Mid Sussex District Council

Local Cycling and Walking Infrastructure Plan (LCWIP)

Final Report

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Contents

List of Tables

List of Figures

1 Introduction

1.1 Introduction

This report summarises the findings from Mid Sussex District Council's Local Cycling and Walking Infrastructure Plan (LCWIP) study which follows the recommended Department for Transport methodology and in line with West Sussex County Council's ongoing LCWIP programme.

The LCWIP focussed on Burgess Hill, East Grinstead and Haywards Heath. LCWIPs identify and prioritise investment in new infrastructure to support greater numbers of people making journeys on foot or on cycle. LCWIPs should identify infrastructure interventions over a short, medium, and long-term horizon that meet the transport and movement objectives of Mid Sussex.

LCWIPs are a strategic long-term approach to identifying cycling and walking improvements required at the local level over a period of 10 years. They are not designed to create "shovel-ready" proposals. Instead, the cycling and walking routes identified will require further design work if delivery funding is secured.

The LCWIP has been developed with officers from Mid Sussex District Council and supported by officers from West Sussex County Council (WSCC) as well as locally elected members.

The report summarises the LCWIP study based upon the six key stages from the LCWIP methodology below.

- Determining Scope
- Data Collection
- Network Planning for Cycling
- Network Planning for Walking
- Prioritisation
- Integration

The Mid Sussex LCWIP covers three towns in the District. The structure of the report therefore provides a general overview of the LCWIP process and local policy context, and is then structured around individual chapters for each LCWIP town.

2 LCWIP Methodology

2.1 Methodology

This chapter provides an overview of the LCWIP process and how it has been applied in Mid Sussex. The Department for Transport (DfT) technical guidance for authorities developing an LCWIP sets out a methodical approach to the planning and delivery of cycling and walking infrastructure and the process is based on the six stages listed below.

LCWIPs should be evidence-led, and comprehensive. An LCWIP should identify a pipeline of investment, ideally over a ten year period, so that a complete cycling network is delivered at an appropriate geography (see LCWIP Stages 1 and 2) and that walking and cycling improvements are delivered coherently, in particular within core walking zones (see Stage 4 – Planning for Walking). The goal of an LCWIP should be to increase the use of cycling and walking, which means looking at routes and areas where more people could choose these modes in preference to other means of travel. Therefore, an LCWIP should consider travel demand regardless of mode, rather than looking just at existing walking and cycling trips.

The scope of the LCWIP work was determined to be Mid-Sussex's three town centres in line with the agreed approach across the County. Districts and Boroughs in West Sussex have each commissioned their own LCWIPs which all focus on the main towns in their area. Town centres have the highest populations and therefore offer the most opportunities for active travel and modal shift. Taken together, the West Sussex and District and Borough LCWIPs will identify a cohesive active travel network in West Sussex.

LCWIP 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.

Table 2-1: LCWIP Stages

3 Study Context

This chapter summarises the context for this study with particular focus on the policy framework and major developments proposed in the District.

3.1 National Policy Context

3.1.1 Gear Change and LTN 1/20

The national policy context for active travel changed significantly in 2020 with the DfT's publication of 'Gear Change' and the revised Local Transport Note 1/20 'Cycle Infrastructure Design'. These two polices outline significant changes for the future of transport planning and design in the UK and the prioritisation of measures that encourage increased levels of walking and cycling.

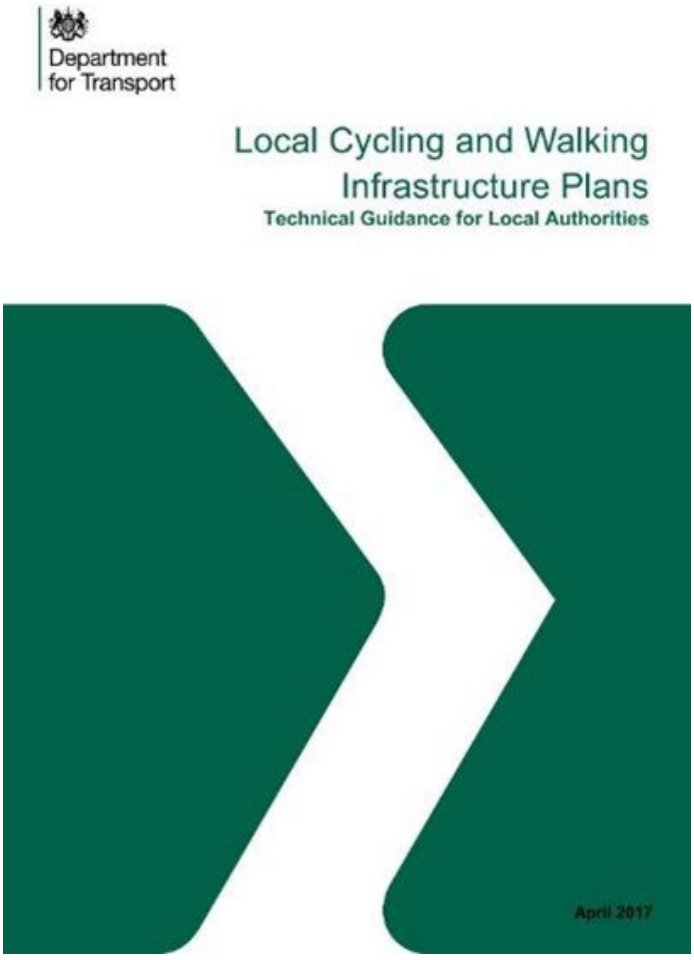
> 'We want – and need – to see a step change in cycling and walking in the coming years. The challenge is huge, but the ambition is clear. We have a unique opportunity to transform the role cycling and walking can play in our transport system, and get England moving differently'

(Gear Change, 2020)

These new documents both fully endorse the Local Cycling and Walking Infrastructure Plan (LCWIP) and Low Traffic Neighbourhood (LTN) approaches as means to help improve conditions for walking and cycling.

3.1.2 Local Cycling and Walking Infrastructure Plans (LCWIP)

An LCWIP is a Local Cycling and Walking Infrastructure Plan that identifies priority investment in new infrastructure to support greater number of people making journeys on foot or on cycle. The LCWIP should identify infrastructure interventions over a short, medium, and long-term horizon that meet the transport objectives of Mid Sussex.



The process for undertaking an LCWIP is set out in the Department for Transport's (DfT) process guidance, issued in 2017 as part of the Cycling & Walking Investment Strategy (CWIS). A fundamental aim of an LCWIP should be to help meet the government's aspiration of doubling the number of journeys undertaken by walking or cycling, and as such planning infrastructure around existing or forecast travel patterns is a core principle of an LCWIP. A key consideration in the

development of an LCWIP is understanding existing conditions for active travel, and how these facilities can be incorporated into the LCWIP networks. The key outputs of an LCWIP are as follows:

- A network plan for walking and cycling which identifies preferred routes and core zones for further development
- A prioritised programme of infrastructure improvements for future investment
- A report which sets out the underlying analysis completed to support the LCWIP's development and recommended LCWIP network

LCWIPs are produced with a ten year timeframe for delivery, however the DfT's intention is that the documents are flexible and therefore should be considered as 'live' documents. This provides local authorities with the flexibility to update their network plans to reflect local changes, including new development sites, funding opportunities and additional routes. On this basis, whilst the plan has recommended initial sites in the town, future work streams should consider expanding and evolving these initial proposals to ensure that a consistent high quality of walking and cycling infrastructure is provided across Burgess Hill, East Grinstead and Haywards Heath.

The Department for Transport are currently reviewing the LCWIP guidance and are intending to 'refresh' the guidance in 2021/22. The changes are not intended to be significant and instead will be focussed on refreshing specific elements of the methodology to provide more information and to expand on some technical aspects.

3.1.3 National Planning Policy Framework (NPPF)

The NPPF has been revised to implement policy changes in response to the Building Better Building Beautiful Commission "Living with Beauty" report and incorporate the increased focus on design. The NPPF sets out the Government's planning policies for England and how these should be applied. It must be considered in preparing local development plans, and is a material consideration in planning decisions. At the heart of the framework is a 'presumption in favour of sustainable development'.

Within Chapter 9 'Promoting sustainable Transport', Paragraph 110 is of particular relevance requiring the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code. Paragraph 106 makes specific reference to LCWIPs as a means for providing attractive and well-designed walking and cycling networks.

