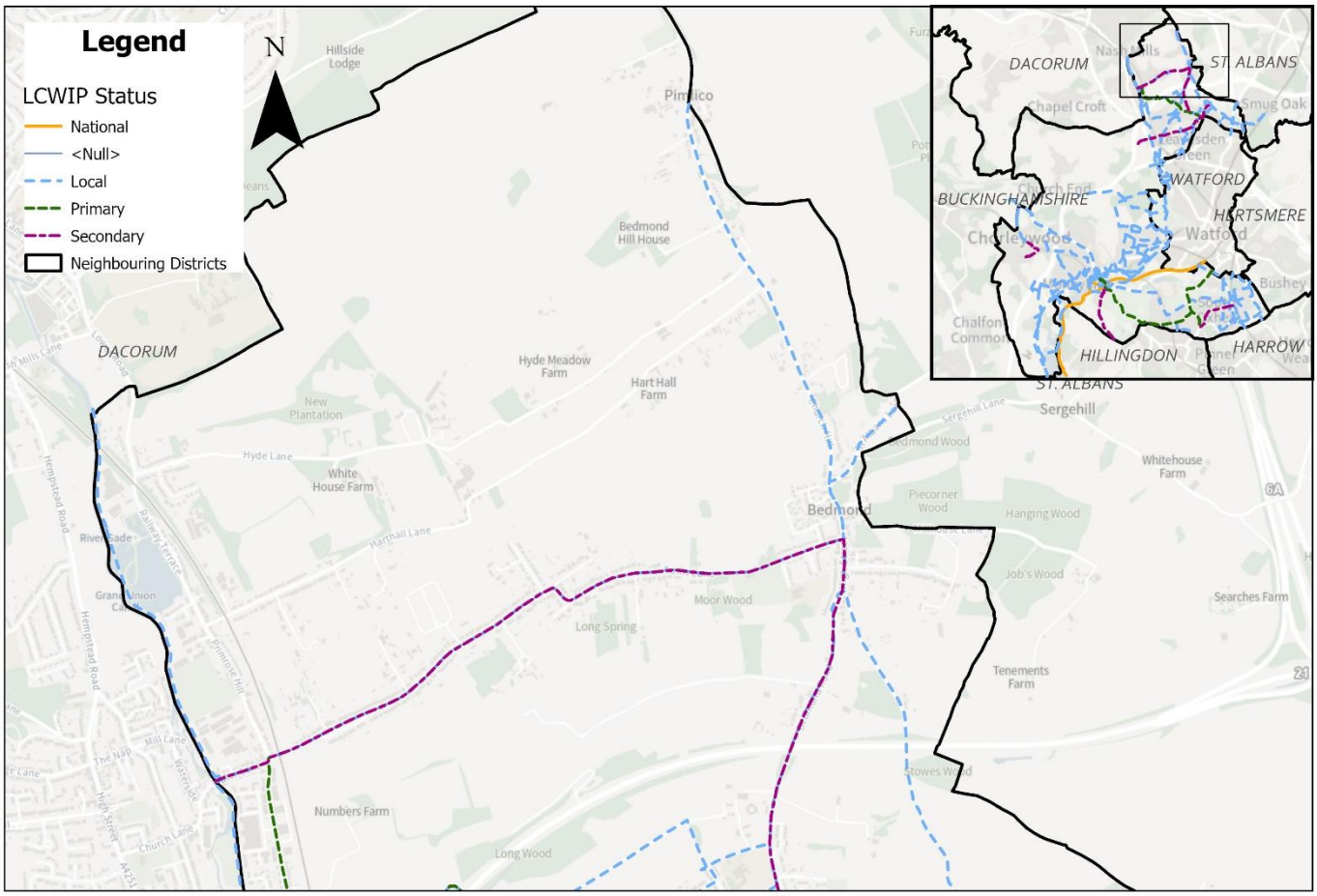


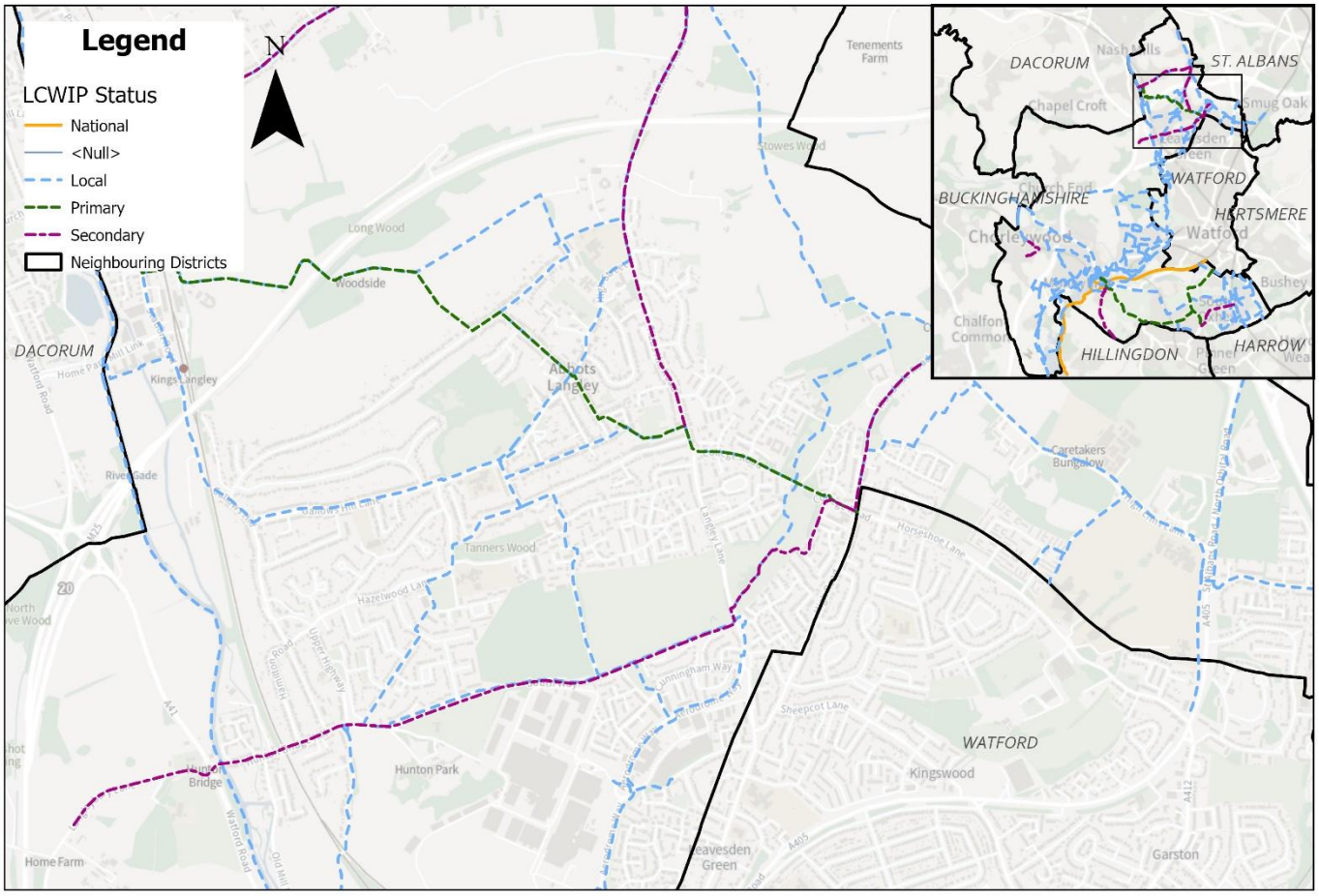


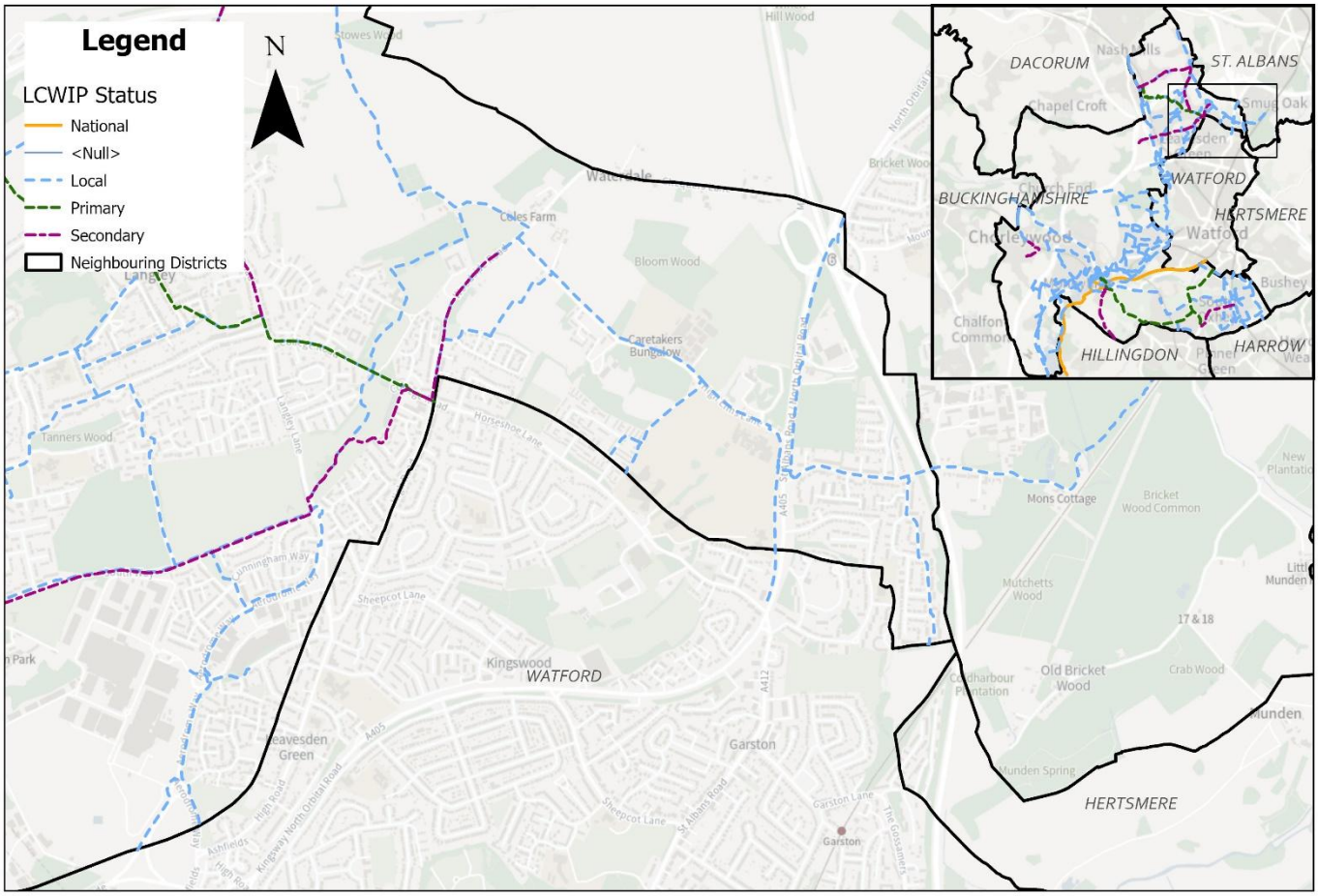


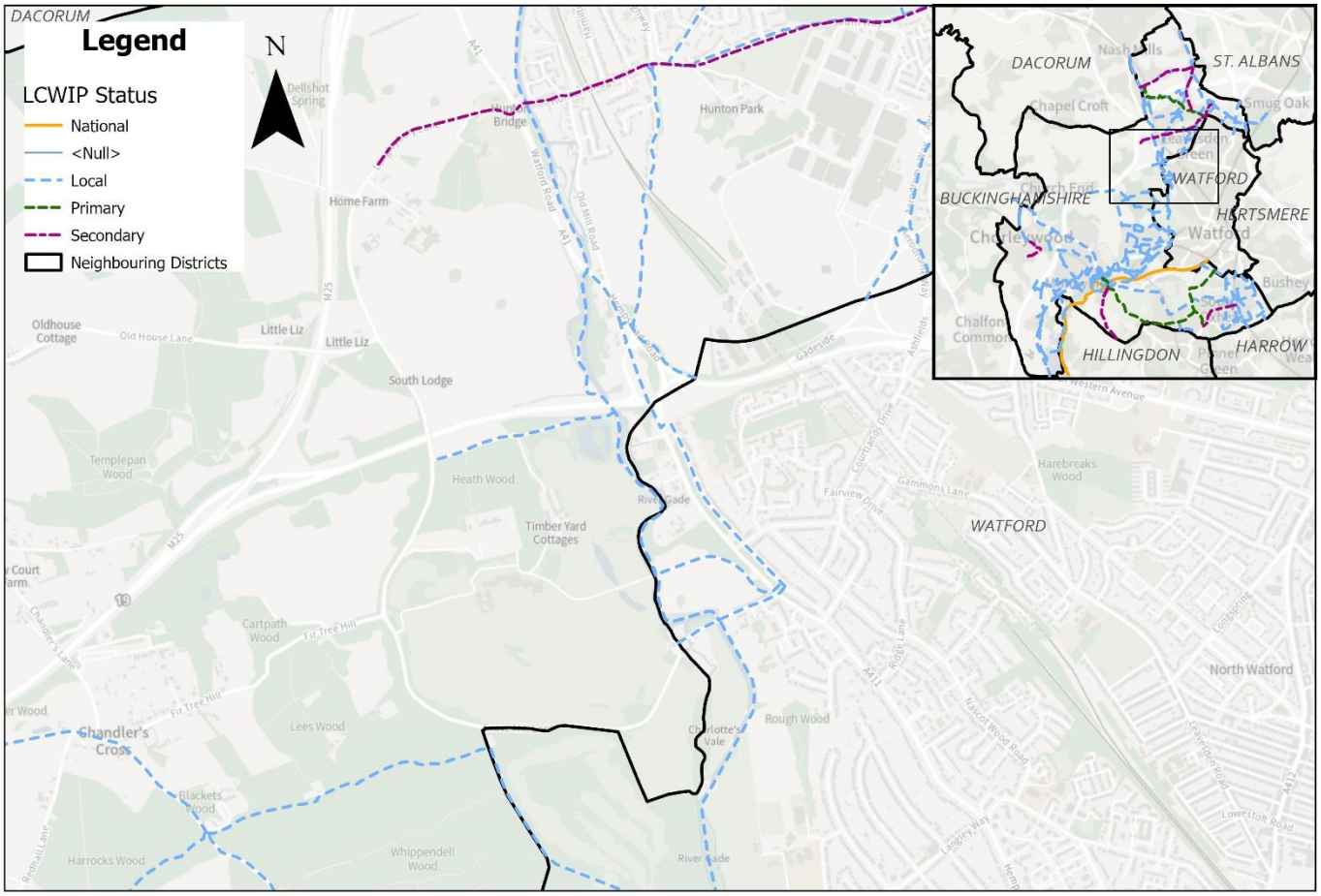












Appendix C – Glossary of Potential Route Interventions

1**. Minor Junction Improvements:**

- At side roads: where a need for minor junction improvements has been identified at side roads, this typically denotes a need to build out the footways (to tighten junction geometry, reduce turning speeds and shorten crossing distances) and add dropped kerbs and/or tactile paving where missing. In some cases, it might be good to consider additional measures, such as banned turns, raised tables, continuous footway or cycleway crossings or modal filters.
- At mini roundabouts: where a need for minor junction improvements has been identified at junctions which are currently mini roundabouts, this denotes a review against LTN 1/20 guidance and potentially tightening of the