



Basildon Borough Council

BBC LOCAL CYCLING & WALKING INFRASTRUCTURE PLAN PLUS





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APPENDICES

APPENDIX A

CYCLING NETWORK MAP AND ASSOCIATED PROGRAMMES OF INFRASTRUCTURE IMPROVEMENTS

APPENDIX B

WALKING NETWORK MAP AND ASSOCIATED PROGRAMMES OF INFRASTRUCTURE IMPROVEMENTS

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1 INTRODUCTION

1.1 Background

- 1.1.1. This document presents Basildon Borough Council's first Local Walking and Cycling Infrastructure Plan Plus (LCWIP+), representing their shared ambition with Essex County Council and central government to make cycling and walking the natural choice for shorter journeys or as part of a longer journey.
- 1.1.2. The approach to the LCWIP+ recognises Basildon Borough Council's objectives to provide a high quality and ambitious integrated cycling, walking and public transport network, improve access across and between several town centres and encourage multi-modal travel. Basildon Borough Council (BBC) wishes to use this LCWIP+ as an opportunity to consider public transport objectives alongside active travel objectives in recognition of the importance of multi-modal trips and the potential of these to increase the case for investing in walking and cycling. The addition of public transport and multi-modal analysis to this LCWIP is what makes it an LCWIP 'plus'.
- 1.1.3. To achieve this, BBC recognises the need for a step change in the process of planning active travel networks, identifying and prioritising infrastructure improvements, and incorporating emerging best practice in design.
- 1.1.4. The key outputs of this LCWIP+ are:
- A cycling network map with a programme of cycle infrastructure improvements;
 - A walking network map with a programme of walking infrastructure improvements;
 - a prioritised list of cycling and walking proposals for future investment;
 - analysis showing the great potential for multi-modal trips in Basildon Borough; and
 - this report which sets out the process and underlying analysis carried out and draws together the LCWIP+ outputs.
- 1.1.5. The next section summarises the staged process that has been followed in preparing this LCWIP+.
- 1.1.6. There is a glossary of key terms and acronyms at the end of this document, in section 9.

1.2 The LCWIP Process

- 1.2.1. The Department for Transport (DfT) has produced guidance to develop a LCWIP. Table 1 sets out this LCWIP process and its six stages below:

Table 1 – 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

1.3 Report Structure

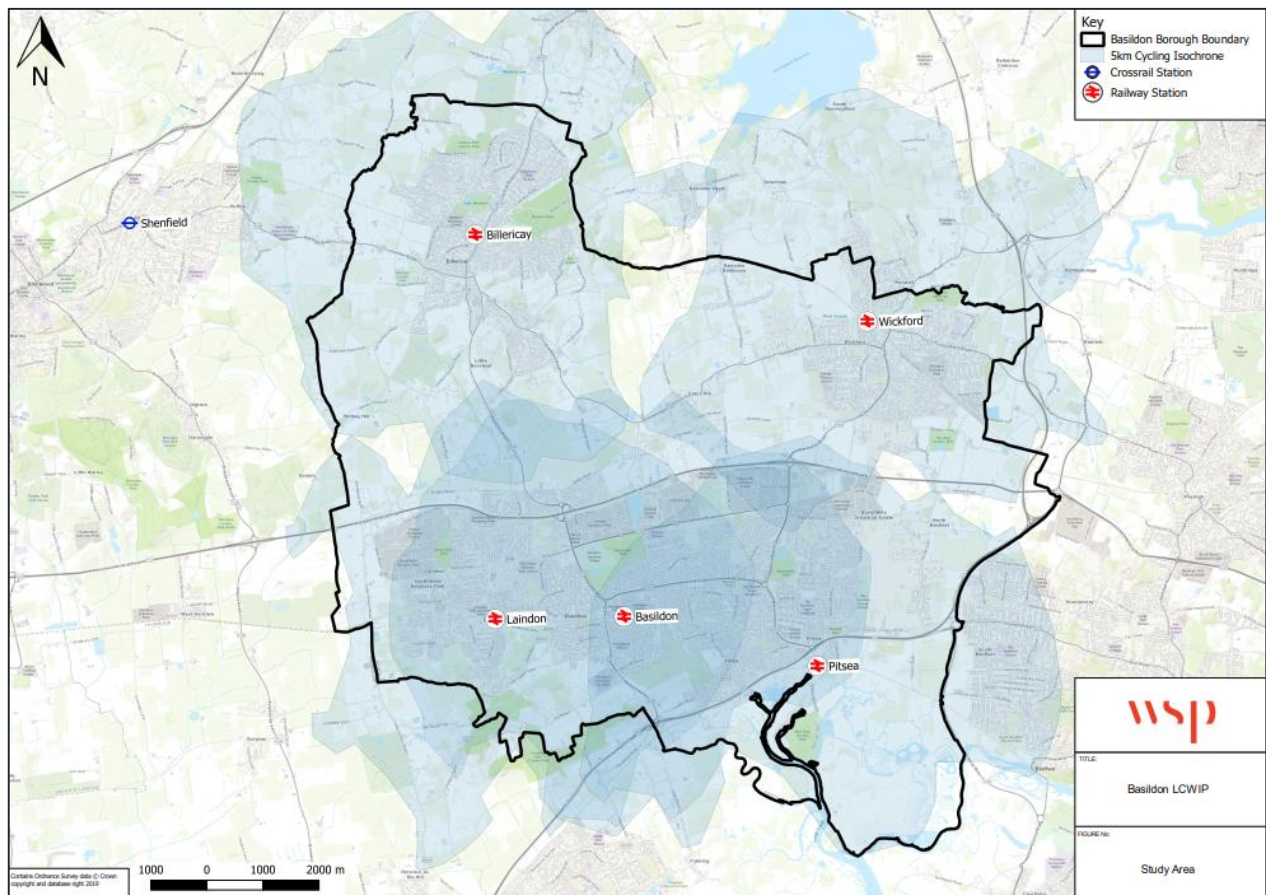
- 1.3.1. This report details the technical support provided by WSP at each stage of the development of the LCWIP, including a section setting out the multi-modal analysis carried out for the ‘plus’ element of this LCWIP+.
- 1.3.2. For each stage of the technical support, details of the approach, methodology, assumptions and outputs are provided. The note can therefore act as a step-by-step guide of how the technical requirements of the LCWIP guidance have been fulfilled.
- 1.3.3. The report is structured as follows:
- LCWIP Stage 1: Determining Scope
 - LCWIP Stage 2: Gathering Information (including Local Policy and Strategic Context)
 - LCWIP Stage 3: Network Planning for Cycling
 - LCWIP Stage 4: Network Planning for Walking
 - LCWIP ‘Plus’ – Multi-Modal Travel Analysis
 - LCWIP Stage 5: Scheme Prioritisation
 - LCWIP Stage 6: Integration and Application

2 LCWIP STAGE 1: DETERMINING SCOPE

2.1 Establishing Geographical Extent of the LCWIP

2.1.1. Figure 3-1 below shows the boundary of Basildon Borough in black alongside the 5 railway stations (Basildon, Billericay, Laindon, Pitsea and Wickford) within the borough, with 5km cycling isochrones from these shown in blue. This figure was derived to broadly reflect the key transport hubs and associated employment and residential areas within a reasonable walking or cycling distance of the key destinations in the borough. The vast majority of the urban areas (and therefore trip origin points) within the 5km cycling distance of each station fall within the boundary of Basildon Borough with the exceptions of north Wickford and South Benfleet. These are not in scope for this LCWIP+. In any case, there are significant barriers between South Benfleet and Pitsea, such as the A310 dual carriageway and the major London Road / Canvey Way roundabout, which mean that this would have been a hard desire line to cater for in terms of active travel.

Figure 3-1 Basildon LCWIP+ Area



2.2 Governance and Delivery

2.2.1. WSP produced this LCWIP+ as its Senior Responsible Owner (as defined in DfT LCWIP guidance), reporting to officers from Basildon Borough Council (BBC) and Essex County Council (ECC) who together formed a Joint Working Group.

3 LCWIP STAGE 2: GATHERING INFORMATION

3.1 Local Policy and Strategy Context

The Current Update to Essex County Council's Local Transport Plan 3 (LTP3)

- 3.1.1. Essex County Council's statutory umbrella transportation strategy is contained in the Essex Transport Strategy (ECC's third Local Transport Plan: LTP3) that was adopted formally in July 2011. The LTP is ECC's long-term approach for transport in Essex. It sets out ECC's aspirations for improving travel in the county, demonstrating the importance of meeting these aspirations to achieving sustainable long-term economic growth in Essex and enriching the lives of its residents.
- 3.1.2. ECC's vision is for a transport system that supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex. Achieving this will require ECC to make best use of the transport infrastructure, to invest wisely to deliver the greatest benefits to Essex residents and the local economy and to encourage and enable changes in travel behaviour. The Local Transport Plan provides a framework for the effective and efficient delivery of all transport services provided by or on behalf of the County. The Essex Transport Strategy seeks to achieve five broad outcomes that have been developed in parallel with those being sought from ECC's Highways Strategic Transformation programme:
- Provide connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration
 - Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology
 - Improve safety on the transport network and enhance and promote a safe travelling environment
 - Secure and maintain all transport assets to an appropriate standard and ensure that the network is available for use
 - Provide sustainable access and travel choice for Essex residents to help create sustainable communities.
- 3.1.3. Given that LTP3 is now 10 years old, ECC is in the process of refreshing its approach for an updated strategy for the 2020s. A refreshed LTP is being prepared that will build upon LTP3, in particular to significantly strengthen encouragement of a shift to the most sustainable forms of travel. Consideration is being given to wider non transport policies which may help to reduce carbon emissions and reduce the need for travel. The refreshed LTP will also reflect changes in lifestyles, neighbourhoods and work patterns. Smart deliveries including more cycle and e-cargo bike deliveries as well as better interchange between walking, cycling and public transport will form an increasingly important role in the future.
- 3.1.4. In terms of the relationship between the different levels of transport geography, the refreshed LTP will reflect a layered approach, developed within the Basildon integrated strategy, to help plan and implement a shift to sustainable transport which considers future opportunities in a tiered approach:
- Tier 1 is the strategic connectivity, that is the key strategic rail and road links across the county
 - Tier 2 consists of the main towns and their economic hinterlands
 - Tier 3 includes collections of neighbourhoods that form a larger natural area, a town, or a group of villages. (Further consideration needs to be given to how these are defined and connected)

- Tier 4 is the hyper-local or neighbourhood level, which occurs everywhere in Essex and could be a local estate in a town, or a village and the area around it. Each Tier 4 area could incorporate a hub related to existing and possible new economic / social centres.

3.1.5. The networks proposed in this Basildon LCWIP+ mainly address connectivity through active travel at the Tier 3 and 4 level, and are intended to encourage a modal shift to walking and cycling at a local level. However, over time there will be opportunities to consider Tier 2 routes, which are longer inter-urban cycle routes whereby longer cycle trips are undertaken with e-bikes to which enable longer distances to be travelled.

South Essex Connectivity

- 3.1.6. The Association of South Essex Local Authorities (ASELA) is developing a connectivity strategy to consider how best to link the various towns in South Essex. The strategy is: *a transformative vision for transport connectivity within the region. It will outline how the region will build on their existing assets, maximise efficiency and use of the transport network, and support sustainable travel behaviours. The strategy builds upon the need to increase the trend of the population walking and cycling, in an area that has experienced a growing reliance on cars in the recent past* (ASELA Connectivity Study, ARUP 2020).
- 3.1.7. The strategy highlights that walking and cycling should be enabled for both local journeys and as the start of longer journeys with public transport in order to give more choice in how people travel, it highlights the importance of active travel routes, which connect to transport hubs and future rapid public transport routes.

Basildon Borough Local Plan 2014 – 2034

- 3.1.8. BBC, through its new Local Plan, is seeking to deliver improved accessibility to jobs, services and facilities via an enhanced and better integrated transport network as set out in *Policy T1: Transport Strategy* of the Basildon Borough Revised Publication Local Plan (October 2018). The overall aim is to facilitate a modal shift towards active and sustainable transport modes.
- 3.1.9. With regard to walking and cycling, *Policy T3: Improvements to Footpaths, Cycling and Bridleway Infrastructure* sets out how the Local Plan will support patterns of development which facilitate the use of sustainable modes of transport by working with partners including Essex County Council to secure the funding necessary to deliver the infrastructure improvements set out in the Essex Transport Strategy, Public Rights of Way Improvement Plan and the Basildon Cycling Action Plan.
- 3.1.10. *Policy T4: Improvements to Public Transport Infrastructure and Services* recognises the provision of an excellent passenger transport network as one of the key considerations of the Essex Transport Strategy. BBC will therefore work with Essex County Council and other key partners to secure investment in the public transport network, and secure onward journeys by sustainable means, including public transport, walking and cycling.

3.2 National Policy and Strategy Context

Cycling and Walking Investment Strategy (Department for Transport, 2017)

- 3.2.1. The Government published its first Cycling and Walking Investment Strategy (CWIS) in 2017, setting out an ambition to make walking and cycling the natural choice for shorter journeys or as part of a longer journey. The CWIS states that the benefits to doing this would be substantial, potentially leading to cheaper travel and better health, increased productivity for business and increased footfall in shops. Benefits will also include lower congestion, better air quality, and vibrant, attractive places and communities.
- 3.2.2. The CWIS outlined a £300 million investment in cycle training and infrastructure and sets out ambitious targets for the period to 2025. This included a doubling of cycling trips each year (from 0.8 billion in 2013 to 1.6 billion by 2025), while also reversing the current year-over-year decline in walking trips. The CWIS also identifies a need to decrease the number of cycle user fatalities and serious injuries each year.

Future of Mobility: Urban Strategy (Department for Transport, 2019)

- 3.2.3. The 'Future of Mobility: Urban Strategy' recognises the challenges associated with the rise in motor transport including safety, pollution and space. The document sets out principles to guide government decision making, industry and local authorities, and has recognised active travel as a key area to help shape the future of urban mobility. The principle 'Walking, cycling and active travel must remain the best option for short urban journeys' states that in England, 45% of all journeys taken by urban residents are under two miles. Many such journeys could be undertaken by sustainable, active modes of transport leading to better air quality, health outcomes and lower congestion. This can be supported by new technologies including intelligent use of real-time data and connectivity making public transport more convenient and responsive. With these improvements active travel can become a more desirable option for multi-stage journeys. Locally, this would support the South Essex Connectivity vision to enhance connections to important transport interchanges, such as the five rail stations in Basildon Borough, through investment in active travel infrastructure. The increase in available journey planning tools, the provision of real-time travel information by all modes, including walking and cycling, can help people make smarter, greener and healthier travel choices.
- 3.2.4. An additional principle identified; 'Mobility as a Service', suggests introducing well-managed bike-sharing schemes and e-bikes which would encourage people who wouldn't normally chose cycling as a travel option to switch. This may be especially important given the trend towards an aging population, noting 62% of e-bikes in the UK are sold to people over the age of 55. This represents a complementary investment opportunity, which combined with improving active travel infrastructure, could help facilitate the step-change towards cycling and walking becoming much more commonplace across Basildon.

Clean Air Strategy (Department for Environment, Food & Rural Affairs, 2019)

- 3.2.5. The Clean Air Strategy sets out a comprehensive action required to tackle all sources of air pollution.
- 3.2.6. A key action in achieving this is reducing emissions from transport by facilitating modal shift towards low and zero emission options. The report suggests that encouraging an increase in cycling and walking for short journeys will deliver a reduction in congestion and emissions in addition to the associated health benefits from a more active lifestyle.

3.2.7. Furthermore, the strategy highlights that drivers and passengers inside vehicles are often exposed to significantly higher levels of air pollution in comparison to those walking and cycling on the same route. The strategy presents evidence suggesting that those travelling actively experience lower exposure. Pedestrians and cyclists can be encouraged to use quieter routes away from vehicle traffic to reduce exposure even further. Active modes of travel also create less pollution, with associated health benefits such as improved fitness, mental health and lower risk of obesity and heart diseases.

3.2.8. In addition to the funding identified through the Cycling and Walking Investment Strategy, local authorities and mayors have been allocated an additional £700 million to safe infrastructure and other active travel projects since the CWIS was published. There has also been £34 million spent to improve cycle facilities at stations, making it easier and more accessible to get to and from station by bike, including 22,000 new cycle parking spaces which as a result increased cycle trips to stations by 40%.

Gear Change: A Bold Vision for Cycling and Walking (Department for Transport, 2020)

3.2.9. Gear Change is the Government's vision to see a step-change in levels of walking and cycling in England. The strategy details how the Government intends to invest £2 billion on increasing the numbers of people walking and cycling. This includes the creation of a new body – Active Travel England – which will act as a commissioning body and inspectorate for active travel schemes, led by a national cycling and walking commissioner.

3.2.10. A core focus of the strategy is on improving safety for all by building high quality cycle infrastructure, the lack of which is a significant barrier to more people choosing to walk or cycle for the everyday journeys. The strategy overtly highlights the need to dramatically improve the quality of cycling infrastructure on England's roads to achieve the substantial increases in cycling required.

3.2.11. The document sets out the actions required at all levels of government, grouped under four themes:

- Better streets for cycling and people;
- Putting cycling and walking at the heart of transport, place-making and health policy;
- Empowering and encouraging local authorities; and
- Enabling people to cycle and protecting them when they do.

3.2.12. The theme 'Better streets for cycling and people' outlines how the Government will help to fund safe, continuous, direct routes for cycling that help people reach the places they need to get to. The key design principles highlight how routes must be physically separated from pedestrians and from high volumes of motor traffic on links and at junctions. The creation of low traffic neighbourhoods and school streets is also featured due to their role in facilitating local walking and cycling trips and creating better places for people to live in.

3.2.13. Figure 3-1 presents the 'Key Design Principles' identified in Gear Change, many of which are a significant change in approach included in previous guidance or indeed current practice.

Figure 3-1 - Key Design Principles from Gear Change (DfT, 2020)



- 3.2.14. The second theme focuses on how cycling and walking should complement and help expand the range of other modes of transport such as bus and rail travel. The strategy mentions how new local and strategic A road schemes should include appropriate provision for cycling and that the tools used to assess transport schemes' value for money will give fair weight to the broader benefits of active travel schemes.
- 3.2.15. The third theme outlines the new powers and improved assistance for local authorities, such as improving enforcement of traffic violations that impact on pedestrian and bicycle user safety. An important statement under this theme is how funding available for local authorities will only be applied to schemes that meet the new standards and principles described within the first theme.
- 3.2.16. The final theme focuses on encouraging more people to cycle by providing people with the confidence and skills to cycle where the appropriate infrastructure facilitates cycle journeys. The Government also stipulate their aim to make legal changes to protect vulnerable road users, strengthen the Highway Code to improve safety and mandate higher safety standards on lorries.

Local Transport Note 1/20: Cycle Infrastructure Design (Department for Transport, 2020)

- 3.2.17. Alongside Gear Change, the DfT also published updated cycle infrastructure design guidance in 2020. LTN 1/20 provides guidance and good practice for the design of cycling infrastructure in support of the DfT Cycling and Walking Investment Strategy. LTN 1/20 replaces *LTN 2/08: Cycle Infrastructure Design* and *LTN 1/12: Shared-use Routes for Pedestrians and Cyclists* have been withdrawn.

- 3.2.18. The Government expects local authorities to demonstrate they have given due consideration to the guidance when designing new cycle schemes and when applying for national cycle infrastructure funding.
- 3.2.19. LTN 1/20 is based around five overarching design principles (that cycle routes and networks must be coherent, direct, safe, comfortable and attractive) and 22 principles that represent the essential requirements to achieve more people travelling by foot or cycle for more of their trips. The key design principles from Gear Change (shown in Figure 3-1) are nine examples of these.
- 3.2.20. The LTN 1/20 begins with an introductory chapter explaining these principles and a chapter giving context to the need to improve the quality of cycle infrastructure as part of wider strategies to increase physical activity, reduce carbon emissions and stimulate economic growth. The rest of the document is structured around 13 chapters that begin with the planning of cycle networks and further details on design principles and processes. LTN 1/20 then moves on to chapters that focus on specific types of infrastructure and elements of the highway network, such as facilities within the highway corridor, motor-traffic-free routes, quiet mixed traffic streets and junctions and crossings.
- 3.2.21. LTN 1/20 also covers cycle parking, signage & markings and construction & maintenance. It thus provides guidance through the full process of planning, designing and implementing high quality cycle infrastructure.
- 3.2.22. The Government intends that all proposed schemes will be checked against the summary principles set out in LTN 1/20 by a new inspectorate before any funding is agreed. It is also set out that completed schemes will be inspected to ensure that they have been delivered in compliance with LTN 1/20.

Important note on the Basildon LCWIP+ and LTN 1/20

The initial cycling and infrastructure proposals in this Basildon LCWIP+ were reviewed and approved by stakeholders in late 2019 and early 2020, before the Gear Change and LTN 1/20 were published. WSP revised the proposals in late 2020 to bring the recommendations in line with LTN 1/20 wherever possible (for example: proposing signalised pedestrian/cycle crossings instead of toucan crossings), while attempting to minimise big changes from what was discussed and agreed with stakeholders.

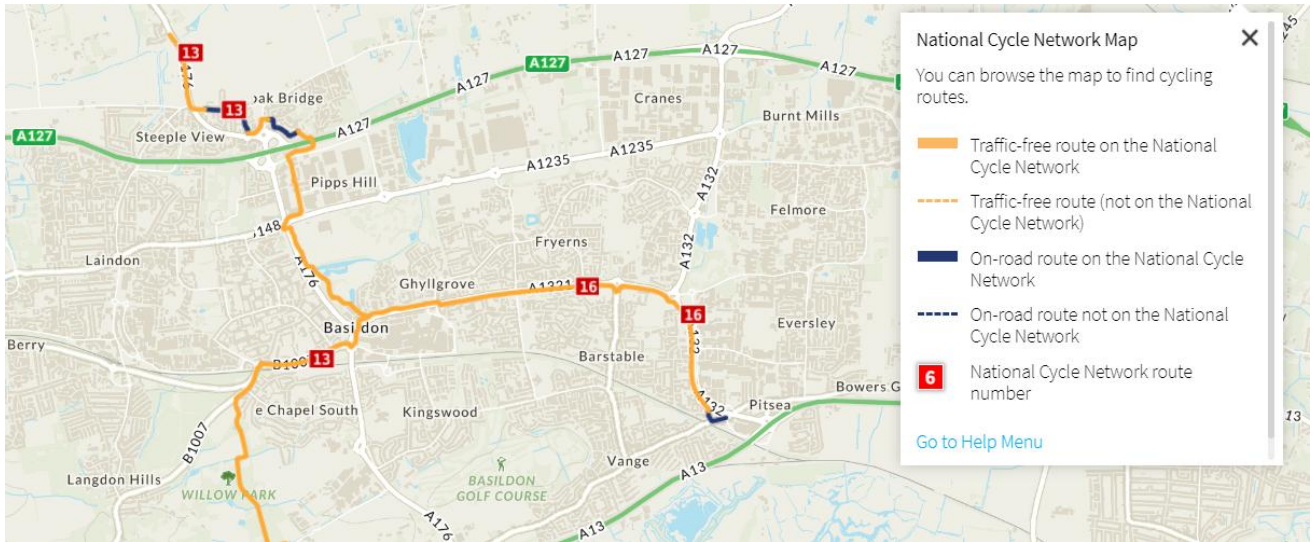
- 3.2.23. A further consultation on the LCWIP+ network was carried out between 11 March and 7 April 2021, led by ECC.