Chapter 8 'Promoting healthy and safe communities' also recommends promoting social interaction with '*street layouts that allow for easy pedestrian and cycle connections within and between neighbourhoods, and active street frontages'.*

3.1.4 National Model Design Code (2021)

Building on the 2019 National Design Guide, the National Model Design Code is intended to inform local design guides and codes or, in the absence of local guidance, act in their stead. It places local communities at the heart of plans to make sure that new developments reflect the history and unique character of their areas and are beautiful and well-designed. The code places great weight on Manual for Streets and Manual for Streets 2, which continue to represent good practice on street design. Paragraph 58 outlines that 'a connected network of streets, good public transport and the promotion of walking and cycling as key principles'.

3.2 Local Policy Context

The Mid Sussex LCWIP will form part of the **WSCC Active Travel Strategy**.

The LCWIP will also form part of the evidence base for the Mid Sussex **District Plan** review, specifically proposed policy DPT 3 Active Travel which states: 'Development will be required to help remove barriers to active travel and create a healthy environment in which people chose to walk and wheel; facilitated by, where appropriate, providing high quality, fit for purpose active travel infrastructure, within the development which links to existing networks and builds on the schemes identified in the Mid Sussex Local Cycling and Walking Infrastructure Plan (LCWIP)'.

On April 27th 2022, MSDC adopted the **Sustainable Economy Strategy and Action Plan**. The LCWIP plays a key role to deliver several objectives of the Sustainable Economy Strategy and Action Plan.

- Objective 6 of the Action Plan aims to promote the benefits of sustainability practices and encourage action to support achievement of Carbon Net Zero. An action within Objective 6 is to promote sustainable travel options and initiatives, including green travel plans, to businesses, schools and residents.
- Objective 7 of the Action Plan aims to position and promote our town and village centres as healthier, greener and more sustainable places generating footfall, social interaction and economic activity. An action within Objective 7 is to identify and agree a range of sustainable transport projects in the District's three towns to promote sustainable transport options for residents and businesses. One Measure of Success for Objective 7 is to increase the proportion of adults who cycle or walk at least five times per week from 36.8% to 38% or above the West Sussex average by the end of the strategy period.

In November 2022, MSDC adopted a **net-zero target** of 2050 for the District. The LCWIP plays a key role to achieve the adopted net-zero targets.

- The Ricardo Net-Zero Carbon Emissions Options and Feasibility Report, commissioned by the Council to enable the adoption of net-zero targets, identified buildings and transport (specifically, homes and cars) account for the vast majority of carbon emissions in Mid Sussex.

- Therefore, supporting a greater number of people making journeys on foot or on cycle and not petrol\diesel cars is an important aspect of reducing carbon emissions in Mid Sussex and achieving our net-zero target.

3.3 Report Structure

Chapters 4 – 6 of the report provide individual chapters for each of the LCWIP towns: Burgess Hill, East Grinstead, and Haywards Heath. These chapters summarise the LCWIP process for each of the towns and the results from the walking and cycling audits. Chapter 7 focusses on the Prioritisation of the design measures and combines the results from the individual towns to allow comparison of the results.

4 Burgess Hill

4.1 Stage 1: Determining Scope

Stage 1 is focussed on understanding the local geographic context to help inform the LCWIP process. Our approach to determining the scope includes a high-level review of the below datasets which we have found to be highly influential on the geographic scope of LCWIPs:

- Local Context and Development Sites – understanding the local development context and how the town will develop is essential for developing a future-proofed LCWIP network.
- Walking and Cycling Catchment Areas: Walking and cycling isochrones help to provide a sense of scale and to better understand the extent to which trips could be walked and cycled. Comparing the isochrones also helps to understand the relationship between future walking and cycling routes in the LCWIP.
- First Impressions: Providing a summary of our first impressions helps to better understand the local context of the study area.

4.1.1 Local Context

The local context plan below (Figure 4-1) summarises the distribution of key destinations and land uses within Burgess Hill, including schools, future development sites, leisure and retail facilities, cycle routes, Public Rights of Way (PRoW), open spaces and employment sites. Understanding the location of these sites provides important context in the development of the LCWIP routes – particularly in relation to future development sites. The plan highlights a clustering of key destinations in and around the town centre, including the Shopping Centre, several retail/leisure/healthcare facilities, public open spaces such as St John's Park, Burgess Hill railway station and multiple car parks. Victoria Business Park is a significant employment site and is located to the west of the B2036, north of the A273.

There are several committed housing development sites dotted around the outskirts of the town and also within the town centre itself. Examples include Burgess Hill Brookleigh development to the north and the Kings Weald development to the east. The development plan also highlights proposed employment sites to the northwest between the A2300 and Cuckfield Road. There is also an existing cycle route which runs on a north/south alignment through the town. Key trip attractors include Burgess Hill and Wivelsfield railway stations, Burgess Hill Academy school, the Tesco Superstore on Jane Murray Way and the Lidl on Leylands Road.

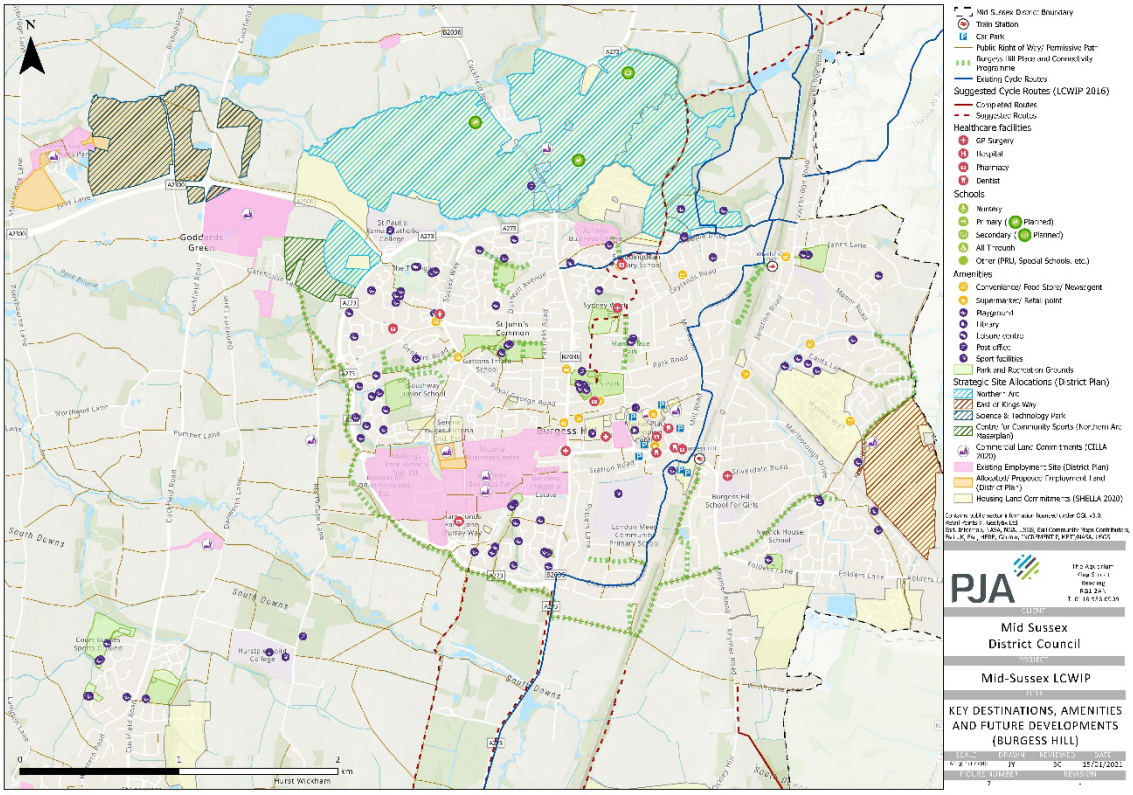


Figure 4-1: Local Context and Development Sites Plan (Burgess Hill)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

4.1.2 Walking and Cycling Catchment Areas

The purpose of the walking and cycling isochrone plans is to understand the potential catchment area accessible within a 20-minute walk/cycle from the centre of Burgess Hill. The isochrone plans are based on the existing street network, to give a more accurate representation of the areas accessible by walking/cycling.

The walking catchment plan (Figure 4-2) suggests that a majority of the urban extent of Burgess Hill is within a 20-minute walk of the town centre. The walking isochrone encompasses several amenities and extends out towards key residential and employment sites. Areas to the east of the town centre are slightly less accessible due to the positioning of the railway line and the severance it creates.