junction geometry and/or improving the crossing facilities. In some cases, especially where there are double mini roundabouts it may be better to simply replace them with unsignalised priority T-junctions.





2. Medium junction improvement: at mid-size junctions, improvements typically denote a need for pedestrian crossings and protected cycle infrastructure on all arms. In some cases, this might mean signalising the junction.


30
Ware Rd

3. Large junction improvement: at large junctions where a need for junction improvements has been identified, this typically denotes a need for pedestrian crossings and protected cycle infrastructure on all arms. At particularly large junctions this might mean a Dutch-style roundabout (with parallel crossings on each arm) or a signalised ‘CYCLOPS’ style junction (as have been installed in Manchester in recent years). Some large junctions which are roundabouts may need converting to signalised crossroads or other forms of signalised junction to be able to provide the required improvements to pedestrians and cyclists.

Proposed Dutch style cycle and pedestrian friendly roundabout for Boundary Way Hemel Hempstead

4. New / improved pedestrian crossing: where these are included in the plans, this denotes providing new priority (controlled) crossings for pedestrians to reduce severance or improving existing crossings. In some cases, this might mean installing new zebra or signalised pedestrian crossings. In other cases, this may refer to improving an existing crossing, for example by increasing the green time available at signalised crossings or replacing informal traffic island crossings with zebra crossings. This has the added benefit of reducing pinch points on the carriageway for cyclists.

5. New / improved pedestrian + cyclist crossing: where these are included in the plans, this denotes providing new priority (controlled) crossings for