National Cycle Network Routes in Basildon Borough

- 3.2.24. Two National Cycle Network (NCN) routes run through Basildon Borough: Route 13 and Route 16. Route 13 appears in both Basildon and Billericay but is not continuous between the two. This may be due to the Sustrans' removal of certain sections of routes on the National Cycle Network in 2020 after they were deemed to be less accessible and therefore only suitable for confident cyclists.
- 3.2.25. Figure 3-2 is a screenshot from the [sustrans.org.uk](https://www.sustrans.org.uk) website showing the alignments of NCN Routes 13 and 16 in Basildon. These are largely "traffic-free routes" however in many cases they are shared footways, which do not necessarily meet the standards of LTN 1/20. Moreover, NCN routes are often geared towards leisure trips rather than large scale commuter trips. Part of NCN Route 13 has been included in the Basildon LCWIP+ cycle network (as part of Cycle Route 5) and is therefore deemed more suitable for everyday cyclists to use in

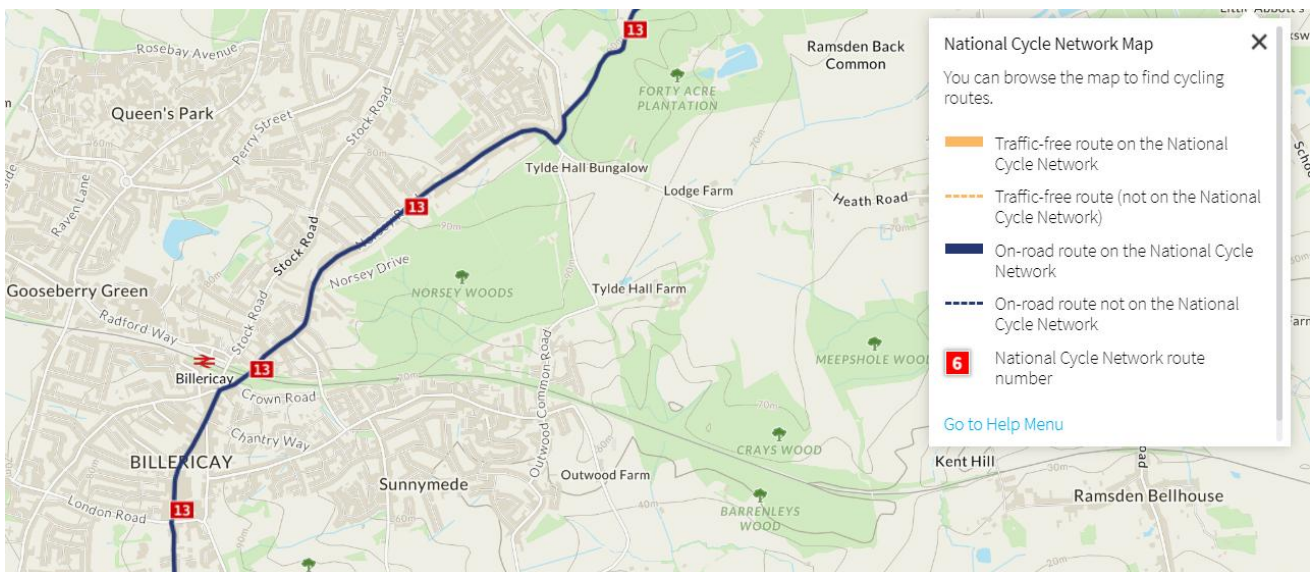
increasing numbers, although improvements are required. Other sections of the NCN Routes in Basildon require reviewing and plans for improved infrastructure on them should be developed before inclusion in the proposed Basildon LCWIP+ cycle network.

Figure 3-2 - National Cycle Network routes in Basildon (OS data © Crown Copyright and database rights 2018)



3.2.26. Figure 3-3 is a screenshot from the sustrans.org.uk website showing the alignment of NCN Route 13 in Billericay. This route is entirely on-road, unsegregated from traffic and it goes through several junctions with no protection for cyclists. Part of this is included in the Basildon LCWIP+ cycle network (as part of Cycle Route 8) and is therefore deemed more suitable for everyday cyclists to use in increasing numbers, although improvements are required. Plans for infrastructure improvements on the rest of NCN Route 13 need developing before it can be considered for inclusion in Basildon’s LCWIP+ cycle network.

Figure 3-3 - National Cycle Network routes in Billericay (OS data © Crown Copyright and database rights 2018)



3.3 Identifying Existing and Planned Trip Origins and Destinations

- 3.3.1. To understand which routes and areas in Basildon Borough have the most potential for walking and cycling, the first step is to gather information on existing key trip origins and destinations, as well as potential origins and destinations planned for the future. In the inception meeting, WSP requested relevant data from BBC and ECC. This data was then input into a Geographic Information System (GIS) model developed by WSP to analyse cycling and walking potential across Basildon Borough. Key datasets which were included as origins and destinations in the GIS model are listed in the following sections. These are the same datasets which WSP analysed for the Chelmsford, Colchester and Braintree LCWIPs. Indeed, for consistency, the same GIS model was used with the same methodology assumptions (as explained further in section 4 of this report).

Note about the technical content in this report:

Much of the content of sections 3.3 to 4.4 is directed at professional transport planners and GIS professionals and may not be immediately understandable to the casual reader. For other readers, the most important thing to understand is that data about where people live and journey to has been analysed to determine which routes could have the most potential for increased walking and cycling. These were then shown to stakeholders and their feedback was used to adjust the routes. The walking and cycling networks developed in this LCWIP+ are therefore evidence-based.

The inclusion of the more technical content in this report is primarily so that the methodology is transparent and shown in its entirety.

Trip Origins and Origin Clustering

- 3.3.2. Two datasets were used to represent origins in the GIS model:
- Existing residences, represented by Lower Super Output Area (Census 2011) data
 - Strategic development locations (e.g. future residential sites over 100 units in size)
- 3.3.3. Lower Super Output Areas (Census 2011) data was mapped in the GIS model to show where the existing population is concentrated, thereby representing a greater potential for trips. Future planned residential developments with over 100 units were also taken from the current Local Plan and mapped - recognising the value in planning an LCWIP to connect with anticipated future trip demands.
- 3.3.4. All the strategic development locations which were included in the GIS model and considered in this LCWIP+ are shown in Appendix D.
- 3.3.5. These origins were then clustered using the hexagon method¹ in order to better represent neighbourhoods and have smoother and more realistic population distribution. Each origin was clustered to its nearest hexagon centroid, provided there was part of the road network to cluster to in the centre of the hexagon.

¹ <https://pro.arcgis.com/en/pro-app/2.7/tool-reference/spatial-statistics/h-whyhexagons.htm>

Where there was no road network in the centre of the hexagon, the origin moved to the nearest suitable hexagon.

- 3.3.6. In November 2020, WSP was made aware of three new planning applications in Basildon town centre which would provide over 300 new residential units. It was too late in the programme to add these to the GIS model. However, due to their location, we can say with confidence that if these planning applications are approved, this only adds to the case for walking and cycling improvements on routes to Basildon town centre. These three sites are also included in Appendix D for reference.
- 3.3.7. It should also be noted that Brentwood Council is proposing a housing allocation within their Local Plan, Dunton Hills Garden Village, which abuts the west of the Basildon Borough boundary. This was not included in the GIS model and is not shown in Appendix D. However, should the development go ahead, this strengthens the case for active travel connections to the west of the borough, as any such development should have good walking and cycling connections to Laindon and Basildon.

Trip Destinations

- 3.3.8. The destinations listed below were set into two categories based on how many trips they are likely attract and mapped in GIS software. More information on categorisation and methodology is included in section 4 of this report.
- Class 1 Destinations:
 - Town centre areas;
 - Employment areas / large employers (e.g. Burnt Mills Industrial Estate, Basildon University Hospital)
 - Class 2 Destinations:
 - Educational establishments;
 - GPs;
 - Supermarkets;
 - Leisure Facilities; and
 - Transport interchange facilities e.g. Basildon, Billericay and Wickford Railway Stations

4 LCWIP STAGE 3: NETWORK PLANNING FOR CYCLING

4.1 Establishing Desire Lines for Cycle Movement

- 4.1.1. The previous section set out the trip origin and destination points included in this LCWIP+ and how the origin points were clustered. This section sets out how these origin and destination points were converted into desire lines for cycle movement, and how these desire lines were converted into routes with associated programmes of infrastructure improvements.
- 4.1.2. Firstly, desire lines were drawn from the clustered origins (i.e. the centres of the hexagons) to the various destinations. Each origin was linked to every class 1 destination but only linked with the closest of each type for the class 2 destinations.
- 4.1.3. As explained in the note in section 3.3, the content in these sections, particularly section 4.3, is very technical in nature and has been included primarily for transparency and completeness in describing the methodology taken. For most readers, the most important thing to take from these sections is that the planned walking and cycling networks developed for this LCWIP+ have a robust data-led evidence-base and have been presented to stakeholders and updated through two rounds of consultation.

4.2 Weighting Desire Lines

- 4.2.1. As with the GIS model used in other Essex LCWIPs, the weighting of origins by population assumed 2.4 people per unit for future residential developments. LSOA data included population estimates from 2016 for each population weighted centroid.
- 4.2.2. An additional weighting process was undertaken for the Key Employment Area (KEA) destinations. The area of each KEA was taken, divided by two as an assumption for usable floorspace and then one job per 30m² was assumed.
- 4.2.3. Desire lines were therefore weighted according to the population of their origin points and, in the case of KEAs, the estimated number of jobs in each KEA. Shorter desire lines were given greater weighting as longer cycle journeys may be less appealing to newer, less confident cyclists.

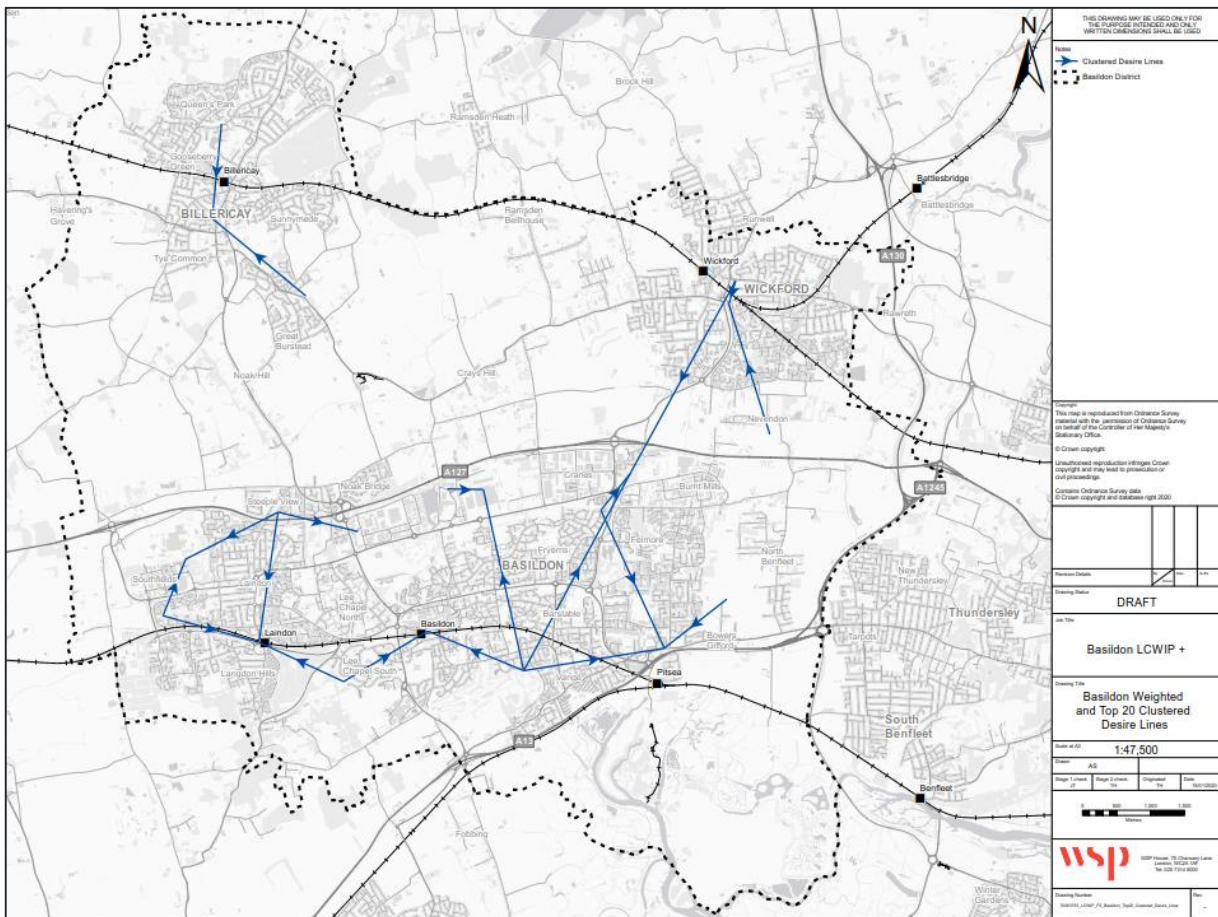
4.3 Clustering Desire Lines

- 4.3.1. There were many weighted desire lines across the three urban areas and so a process was required for clustering these to identify the greatest potential for cycling across the borough.
- 4.3.2. The methodology used for this was based on the K-means clustering method which grouped together the weighted desire based on the locations of their origins and destinations and proximity to other weighted desire lines. This clustering was based on a predefined number of clusters.
- 4.3.3. The K-means method is a method of clustering where space is partitioned into a number of clusters with centre points whose positions are approximately the averages of the origin/destination points around them. However, in this application there was no particular number of clusters in mind.
- 4.3.4. The method of estimating the number of clusters chosen to best represent the origins and destinations is the 'elbow' method. In the elbow method, the K-means algorithm is run multiple times for a range of numbers of clusters in order to calculate the average distance between the centre points and their original associated

origins/destinations. Smaller numbers of clusters gives fewer, longer, lines while larger numbers of clusters gives numerous, shorter lines. The ideal number of clusters is found somewhere on the 'elbow' of the figure.

- 4.3.5. After the ideal number of clusters was chosen, a new mapping output was created, with only the top 20 desire lines (in terms of demand) shown. This is shown below in Figure 4-1. As expected, the majority of these lines are concentrated in Basildon due to the higher number of key destination points. Two desire lines were identified in Wickford and Billericay, both of which gravitate towards the railway station and town centre area, with an additional desire line originating in Wickford with a destination near two industrial estates in northeast Basildon.
- 4.3.6. It is important to note that the desire lines shown in Figure 4-1 were an early stage output and had not yet been consulted on or verified through stakeholder workshops and route auditing. The cycle network presented later in this report took into such account additional considerations and therefore, while some parts of the cycle network do not appear to be supported by these top 20 desire lines, there is still good evidence that they will be useful and strategic connections.

Figure 4-1 - Top 20 Weighted, Clustered Desire Lines for Cycling in Basildon Borough



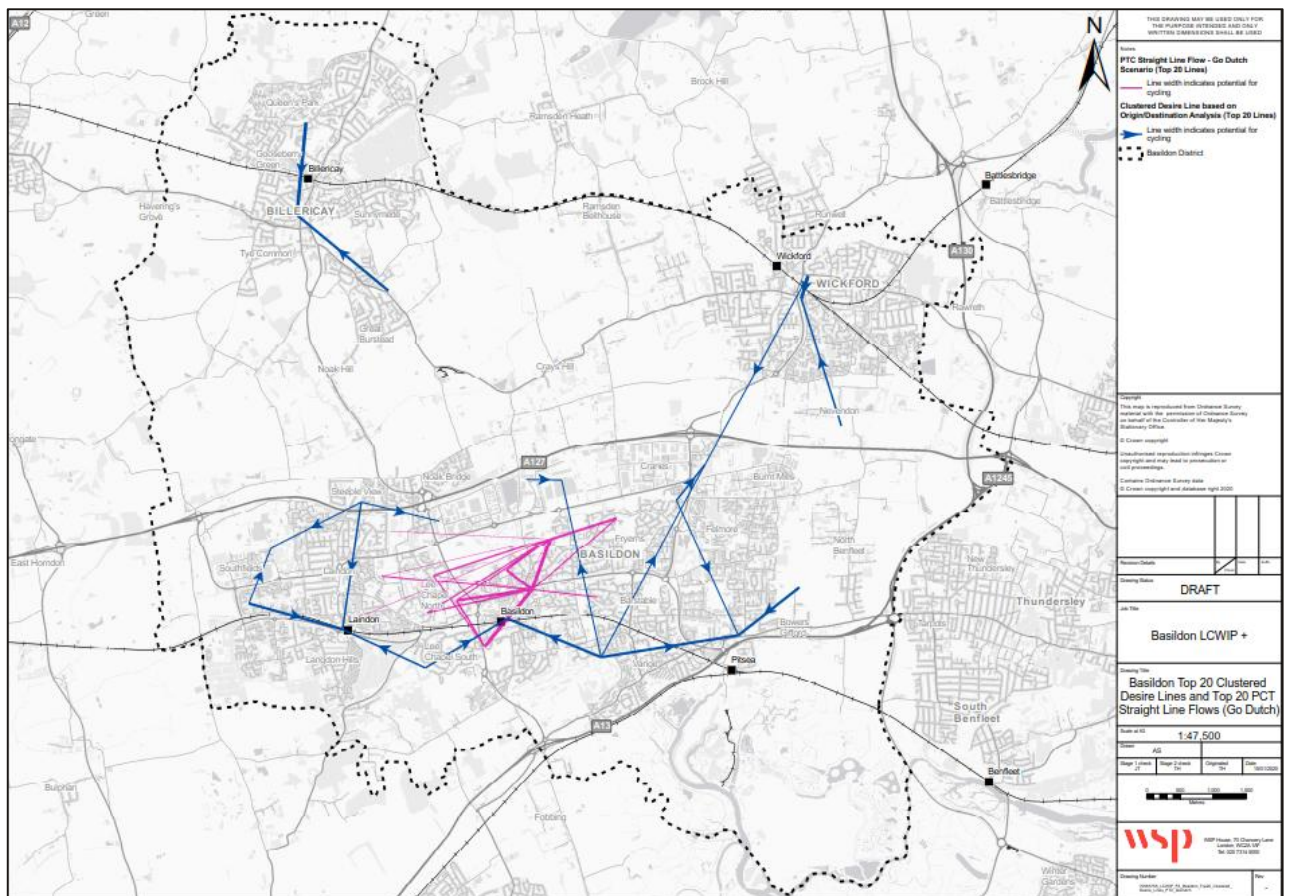
4.4 Propensity to Cycle Tool

- 4.4.1. As a further layer of evidence to assist in the development of the LCWIP+ cycle network, origin and destination points were analysed using The Propensity to Cycle Tool (PCT). This is a web-based tool

developed by the Department for Transport to aid in the identification of the most promising areas for potential cycle growth, to inform network development. For this study the top five straight line desire lines between Census Local Super Output Areas (LSOAs) were determined, applying the 'Go Dutch Scenario' which considers the increase in cycle users if England had the same infrastructure and cycling culture as the Netherlands.

- 4.4.2. Whilst the tool outputs are not predictions of the future, they provide snapshots indicating how the spatial distribution of cycling may shift as cycling grows based on current travel patterns. The top 20 PCT lines are concentrated around Basildon town centre. Figure 4-2 shows these alongside the top 20 desire lines from WSP's GIS model.
- 4.4.3. As with Figure 4-1, it is important to remember the limitations of the early stage desire lines. PCT outputs do not account for developments since 2011, nor future developments, nor do they account for trips other than commuting trips.

Figure 4-2 - Top 20 PCT "Go Dutch" Desire Lines, Alongside Top 20 Weighted, Clustered Desire Lines for Cycling in Basildon Borough



- 4.4.4. The PCT desire lines are much more concentrated around Basildon town centre compared with the WSP GIS model. This may be a reflection of the higher density of destinations and population in Basildon compared to Billericay and Wickford.

4.5 First Stakeholder Workshops (Verifying Desire Lines)

- 4.5.1. Two workshops were held in December 2019 to get stakeholders' views on the analysis done at that time. With regard to the top desire lines for cycling, this meant gathering local knowledge to verify that they were indeed reasonable desire lines that locals would like to cycle either now or in future, with forthcoming developments. Future housing developments were included on the plan, along with key local trip destinations such as employment areas and schools, to give context to the desire lines and potential cycle routes. Stakeholders were also given the opportunity to propose additional desire lines for inclusion, and comment on potential cycle corridor alignments to support these desire lines, i.e. which roads and paths would need improving in order to facilitate cycling along such a desire line.
- 4.5.2. An internal stakeholder workshop was held in Chelmsford on 05 December 2019, with officers from BBC and ECC. An external stakeholder workshop following the week after in Pitsea on 09 December 2019 to which representatives from the following organisations were invited: Park Run, Billericay Striders, Club Kingswood, Essex Road Runners, Basildon Ramblers, Trailnet Essex, Sustrans, Essex Roads, Motivated Minds, Southend Council, British Cycling, England Athletics, Sport England, St Modwen, Mayer Brown, Vector, Active Essex, RN Planning, NIBSbuses, First Group (First Essex), Abellio Greater Anglia, C2C Rail, Essex Police, NHS, Pro Vision.
- 4.5.3. Notes from both the internal and external workshops (including records of attendance) are included in Appendix E.

Figure 4-3 - External Stakeholder Workshop in Pitsea, 09 December 2019



- 4.5.4. The stakeholders agreed with the need to support cycling on the majority of the top 20 desire lines from the WSP GIS model. A small number of desire lines were rejected for various reasons or demoted to be converted into 'secondary' cycle routes. For example, desire lines to the Ford Dunton site were considered

less realistic as the much of the workforce in this KEA lives outside Basildon Borough and drive long distances to get there.

- 4.5.5. The top 20 PCT “Go Dutch” desire lines were considered evidence to support a focus on cycle routes in Basildon town centre, with a circular route around the central shopping district and an east-west route along the A1235. The “Go Dutch” scenario is explained briefly in paragraph 4.4.1 and its top 20 desire lines in Basildon Borough are shown in Figure 4-2. More information on the Propensity to Cycle Tool and the “Go Dutch” scenario can be found on the www.pct.bike website and its user manuals, especially user manual C1.
- 4.5.6. Stakeholders also wished to see additional routes added to the draft cycle network. For example, a route linking Billericay to Basildon was progressed for various reasons including the fact that it would result in a joined-up network across the three urban areas. (When WSP went back to the GIS model and investigated the top 30 desire lines, as opposed to just the top 20, desire lines were found which followed similar alignments to the suggestions of the stakeholders at the workshops.)
- 4.5.7. Potential cycle corridors to support the primary desire lines proposed by WSP were discussed. Some were considered less desirable by stakeholders or not direct enough and were therefore not progressed. Stakeholders also proposed new potential cycle corridors to support the desire lines. Where these were direct enough, they were progressed to the next stage.
- 4.5.8. The result of these workshops was a series of potential cycle corridors to be further investigated based on desire lines identified and local knowledge.

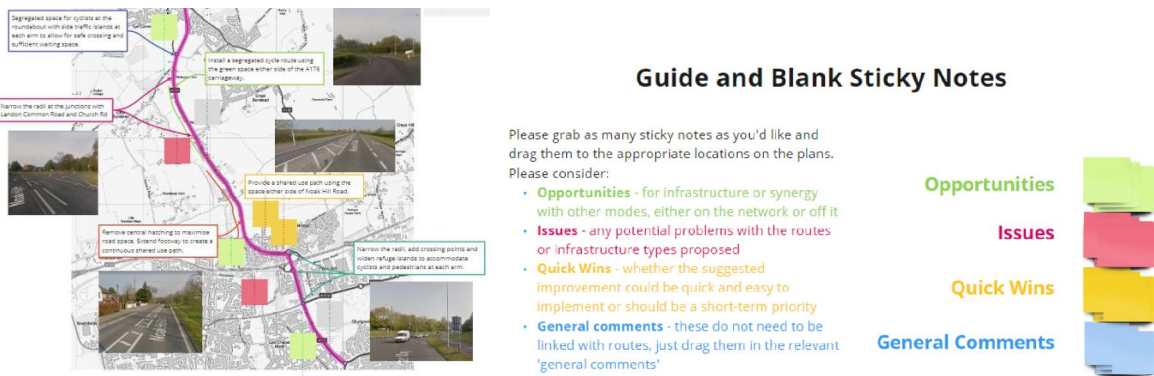
4.6 The Route Selection Process

- 4.6.1. BBC chose to complete the DfT’s Route Selection Process (RSP) in-house. (The RSP is detailed in the DfT’s 2017 LCWIP Technical Guidance for Local Authorities). BBC staff received training from WSP on how to use the Route Selection Tool (RST). The potential cycle corridors that were progressed from the stakeholder workshops were audited by BBC in January 2020.
- 4.6.2. The primary function of the tool is to assess the suitability of a route in its existing condition against the core design outcomes of being coherent, direct, safe, comfortable and attractive, then compare it with the potential future state, if improvements were made. It also enables the easy comparison of alternative routes.
- 4.6.3. The RSP allowed for an assessment to be made of both existing conditions and the potential for route development. The following factors were also taken into consideration when auditing and determining the potential for routes:
 - The quality of existing cycling provision / infrastructure;
 - The potential of the route to connecting other origins and destinations within the corridor;
 - The potential for and feasibility of route improvements, based on any apparent constraints; and
 - Critical junctions, to determine how these could be either avoided or enhanced to make the route more attractive, safe and direct for cyclists.