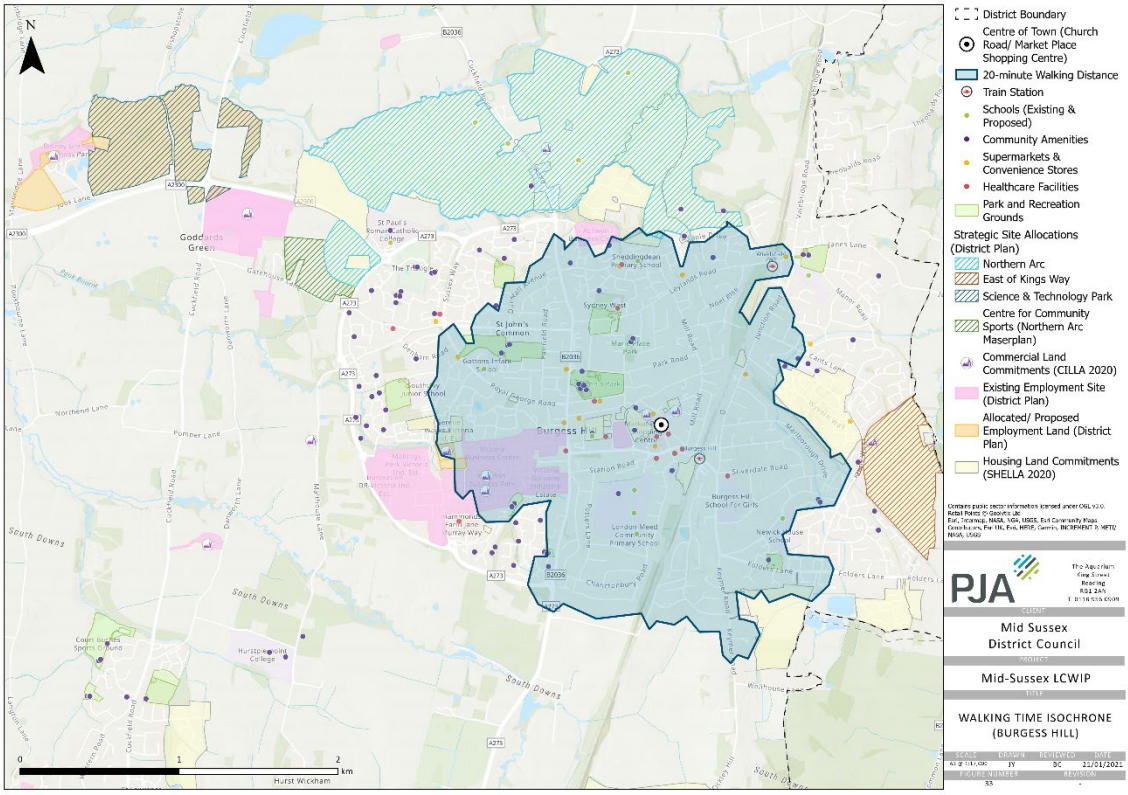


Figure 4-2: 20 Minute Walking Catchment Plan (Burgess Hill)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

The cycling catchment plan (Figure 4-3) illustrates that several destinations further afield are within cycling distance of Burgess Hill, including Haywards Heath to the north and Hassocks to the south. The 20-minute cycling isochrone also captures many designated housing and employment sites located on the periphery of the town.

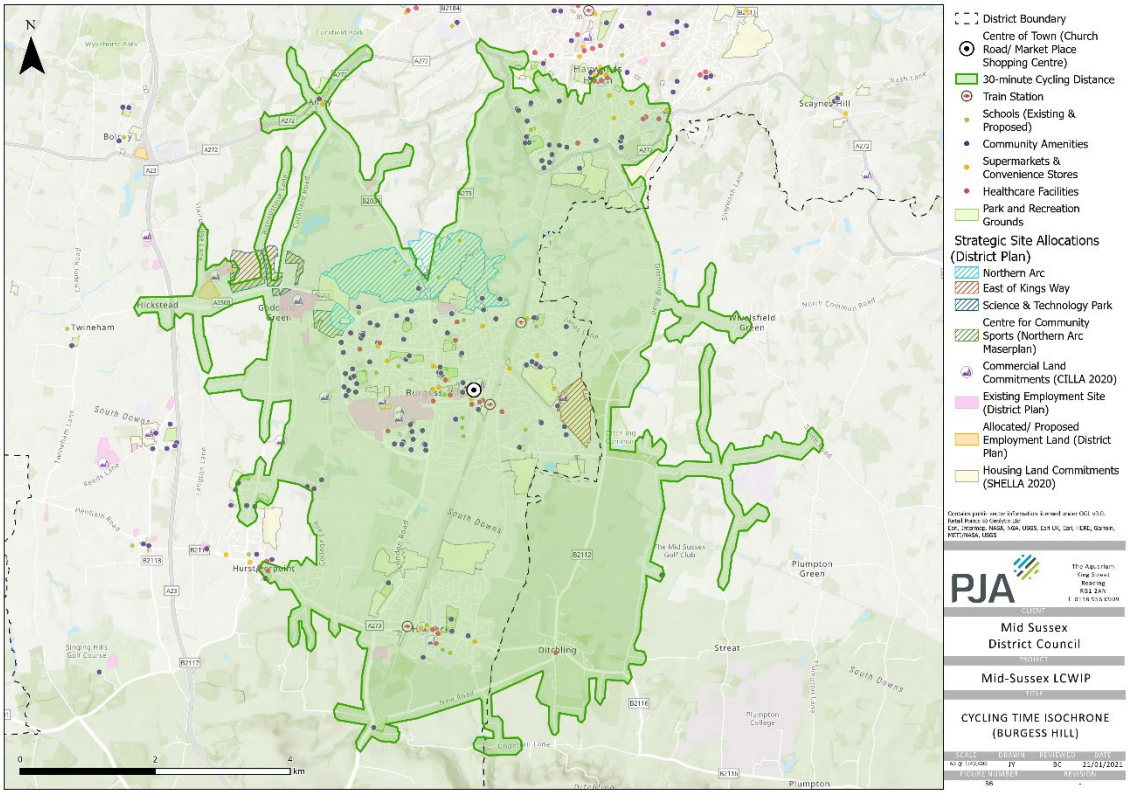


Figure 4-3: 20 Minute Cycling Catchment Plan (Burgess Hill)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

4.1.3 First Impressions

This section briefly summarises the project team's first impressions of Burgess Hill from our initial site visits. The purpose of the site visit was to better understand the local context, and to review conditions for walking and cycling. We have summarised the findings into the following groups:

- **Compact town centre** - a majority of the town's key destinations are concentrated in the south of Burgess Hill with the main retail centre concentrated between the train station and Church Walk, and the Victoria Business Park in the south-west corner of the town. The distribution of the town and local trip generators has an important influence on how people move through Burgess Hill.

- **Connectivity** – Connectivity and crossing opportunities for walking, wheeled and cycle trips between the town centre and suburban Burgess Hill is challenging, with limited crossings available to cross the main road network and/or on natural desire lines. Consequently, many journeys through the town centre feel complicated and elongated.


- **Suburban Burgess Hill** – Beyond the town centre and Victoria Business Park, the remainder of the town is predominantly suburban in nature with most housing developed in the late 20th century. The Brookleigh masterplan will further entrench this layout dynamic with the development of thousands of new homes in the north of Burgess Hill.


- **Cycle Network** - there are some limited examples of protected cycle facilities using shared use paths on the town's main road network, however there is little dedicated infrastructure beyond this. The recent Place and Connectivity programme has successfully increased the network

coverage of recreational routes through the town's open spaces and connects with the Green Circle which encircles the town.

- **Historic Road Network** – The majority of the town's road network is based on a historic road network which have no provision for cycling, and limited pedestrian facilities. The dominance of vehicle traffic on these corridors will be a key consideration in how the LCWIP network can develop. The Place & Connectivity programme has recently provided alternative routes for walking, wheeled and cycle trips away from the main road network to help offset this point.

4.2 Stage 2: Data Collection

Stage 2 is intended to collect and review relevant datasets which can be used to help inform the development of the LCWIP networks. This chapter summarises the analysis completed for Burgess Hill.

4.2.1 Topography

Burgess Hill is situated within the High Weald and is approximately 50m above sea level. The topography plan (Figure 4-4) highlights that the topography of Burgess Hill is relatively flat, with few steep inclines that would impact significantly upon walking and cycling journeys. The elevation profile increases gradually to the south of Burgess Hill, following the B2113/Keymer Road.