pedestrian and cyclists. In some cases, this might mean installing a new parallel crossing, or a new signalised pedestrian and cycle crossing (ideally not toucan crossings as these rely on shared use which is discouraged in LTN 1/20). In other cases, it might mean improving an existing crossing, for example by upgrading a zebra crossing to a parallel crossing which cyclists can also use.

6. **Traffic Management Measures**: traffic calming denotes adding cycle-friendly traffic calming features to streets and/or reducing speed limits to safe levels for cyclists following LTN 1/20 guidance. Where traffic calming features are considered, these should be cycle friendly (e.g., narrowing traffic lanes and carriageways, removing centre lines, or raising tables). Additional measures could include parking restrictions, resurfacing and gulley cover replacement. Some traffic-calmed streets may also be suitable for contraflow cycling (either with or without cycle lanes/tracks) – this has been indicated on the plans where it may be especially useful for the cycle network. Areas in which traffic filtering is suggested are areas in which there's a need for reduced traffic volumes and/or speeds. Methods of implementing this include traffic filtering using modal filters, banned turns, or one-way systems.


One vehicle only may proceed
If no light shows check bollards are lowered
BETFRED
STOP

7. Footway improvements: this could refer to a number of different types of footway improvement. It could denote ensuring footways have 1.5m clear width to allow wheelchairs and buggies to pass, widening and/or relocation of permanent/temporary footway obstructions as necessary (including footway parking). It could also denote resurfacing to fix surface issues (patching, trenching, uneven surfaces, trip hazards), lighting improvements, and/or the removal of excess bollards, guard railing and vegetation.