4.7 Second Stakeholder Workshops (Infrastructure Improvements)

- 4.7.1. Upon receiving the RST outputs, WSP reviewed them to select the most appropriate alignments for the cycle network. For each of these alignments, WSP used its active travel expertise to generate draft programmes of infrastructure improvements based on the principles listed in section 4.6.
- 4.7.2. The updated cycle network and draft programmes of infrastructure improvements were then presented at stakeholder workshops for review and comment. An internal stakeholder workshop was held with BBC and ECC in Chelmsford on 16 March 2020, just before the covid-19 pandemic was beginning to have an impact on working arrangements at WSP, ECC and BBC.
- 4.7.3. The external stakeholder workshop was postponed in light of the covid-19 pandemic. It was eventually run virtually, using Microsoft Teams and the online collaborative tool, Miro, in three sessions over two days: 29 June 2020 and 30 June 2020. The same invites were sent out as for the first stakeholder workshop (see section 4.5 for the list of organisations invited).
- 4.7.4. Notes from both the internal and external workshops (including records of attendance) are included in Appendix E.

Figure 4-4 - Screenshots from Miro (June 2020 External Stakeholder Workshop)



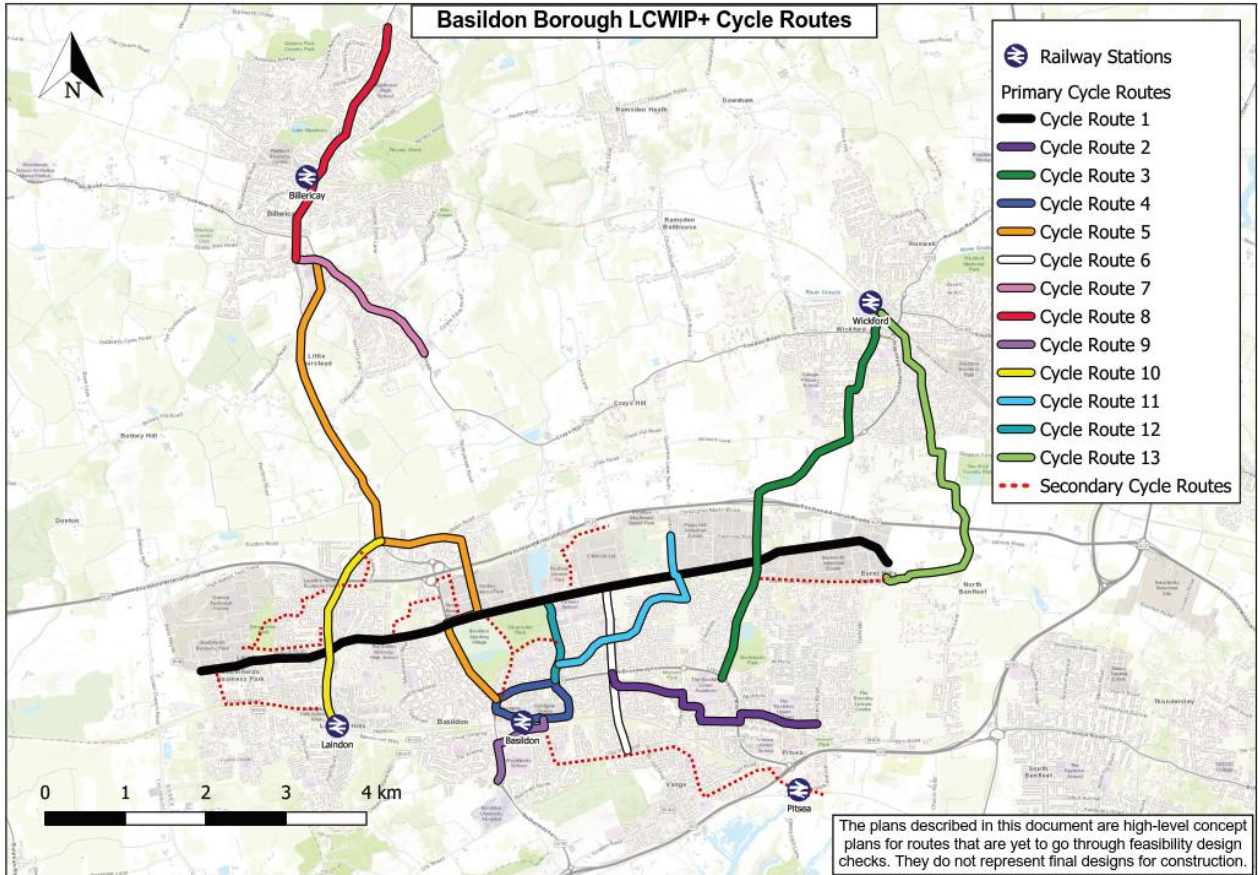
- 4.7.5. WSP's suggestions for infrastructure improvements were reviewed at these workshops and some concepts were changed based on local knowledge. Additional suggestions for route amendments or infrastructure improvements from stakeholders were put forward and the cycling network map and its associated programmes of infrastructure improvements were updated accordingly (where appropriate).

4.8 Cycling Network Map and Programmes of Infrastructure Improvements

- 4.8.1. After the second stakeholder workshops, the cycling network map and associated programmes of infrastructure improvements for each route were updated. Furthermore, following the publication of LTN 1/20, WSP reviewed all plans and made small changes to bring the plans in line with LTN 1/20 principles and guidance, such as favouring signalised cycle/pedestrian crossings as opposed to shared toucan crossings.
- 4.8.2. The final cycling network map is shown below in Figure 4-5 and included in higher resolution in Appendix A, along with maps detailing each cycle route and its associated programme of infrastructure improvements individually.

4.8.3. It is important to remember that this network does not necessarily represent a selection of routes which already have good cycle facilities on them, rather it represents an aspirational network which, if its programmes of infrastructure improvements are implemented, should enable much more cycling in Basildon Borough.

Figure 4-5 – Cycling Network Map



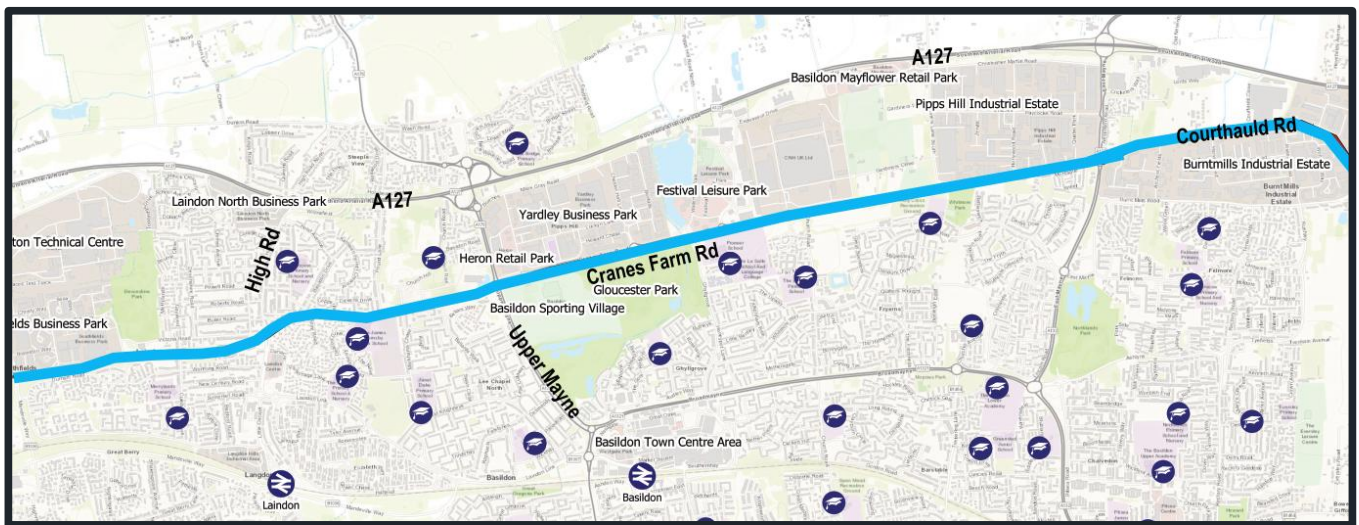
4.9 Summary of Cycle Routes

4.9.1. The alignments of the routes are shown in this section, along with a brief description of the infrastructure proposed, estimated cost (for more information see section 7.1) and the minimum predicted modal shift (as calculated through use of the Active Mode Appraisal Toolkit). More detailed descriptions of the high-level infrastructure proposals are included in Appendix A.

Cycle Route 1 – Basildon East-West Link

- 4.9.2. Route 1 links West Mayne and Burnt Mills Industrial Estate along the A1235. The route will help connect commuters travelling to Ford, Festival Park and Burnt Mills Industrial Estate, with potential onward connections to the new developments at Dunton Hills and Pound Lane. The A1235 is currently a barrier for cyclists and pedestrians travelling north and south of the route. This route intersects multiple primary routes identified within the LCWIP, including strategic corridors to Wickford, and Billericay overcoming the severance faced by active travel users.

Figure 4-6 - Cycle Route 1 Alignment (Basildon East-West Link)

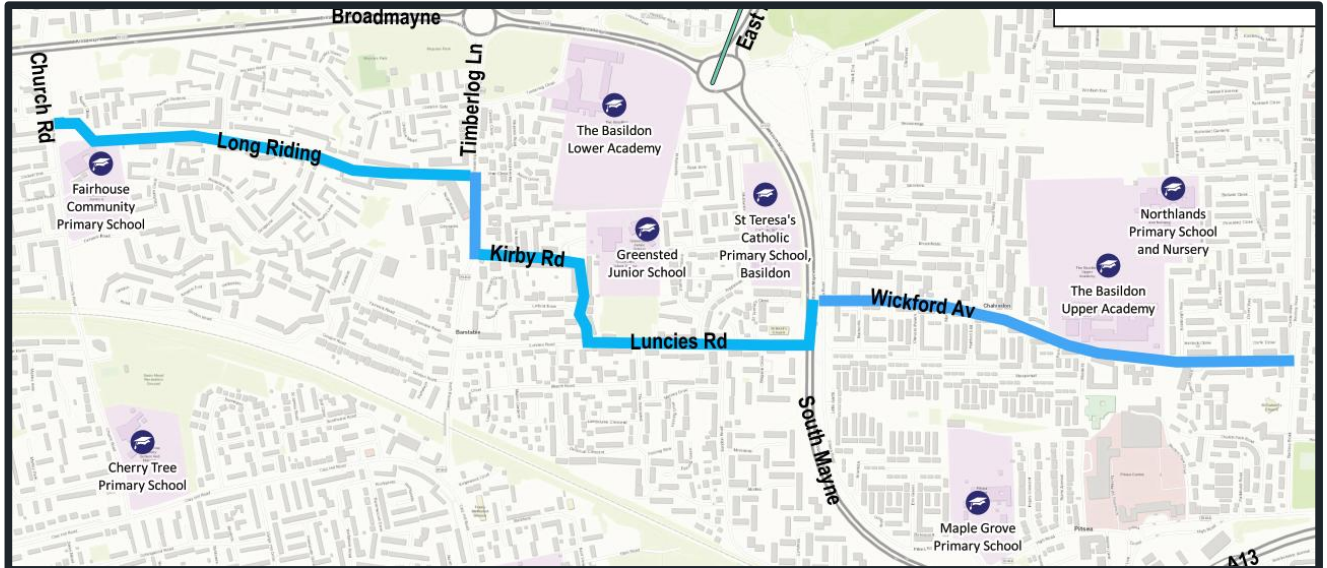


- 4.9.3. At present there are off-road shared-use paths located on the route, adjacent to the heavily trafficked corridors. Cyclists encounter numerous critical junctions, however there are existing underpass routes to avoid conflict with motor vehicles.
- 4.9.4. The proposed improvements are to add an off-carriageway cycle track separate from pedestrians and vehicles for the majority of the route, with minor and major junction improvements and surface level crossings at critical points along the route.
- 4.9.5. This route is 9km long and the proposed improvements have an estimated cost of £7.9m.
- 4.9.6. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.7. AMAT analysis shows that this route could achieve a 5.1% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 5.1%.

Cycle Route 2 – Basildon to Pitsea

- 4.9.8. Route 2 predominantly serves residential areas and education facilities including The Basildon Lower Academy and Basildon Upper Academy. The route would connect a new corridor on Church Road supporting further journeys to Festival Park.

Figure 4-7 - Cycle Route 2 Alignment (Basildon to Pitsea)



- 4.9.9. There are currently no cycle facilities on this route, nor safe crossing points for cyclists travelling on Timberlog Lane. The junctions on the route have lots of guard railing and their geometry prioritises motor traffic flow over pedestrian and cyclist comfort. There is therefore potential to tighten and improve comfort for cyclists.
- 4.9.10. The proposed improvements are to keep cyclists on carriageway and reduce speed limits for much of the route, with light segregation proposed for Timberlog Lane and Wickford Avenue. There are also associated improvements proposed to the underpass under South Mayne and the junction of Long Riding and Timberlog Lane.
- 4.9.11. This route is 3km long and the proposed improvements an estimated cost of £2.6m.
- 4.9.12. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.13. AMAT analysis shows that this route could achieve a 1.3% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 1.3%.

Cycle Route 3 – Wickford to Basildon

- 4.9.14. Route 3 connects Wickford town centre and residential areas off Nevendon Road with Burnt Mills Estate and eastern areas of Basildon. The route intersects the key east-west connection through Basildon. There are numerous critical junctions on this route including where Nevendon Road intersects the A127. As part of the Emergency Active Travel Fund proposals for Essex, Wickford High Street was identified as an area for pedestrianisation, proposals include the installation of modal filters at both ends of Wickford High Street to pedestrianise it during the day, also allowing cyclists and buses through (this could be in the form of a bus and cycle gate, or a modal filter which uses cameras and ANPR rather than a physical filter).

Figure 4-8 - Cycle Route 3 Alignment (Wickford to Basildon)

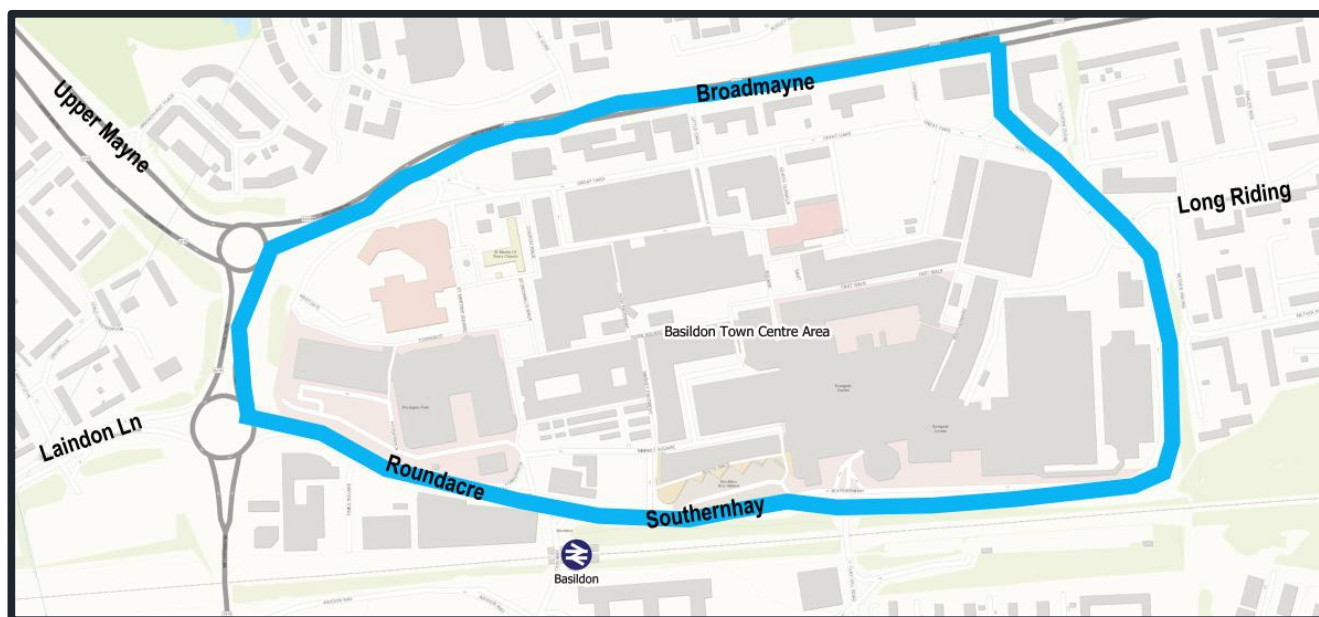


- 4.9.15. There is currently a shared-use off-road facility on East Mayne, where there is space to upgrade to a full off-road facility for cyclists. The existing shared-use path on Nevendon Road is narrow and currently of insufficient width to accommodate cyclists and pedestrians.
- 4.9.16. Off-road segregation is proposed for Nevendon Road and East Mayne, with associated junction improvements. Light segregation is proposed for the suburban part of Nevendon Road.
- 4.9.17. This route is 5.5km and the proposed improvements have an estimated cost of £4.8m.
- 4.9.18. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.19. AMAT analysis shows that this route could achieve a 1.4% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 1.4%.

Cycle Route 4 – Central Basildon Ring

- 4.9.20. Route 4 consists of an orbital route around the town centre area. Currently there is no cycle facility on the existing carriageways, however there is a shared-use path and network of underpasses between Roundacre and Upper Mayne roundabouts which are accessed off Southern Hay and with the new housing development north of the town centre.

Figure 4-9 - Cycle Route 4 Alignment (Central Basildon Ring)

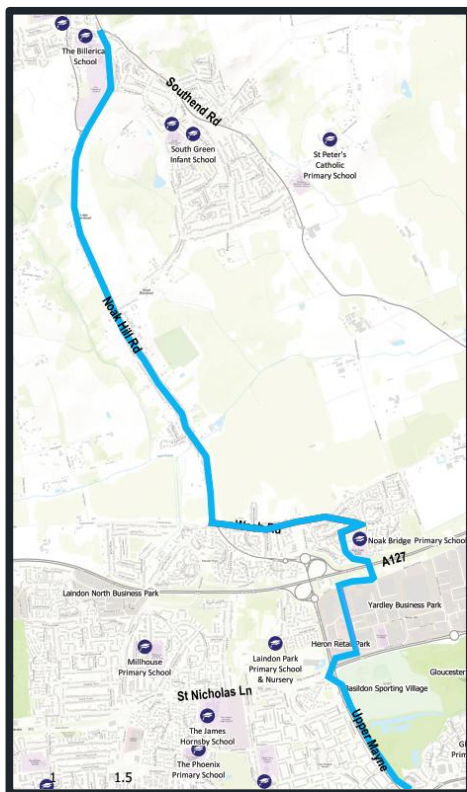


- 4.9.21. The proposed improvements include on-road segregation for much of the ring connecting with an existing off-road route avoiding conflict with traffic at critical junctions west of the town centre area. The circular route supports additional primary LCWIP routes which intersect in the north and south and the route supporting connections to the hospital and Festival Park.
- 4.9.22. This route is 2.2km long and the proposed improvements have an estimated cost of £1.9m.
- 4.9.23. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.24. AMAT analysis shows that this route could achieve a 1.2% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 1.2%.

Cycle Route 5 – Billericay to Basildon

- 4.9.25. Route 5 is a strategic corridor extending from Billericay to Basildon town centre, supporting commuter trips from Billericay to Pippis Hill Industrial Estate, as well as onward journeys into Central London from Basildon railway station, a cheaper option than from Billericay.
- 4.9.26. Cyclists currently share the main carriageway on Noak Hill Road where motor vehicles travel at up to 50mph. There is an existing shared-use path facility on Miles Grey Road and Upper Mayne which are connected via an off-road route through an underpass avoiding the Upper Mayne/Cranes Farm Road roundabout.

Figure 4-10 - Cycle Route 5 Alignment (Billericay to Basildon)

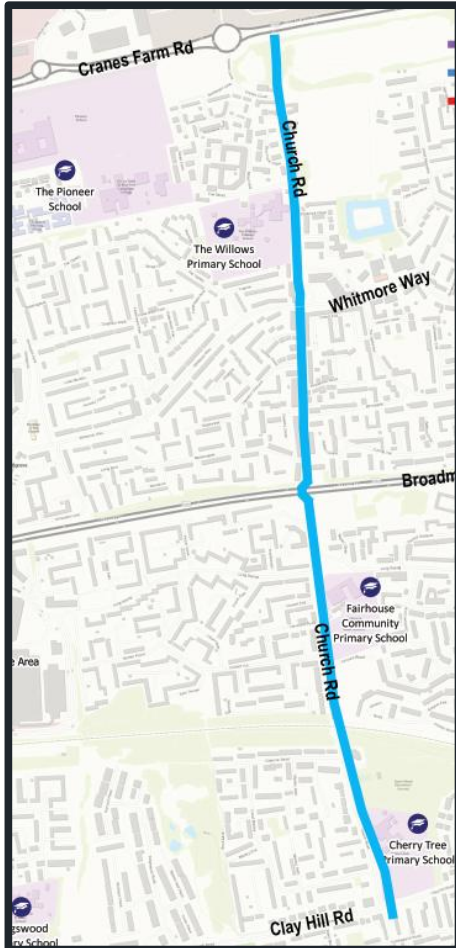


- 4.9.27. To avoid existing critical junctions and overcome the severance of the A127, the route diverges to join Wash Road and the existing National Cycle Route 13 by Noak Bridge Primary School, to then join the bridge over the A127 into Pippis Hill Industrial Estate.
- 4.9.28. A large variety of cycle segregation types and junction improvements are proposed to accommodate the different highway environments this route goes through.
- 4.9.29. This route is 7.5km long and the proposed improvements have an estimated cost of £6.6m.
- 4.9.30. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.31. AMAT analysis shows that this route could achieve a 3.3% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 3.3%.

Cycle Route 6 – Basildon North-South

- 4.9.32. This route serves residential areas and schools on Church Road, connecting to Cranes Farm Road in the North and Clay Hill Road in the South. The route is also supported by east-west connections: Route 1 on Cranes Farm Road, Route 11 on Whitmore Way and Route 2 on Long Riding.