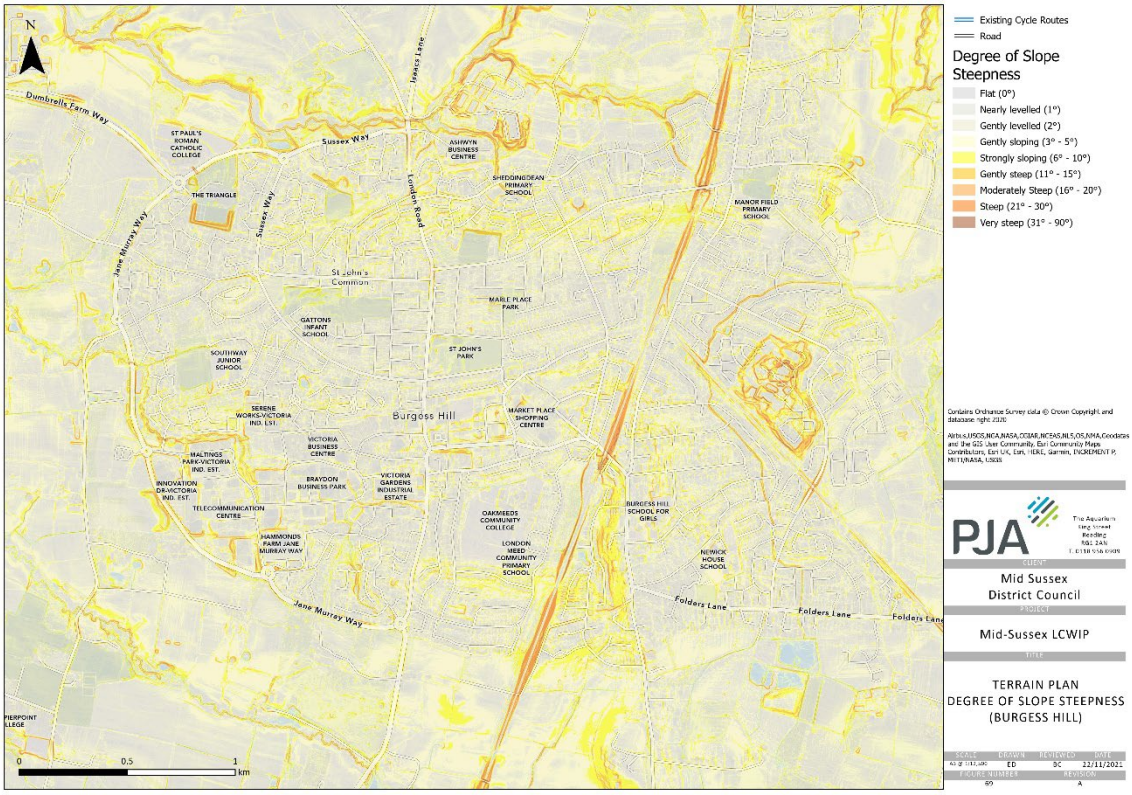


Figure 4-4: Topography Plan (Burgess Hill)

4.2.2 Air Quality

Figure 4-5 summarises annual NO2 concentrations across the LCWIP study area in Burgess Hill. NO2 is a gas that is mainly produced during the combustion of fossil fuels along with nitric oxide (NO). The highest concentrations of NO2 were recorded near the Victoria Gardens Business Park/Industrial Estate, to the west of the B2036. The majority of Burgess Hill's urban extent has NO2 concentrations below the UK annual legal limit of 40µg/m3 (the UK average annual mean concentration of NO2 at urban background sites in 2020 was at a record low of 15.1µg/m3).

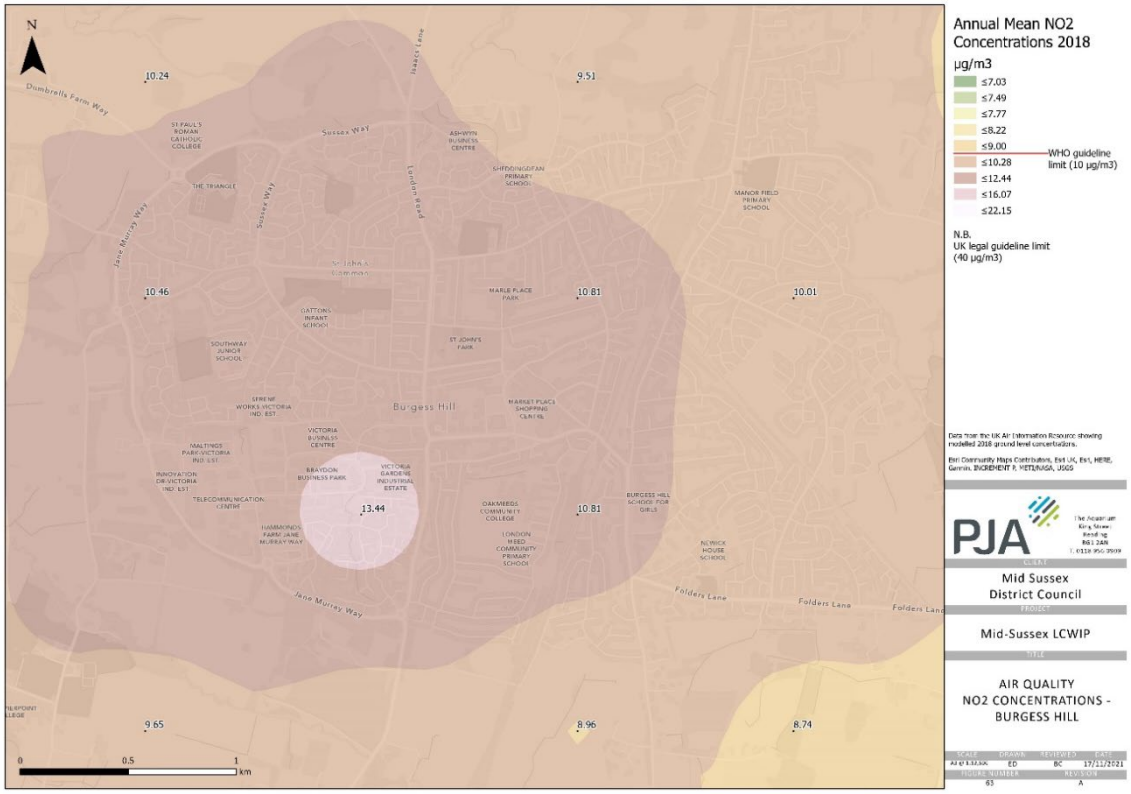


Figure 4-5: Air Quality Plan – NO2 Concentrations (Burgess Hill)

Please Note: MSDC currently works to the UK National Air quality Objectives which is 40µg/m3

4.2.3 Severance and Permeability

Figure 4-6 highlights the key severance features in Burgess Hill. Understanding the impact of severance is critical for contextualising how pedestrians and cyclists currently move through Burgess Hill. For the purposes of this analysis, severance has been defined as features which interrupt the visual and/or physical continuity of routes and sightlines. Severance inadvertently causes bottlenecks in locations which provide the only route to overcome the severance features. A typical example of a bottleneck in Burgess Hill is adjacent to the railway station where the B2113/Station Road provides a key bridge/link across the railway line. The B2036/London Road is another key severance feature that runs from north to south through the town. It is noted that there are a limited number of controlled pedestrian crossings points along this stretch of road.