8. Segregated cycleway: this denotes the addition of LTN 1/20 compliant segregated cycle facilities such as kerb-segregated tracks, stepped cycle tracks, footway level tracks, off-road cycle tracks or lightly segregated cycle lanes (whichever is judged most suitable in feasibility design). It also includes the necessary traffic calming and speed limit changes need to make the route LTN 1/20 compliant, as well as bus stop redesign (i.e., to bus stop bypass or shared use bus border) resurfacing, wayfinding, and gulley cover replacement as necessary.

9. Shared use: A shared use path is a path that is designed for both pedestrians and cyclists to use, and can be created from new or existing footpaths. Shared use paths can be segregated or unsegregated.

10. Mixed traffic: Where cyclists are on-carriageway, mixed with other roads users. It should be noted that this is only appropriate where speeds and vehicle numbers are low and other existing or proposed traffic management, and calming measures are in place.

APPENDIX D – Policy Context

1 Local Cycling and Walking Infrastructure Plans: Technical Guidance for Local Authorities

- **Publisher**: Department for Transport (DfT)
- **Date Published**: 2017
- **Policy Level**: National
- **Additional details**: provides the framework for undertaking strategic walking and cycling network developments, including the six-stage process this LCWIP follows, and the type and nature of data collected and used as part of the process.

2 Cycling and Walking Investment Strategy (CWIS)

- **Publisher**: Department for Transport (DfT)
- **Date Published**: 2017
- **Policy Level**: National
- **Additional details**: outlines ambitious targets up to 2025 including a doubling of cycling trip stages each year whilst also reversing the year-on-year decline in walking trip stages. The benefits of doing this are stated as potentially leading to cheaper travel and better health, increased productivity for business and increased footfall in shops. Along with lowering congestion, better air quality, and vibrant, attractive places and communities.

3 Local Transport Plan 4 (LTP4)

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2018-2031
- **Policy Level**: County
- **Additional details**: The key policy document guiding transport strategy in Three Rivers is Hertfordshire's Local Transport Plan 4 (LTP4) for 2018 to 2031. This sets out how transport can play a positive role in the future development of Hertfordshire, through improving economic growth, public health, meeting housing needs and having a sustainable impact on the environment.

The key challenges and opportunities identified on the LTP are:

- there is predicted to be a 21% increase in population by 2039 (Some 250,000 extra people) which will likely increase the demand for transport and travel over time.
- improving transport can support economic growth, support regeneration, and improve the health and wellbeing of the population and environment.
- transport has an important role in tackling health issues such as obesity and air pollution, and in improving overall quality of life.
- the solutions to these issues must be delivered against a backdrop of public spending pressures.

The LTP sets out objectives across three themes of People, Place and Prosperity. The LTP objectives which the LCWIP can most effectively support are:

- Enhance connectivity between urban centres in Hertfordshire.

- Improve accessibility between employers and their labour markets.
- Enhance the quality and vitality of town centres.
- Reduce carbon emissions.
- Make journeys and their impact safer and healthier; and
- Modal shift and encouraging active travel.

The key supporting strategies are:

- Active Travel Strategy
- Sustainable Modes of Travel Strategy 24/25

The flagship transport improvements are:

- Sustainable Travel Towns
- East-West Mass Rapid Transit System (HERT) connecting towns along the A414 corridor with links to Watford via the Abbey Line.

The strategic transport Improvements for Watford and Three Rivers are:

- Use of the former Croxley Rail Link as a public transport corridor.
- Cycling infrastructure improvements for Rickmansworth and Watford.

In terms of transport context and issues for Hertfordshire, the following were identified:

- Strong north-south transport network but weaker east-west links, especially for passenger transport.
- High level of cross-boundary commuting, including 118,000 Hertfordshire residents working in London.
- Complex movement patterns due to numerous medium-sised urban areas.
- Significant road congestion and capacity constraints on the rail network.
- Potential to improve the attractiveness of walking, cycling, and bus use, encouraging more car users to switch modes.
- Forecasted 18% increase in peak hour car trips by 2031, impacting the environment and quality of life, and increasing pressure on highway capacity.
- Future rail lines are expected to be over capacity.