Figure 4-11 - Cycle Route 6 Alignment (Basildon North-South)

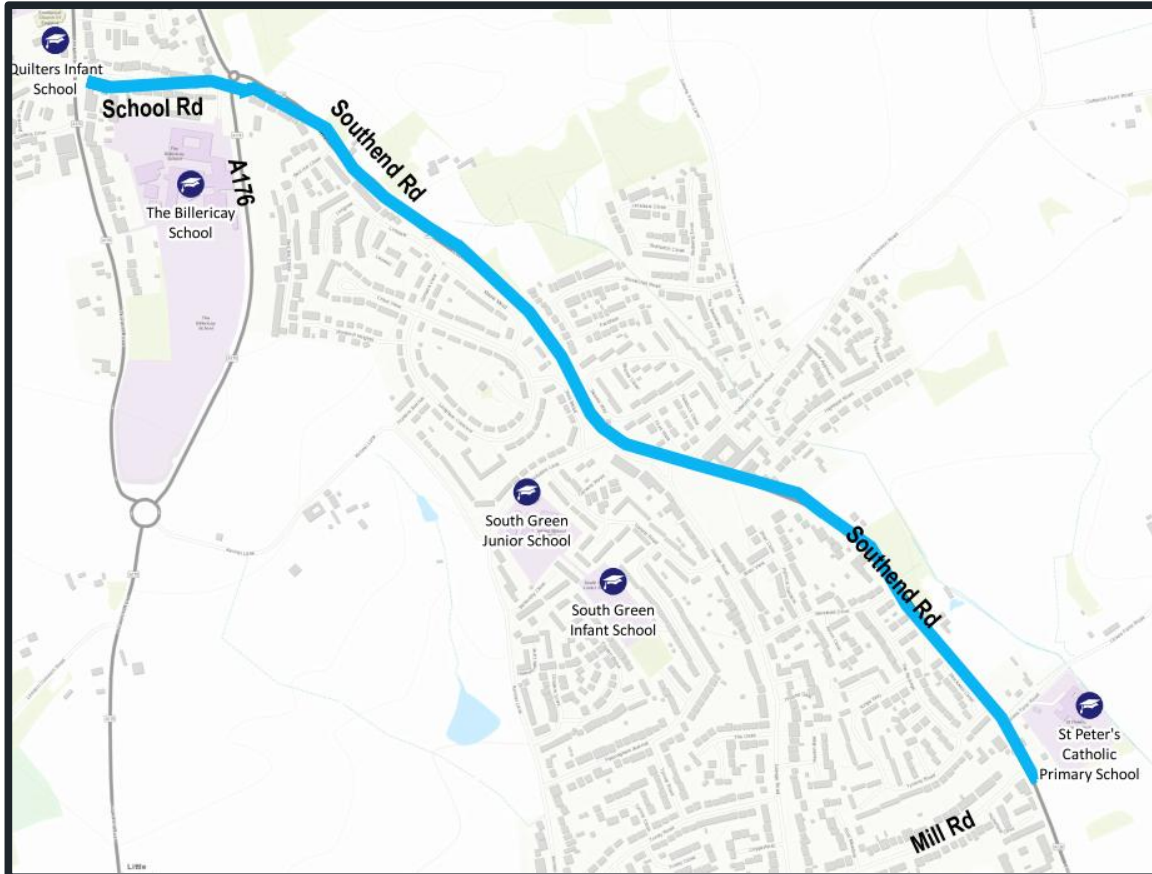


- 4.9.33. There is an existing shared-use path between Fairhouse Community Junior School and the pedestrian bridge over Broadmayne with a ramp available for cyclists. There are pinch points at the railway bridge where northbound cyclists are required to give way to motor vehicles.
- 4.9.34. To the north of the route, off-road segregation is proposed. South of Whitmore Way, it is proposed to add modal filters to reduce through traffic on Church Road and make the environment safer for cyclists.
- 4.9.35. This route is 2km long and the proposed improvements have an estimated cost of £1.8m.
- 4.9.36. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.37. AMAT analysis shows that this route could achieve a 5.1% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 5.1%.

Cycle Route 7 – South East Billericay

- 4.9.38. Route 7 extends from Laindon Road at the northern extent along School Road to St Peter’s Catholic Primary School via Southend Road. The route will accommodate cycling trips from residential areas and new developments in the south east of Billericay.

Figure 4-12 - Cycle Route 7 Alignment (South East Billericay)



- 4.9.39. There is currently no provision for cyclists on the route and they must share carriageway space with motor vehicles. However, there are opportunities to provide segregation by reallocating space from the carriageway and using existing grass verges. The proposals suggest this for much of Southend Road, with on-road segregation at the northern end where there are fewer grass verges. Junction improvements and parallel crossings are included in the infrastructure proposals for this route.
- 4.9.40. The length of this route is 2km and the proposed improvements have an estimated cost of £1.8m
- 4.9.41. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.42. AMAT analysis shows that this route could achieve a 3.7% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 3.7%.

Cycle Route 8 – Billericay North-South

- 4.9.44. Route 8 is a key connection between Billericay town centre, the railway station and residential developments, existing and future in the north of the town. The route also serves education facilities including Mayflower High School.

Figure 4-13 - Cycle Route 8 Alignment (Billericay North-South)

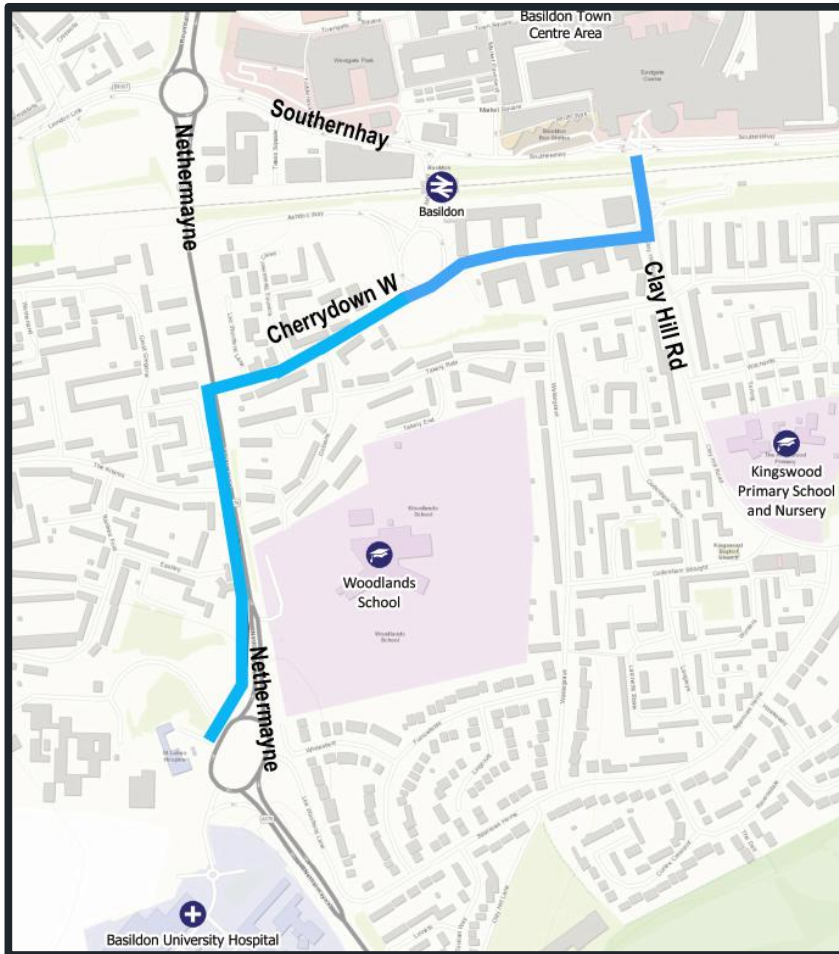


- 4.9.45. At present, there are currently no cycle facilities on Stock Road, through the town centre area and Noak Hill Road. Cyclists must also cross multiple junctions including the roundabout with Sun Lane and London Road.
- 4.9.46. The proposals include improving the junctions in terms of cycle safety and measures to reduce speeds on Stock Road. Segregation for cyclists is not proposed on this route due to lack of available space.
- 4.9.47. The southern part of the route, on Billericay High Street, is also part of NCN Route 8, as mentioned in section 0. However, as with the rest of the route, improvements are still required in order to make this part of the route suitable for more increased and inclusive cycling.
- 4.9.48. This route is 3.2km long and the proposed improvements have an estimated cost of £2.8m.
- 4.9.49. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.50. AMAT analysis shows that this route could achieve a 4.3% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 4.3%.

Cycle Route 9 – Basildon Station to Basildon Hospital

- 4.9.51. Route 9 is a key connection from Southernhay to the University Hospital of Basildon. The route extends from Route 4 on Southernhay connecting to the hospital via Cherrydown Way and Nethermayne using an existing pedestrian bridge. There is an existing shared-use path between the pedestrian bridge and the entrance to the hospital, however at present this is not wide enough to accommodate both pedestrians and cyclists.

Figure 4-14 - Cycle Route 9 Alignment (Basildon Station to Basildon Hospital)

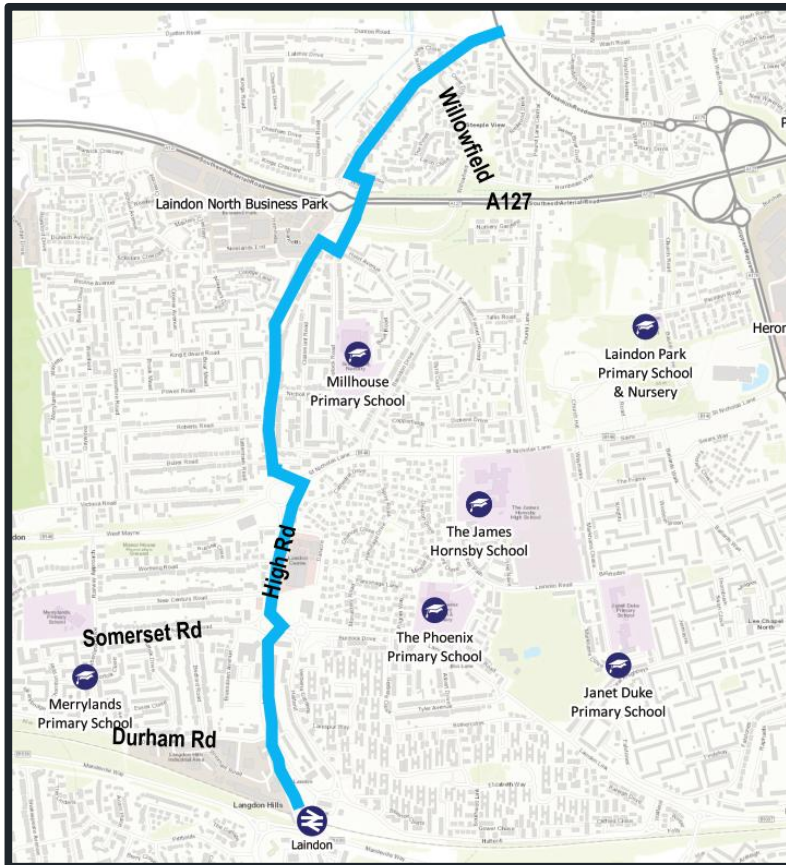


- 4.9.52. There is currently no provision for cyclists between Southernhay and Nethermayne, and cyclists come into contact with several critical junctions on the route where there is no safe facility for cyclists.
- 4.9.53. Junction improvements and additional surface level crossings are proposed for this route, along with a variety of types of segregation for cyclists.
- 4.9.54. The length of this route is 1.2km and the proposed improvements have an estimated cost of £1.1m.
- 4.9.55. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.56. AMAT analysis shows that this route could achieve a 4.5% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 4.5%.

Cycle Route 10 – Laindon North-South

- 4.9.57. Route 10 provides a link between Laindon Railway station in the south, through residential areas off High Road. The route provides an onward connection to the proposed cycle route to Billericay. This corridor is of strategic importance as it is likely to attract commuters into central London from Billericay as the trains between Laindon and the capital are cheaper and more direct.

Figure 4-15 - Cycle Route 10 Alignment (Laindon North-South)

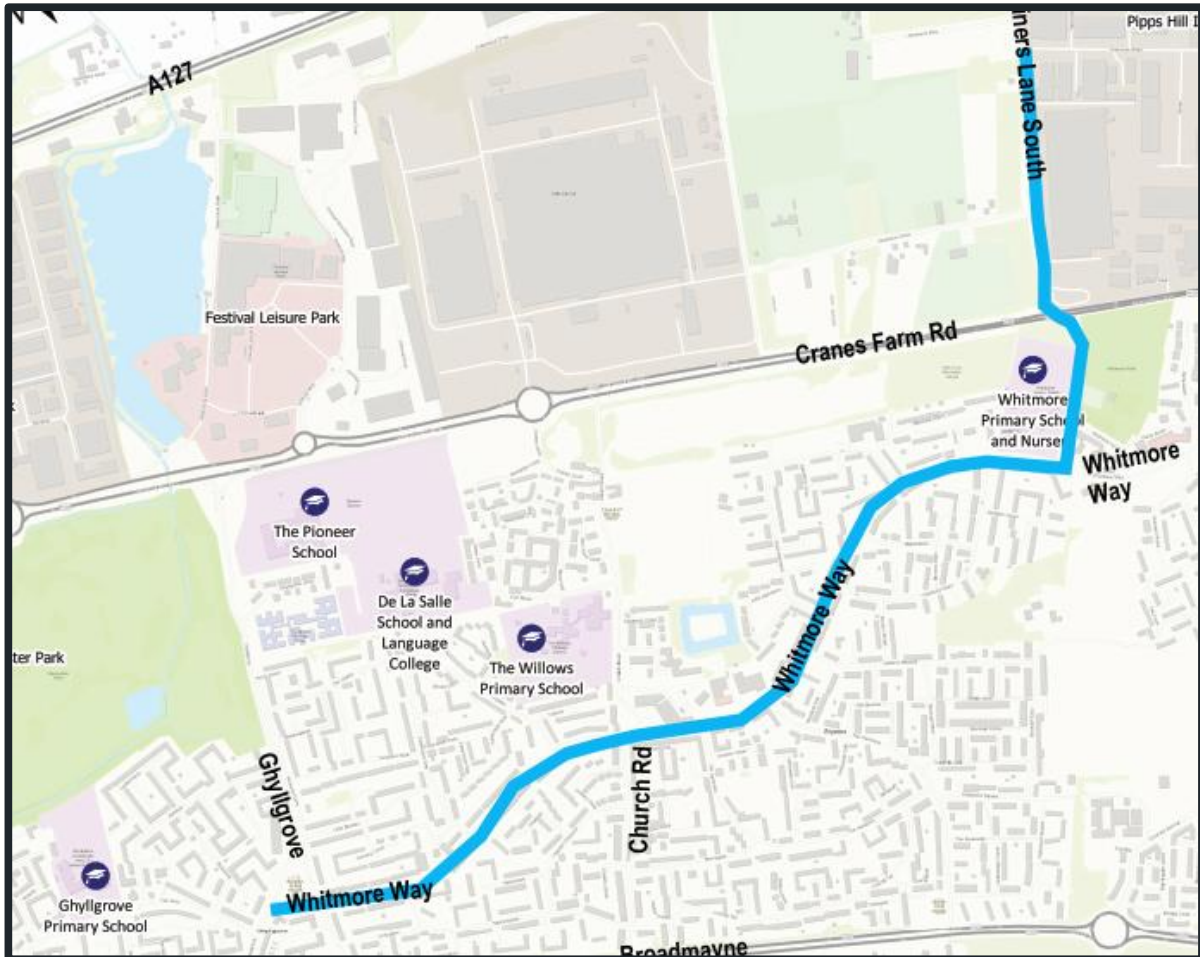


- 4.9.58. Existing infrastructure on this route is in the form of a shared-use path located between High Road and Holst Avenue, with cyclists sharing the carriageway with motor vehicles on the rest of the route. At West Mayne cyclists are required to use the existing underpass, providing a safe crossing point, however existing users may find this intimidating especially at night and through the winter months.
- 4.9.59. Proposals for this route include several junction improvements, new crossings in place of subways and a variety of segregation types appropriate with the different highways environments.
- 4.9.60. The length of this route is 2.6km and the proposed improvements have an estimated cost of £2.3m.
- 4.9.61. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.62. AMAT analysis shows that this route could achieve a 5.1% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 5.1%.

Cycle Route 11- Central Basildon to Gardiners Way

4.9.63. Route 11 extends from the outskirts of Basildon town centre to Pipp's Hill Industrial estate, serving residential areas on Whitmore Way. The route intersects 3 additional cycle corridors providing further connections to Burnt Mills Industrial Estate, Basildon town centre and schools and residential areas on Church Road.

Figure 4-16 - Cycle Route 11 Alignment (Central Basildon to Gardiners Way)

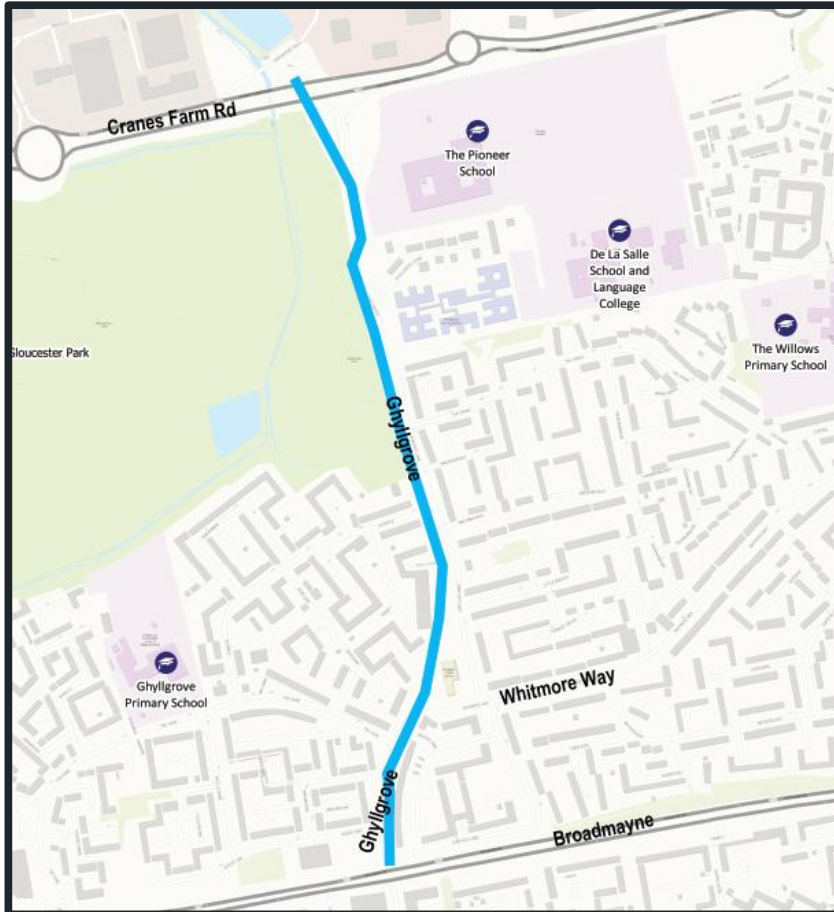


- 4.9.64. There is currently no existing provision on the route, cyclists must use an underpass under Cranes Farm Road to access Gardiners Lane South, adjacent to Pipp's Hill Industrial Estate.
- 4.9.65. Proposals for this route include off-road segregation to the north of the route, with cyclists mixing with traffic on Whitmore Way. Measures are suggested to adjust mini-roundabouts and reduce traffic speeds and volumes on Whitmore Way in order to create a safer environment for cycling.
- 4.9.66. The length of this route is 2.7km and the proposed improvements have an estimated cost of £2.4m.
- 4.9.67. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.68. AMAT analysis shows that this route could achieve a 0.8% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 0.8%.

Cycle Route 12 – Central Basildon to Festival Park Leisure Centre

- 4.9.69. Cycle Route 12 runs on Ghyllgrove between Cranes Farm Road and Broadmayne, connecting to two additional cycle routes. It is a key route, serving residents but also commuter and leisure trips between the town centre area and Festival Leisure Park.

Figure 4-17 - Cycle Route 12 Alignment (Central Basildon to Festival Park Leisure Centre)



- 4.9.70. At the northern extent of this route there is an existing shared-use path which follows the underpass under Cranes Farm Road. The route intersects Cycle Route 1 at the northern extent and Cycle Route 4 in the south.
- 4.9.71. Proposals for this route include amending mini-roundabout geometry to make them safer for cycling, and a combination of on-road and off-road segregation to separate cyclists from cars and pedestrians.
- 4.9.72. The length of this route is 1km and the proposed improvements have an estimated cost of £880k.
- 4.9.73. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.74. AMAT analysis shows that this route could achieve a 1.0% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 1.0%.

Cycle Route 13 – Wickford to Burnt Mills Industrial Estate

4.9.76. This is an alternative route between Wickford and Basildon, connecting residential areas in South Wickford to Wickford railway station in the north and Burnt Mills Industrial Estate in the south. This will also support trips from the new development off Pound Lane.

Figure 4-18 - Cycle Route 13 Alignment (Wickford to Burnt Mills Industrial Estate)



- 4.9.77. A large proportion of the route is off-road between Golden Jubilee Way and Cranfield Park Road, through the residential areas, running parallel to Golden Jubilee Road.
- 4.9.78. Proposals for this route include upgrading the existing off-road route in the Wickford suburbs, with cyclists mixing with traffic south of Cranfield Park Road. A new active travel bridge over the A137 is proposed to connect Cranfield Park Road with Pound Lane.
- 4.9.79. The length of this route is 4.6km and the proposed improvements have an estimated cost of £4.0m.
- 4.9.80. More detail on the proposed infrastructure improvements for cycling on this corridor is given in Appendix A.
- 4.9.81. AMAT analysis shows that this route could achieve a 5.1% modal shift to cycling. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 5.1%.

5 LCWIP STAGE 4: NETWORK PLANNING FOR WALKING

5.1 Establishing Core Walking Zones

- 5.1.1. Section 4 of this report sets out the trip origin and destination points included in this LCWIP. This section sets out the process that was followed to establish Core Walking Zones (CWZs) and key walking routes.
- 5.1.2. CWZs are defined here (and in the DfT LCWIP guidance) as areas where large numbers of walking movements are concentrated and are therefore generally town centres, transport sites, retail cores, business parks or other large employment sites. It is imperative that the pedestrian infrastructure within CWZs, and connections to the surrounding areas, is of a high standard to support and encourage more walking trips.
- 5.1.3. WSP and the Joint Working Group agreed that there were four obvious CWZs for this LCWIP+, centred around Laindon, Basildon, Billericay and Wickford transport hubs (rail stations and bus stations). These four public transport hubs are situated in the town centres of each of the areas they serve, and so CWZs have been identified which comprise the town centre area and public transport hubs. The town centres include key employment, retail and leisure sites. The concentration of key origins and destinations in these locations from the section 4 analysis support the selection of these four CWZs. By comparison, in Pitsea, the rail station is severed from Pitsea centre by the A13 and it is a much less busy station, so no CWZ for Pitsea has been included in this iteration of the LCWIP+.
- 5.1.4. Plans of the four CWZs, with 2km buffers around these to indicate a walkable distance within which many of the key walking routes will be, were drawn and are shown below in Figure 5-1 to Figure 5-4.