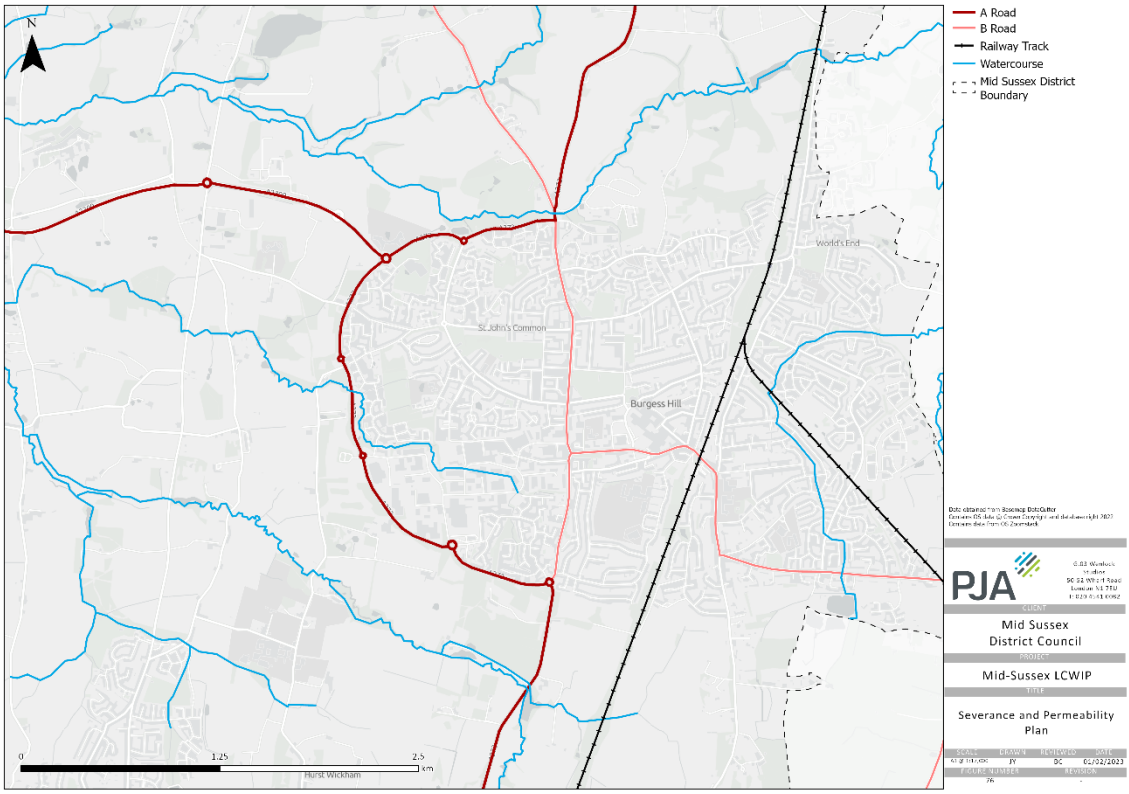


Figure 4-6: Severance and Permeability Plan (Burgess Hill)

4.2.4 Collision Analysis

Figure 4-7 shows the distribution, type and severity of collisions which resulted in an injury to a pedestrian or cyclist during the 60-month period between October 2015 and September 2020. This data can be used to identify locations where pedestrians and cyclists come into conflict with vehicular traffic, with collisions often being the result of poor infrastructure provision. Whilst generally infrequent and mostly resulting in slight injuries, there was an increased incidence of collisions resulting in an injury to a pedestrian or cyclist in the town centre, particularly along the B2113/Station Road to the south of the Shopping Centre.

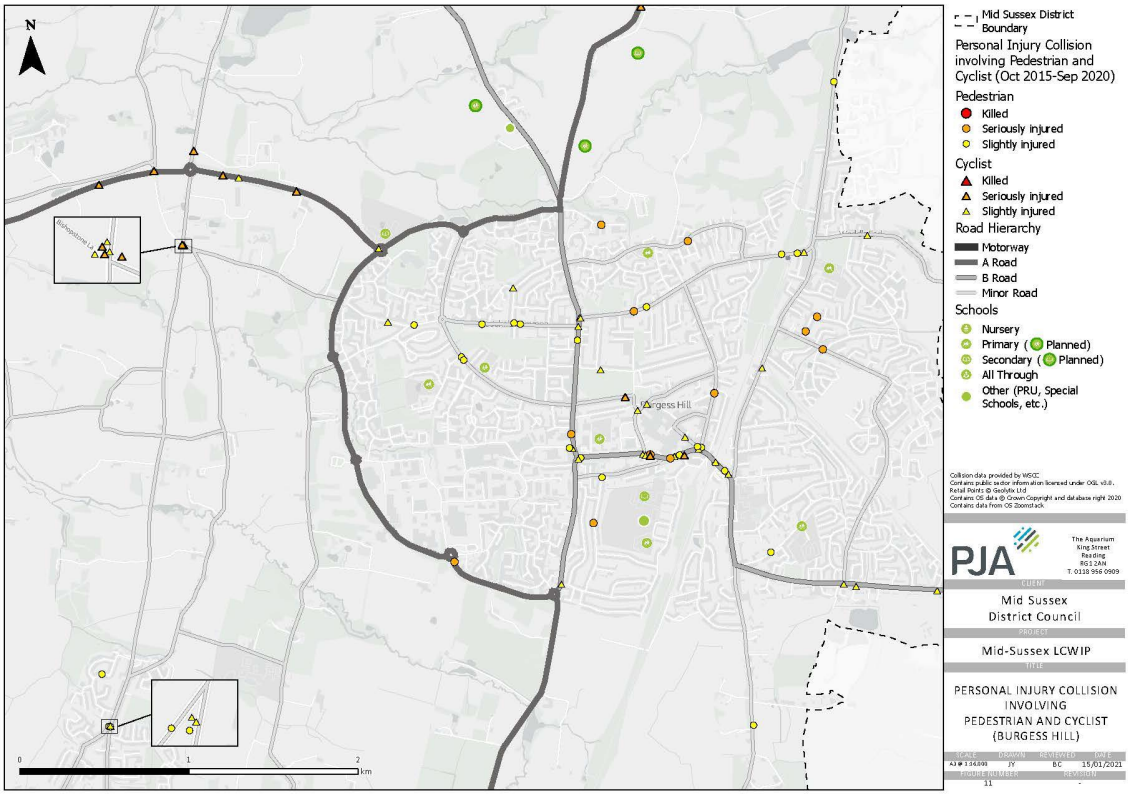


Figure 4-7: Walking and Cycling Collision Analysis Plan (Burgess Hill)

4.2.5 Travel Patterns

Figure 4-8 illustrates the method of travel to work data for the local area alongside the proportion of residents who have a journey of less than 5km when commuting to work, taken from the 2011 Census. It is widely acknowledged that cycling has the potential to replace short car journeys, particularly those under 5km. The plan indicates that the car accounts for the highest percentage of people's' preferred modes of transport when commuting to work in Burgess Hill. Moreover, a significant proportion of journey to work distances for residents are under 5km. The data from one Lower Super Output Area (LSOA) located in the north of the town suggests over 50% of residents have a journey to work distance under 5km, with just 14% walking or cycling to work. This indicates that there is the potential for many trips to be switched to walking or cycling within the urban extent of Burgess Hill.

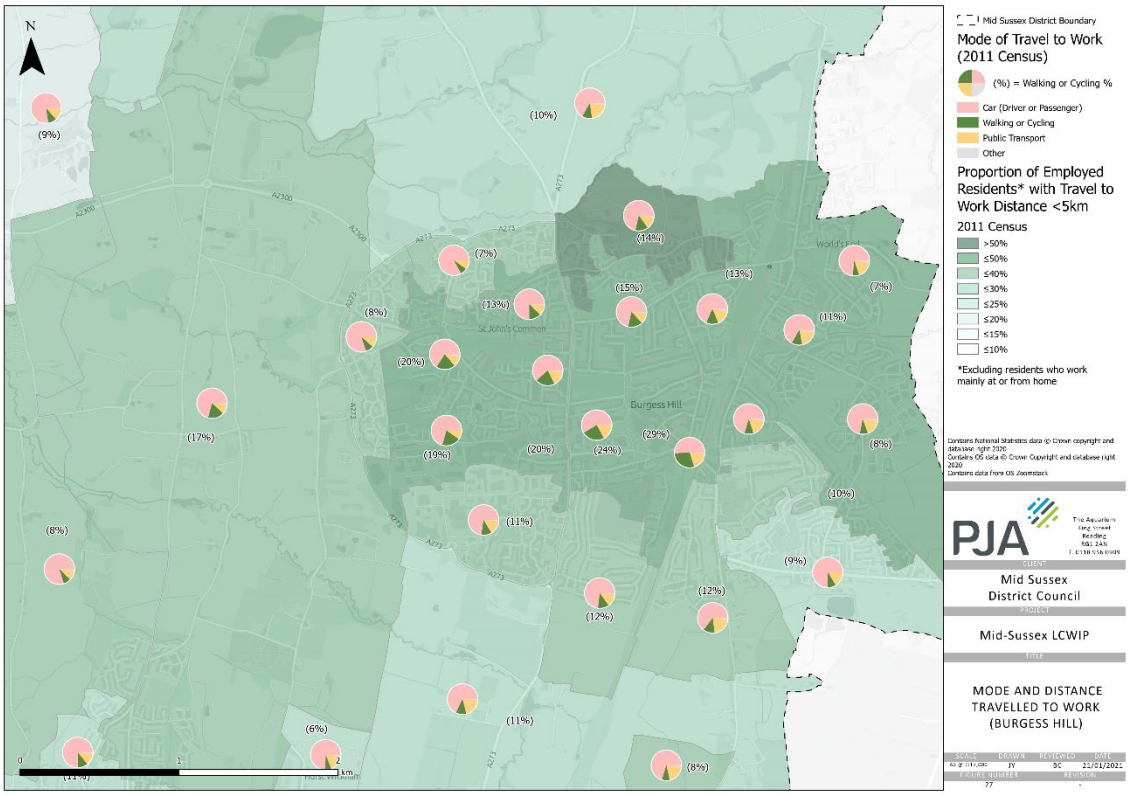


Figure 4-8: Preferred Mode and Distance Travelled to Work Plan (Burgess Hill)

Figure 4-9 highlights the proportion of households in Burgess Hill that do not have access to a car or van, taken from the 2011 Census. The plan in general suggests a relatively high car ownership in Burgess Hill, with more car-free households located around the town centre and towards the railway station. The highest percentage of car free households per LSOA in Burgess Hill was 35%. Car ownership increases towards the outer urban extents of the town.