As for the approach to tackling the identified issues, the following were identified:

- Support for walking, cycling, and passenger transport.
- Behaviour change initiatives and traffic demand management.
- Infrastructure provision to cater for increased motor traffic.

As for the transport user hierarchy, the following were identified:

- Prioritises pedestrians and cyclists, followed by passenger transport users, powered two-wheeler users, and other motor vehicle users.
- Emphasises reducing travel demand, addressing vulnerable road user needs, and supporting sustainable transport modes.

As for the active travel context and issues, the following were identified:

- High walking mode share for trips less than 1 mile (76.5%), but significant potential to increase cycling activity given the low current mode share.
- Barriers to walking and cycling include safety, infrastructure, social attitudes, weather, journey purpose, topography, health, and lack of knowledge or training.
- Variable provision of cycling infrastructure, with many areas having patchy and broken linkages.
- Opportunities to improve cycling infrastructure as endorsed by the Government's Cycling and Walking Investment Strategy (CWIS).

The LCWIP supports these policies by developing key routes and improving safety for all active travel users.

4 South West Hertfordshire Growth and Transport Plan (SWGTP)

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2019
- **Policy Level**: County
- **Additional details**: Hertfordshire is experiencing significant levels of housing and employment growth, impacting the transport system in the short, medium, and long term. The Growth and Transport Plan (GTP) has been developed as a sub-county transport planning approach with South West Hertfordshire being the sub-area. The purpose of the document is to promote a shift away from private vehicles towards more sustainable modes of transport and improved modal choice. The South West Hertfordshire GTP supersedes the South West Hertfordshire Transport Plan.

Seven objectives have been developed for the South West Hertfordshire GTP:

- Support sustainable economic growth in South West Hertfordshire through improving sustainable modes of travel.
- Ensure new infrastructure is resilient to future change.
- Provide greater attractiveness and choice of alternatives to the private car with better network resilience.
- Improve health and quality of life through reduced noise and pollution.
- Encourage walking and cycling networks to improve the environment and create vibrant communities.
- Improve the safety and perception of safety for walking and cycling.
- Reduce transport emissions through embracing new technologies and encouraging sustainable travel modes.

The Local Cycling and Walking Infrastructure Plan (LCWIP) process can help deliver on all seven objectives through the planning and development of improved, safe cycling and walking networks that will promote mode shift and sustainable travel.

The GTP includes a number of active travel proposals contained within 'packages' of interventions, with several of these falling within the Three Rivers LCWIP area:

- St Albans to Watford Corridor: Enhanced cycling facilities along the A405 linking St Albans and Leavesden.
- Western Gateway (Watford): Enhanced cycleways and facilities linking the Western Gateway area

to Watford Junction.

- Watford-Hemel Hempstead: Enhanced cycleways and facilities along the Grand Union Canal Towpath and the A411 from Hemel Hempstead to Watford town centre. Watford Junction and Town Centre public realm enhancements.
- Watford Central: Significant public realm enhancements and improvements to movement and permeability for sustainable modes on Watford Ring Road. Improved walking and cycling environment on routes to Watford Junction Station and a new foot, cycle, and bus link bridge at Colonial Way.
- Watford South: Cycling links in Oxhey, South Oxhey, Carpenders Park, and Bushey.
- Rickmansworth: Enhanced cycleways and facilities towards Rickmansworth railway station and town centre.

5 Sustainable Modes of Travel Strategy

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2024/25
- **Policy Level**: County
- **Additional details**: While this document does not explicitly target the Three Rivers district, it includes broader strategies and initiatives that impact neighbouring areas like Watford and St Albans. These strategies focus on promoting sustainable travel to schools, developing school travel plans, and improving road safety education. The document provides the council's vision to increase opportunities for children and young people to travel to, from, and between schools and colleges by sustainable modes in line with the Education and Inspections Act 2006, which places a requirement upon on local authorities to promote said travel methods.