Figure 5-1 - Laindon Core Walking Zone with 2km Buffer

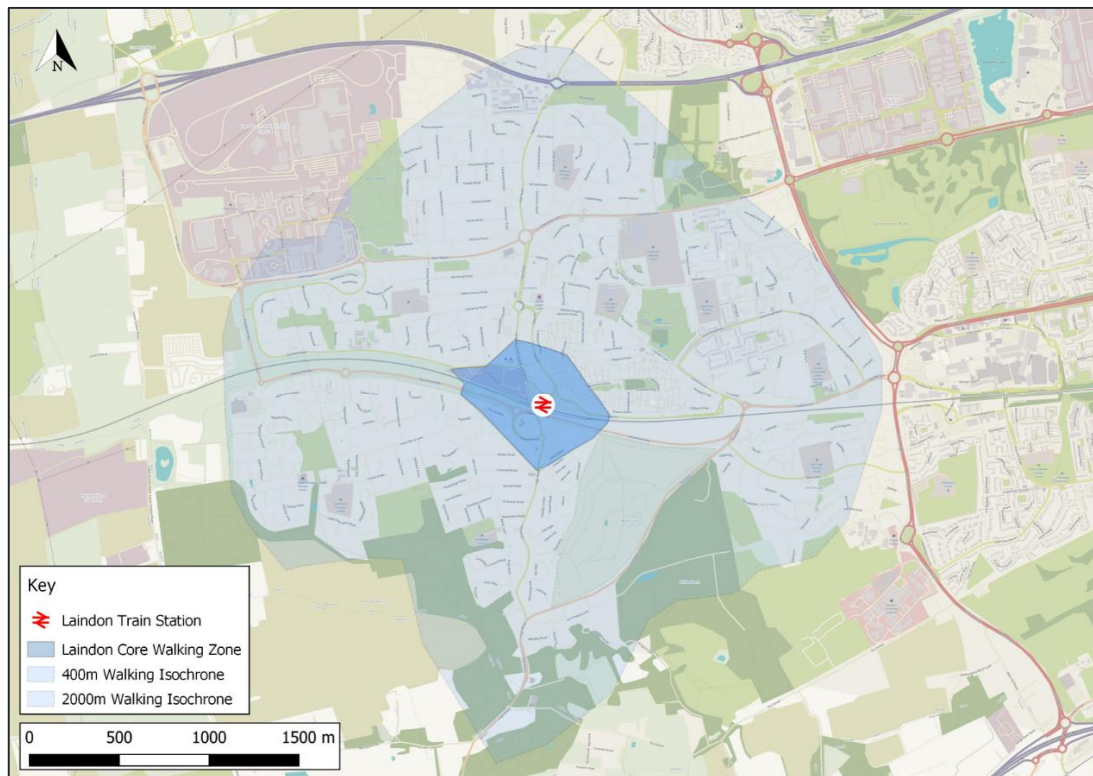


Figure 5-2 - Basildon Core Walking Zone with 2km Buffer



Figure 5-3 - Billericay Core Walking Zone with 2km Buffer

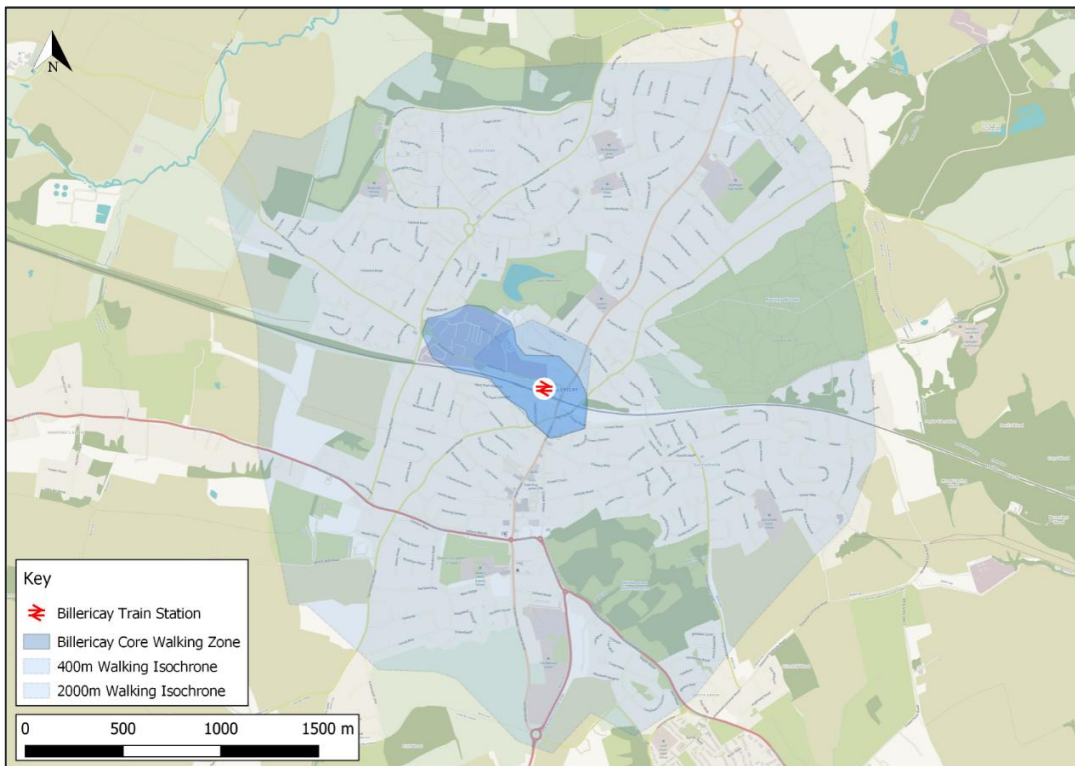
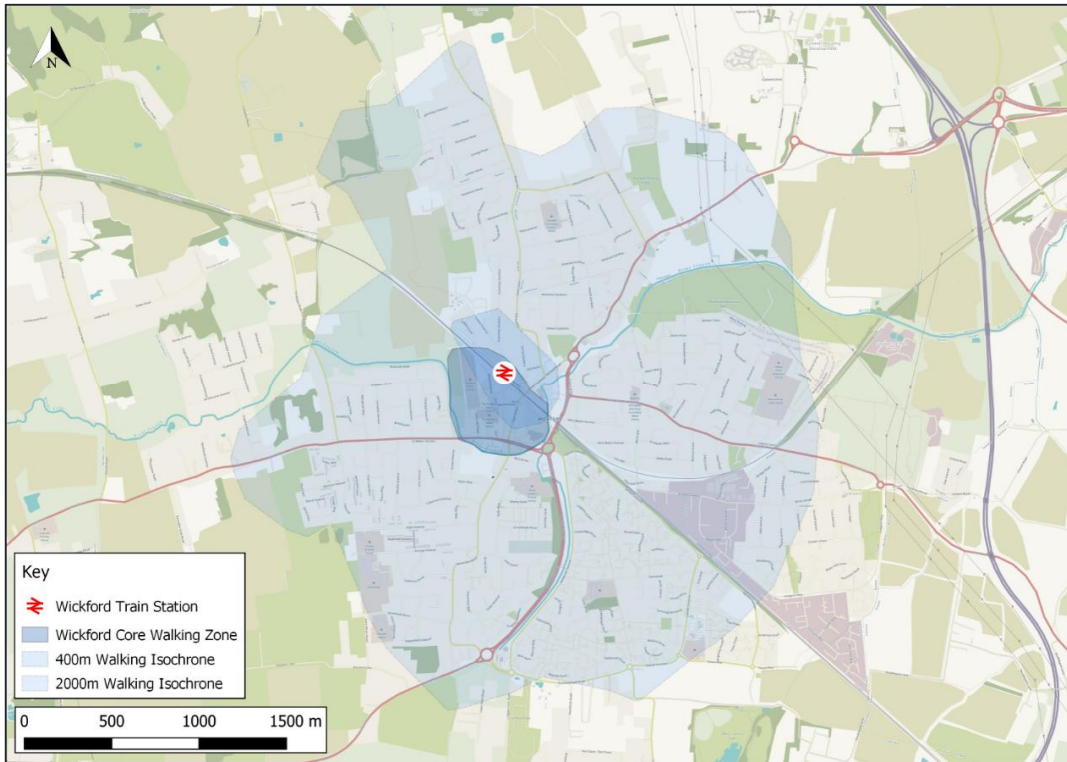


Figure 5-4 - Wickford Core Walking Zone with 2km Buffer



5.2 First Stakeholder Workshops (Identifying Key Walking Routes)

- 5.2.1. At the same stakeholder workshops as described in section 4.5 (an internal stakeholder workshop on 05 December 2019 and an external stakeholder workshop on 09 December 2019), the Core Walking Zones were presented for discussion. Stakeholders agreed with the selection of CWZs and the reasoning behind this.
- 5.2.2. The CWZs plans presented to stakeholders at the workshops also showed key origins and destinations for context, as well as key 'barriers' to walking and 'funnels' over these barriers. 'Barriers' included major roads, rail lines and rivers; 'funnels' included pedestrian crossings, subways and bridges. Stakeholders were invited to review these barriers and funnels to and identify any additional barriers and funnels that may have been omitted. Notes and attendance records from these stakeholder workshops are included in Appendix E.
- 5.2.3. In addition to the CWZ plans, stakeholders were also presented with plans of desire lines for walking. These desire lines were generated in the GIS model with the same methodology as described in section 4 with one key difference: desire lines over 2km were filtered and removed from the plans (as 2km was considered the walkable distance following DfT LCWIP guidance).
- 5.2.4. With the CWZs, origins, destinations, barriers and funnels, stakeholders had all the key information to be able to discuss and identify walking routes to the CWZs. Some of the walking routes identified fell entirely within the CWZs, others were routes to the CWZ within the 2km 'walkable distance' buffer. 16 of these routes could be considered primary and secondary walking routes according to the DfT's footway hierarchy, shown in Table 5-1 below. These were selected as the key walking routes due to their higher demand.

Table 5-1 – Footway Hierarchy

Category	Name	Description
1	Primary Walking Routes	Busy urban shopping and business area, and main pedestrian routes
2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.
3	Link Footways	Linking local access footways through urban areas and busy rural footways.
4	Local Access Footways	Footways associated with low usage, short estate road to the main roads and cul-de-sacs.

5.2.5. The 16 primary and secondary walking routes were distributed fairly evenly across Basildon Borough, with nine in Basildon/Laindon, four in Billericay and three in Wickford.

5.2.6. These key walking routes were then mapped and handed to BBC for auditing.

5.3 Walking Route Auditing

5.3.1. As with the cycling routes, BBC chose to audit the walking routes internally and therefore received training from WSP on how to use the DfT's Walking Route Audit Tool (WRAT). The 16 key walking routes identified in the first stakeholder workshops were audited by BBC in January 2020.

5.3.2. As with cycling and the RST, the WRAT auditing methodology targets five core design outcomes for pedestrian infrastructure, which are similar to those for cycling. The design outcomes are attractiveness, comfort, directness, safety and coherence.

5.3.3. The assessments considered the needs of all users, including vulnerable pedestrians, such as those who are older; visually impaired; mobility impaired; hearing impaired; with learning difficulties; buggy users or children.

5.4 Second Stakeholder Workshops (Infrastructure Improvements)

5.4.1. Upon receiving the results of the WRAT audits, WSP used its active travel expertise to generate associated draft programmes of infrastructure improvements based on the principles listed in section 5.3 and the DfT LCWIP guidance, to bring the walking environment up to the high standard being targeted in this LCWIP+.

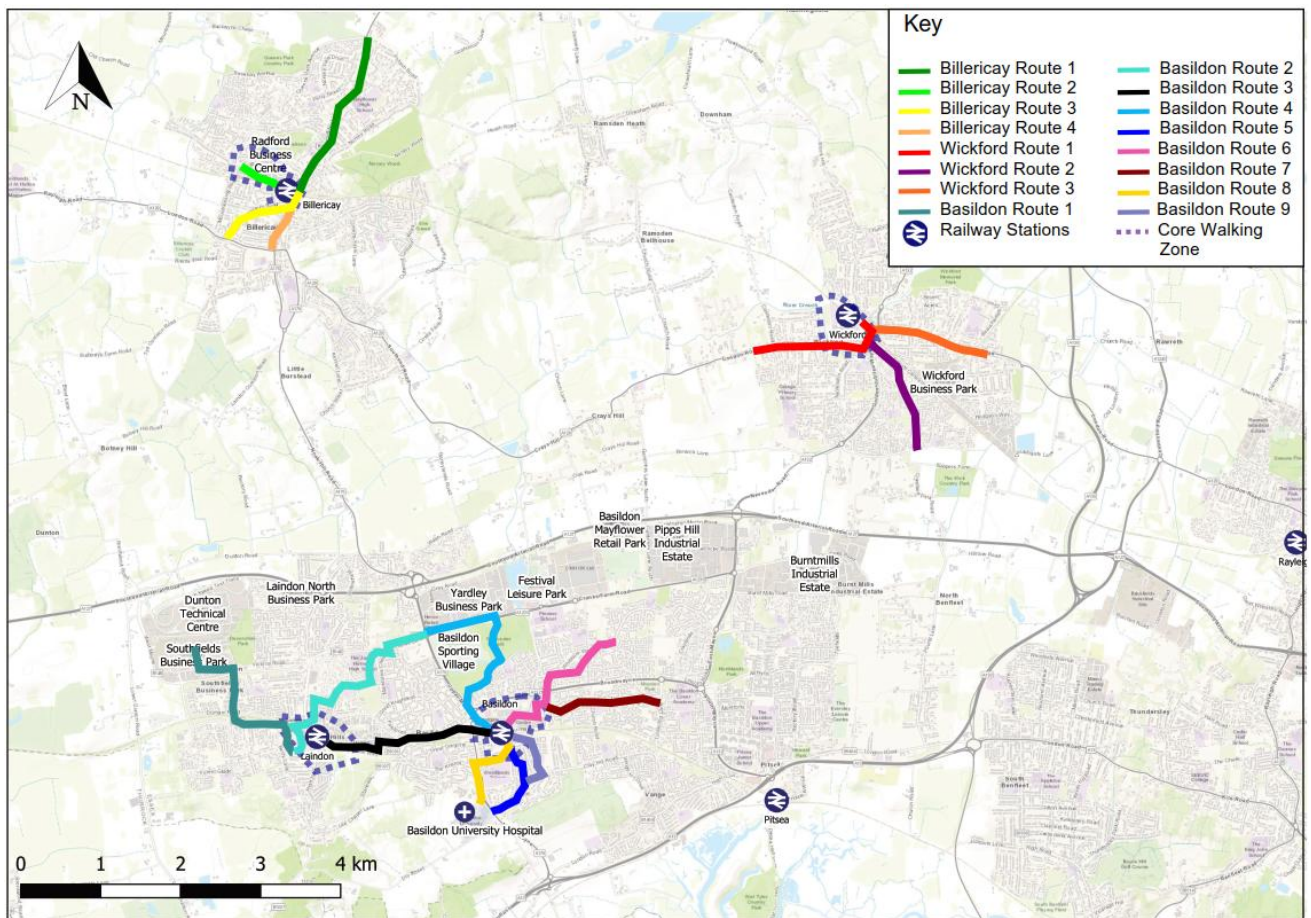
5.4.2. At the same workshops as described in section 4.7 (one internal stakeholder workshop on 16 March 2020; three virtual external stakeholder workshops in June 2020), stakeholders were presented with the updated walking network and the draft programmes of infrastructure improvements. They were given an opportunity to comment and suggest additional infrastructure improvements for inclusion. Where appropriate, additional suggestions for route amendments or infrastructure improvements from stakeholders were incorporated into the walking network map and its associated programmes of infrastructure improvements.

5.4.3. Notes and attendance records from these stakeholder workshops are included in Appendix E.

5.5 Walking Network Map and Programmes of Infrastructure Improvements

- 5.5.1. After the second stakeholder workshops, the walking network map and its associated programmes of infrastructure improvements were updated. The final walking network map is shown below in Figure 5-5 and included in higher resolution in Appendix B along with plans for each of the walking routes and their associated programmes of infrastructure improvements.
- 5.5.2. It is important to remember that this network does not necessarily represent a selection of routes which already have good facilities for pedestrians on them, rather it represents an aspirational network which, if its programmes of infrastructure improvements are implemented, should enable much more walking in Basildon, Billericay, Wickford and Laindon in particular.

Figure 5-5 – Walking Network Map



5.6 Plans for Core Walking Zones and Key Walking Routes

- 5.6.1. The next pages summarise the key walking routes in terms of the destinations they serve, the existing environment, the improvements proposed, the cost of these improvements and the mode shift estimated from them by the AMAT. More detailed information is included in Appendix B.

5.6.2. In addition to the improvements listed for the key walking routes, the following additional interventions have been identified for the CWZs:

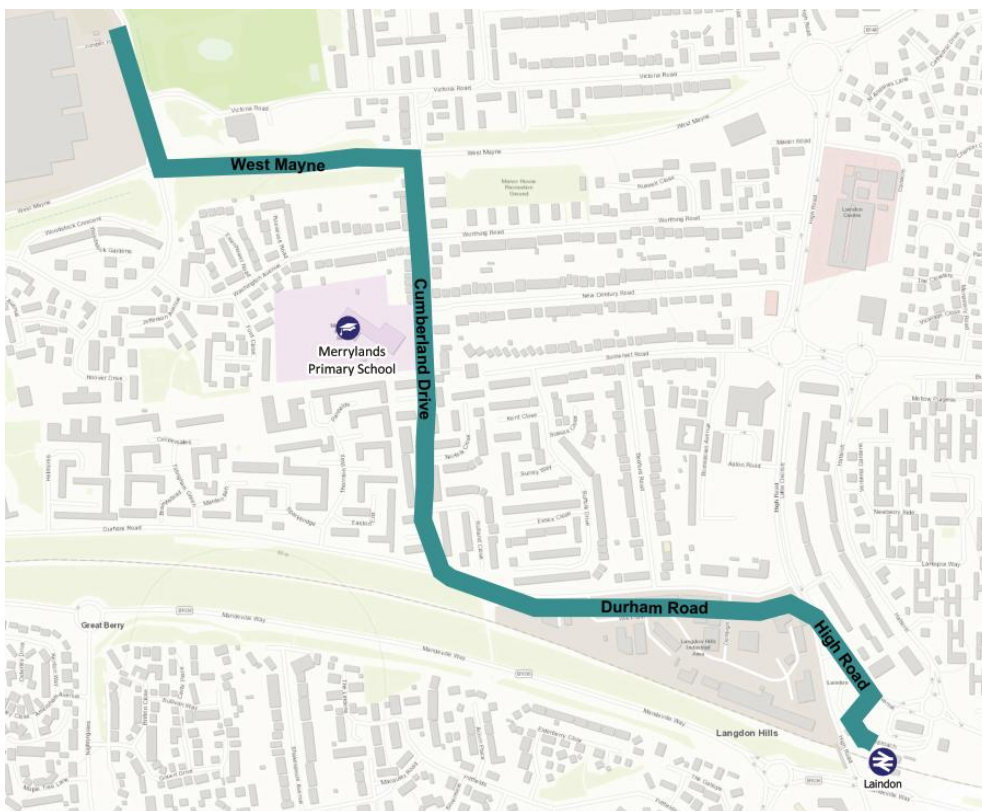
- Implement wayfinding signs throughout the CWZ and providing direction to railway station and local employment areas
- Add benches within the CWZ to provides areas for pedestrians to stop and rest
- Install art, planters, edible gardens in the town centre areas.

Basildon Walking Route 1 – Laindon Station North-Eastern Link

- 5.6.3. NB: Laindon is part of the Basildon urban area and the titles of these walking routes reflect that.
- 5.6.4. Basildon Walking Route 1 extends from Laindon Railway Station to employment areas towards Dunton Mills. South of West Mayne the route is predominantly residential, though Durham Road is heavily trafficked. Site Route auditors noted that:

“There is no surveillance or housing around the route by Victoria Park, so it feels isolated and unsafe walking here and on the bridge over West Mayne. There is more lighting and surveillance in the residential area and it therefore feels safer for users. It is an area where people are walking children to primary school and gets busy during school hours. However, it’s very noisy on Durham Road in the day and at night it feels isolated.”

Figure 5-6 – Basildon Walking Route 1 – Laindon Station North-Eastern Link



- 5.6.5. Proposals for this route include improved wayfinding, widening the northern footway on Durham Road, reducing speed limits, narrowing junction radii at side roads, installing a zebra crossing close to Merrylands Primary school, increasing the lighting provision and making existing crossing points accessible.
- 5.6.6. The length of this route is 1.9km and the proposed improvements have an estimated cost of £250k.
- 5.6.7. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.8. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 2 – Laindon Station North-Western Link

5.6.9. This route extends from Laindon Railway station towards employment and retail areas north of Basildon. Route auditors noted that:

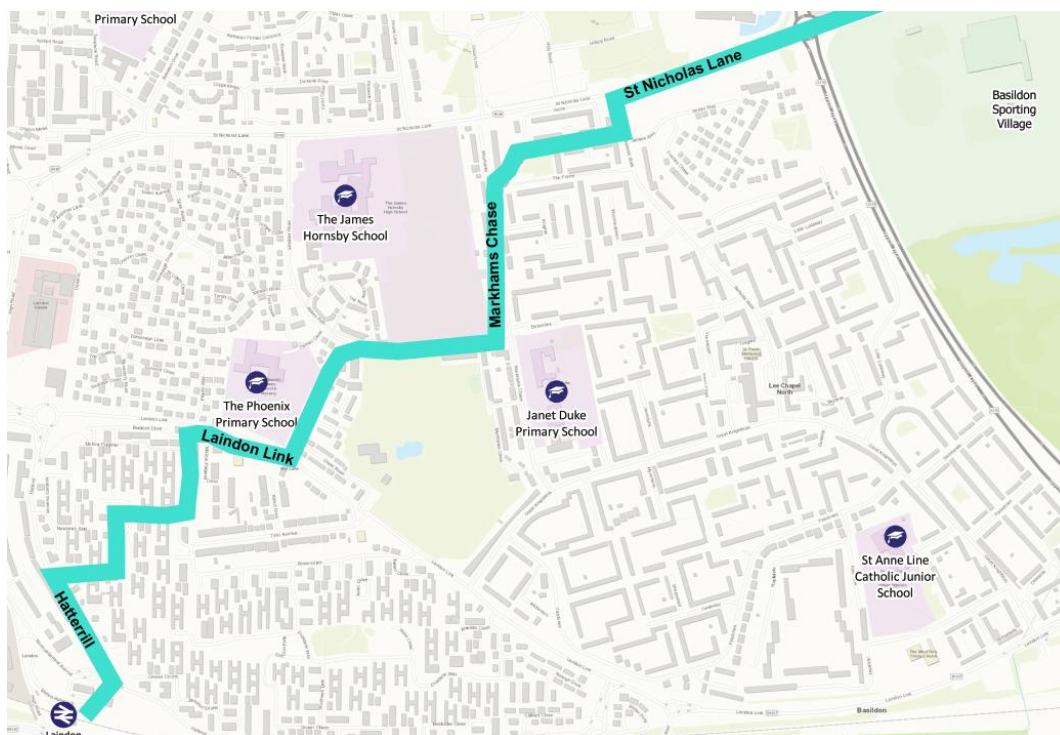
“the area around Laindon Railway station is unpleasant, especially at night. There’s a lot of littering and footway parking and not many people around, which means as a pedestrian you feel isolated and unsafe.”

5.6.10. However, site auditors also noted that:

“the route gets better towards the schools and parks, where there’s more activity and people around.”

5.6.11. A lot of guard railing was noted along the route, and it could benefit from further crossing facilities. There is an underpass located at the north easterly extent of the route from the site visit. Site auditors noted that this too could feel unsafe to use particularly during night.

Figure 5-7 - Basildon Walking Route 2 – Laindon Station North-Western Link



5.6.12. Proposals for this route include improved wayfinding, moving the signalised crossing by Laindon Station closer to the desire line (at the roundabout), reducing junction radii at side roads, increasing the lighting provision and making existing crossing points accessible through dropped kerbs and tactile paving.

5.6.13. The length of this route is 2.8km and the proposed improvements have an estimated cost of £160k.

5.6.14. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.

5.6.15. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 3 – Laindon Station to Basildon Station

5.6.16. This route connects Laindon Rail Station to Basildon Rail Station, running along the railway line. Route auditors noted that:

“the western part of the route was quite dark, caused by the high tree line. The houses on this route have high fences and do not face the road which means that you feel quite isolated when walking there.”