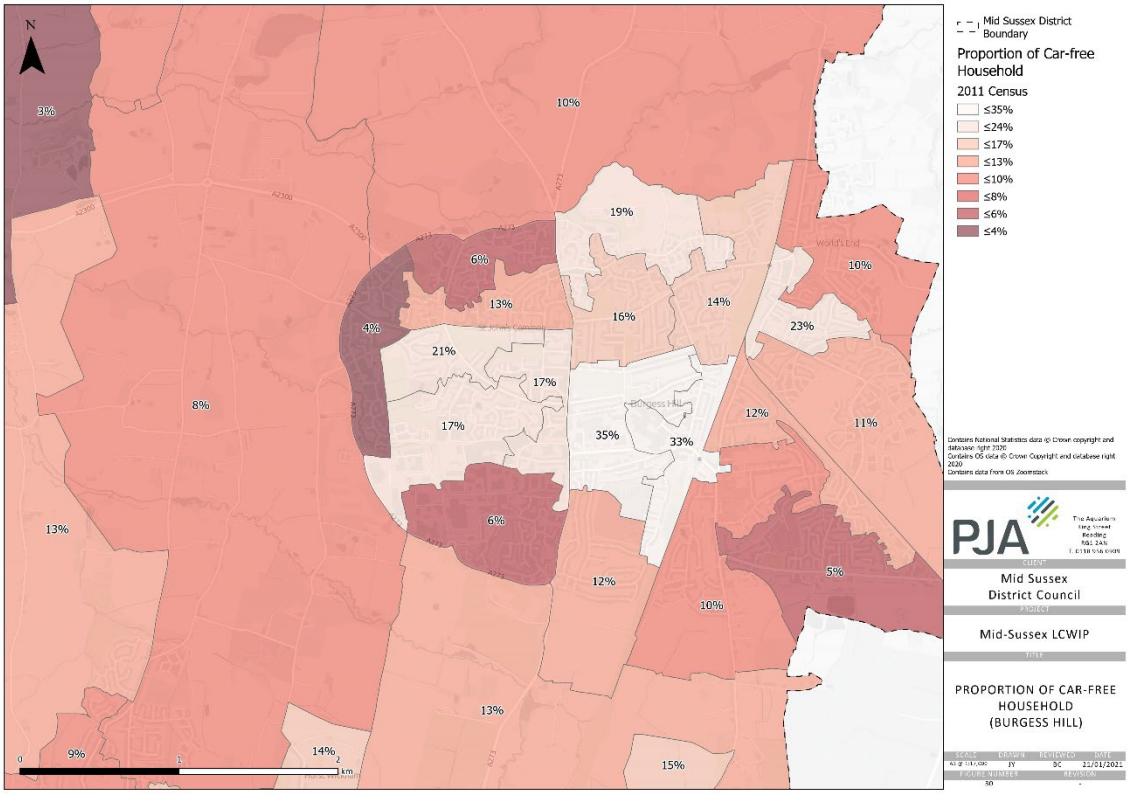


Figure 4-9: Preferred Mode and Distance Travelled to Work Plan (Burgess Hill)

4.2.6 Propensity to Cycle Tool (PCT) – Commuting Trips

The Propensity to Cycle Tool (www.pct.bike) is a nationwide model that identifies where increases in the rates of cycling can be expected through the provision of better infrastructure. It uses census travel to work data and school travel data, and looks at trip distances to see where there may be scope for more short journeys to be undertaken by cycling. The PCT provides seven scenarios for forecasting future levels of cycling which range in ambition from the 'Government Target' (assumes 6% of commuting trips by bicycle) up to the 'E-Bike' scenario (assumes 22% of commuting trips by bicycle and improved access to e-bikes). The PCT provides two sets of mapping outputs:

- Straight-Line Networks – these plans show direct paths between LSOA Origin-Destination points which gives an overview of the key desire lines for cycling flows
- Applied Networks – applies the straight desire line to the existing road network to provide a more detailed summary of where increased cycle flows would take place on the local network

The PCT tool was used to identify the greatest latent demand for cycle and school commuting. The PCT analysis used the 'E-Bike' scenario, which models the same mode share for cycling as in the Netherlands, adjusting for trip distance and topography and includes improved access to E-Bikes. Using the 'E-Bike' scenario provides a more ambitious and longer-term outlook for cycling flows which is advantageous in network planning as it ensures that the LCWIP cycle network will provide

for assumed future advances in the town's cycle network. To accommodate for future commuting demand from proposed developments, the population forecasts for each proposed site were incorporated into the PCT forecasts to provide a more accurate reflection of a potential future scenario. The forecast populations were assigned to the nearest available LSOA to each development site (n.b. this approach is limited as some development sites are currently >1km from the nearest LSOA).

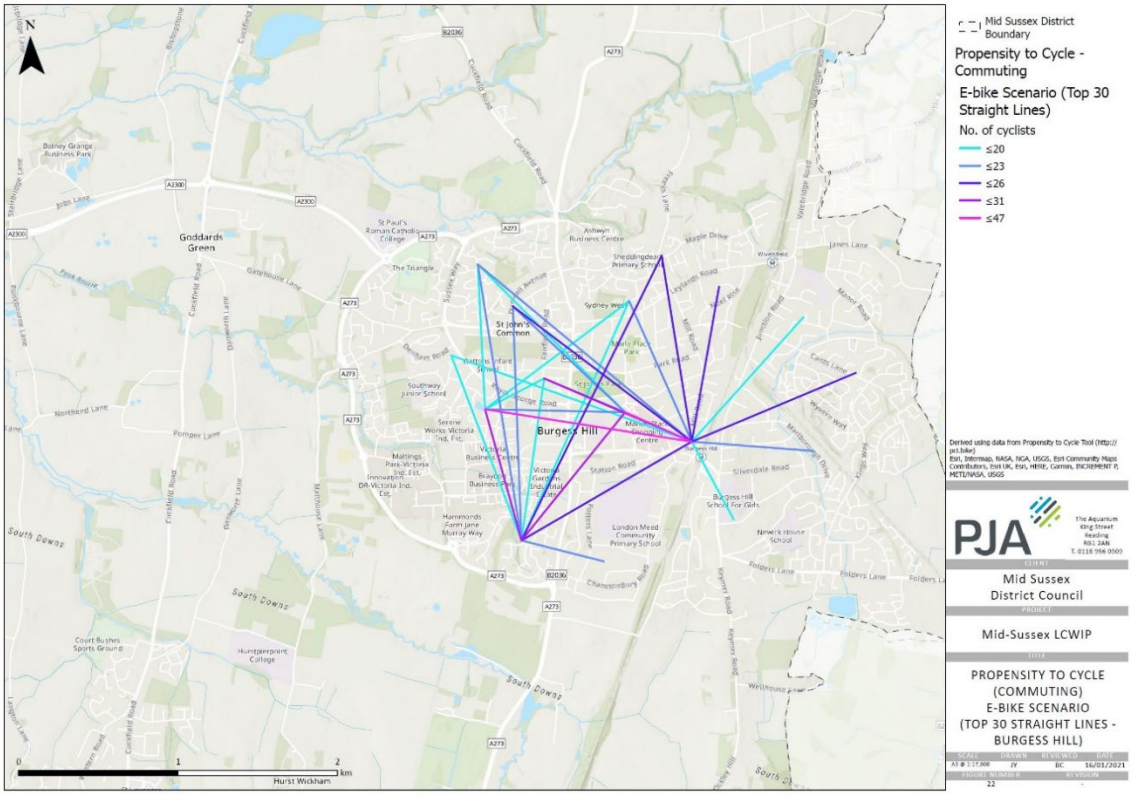


Figure 4-10: PCT 'E-Bike' Scenario: Top 30 Straight Desire Lines (Burgess Hill)

The straight-line results (Figure 4-10) suggest that the main concentration of commuting demand would be based within the existing town's urban extents.