6 Hertfordshire Place and Movement Planning and Design Guide

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2023
- **Policy Level**: County
- **Additional details**: a technical approach intended to recognise the needs of different road users in Hertfordshire and manage the interfaces between them. It intends to provide a way of looking at the appropriate function of any section of highway and a basis for deciding which activities should be prioritised. In doing so, it aims to provide a means to translate LTP4 policies into practice. The document also mentions the "Three Rivers' Preferred Local Plan Lower Housing Growth Option" which aims to protect more Green Belt land with key implications for the area.

7 A414 Corridor Strategy

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2019
- **Policy Level**: County
- **Additional details**: The A414 corridor is an east-west multi-modal corridor extending from Hemel Hempstead to the M11 through Hertfordshire, including the A405 link to Watford in the north of the LCWIP study area. The corridor experiences traffic congestion on sections of the road, and poor public transport,

walking, and cycling provision increases dependency on private vehicles. Planned growth of new homes and jobs will create additional travel demand on this section of the network. A £1.8bn package of interventions has been proposed, which includes enhancing walking and cycling links and improving the urban realm.

Eleven objectives have been developed for the Corridor Strategy. The ones which align with the LCWIP include:

- Support sustainable growth: Improving provision for journeys made by public transport and bicycle.
- Improve inter-urban connectivity: Ensuring consistency of travel options from different modes between links.
- Enable modal shift to active travel: Improving infrastructure and routes for active travel to be a more attractive alternative to the private car for shorter distance trips.

8 Maintenance for Active Travel Strategy

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2019
- **Policy Level**: County
- **Additional details**: outlines how routine or ad hoc highway maintenance programmes may contribute to the uptake of active travel, by ensuring that existing infrastructure is kept to the appropriate standards and new infrastructure suitably maintained to ensure a long, efficient lifecycle.

9 South West Hertfordshire Cycle Study

- **Publisher**: Hertfordshire County Council (HCC)
- **Date Published**: 2013
- **Policy Level**: County
- **Additional details**: the vision set out within the Southwest Hertfordshire Cycle Study 2013 is for: “a sustainable, innovative transport system that seeks to make travel within Southwest Herts area easier through the full utilisation of different transport modes and the better management of the existing network.” As for the benefits of increased cycling, increasing levels of cycling within southwest Hertfordshire are expected to:
    - Reduce levels of congestion, especially localised congestion related to shorter journeys.
    - Improve levels of health and tackle obesity, particularly within children.
    - Help to reduce levels of carbon emissions and improve quality of life.

The cycle study supports the wider HCC Active Travel Strategy and aligns with the Local Cycling and Walking Infrastructure Plan, which aims to enhance cycling and walking routes across Hertfordshire. The cycle audits have taken into account stakeholder aspirations, ensuring that the proposed cycle schemes align with the needs and goals of the local community.

10 District

- **Publisher**: Three Rivers District Council Local Plan
- **Date Published**: 2011
- **Policy Level**: District
- **Additional details**: the current Local Plan is in the process of being updated, with the council preparing a

new Local Plan which will provide the planning policies and proposals for future sustainable growth in the district up to 2041

Where available, the links to the policy documents mentioned in this Appendix are provided below:

- 1. Local Cycling and Walking Infrastructure Plans: Technical Guidance for Local Authorities
- 2. Cycling and Walking Investment Strategy (CWIS)
- 3. Local Transport Plan 4
- 4. South West Hertfordshire Growth and Transport Plan (SWGTP)
- 5. Sustainable Modes of Travel Strategy
- 6. Hertfordshire Place and Movement Planning and Design Guide
- 7. A414 Corridor Strategy
- 8. Maintenance for Active Travel Strategy: not available as currently under review
- 9. South West Hertfordshire Cycle Study: not available
- 10. Three Rivers District Council Local Plan