Figure 5-8 - Basildon Walking Route 3 – Laindon Station to Basildon Station



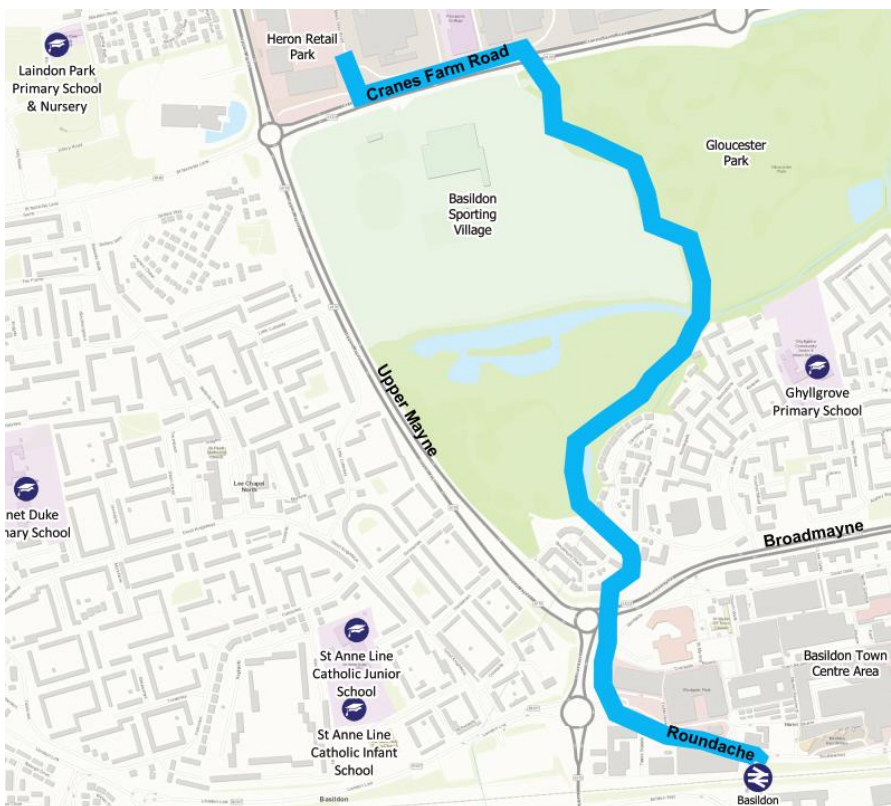
- 5.6.17. Proposals for this route include improved wayfinding, moving dropped kerbs closer to desire lines near Laindon Station, increasing the green man time at the signalised crossing, widening the footways using grass verges and road space, improving crossings near Basildon station and greatly improving the lighting along the route, especially at the underpass.
- 5.6.18. The length of this route is 2.5km and the proposed improvements have an estimated cost of £210k.
- 5.6.19. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.20. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 4 – Basildon Station to Gloucester Park

- 5.6.21. Basildon Route 4 connects Basildon Railway Station to the employment and retail areas north of Gloucester Park. The route is mostly off-road, following an existing shared-use facility off-road and passes under an underpass on Broadmayne before joining a footpath through Gloucester Park.
- 5.6.22. Route auditors noted about this route that:

“there are a number of underpasses towards Westgate, which feel particularly unsafe at night to walk through. Through the park there is sufficient lighting, with space for pedestrians and cyclists. This provides a more attractive route to Upper Mayne. However, once you get there [the Cranes Park Road / Upper Mayne roundabout], there are underpasses again which regularly flood when it’s raining.”

Figure 5-9 – Basildon Walking Route 4 – Basildon Station to Gloucester Park



- 5.6.23. Proposals for this route include: improved wayfinding, installing an surface level signalised crossing across Cranes Farm Road, improving the footway through Gloucester Park by resurfacing and installing additional lighting, providing segregation between pedestrians and cyclists and improving lighting in the subways.
- 5.6.24. The length of this route is 2.1km and the proposed improvements have an estimated cost of £390k.
- 5.6.25. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.26. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 5 – Basildon Station to Basildon Hospital Route A

5.6.27. Basildon is a key connection for commuters travelling between the railway station and the Hospital. The route extends southwards through residential areas. It was noted the green man time on the crossing by the BBC offices was no long enough to accommodate all users, lasting less than 10 seconds.

5.6.28. Route auditors also noted that:

“there are numerous bollards on the route getting in the way of pedestrians. The route on Stainbridge path feels isolated because of the trees and poor lighting. It also needs resurfacing.”

Figure 5-10 – Basildon Walking Route 5 – Basildon Station to Basildon Hospital Route A



5.6.29. Proposals for this route include improved green man time at the crossing near Basildon station, resurfacing the Stainbridge Path footway and improving the lighting on the route.

5.6.30. The length of this route is 1.5km and the proposed improvements have an estimated cost of £182k.

5.6.31. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.

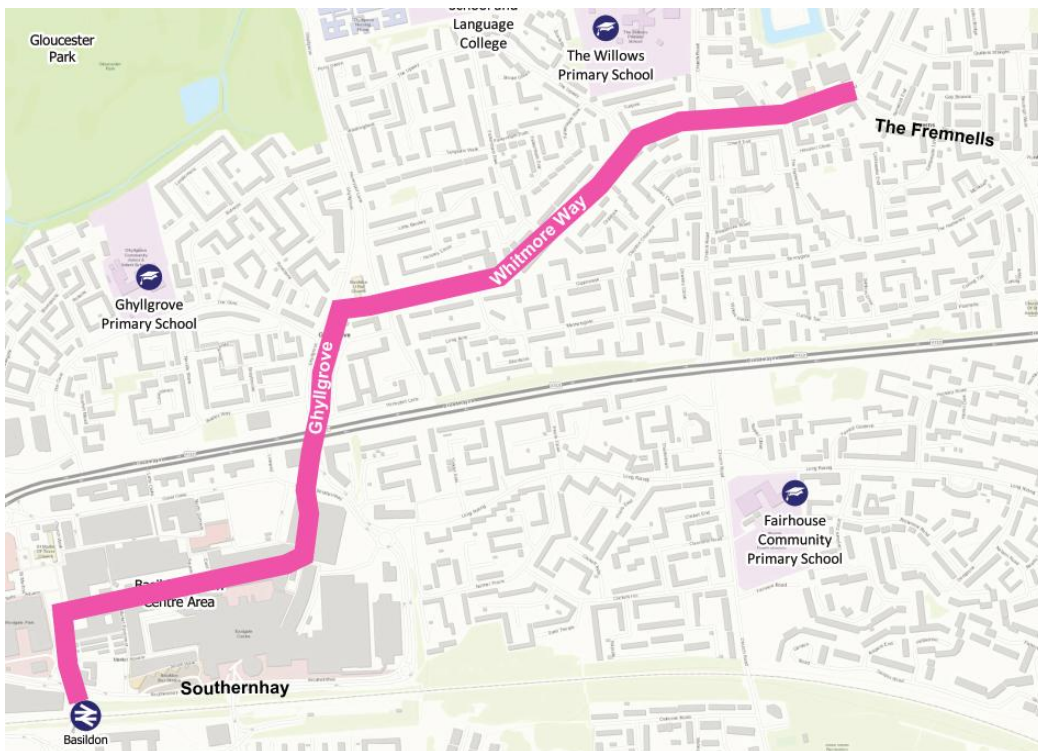
5.6.32. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 6 - Basildon Station North-Western Link

- 5.6.33. This route extends through Basildon town centre to residential areas in the north west of Basildon. Route auditors noted that:

“The town centre is dead at night, it feels quiet and unsafe to walk through compared with Billericay where there’s a bit of a nightlife. In the day, the crossing at Broadmayne is very busy with pedestrians waiting a while to cross. Along Whitmore Way it’s fairly pleasant, you go through a residential area and past a few schools.”

Figure 5-11 - Basildon Walking Route 6 - Basildon Station North-Western Link

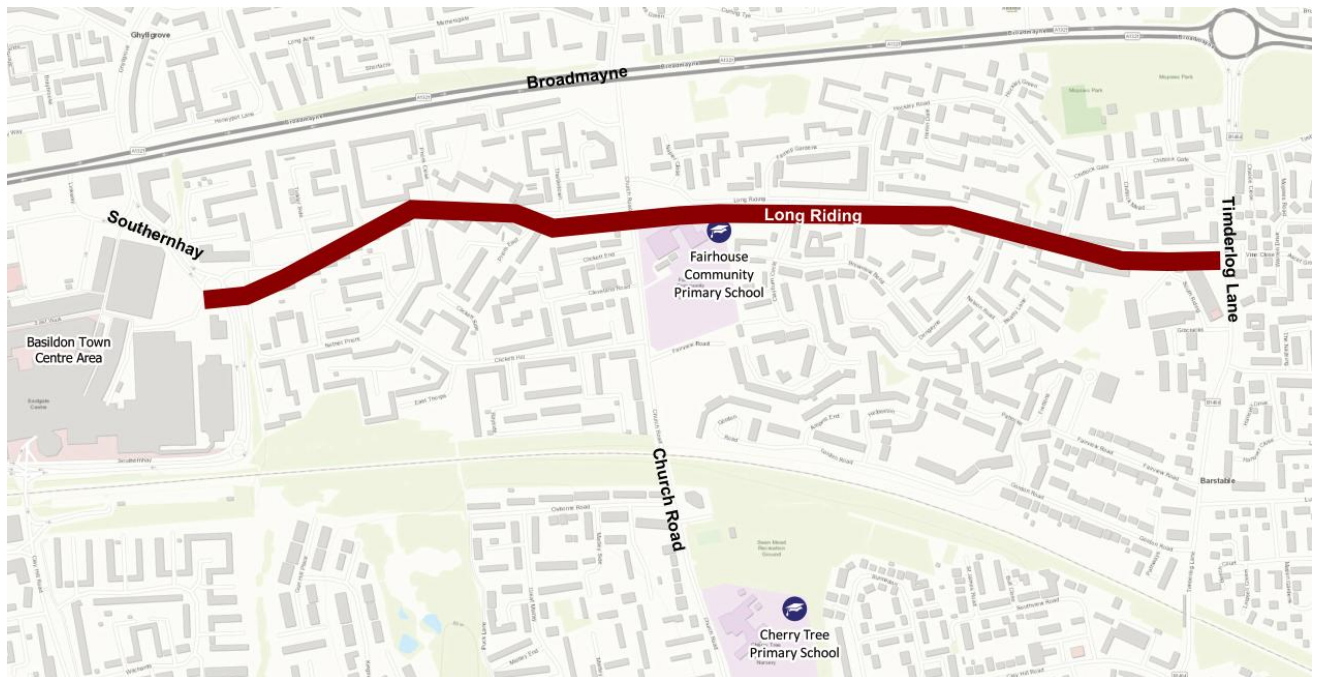


- 5.6.34. Proposals for this route include: improved wayfinding, removing guard railings, increasing the green man time at the Broadmayne / Ghyllgrove Junction, reducing junction radii at side roads along Whitmore Way, resurfacing deteriorated footways, increasing the lighting provision and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.35. The length of this route is 2.1km and the proposed improvements have an estimated cost of £130k.
- 5.6.36. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.37. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 7 – Basildon Town Centre Eastern Link

- 5.6.38. Basildon Route 7 is an east west connection between Basildon Town Centre to Timberlog Lane, via Long Riding. The route is predominantly through a residential area and serves Fairhouse Community Junior School. It is therefore quite busy during the peak hours for school trips.
- 5.6.39. The route itself is sufficiently lit with houses looking over the route. It was noted on the site visit there were numerous instances of footway parking, causing obstruction for pedestrians.

Figure 5-12 - Basildon Walking Route 7 – Basildon Town Centre Eastern Link



- 5.6.40. Proposals for this route include improved wayfinding, removal of guard railing, enforcement of parking restrictions to reduce footway parking, resurfacing and widening of footways where possible, reducing junction radii at side roads, increasing the lighting provision and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.41. The length of this route is 1.5km and the proposed improvements have an estimated cost of £80k.
- 5.6.42. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.43. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 8 – Basildon Station to Basildon Hospital Route B

5.6.44. Route 8 provides an addition route between Basildon Railway station and the University Hospital. The route is located adjacent to a heavily trafficked route on Nether Mayne. Route auditors noted that:

“The western side of Nethermayne is well lit, however the eastern side is covered by trees and might feel unsafe at night with the lack of lighting. There is a bridge provided over Nethermayne but it does not accommodate all users in particular people with wheelchairs and pushchairs.”

5.6.45. Route auditors also commented that this route is more direct than Basildon Walking Route 5 (which also links Basildon Station with Basildon University Hospital) and is therefore likely to be the preferred route for many pedestrians.

Figure 5-13 - Basildon Walking Route 8 – Basildon Station to Basildon Hospital Route B



5.6.46. Proposals for this route include improved wayfinding, removing guard railing, reducing junction radii at side roads, increasing the lighting provision and making existing crossing points accessible through dropped kerbs and tactile paving.

5.6.47. The length of this route is 1.0km and the proposed improvements have an estimated cost of £70k.

5.6.48. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.

5.6.49. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Basildon Walking Route 9 – Basildon Station Southern Link

- 5.6.50. Basildon Route 9 serves walking trips between the railway station and residential areas in the south of the town centre, including two schools. Issues located on the route include guard railing underpass at Clay Hill Road, crossing points were not located on the natural desire particularly at the junction with Cherrydown East.

Figure 5-14 – Basildon Walking Route 9 – Basildon Station Southern Link

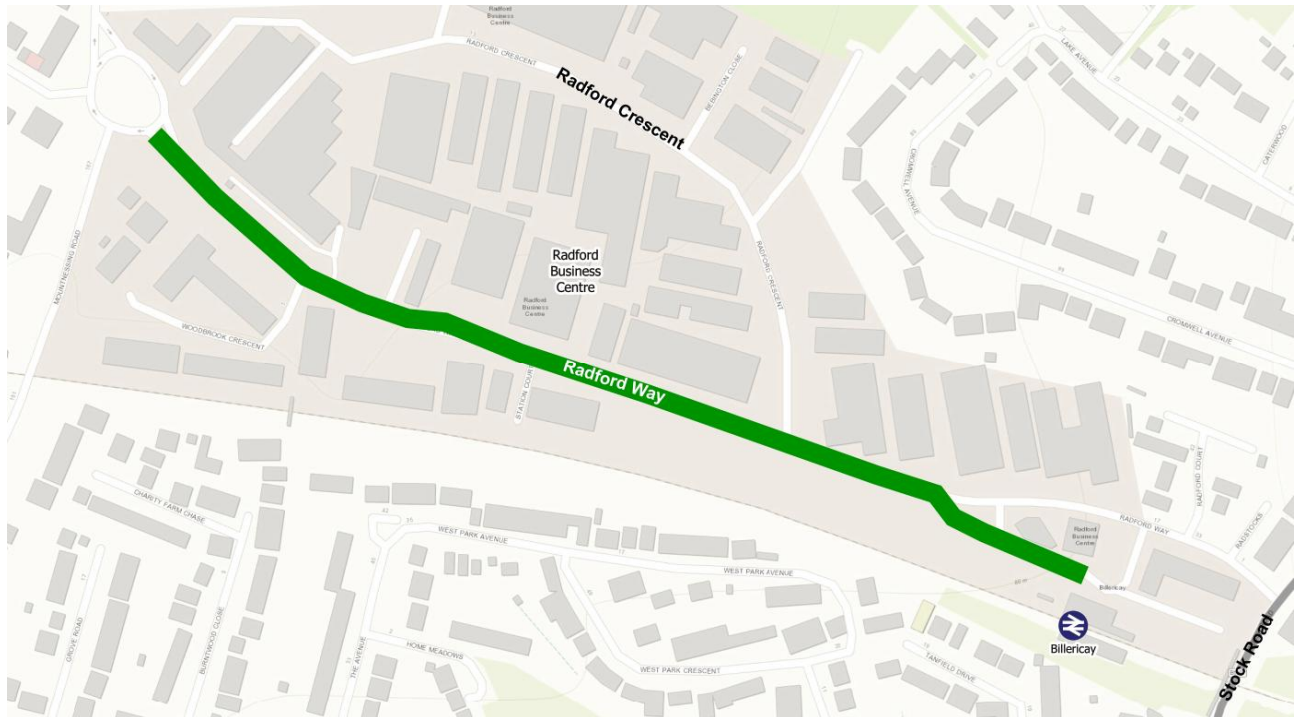


- 5.6.51. Proposals for this route include improved wayfinding, adding a zebra crossing by Kingswood Primary School and Nursery removal of guard railing and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.52. The length of this route is 1.1km and the proposed improvements have an estimated cost of £70k.
- 5.6.53. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.54. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Billericay Walking Route 1 – Billericay Station Western Link

- 5.6.55. Billericay Route 1 is the key route between Billericay Railway Station and Radford Business Centre. The route currently has footways on both sides of the route, however there are narrow sections caused by vegetation encroaching on the footway and guard railing.
- 5.6.56. There is an existing zebra crossing point by Radford Crescent connecting pedestrians on the southern side of the route to the industrial estate.

Figure 5-15 - Billericay Walking Route 1 – Billericay Station Western Link



- 5.6.57. Proposals for this route include adding new crossing points at each end of the route, decluttering the route, addressing footway parking, widening footway using grass verges, reducing junction radii at side roads, resurfacing the footway and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.58. The length of this route is 0.7km and the proposed improvements have an estimated cost of £280k.
- 5.6.59. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.60. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

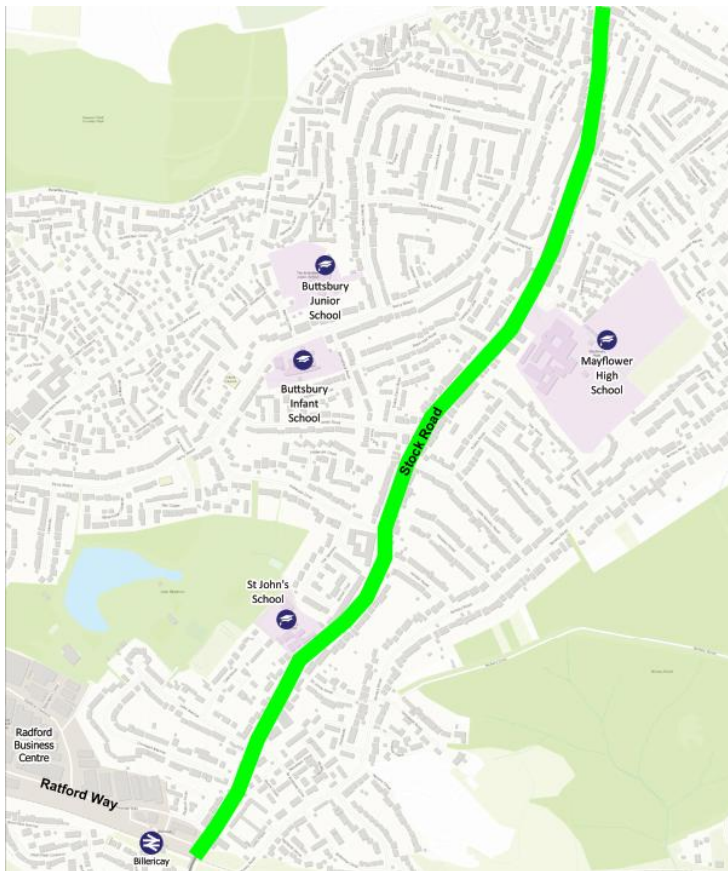
Billericay Walking Route 2 – Billericay Station Northern Link

5.6.61. This route runs from the northern extent of Billericay and will also provide a key link into the town centre and the railway station from the new developments planned. It is also regularly used by school children particularly from Mayflower High School.

5.6.62. Route auditors noted that:

“This route is fairly quiet outside of school hours. The footways are fairly wide, accommodating trips in the school hour peak.”

Figure 5-16 – Billericay Walking Route 2 – Billericay Station Northern Link



5.6.63. Proposals for this route include new crossing points near Billericay station, removing guard railing, reducing junction radii at side roads and making existing crossing points accessible through dropped kerbs and tactile paving.

5.6.64. The length of this route is 2.1km and the proposed improvements have an estimated cost of £300k.

5.6.65. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.

5.6.66. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Billericay Walking Route 3 – Billericay Station Southwestern Link

5.6.67. This route is adjacent to Billericay High Street serving pedestrians west of the town centre between the railway station and London Road. Route auditors noted that:

“footways are often narrow here and it’s unpleasant as you’re right next to the traffic a lot of the time.”

Figure 5-17 - Billericay Walking Route 3 – Billericay Station Southwestern Link



5.6.68. Proposals for this route include decluttering the route, addressing footway parking, widening footway using grass verges, reducing junction radii at side roads, resurfacing the footway and making existing crossing points accessible through dropped kerbs and tactile paving.

5.6.69. The length of this route is 1.1km and the proposed improvements have an estimated cost of £65k.

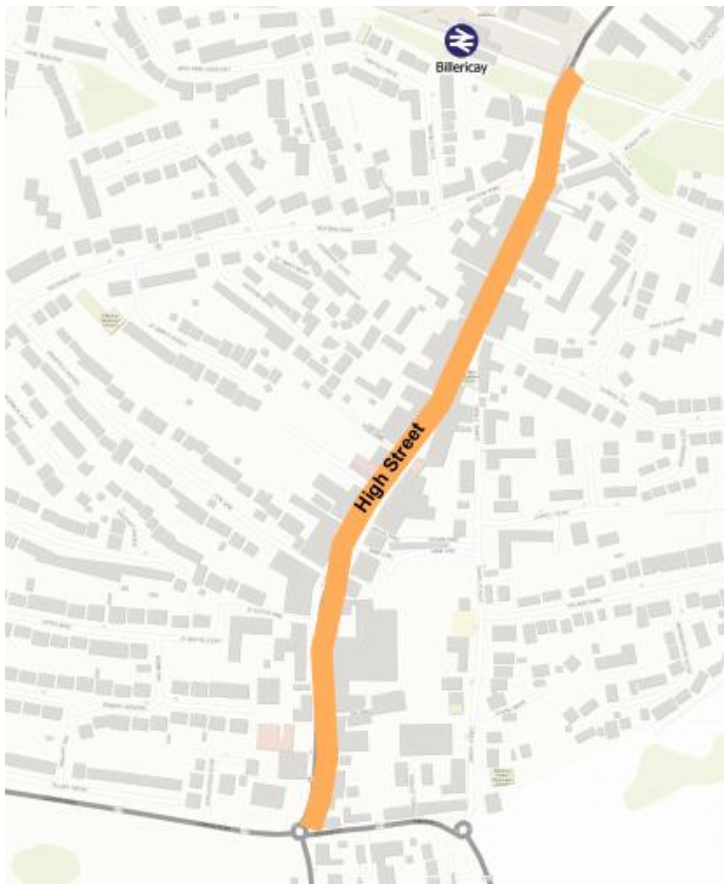
5.6.70. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.

5.6.71. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Billericay Walking Route 4 – Billericay Station to Billericay High Street

- 5.6.72. This route is located on the busy Billericay High Street. As observed from the site visit this route is very popular with pedestrians and particularly at night-time due to the abundance of pubs and restaurants located on the route. People felt safe using this route during both daytime and at night due to the night activity.
- 5.6.73. A key issue identified on this route was the poor air quality, due to the build-up of traffic during all hours of the day.