The PCT also provides an 'applied network' scenario which snaps the straight-line desire lines to closest applicable road alignment to provide an indication of a more applied demand, as shown in Figure 4-11.

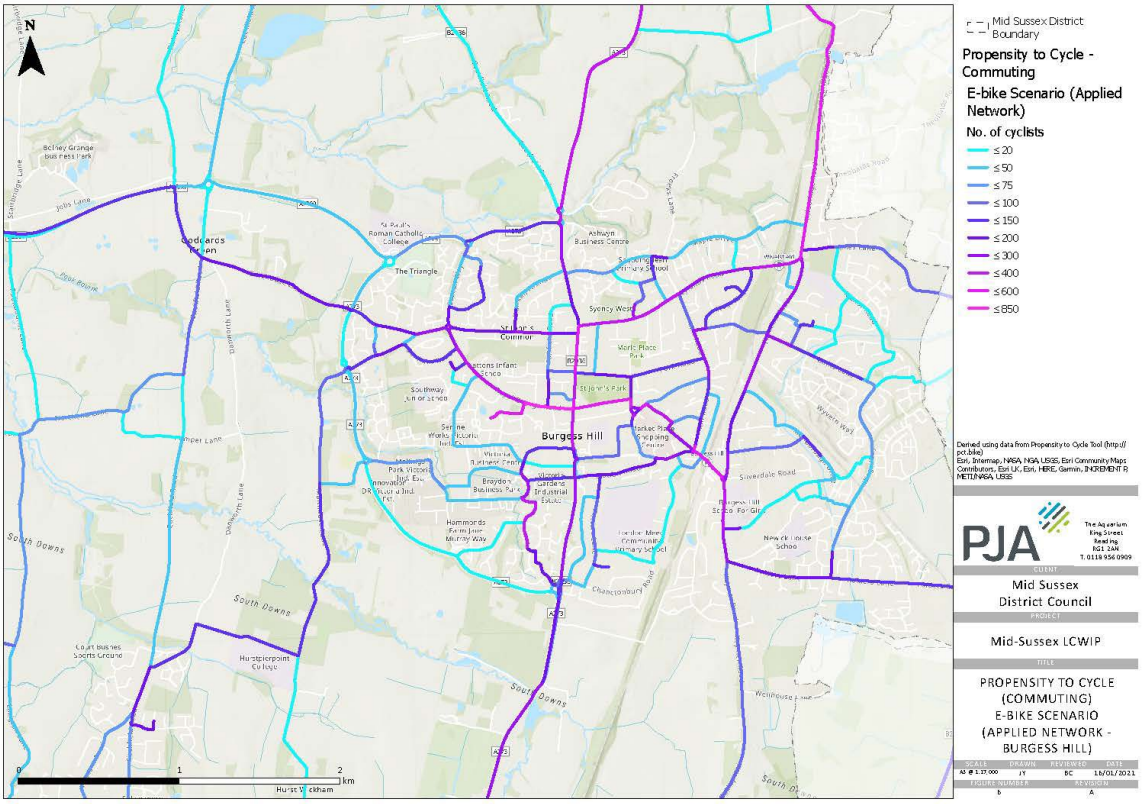


Figure 4-11: PCT 'E-Bike' Scenario: Top 30 Applied Network Desire Lines (Burgess Hill)

The results suggest that future commuting demand would be highest on desire lines from the north via Valebridge Road, Leylands Road and the B2036/London Road, from the east via the B2113/Station Road, Church Road, Crescent Way and Lower Church Road and from the west via Royal George Road. It is worth noting that future demand from committed development sites is linked to the popularity of some desire lines, particularly to the north.

The PCT also provides a school travel scenario using the travel to school results from the 2011 Census. The below plan (Figure 4-12) presents the 'Go Dutch' school travel results for Burgess Hill which assumes a cycle mode share of 41% of trips being cycled to school (the plan includes existing and proposed school locations in the town).

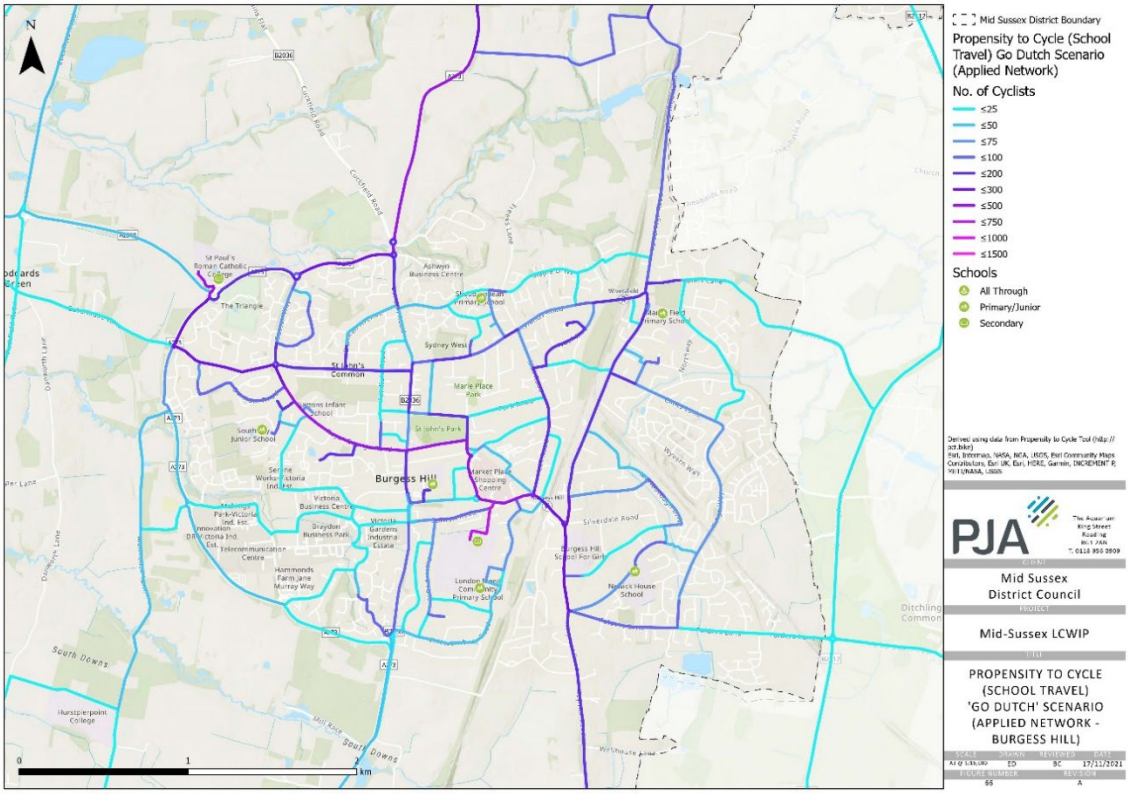


Figure 4-12: PCT 'Go Dutch' School Scenario: Top 30 Applied Network Desire Lines (Burgess Hill)

The plan highlights several routes which are anticipated to have significant increases in the number of cycling trips to school, including most notably routes along the A273/Jane Murray Way/Sussex Way/Issac's Lane, Gatehouse Lane and West Street, Royal George Road, Lower Church Road, Civic Way and the B2113/Station Road and Keymer Road, Junction Road and Valebridge Road.

A limitation of the PCT is its focus on commuting and school trips which tends to produce outputs focussed around key employment and education sites. The PCT results were used alongside an analysis of non-commuting, and leisure trips to enable the development of a cycle network that also includes leisure and recreation trips.