Figure 5-18 – Billericay Walking Route 4 – Billericay Station to Billericay High Street

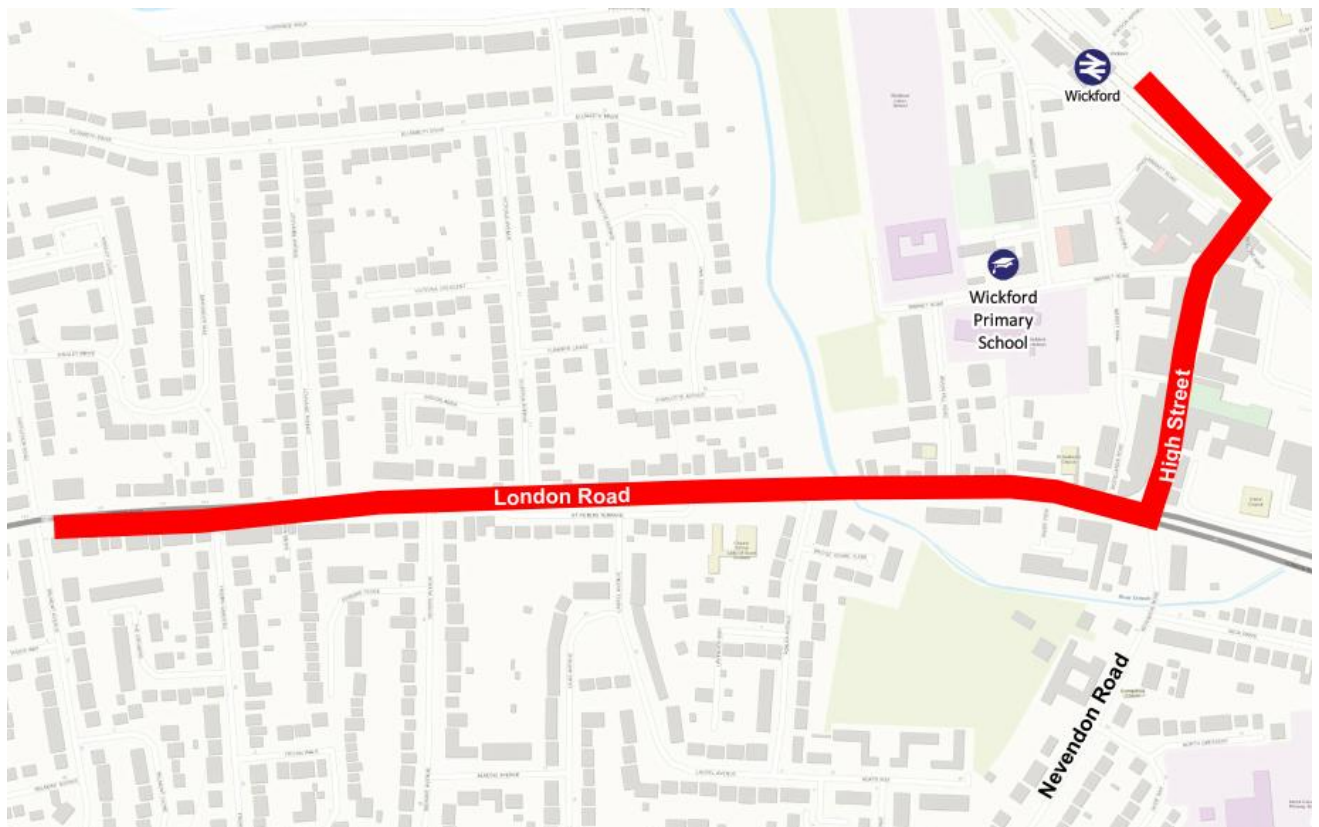


- 5.6.74. Proposals for this route include adding crossing points, widening footways, improving green man time at crossing points, decluttering the route, addressing footway parking, resurfacing the footway and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.75. The length of this route is 0.8km and the proposed improvements have an estimated cost of £180k.
- 5.6.76. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.77. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Wickford Walking Route 1 – Wickford Station Western Link

- 5.6.78. This route extends from Wickford Railway station to residential areas in the west of the town centre off London Road, with future connections to the new residential developments. Route auditors noted that:
- “The route is noisy and you feel quite close to traffic a lot of the time because the pavement is often narrow.”*
- 5.6.79. The route travels down Wickford High Street which is fairly busy and can be heavily trafficked. However, as part of the Emergency Active Travel Fund for Essex Wickford High Street was identified as an area for potential pedestrianisation which would in turn improve air quality in the town centre.

Figure 5-19 - Wickford Walking Route 1 – Wickford Station Western Link



- 5.6.80. Proposals for this route include adding new crossing points, decluttering the route, widening footway using grass verges, reducing junction radii at side roads, resurfacing the footway and making existing crossing points accessible through dropped kerbs and tactile paving.
- 5.6.81. The length of this route is 1.6km and the proposed improvements have an estimated cost of £260k.
- 5.6.82. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.83. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Wickford Walking Route 2 – Wickford Station Southern Link

- 5.6.84. This route is a key connection for residents living south of the town centre, bound to Golden Jubilee Way and the railway line. The route currently extends on an existing footpath behind housing.
- 5.6.85. The footpath follows an existing pedestrian bridge over Golden Jubilee Way. Route auditors noted that:
“This is not sufficiently lit and lacks surveillance which may make people feel unsafe particularly at night. The existing footpath through the housing is narrow in sections and is sometimes overgrown.”

Figure 5-20 – Wickford Walking Route 2 – Wickford Station Southern Link

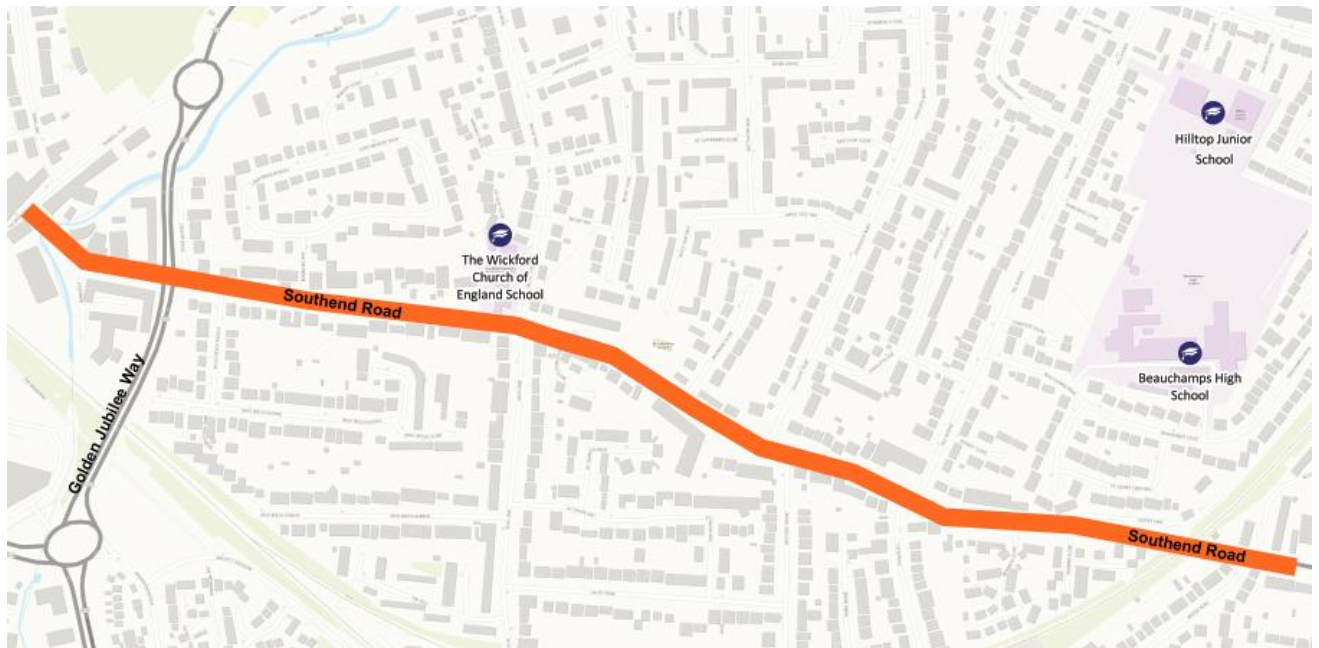


- 5.6.86. Proposals for this route include wider footways, improved lighting and wayfinding.
- 5.6.87. The length of this route is 1.9km and the proposed improvements are included as part of the £4m estimated cost of Cycle Route 13.
- 5.6.88. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.89. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

Wickford Walking Route 3 – Wickford Station Eastern Link

- 5.6.90. This route extends west of the town centre from Wickford Railway station via a subway under Golden Jubilee Way, connecting to residential areas off Southend Road. Route auditors noted that *“it’s a fairly busy road and you feel close to traffic. The underpass is unpleasant.”*

Figure 5-21 - Wickford Walking Route 3 – Wickford Station Eastern Link



- 5.6.91. Proposals for this route include improved wayfinding, additional crossing points, widening the footways using grass verges, improving crossings near Wickford station and greatly improving the lighting along the route, especially at the underpass.
- 5.6.92. The length of this route is 1.9km and the proposed improvements have an estimated cost of £240k.
- 5.6.93. More detail on the proposed infrastructure improvements for walking on this route is given in Appendix B.
- 5.6.94. AMAT analysis shows that this route could achieve a 2.7% modal shift to walking. This considers the route in isolation, rather than being part of a wider cycle network, and does not take into account complementary behaviour change programmes. The potential modal shift could therefore be much higher than 2.7%.

6 LCWIP 'PLUS' – MULTI-MODAL TRAVEL ANALYSIS

6.1 Introduction

- 6.1.1. The inclusion of public transport as part of Basildon LCWIP+ has created the unprecedented opportunity to consider traditional surface public transport alongside cycling and walking to build the case for a multi-modal transport network as an attractive alternative to the cars. This approach was taken before 'Bus Back Better' and plans for Bus Service Improvement Plans (BSIP) were published by the DfT. This pro-active approach to multi-modal transport shows that BBC and ECC were already considering how plans for active travel and public transport could complement one another to benefit all users and maximise opportunities for multi-modal travel.
- 6.1.2. The method suggested explores modelling outputs from the WSP LCWIP GIS Model and TRACC (an accessibility mapping tool based on transport operational schedules and the road network). With these outputs, diverse analysis relevant to the public transport network and the opportunities for active travel have been derived. The analyses allow an investigation of journey travel time and network coverage, which in turn allows the attractiveness of different multi-modal desire lines to be identified.
- 6.1.3. This section presents the analyses carried out, results obtained and how these support the case for the cycling and walking improvements outlined in sections 4 and 5.

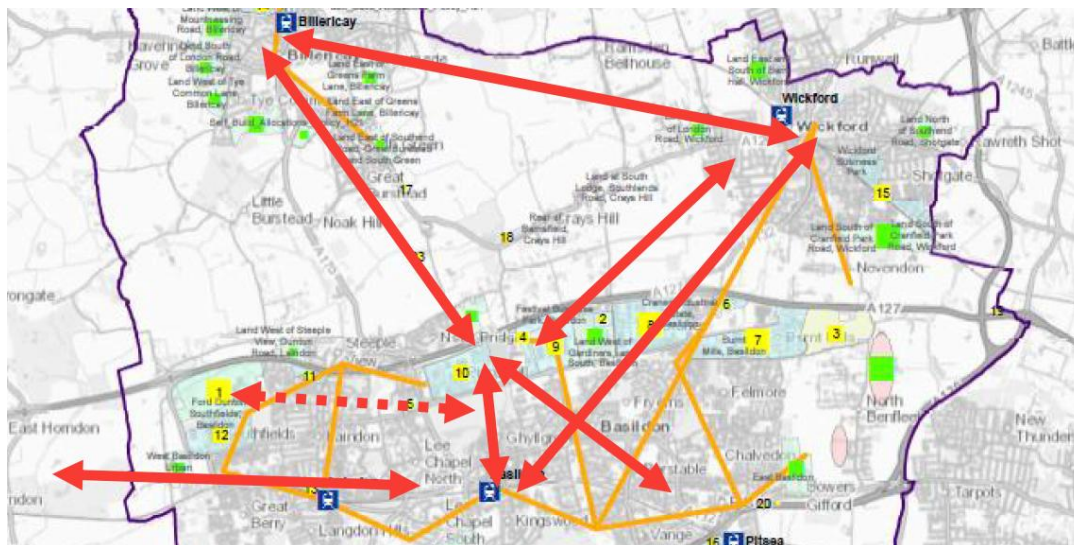
Note on the technical content of this chapter:

As with some of the earlier chapters in this report, some of the content in this chapter is more technical in nature and may be less easily understood by people who aren't transport planning practitioners. Some readers may therefore want to skip ahead to the Summary of Analysis at the end of this chapter, in section 6.8, which summarises the key findings of this multi-modal travel analysis in a succinct and accessible manner.

6.2 Establishing Desire Lines for Multi-Modal Travel

- 6.2.1. The aim of this step is to identify suitable origin-destination trips in Basildon Borough which generate high travel demand and could be satisfied by public transport. The same GIS model used to identify desire lines for cycling and walking was again used to investigate desire lines for public transport and multi-modal travel. The same origins and destinations were used to produce desire lines. However, in this scenario, trip length was set between 5km and 10km as an approximation of journeys that might be considered by the average person as too far to cycle but not too long to consider driving instead.

Figure 6-1 – Key Public Transport / Multi-Modal Desire Lines (Shown in Red)

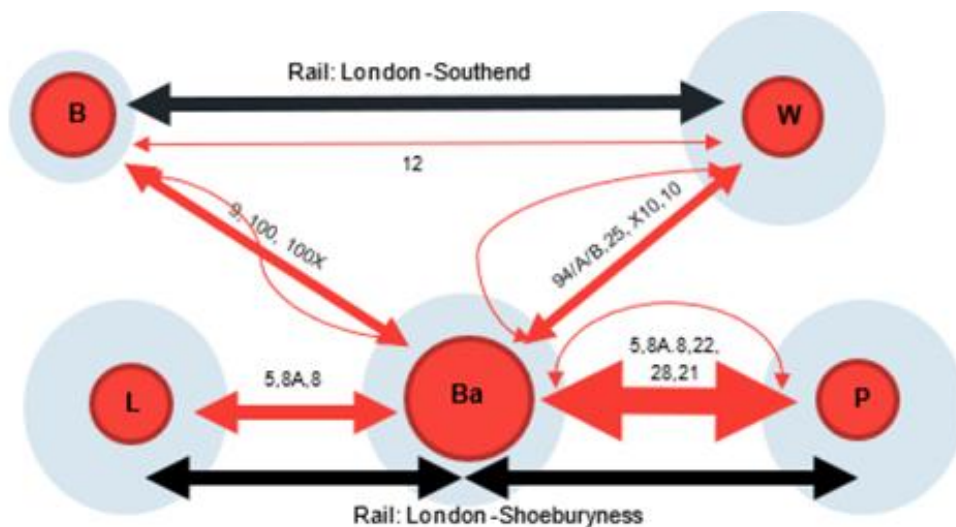


6.2.2. Figure 6-1 shows the clustered desire lines with the highest demand output by the GIS model. It is important to note that even on these routes the expected demand was relatively low. (A reflection of this in reality is how bus routes are often strategically combined to obtain loads which can sustain public transport).

6.3 Comparison with Existing Public Transport Network

- 6.3.1. The bus network in Basildon Borough is composed of around 52 bus routes. Of these, three operate around 5 buses per hour (bph), five operate 3-4 bph and one operates 2 bph. Five routes operate 1-2 bph, and the rest of the routes operate fewer than 1 bph (these are buses which only run every other day, at the weekends only or serve school routes).
- 6.3.2. The network is primarily operated by two operators: First Essex and NIBSbuses. First Essex operates most of the higher frequency routes, while NIBSbuses operate low frequency services, school routes and short peak only frequency services to some railway stations.
- 6.3.3. The core bus network mainly links Basildon town with other surrounding towns, with few orbital links between the 5 towns in Basildon Borough (Basildon, Laindon, Pitsea, Billericay and Wickford). Reasonable local services are supplied to train/town centre users.
- 6.3.4. Figure 6-2 illustrates the public transport network in Basildon Borough, showing the Billericay (B), Wickford (W), Laindon (L), Basildon (Ba) and Pitsea (P) in red circles, rail routes in black and bus routes in red (with line thicknesses representing frequencies of service).

Figure 6-2 - Public Transport Schema for Basildon Borough



6.3.5. The existing network matches fairly well to the desire lines output by the GIS model (connections to Key Employment Areas [KEAs] are provided via intermediate stops on the main corridors).

6.4 Interfaces Between Future Bus and Cycle Networks

6.4.1. A meeting was held between ECC and WSP on 23 March 2020 where ECC presented various long-term ambitions for the bus network in Basildon Borough to compare with any on-carriageway cycle infrastructure proposals from the LCWIP+. This was primarily to ensure that there were no overlaps that might cause issues, for example proposals for a segregated cycle track in the same place where there was a long-term ambition for a bus gate. ECC's public transport officer also wanted reassurance that no vertical traffic calming measures would be proposed in the LCWIP+. No overlaps were found and WSP has ensured that no vertical traffic calming measures would be proposed.

6.5 Network Coverage by Walk-Bus-Walk and Walk-Train-Walk Trips

- 6.5.1. This analysis looks at public transport accessibility all around Basildon Borough using journey time isochrone maps. The public transport accessibility mapping is created using software called TRACC which can provide an estimated journey time between two points based on the transport network operational schedule. The door to door journey time includes the walking time to the network point of entry following the road network, the average waiting time, the travel time on vehicle and interchange time if change if required. For this analysis, the parameters were set to show a maximum journey time of 30 minutes and a maximum initial walking time of 10 minutes.
- 6.5.2. Two journey time isochrone maps have been created to give an overview of how accessible the KEAs and rail stations in Basildon Borough are using the two multi-modal trip combinations: walk-bus-walk and walk-train-walk. The rail stations are also a good proxy for the five town centres, with the possible exception of Pitsea.
- 6.5.3. The lighter areas are accessible in 5 minutes or less, while the dark red areas are accessible between 25 and 30 minutes by public transport. The intermediate shades represent values in between by tranches of 5 minutes. KEAs are represented by yellow squares, with large future residential development sites represented by green squares.

Figure 6-3 - Accessibility of Key Employment Areas by Multi-Modal Trips

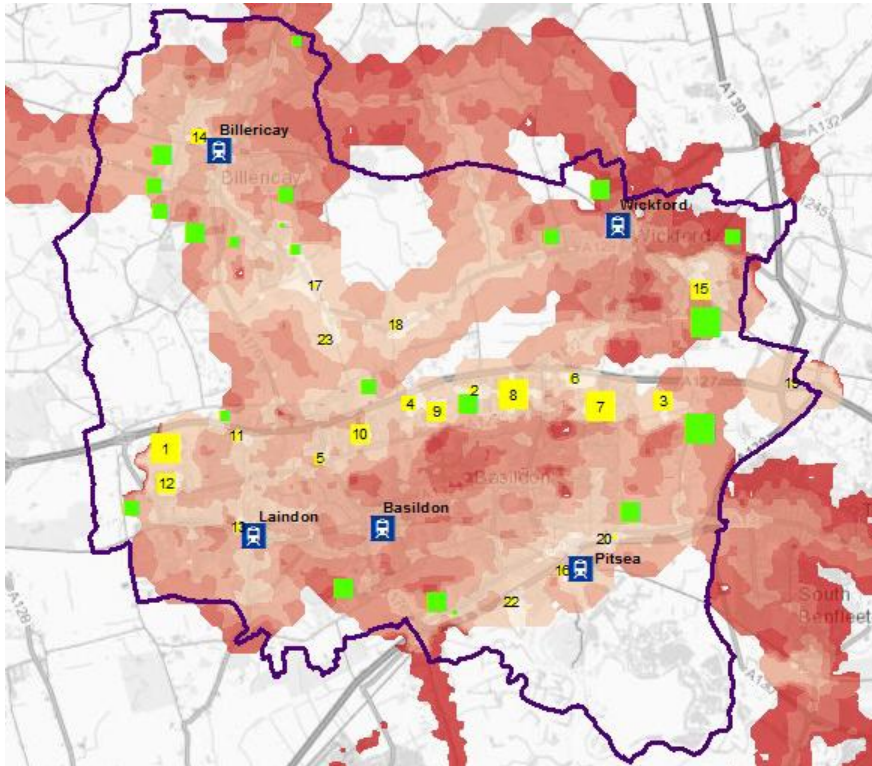
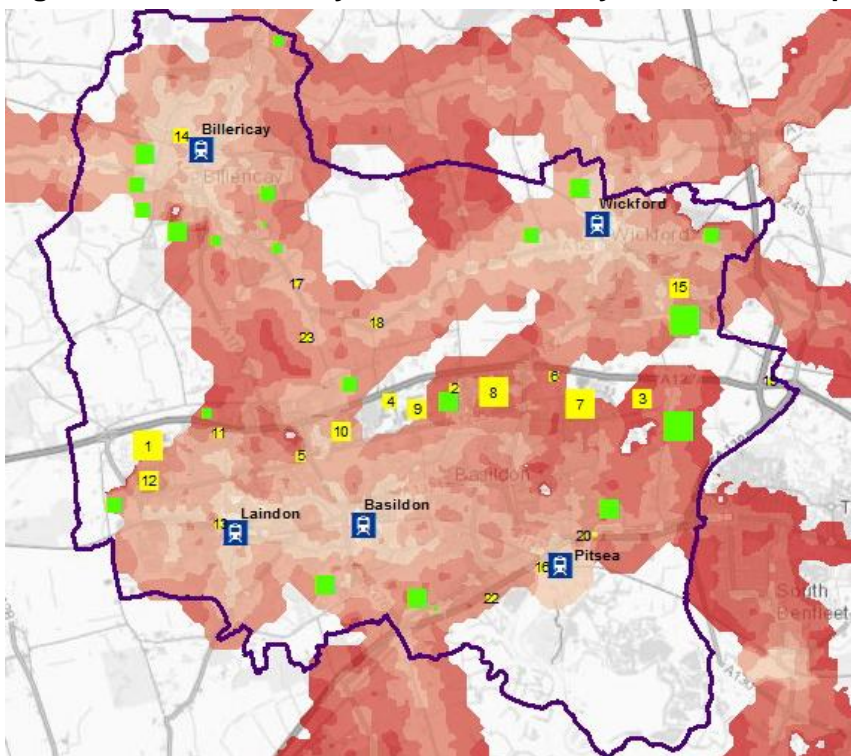


Figure 6-4 - Accessibility of Rail Stations by Multi-Modal Trips



6.5.4. These two figures demonstrate that:

- Walk-bus-walk connectivity between rail stations and five KEAs (Ford Dunton Campus, Festival Leisure Park, Basildon Mayflower Retail Park, Pippys Hill Industrial Estate and Burnt Mills Industrial Estate) are poor, with journeys taking over 32 minutes
- Laindon and several KEAs are well served by walk-bus-walk and walk-train-walk trips
- Wickford is not well connected to KEAs by multi-modal trips involving public transport.

6.6 Rail Station / Town Centre Accessibility within Basildon Borough

6.6.1. This analysis continues the work from the previous section by looking further at rail station (and by proxy town centre) accessibility via walk-bus-walk and walk-train-walk models in TRACC.

6.6.2. An accessibility map was created for each station mapping journeys of up to 40 minutes' length, illustrating the total travel time to reach a train station by public transport from other parts of Basildon Borough. The train stations act as a good proxy for understanding town centre accessibility too. 40 minutes is judged to be the maximum acceptable time to travel by public transport in between the 5 towns in the borough. This analysis identifies potential areas for improvement in the network, though this analysis does not take into account potentially low demand. The results of this analysis are:

6.6.3. Basildon station / town centre is reasonably well connected by multi-modal public transport trips to most KEAs, though it is poorly connected to residential areas of Wickford, Billericay and Laindon.

6.6.4. Billericay station / town centre is poorly connected to Pitsea / East Basildon and residential areas of Laindon and Wickford.

6.6.5. Laindon station / town centre is poorly connected to Billericay, Wickford and KEAs in East Basildon.

6.6.6. Pitsea station / town centre is poorly connected to Billericay, Wickford and Laindon, and KEAs in Basildon.

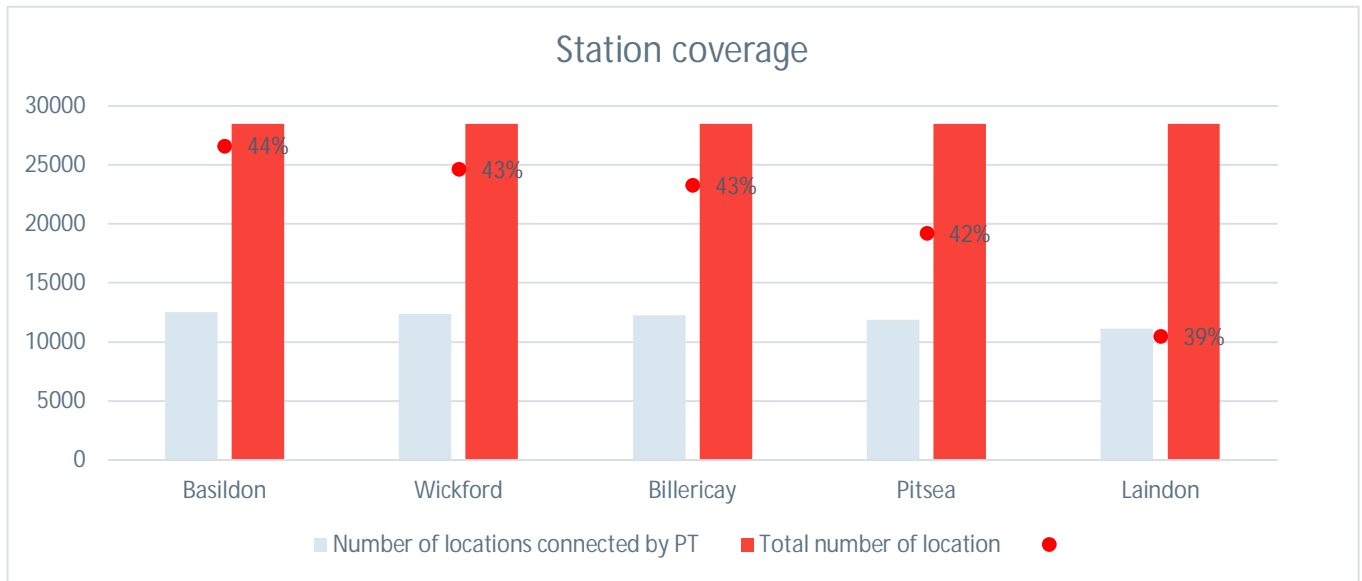
6.6.7. Wickford station / town centre is poorly connected to residential areas of Basildon, Billericay, Laindon and Pitsea.

6.7 Wider Rail Station Connectivity

6.7.1. This analysis used data from TRACC to understand the how well each of the 5 rail stations in Basildon Borough are connected to urban areas outside of the borough. The connectivity is measured in term of public transport journey time and post code coverage

6.7.2. Figure 6-5 shows Basildon to be connected to the greatest number of post codes, while Laindon is connected to the fewest. It is important to note that this analysis does not account for population per post code.

Figure 6-5 - Station Connectivity Based on Post Code Coverage



6.7.3. The analysis of the 5 stations demonstrated that Basildon station has the best public transport connections, while Laindon is the least well connected in terms of coverage. This seems to be in line with the level of service at each station: all trains stop at Basildon but not every train stops at Laindon.

6.8 Summary of Analysis

6.8.1. The diverse analysis completed in this section supports the proposals for walking and cycling in this LCWIP+ in several ways:

- This analysis shows that most of the urban area within Basildon Borough can be reached within 30 minutes from at least one rail station through walk-bus-walk or walk-train-walk trips. This shows the great potential for multi-modal trips within Basildon Borough and therefore the great importance of providing high quality walking network to create attractive environments to walk in to encourage these trips.
- This analysis shows that there are gaps in the public transport network with excessively long journey times between certain urban areas and to certain KEAs. Where there are such gaps in the public transport network, the provision of a high-quality cycle network could give users an alternative to the motor vehicle.

6.8.2. An additional consideration is the importance of the public transport interchange facilities. Even at individual bus stops, the design of the bus stop can affect dwell time of the vehicle. But more significantly, at stations like Basildon, which have good wider connectivity, the importance of an integrated, convenient and attractive hub for changing transport modes cannot be understated. Optimising interchanges in terms of layout, lighting and information provision could reduce the time taken to change between modes and/or make doing so a more attractive provision. Such optimisations could greatly help to encourage multi-modal travel in Basildon Borough.

6.8.3. Within time, all five rail stations in Basildon Borough could benefit from a hub approach and in the long-term, there may even be benefit in considering new transport hubs in the network.

- 6.8.4. The analysis in this section is in broad alignment with the recommendations of the South Essex Connectivity Study. This study identified the need for rapid transit to connect the main towns and hubs (such as railway stations) that is then integrated with local bus services for more local connectivity. It is therefore also likely that it will align with the local BSIP, once it is published.
- 6.8.5. The analysis in this section has shown that active travel and public transport in Basildon Borough can complement one another to benefit all users and maximise opportunities for multi-modal travel.
- 6.8.6. The prioritisation tool used in this LCWIP+ is a standalone tool developed by ECC with predefined inputs. The multi-modal analysis in this section can therefore not be input into the prioritisation tool and factored into route prioritisation.

7 LCWIP STAGE 5: SCHEME PRIORITISATION

7.1 High-Level Costing of Cycling and Walking Proposals

- 7.1.1. As the proposals for routes are at an early concept stage, no detailed estimation of the cost for feasibility, detailed design and construction has yet been undertaken. However, WSP have made high-level cost estimates for each route, following the same approach which ECC have used on other LCWIPs in the county. This approach was advised by ECC and agreed with BBC.
- 7.1.2. For cycle routes, a cost of £880,000.00 per kilometre has been applied. This is based on the cost rate for a 'mixed strategic cycle route' given in the DfT LCWIP guidance, which itself is taken from a report on the 'Typical costs of cycling interventions' written for the DfT.
- 7.1.3. For walking routes, ECC provided two cost rates based on similar work, which have been applied to the plans for walking routes. These rates include design, construction and supervision. These rates are as follows:
- Footway widening and kerbing: £260,000 per kilometre
 - Pedestrian crossing: £65,000
- 7.1.4. This gives the estimated costs for the Basildon LCWIP+ routes shown in Table 7-1.

Important note on costings

These costings should be taken as approximate estimates only and further feasibility design work accompanied by a more detailed costing process will be necessary for any scheme which is being considered for funding or further development

- 7.1.5. It is very important to remember that these costings are high level approximations. They also do not account for inflation.
- 7.1.6. As might be expected, the cost estimates for the walking routes are generally lower than the cost estimates for the cycling routes.

Table 7-1 - High Level Cost Estimates of Cycling and Walking Proposals

Route Name	Length (km)	Cost
Cycle Route 1: Basildon East-West Link	9.0	£7,920,000.00
Cycle Route 2: Basildon to Pitsea	3.0	£2,640,000.00
Cycle Route 3: Wickford to Basildon	5.5	£4,840,000.00
Cycle Route 4: Central Basildon Ring	2.2	£1,936,000.00
Cycle Route 5: Billericay to Basildon	7.5	£6,600,000.00
Cycle Route 6: Basildon North-South	2.0	£1,760,000.00
Cycle Route 7: Southeast Billericay	2.0	£1,760,000.00
Cycle Route 8: Billericay North-South	3.2	£2,816,000.00
Cycle Route 9: Basildon Station to Basildon Hospital	1.2	£1,056,000.00
Cycle Route 10: Laindon North-South	2.6	£2,288,000.00
Cycle Route 11: Central Basildon to Gardiners Way	2.7	£2,376,000.00
Cycle Route 12: Central Basildon to Festival Park	1.0	£880,000.00
Cycle Route 13: Wickford to Burnt Mills Industrial Estate	4.6	£4,048,000.00
Cycle Routes – Total Estimated Cost	46.5	£40,920,000.00
Basildon Walking Route 1: Laindon North-Eastern Link	1.9	£247,000.00
Basildon Walking Route 2: Laindon North-Western Link	2.8	£156,000.00
Basildon Walking Route 3: Laindon to Basildon Station	2.5	£208,000.00
Basildon Walking Route 4: Basildon to Gloucester Park	2.1	£390,000.00
Basildon Walking Route 5: Basildon to Basildon Hospital A	1.5	£182,000.00
Basildon Walking Route 6: Basildon North-Western Link	2.1	£130,000.00
Basildon Walking Route 7: Basildon Eastern Link	1.5	£78,000.00
Basildon Walking Route 8: Basildon to Basildon Hospital B	1.0	£65,000.00
Basildon Walking Route 9: Basildon Station Southern Link	1.1	£65,000.00
Billericay Walking Route 1: Billericay Western Link	0.7	£279,500.00
Billericay Walking Route 2: Billericay Southern Link	2.1	£299,000.00
Billericay Walking Route 3: Billericay Northern Link	1.1	£65,000.00
Billericay Walking Route 4: Billericay South-Western Link	0.8	£182,000.00
Wickford Walking Route 1: Wickford Western Link	1.6	£260,000.00
Wickford Walking Route 2: Wickford Southern Link	1.8	See Cycle Route 13
Wickford Walking Route 3: Wickford Eastern Link	1.9	£240,500.00
Walking Routes – Total Estimated Cost	26.5	£2,847,000.00

7.2 Modal Shift (Active Mode Appraisal Toolkit)

- 7.2.1. The DfT's Active Mode Appraisal Toolkit (AMAT) was used to estimate potential modal shift for each route.
- 7.2.2. The AMAT is a spreadsheet-based model created by the DfT in 2015 for the appraisal of active travel schemes. It allows scheme promoters to assess the overall benefits and costs of proposed walking and cycling schemes following guidance from Transport Analysis Guidance (TAG) unit A5-1. It does this by taking as its inputs details about the types of infrastructure proposed in schemes, estimates of scheme costs, and estimates of the current number of cycling trips using 2011 census data. Then, using assumptions provided by the DfT, it calculates the potential change in active mode trip numbers and several other benefits.
- 7.2.3. The potential for modal shift for the different routes, according to the outputs from the AMAT, ranged from 1.0% to 5.1%. It should be noted that this doesn't account for potential behaviour change programmes, which may increase modal shift further if accompanied by improvements to active travel infrastructure.

7.3 Prioritising Improvements

- 7.3.1. A high-level approach to scheme prioritisation has been undertaken using a prioritisation table developed by Essex County Council in line with recommendations from the DfT. This approach was agreed with BBC. The full prioritisation table is included in Appendix C. Routes were scored against the following criteria:
- ECC Organisation Objectives
 - Will the scheme help enable inclusive economic growth?
 - Will the scheme help people get the best start and age well?
 - Will the scheme help create great places to grow up, live and work?
 - Will the scheme help transform ECC to achieve more for less?
 - DfT LCWIP objectives
 - Will the scheme help to increase cycling activity?
 - Will the scheme help to reduce the rate of cyclists killed or seriously injured on England's roads?
 - Effectiveness
 - Forecast increase in walking and cycling trips
 - Population who directly benefit from the intervention
 - Strategic cycling importance
 - Linkages with other programmes
 - Deliverability
 - Affordability
 - Technical feasibility
 - Political acceptability / priority
 - Cost estimate
- 7.3.2. This process has resulted in a joint prioritised list of cycling and walking infrastructure improvements in Basildon Borough, with each route scored out of 65 and ranked. The routes are shown with their key scores in ranked order in Table 7-2. This list is an indication of which routes and scheme identified are most likely to have the greatest impact on increasing the number of walking and cycling trips, will represent the best value for money as future investment, and will directly support the objectives of this LCWIP+ and ECC's wider objectives.



Table 7-2 - Prioritised List of Cycling and Walking Proposals

Route Name	ECC Organisation Objectives Score	DfT LCWIP Objectives Score	Effectiveness Score	Deliverability Score	Overall Score	Overall Ranking
Billericay Walking Route 4: Billericay South-Western Link	18	24	20	14	58	1
Billericay Walking Route 2: Billericay Southern Link	17	23	19	14	56	2
Cycle Route 11: Central Basildon to Gardiners Way	17	25	18	12	55	3
Billericay Walking Route 3: Billericay Northern Link	17	23	18	13	54	4
Wickford Walking Route 1: Wickford Western Link	19	25	17	12	54	4
Basildon Walking Route 5: Basildon to Basildon Hospital A	16	22	18	14	54	4
Cycle Route 6: Basildon North-South	16	24	17	12	53	7
Billericay Walking Route 1: Billericay Western Link	15	21	18	14	53	7
Basildon Walking Route 4: Basildon to Gloucester Park	17	23	17	13	53	7
Basildon Walking Route 6: Basildon North-Western Link	16	22	17	14	53	7
Basildon Walking Route 7: Basildon Eastern Link	16	22	17	14	53	7
Basildon Walking Route 9: Basildon Station Southern Link	15	21	18	14	53	7
Basildon Walking Route 8: Basildon to Basildon Hospital B	14	20	18	14	52	13
Cycle Route 4: Central Basildon Ring	16	26	19	6	51	14
Cycle Route 1: Basildon East-West Link	16	25	20	5	50	15
Cycle Route 2: Basildon to Pitsea	16	23	14	12	49	16
Cycle Route 12: Central Basildon to Festival Park	17	24	13	12	49	16
Cycle Route 13: Wickford to Burnt Mills Industrial Estate	17	26	13	10	49	16
Basildon Walking Route 1: Laindon North-Eastern Link	16	22	13	13	48	19
Wickford Walking Route 3: Wickford Eastern Link	16	22	14	11	47	20
Cycle Route 8: Billericay North-South	16	23	13	10	46	21
Cycle Route 9: Basildon Station to Basildon Hospital	15	25	11	10	46	21
Cycle Route 10: Laindon North-South	15	23	14	8	45	23
Basildon Walking Route 2: Laindon North-Western Link	14	20	13	12	45	23
Cycle Route 7: Southeast Billericay	13	20	15	9	44	25
Basildon Walking Route 3: Laindon to Basildon Station	12	18	14	12	44	25
Cycle Route 3: Wickford to Basildon	15	24	13	6	43	27
Cycle Route 5: Billericay to Basildon	14	22	13	6	41	28
Wickford Walking Route 2: Wickford Southern Link	13	19	12	7	38	29

7.4 Potential Timescales for Delivery

- 7.4.1. The DfT LCWIP guidance recommends prioritising schemes into three categories based on timescales:
- Short term (typically <3 years) – improvements which can be implemented quickly or are under development
 - Medium term (typically <5 years) – improvements where there is a clear intention to act, but delivery is dependent on further funding availability or other issues (e.g. detailed design, securing planning permissions, land acquisition)
 - Long term (typically >5 years) – more aspirational improvements or those awaiting a defined solution
- 7.4.2. The DfT recommends categorising the schemes into the above categories based on how likely the schemes are to have an impact on increasing the number of people who choose to walk and cycle. The results of the ECC prioritisation process in the previous section is one piece of analysis which could be used to approximate this. AMAT assessments could also be used.
- 7.4.3. BBC and ECC believe that further stakeholder engagement is also needed to influence this process of sorting the routes into medium- and long-term timescales for delivery. As such the schemes have not been categorised into different timescales in this report.
- 7.4.4. However, in the short term, there are two cycling schemes which fit the description of ‘can be implemented quickly or are under development’. These are Cycle Routes 1 and 11. It is therefore recommended that these are prioritised in the short term, along with at least two walking routes (to be determined as part of a separate exercise).

8 LCWIP STAGE 6: INTEGRATION AND APPLICATION

8.1 Integration with Transport Policy and Programmes

- 8.1.1. This LCWIP+ has identified specific walking and cycling infrastructure schemes that can be incorporated into local transport policy and capital investment programmes.
- 8.1.2. Once adopted, this LCWIP+ can represent an accompanying plan to the Basildon Borough Local Plan, providing a focus on where and why targeted investment in active travel infrastructure will be taken forward within Basildon Borough.
- 8.1.3. Schemes in this LCWIP+ have been identified which, when delivered, will in some instances enhance access to future planned development within Basildon Borough. This provides an opportunity to work in partnership with developers to secure investment in quality active travel infrastructure, on key routes, promoting sustainable development. Schemes identified in this LCWIP+ can therefore inform discussions with developers and consideration will be given to integrating LCWIP+ schemes within BBC's Community Infrastructure Levy (CIL) 123 Regulations List once adopted or other similar list of infrastructure projects, to secure the appropriate delivery of this infrastructure.

8.2 Future Bids for External Funding

- 8.2.1. BBC can also explore any opportunities to apply for funding from external sources, such as any future government capital grants or funding competitions for active travel infrastructure. In these instances, additional business case development should be undertaken on schemes outlined in this LCWIP+ as the basis for strong applications to secure funding for design and delivery.
- 8.2.2. One such funding source could be the Active Travel Fund (the first two tranches of which were known as the "Emergency Active Travel Fund" due to its role in responding to the coronavirus pandemic).

8.3 Process of Review and Update

- 8.3.1. This LCWIP+ represents the culmination of a first round of developing primary cycling and walking routes and opportunities for targeted investment. Whilst the initial focus has been on primary connections, BBC can look to expand this process going forward to focus on more areas within Basildon Borough. This will ensure that opportunities to plan and consider routes that cross local authority areas will be explored and developed in partnership with neighbouring authorities.
- 8.3.2. BBC should therefore review and update this document going forward in response to new funding and delivery opportunities as a commitment to having an on-going and sustained investment plan for active travel infrastructure. DfT guidance recommends reviewing and updating LCWIPs "every four to five years to reflect progress made with implementation". It is therefore recommended that this LCWIP+ is reviewed and updated no later than 2026.

9 GLOSSARY OF KEY TERMS AND ACRONYMS

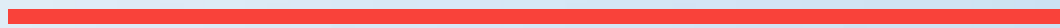
9.1.1. Key terms and acronyms are listed below in alphabetical order:

- Active travel – the transport of people or goods through non-motorised means, powered by physical activity, such as walking and cycling
- AMAT – Active Mode Appraisal Tool (a DfT tool used to calculate the benefit cost ratios and potential modal shift of active travel corridor schemes)
- ANPR – Automatic Number Plate Recognition (a technology which uses optical character recognition on images or videos from cameras to read vehicle registration plates)
- ASELA – The Association of South Essex Local Authorities
- Basildon Borough or ‘the borough’ – the study area of this LCWIP, governed by BBC, which includes Basildon, Billericay and Wickford as well as several smaller settlements
- BBC – Basildon Borough Council
- bph – buses per hour
- CIL – Community Infrastructure Levy
- Critical junction – a junction deemed to have critical safety issues for cyclists
- CWIS – Cycling & Walking Investment Strategy (published by the DfT in 2017)
- CWZ – Core Walking Zone (areas where there are a high number of walking trip generators clustered together, such as a town centre or a business park)
- Desire line – in this report, desire lines refer to simple, straight-lines drawn between where people live (origins) and places they could want to walk or cycle to (destinations) as informed by WSP’s GIS model and the Propensity to Cycle Tool – not to be confused with routes, which follow specific alignments on the road and paths network
- DfT – Department for Transport
- ECC – Essex County Council
- GIS – Geographic Information System
- Inter-urban – between different urban areas, for example an inter-urban journey between Billericay and Basildon
- Isochrone map – in this report, an isochrone map refers to a type of map which uses graded colours to show which areas (isochrones) can be reached by a mode (or modes) of transport from a defined start point, such as a rail station in a set amount of time or distance (as travelled on the network)
- Junction Radii – a geometrical feature of a junction which can govern how fast motorised vehicles can turn, how easy it is to cross for pedestrians and how safe it is for cyclists (tighter or reduced junction radii are typically safer and more pleasant for pedestrians and cyclists)
- KEA – Key Employment Area
- Key destination – an important destination which many people want to travel to regularly, for example a Key Employment Area or a rail station
- LCWIP – Local Cycling & Walking Infrastructure Plan (as defined in the DfT’s 2017 Technical Guidance for Local Authorities)

- LCWIP+ – Local Cycling & Walking Infrastructure Plan ‘Plus’ (the Basildon LCWIP has been defined as an LCWIP ‘plus’ as it also contains public transport analysis and recommendations to maximise potential for multi-modal trips)
- Light Segregation – where an on-carriageway cycle lane is partially segregated from motor vehicles using physical objects such as wands, planters or bolt-on kerbs which repeat every few metres
- LSOA – Lower Super Output Area (a geographical area established by the Office for National Statistics and used in 2011 Census data, typically representing around 1500 people in terms of population)
- LTP – Local Transport Plan
- Modal filter – any measure which, at a single point in a road, allows the passage of some modes of transport but not others (a typical example is a bollard, used to allow cyclists through but not motorists)
- Modal shift – a change in transport habits whereby users start using one mode of transport less, in favour of another (for example, a modal shift away from cars towards cycles)
- Multi-modal analysis – analysis relating to multi-modal travel/transport (see below)
- Multi-modal travel/transport – a type of journey consisting of more than one mode of transport, for example walk-bus-walk or cycle-train-walk
- Multi-stage journey – a multi-modal journey consisting of different modes of transport at different stages, for example cycle-train-walk
- NCN – National Cycle Network (a UK-wide network of signed paths and routes for walking, cycling and wheeling created by the charity Sustrans)
- PCT – Propensity to Cycle Tool (a web-based tool for estimating cycling potential recommended for use in LCWIPs by the DfT in its LCWIP guidance)
- Pinch point – where space for transport users is constrained for a short distance, often creating road safety risks for pedestrians or cyclists
- RSP – Route Selection Process (an iterative process set out in the DfT’s LCWIP guidance for converting cycling desire lines into routes for inclusion in LCWIPs)
- RST – Route Selection Tool (a cycle route audit tool developed by the DfT for use in the route selection process in LCWIPs, which can assess the suitability of an existing route for cycling and help practitioners consider what infrastructure improvements need to be made)
- TRACC – a software produced by Basemap which uses imported data (such as public transport timetables) to run multi-modal journey time calculations
- Transport Hub – a place where different modes of transport come together to allow people to easily change modes, for example a rail station served by buses and accessible by foot or cycle
- Trip origin point – a starting point for a trip, for example a forthcoming block of flats or an existing house on a residential street (these must often be clustered together for analytical purposes – as such trip origin points are often aggregated to the postcode or LSOA level)
- Weighted, clustered desire line – a desire line (see above) which represents multiple desire lines and is weighted to reflect population and other factors
- WRAT – Walking Route Audit Tool (a tool developed by the DfT to help practitioners audit the pedestrian environment and consider what infrastructure improvements need to be made)

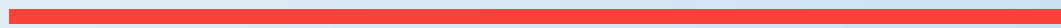
Appendix A

Cycling Network Map and
Associated Programmes of
Infrastructure Improvements



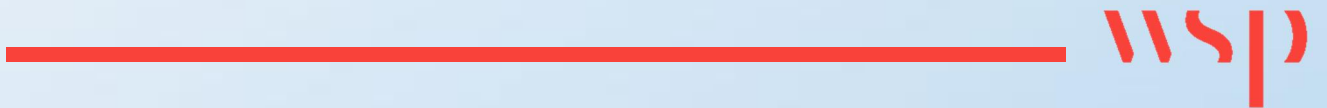
Appendix B

Walking Network Map and
Associated Programmes of
Infrastructure Improvements



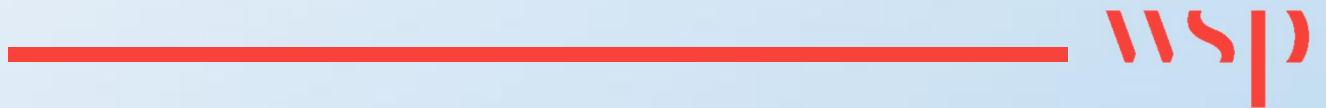
Appendix C

Prioritisation Table



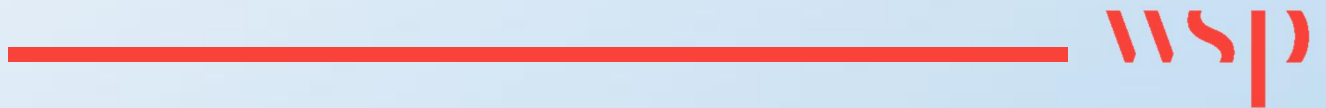
Appendix D

Strategic Development Locations
Considered in this LCWIP+



Appendix E

Stakeholder Workshop Notes and
Attendance Records





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