4.2.7 'Everyday Trips'

The purpose of this section is to provide an additional layer of analysis that focusses on 'Everyday' cycling trips which includes leisure and recreation, trips to local centres, and amenity trips. Combining the 'Everyday' trips with PCT outputs provides a comprehensive demand model for developing the LCWIP network. It should be noted that desire lines that were longer than 5km were removed from the analysis for consistency with the LCWIP approach. This should not preclude the development of longer distance cycling routes in the wider area which could connect into Burgess Hill. Indeed, future development of 'inter-urban' cycling routes will be an important step in the future development of the LCWIP.

Developing the Desire Lines for 'Everyday' trips required the identification of all Origins and Destinations within a 5km catchment area of Burgess Hill using data supplied by the client team. The catchment area was divided into a hexagon grid using 0.25km2 hexoides. For the purposes of the analysis, all hexoides which currently contain >100 residential dwellings and/or are anticipated to include >100 residential dwellings in the future were included as Origins (see Figure 4-13).

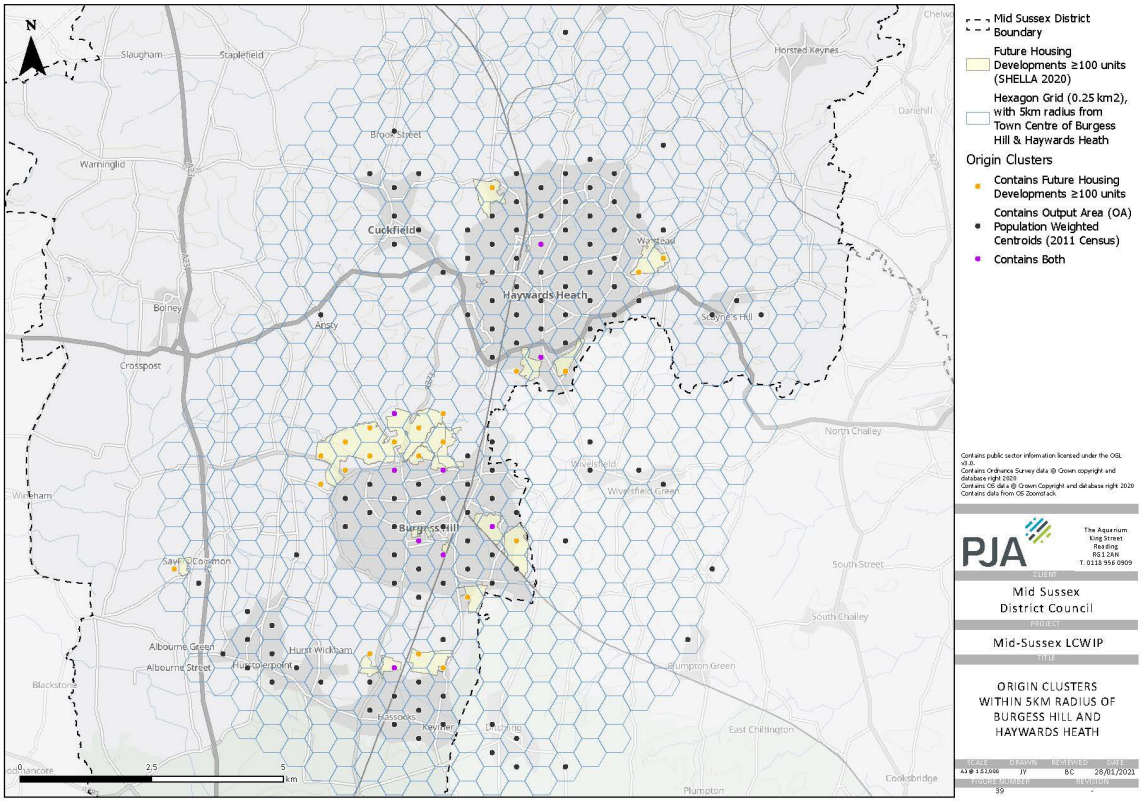


Figure 4-13: Origin Clusters (Haywards Heath and Burgess Hill)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

Having identified the Origins, Destinations were identified based on data provided by the client and clustered to highlight the areas with highest number of destinations. All destinations were categorised as below:

- Class 1: Town, Village and Local Centres; Key Employment Sites.
- Class 2: Bus Stops, Existing and Proposed Schools, Railway Stations, Hospitals, Supermarkets, Leisure Centres and Libraries.

Figure 4-14: Destination Clusters (Burgess Hill)

This analysis provided an important non-commuting dataset which was compared against the Propensity to Cycle Tool (PCT) outputs to provide a comprehensive review of desire lines within Burgess Hill. It was assumed in the analysis that Class 1 destinations would generate a higher number of cycling trips and that they are also likely to have a larger catchment area of cyclists from across the town, compared to Class 2 destinations which would generate more locally based trips.

To determine the key desire lines for the LCWIP, the spatial relationship between Origin and Destinations was analysed. 'Everyday' Origin-Destination desire lines were created from each origin centroid to its nearest Class 2 destination, and then also to all Class 1 destinations in the Study Area (all desire lines >5km were excluded from the analysis). This was based on the assumption that the Class 1 destinations would generate a higher number of trips and that they are also likely to have a larger catchment area of trips from across the study area, compared to Class 2 destinations which would generate more locally based trips. Figure 4-15 provides an indication of the volume of desire lines that were considered in the development of the LCWIP network.

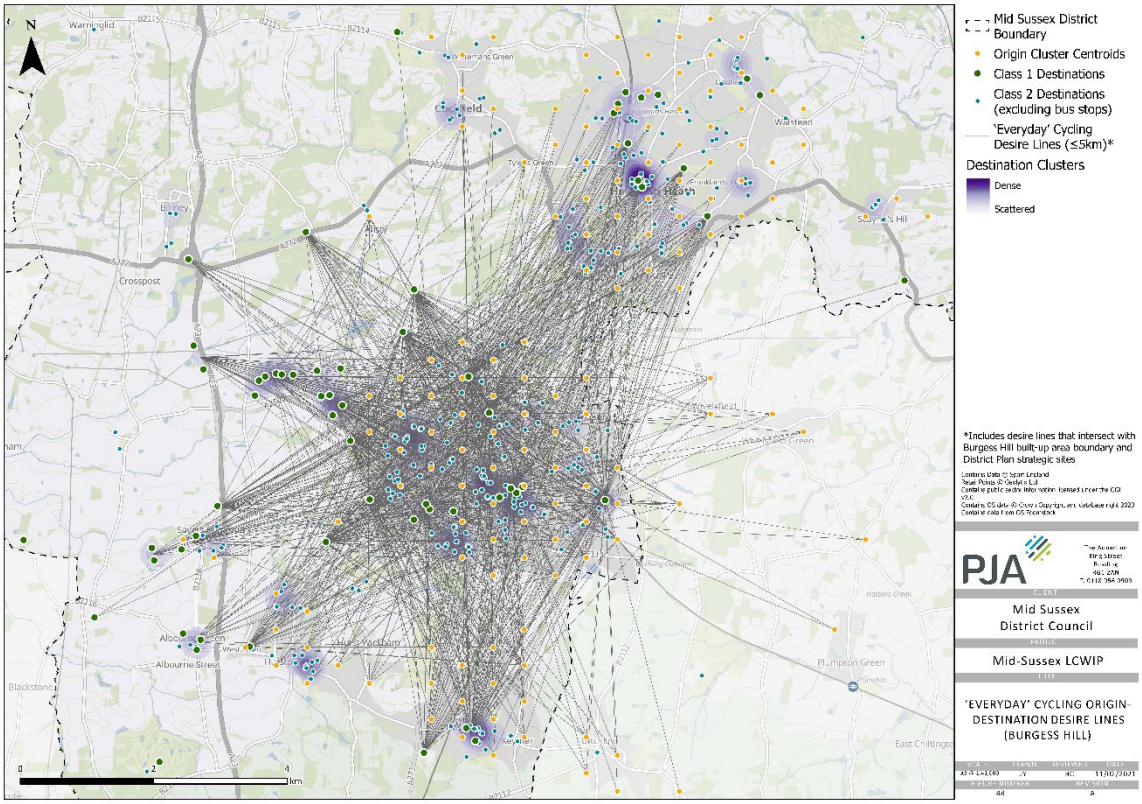


Figure 4-15: 'Everyday' Origin-Destination Pairs (Burgess Hill)

Having identified all available desire lines, a "K-means" clustering analysis was used to cluster the above desire lines into a more refined plan which identified the top 20 desire line clusters (Figure 4-16). The K-means methodology identifies individual desire lines which are within close proximity to each other and combines these into grouped desire lines. The top lines therefore represent the general alignments which are likely to generate the highest number of everyday trips.

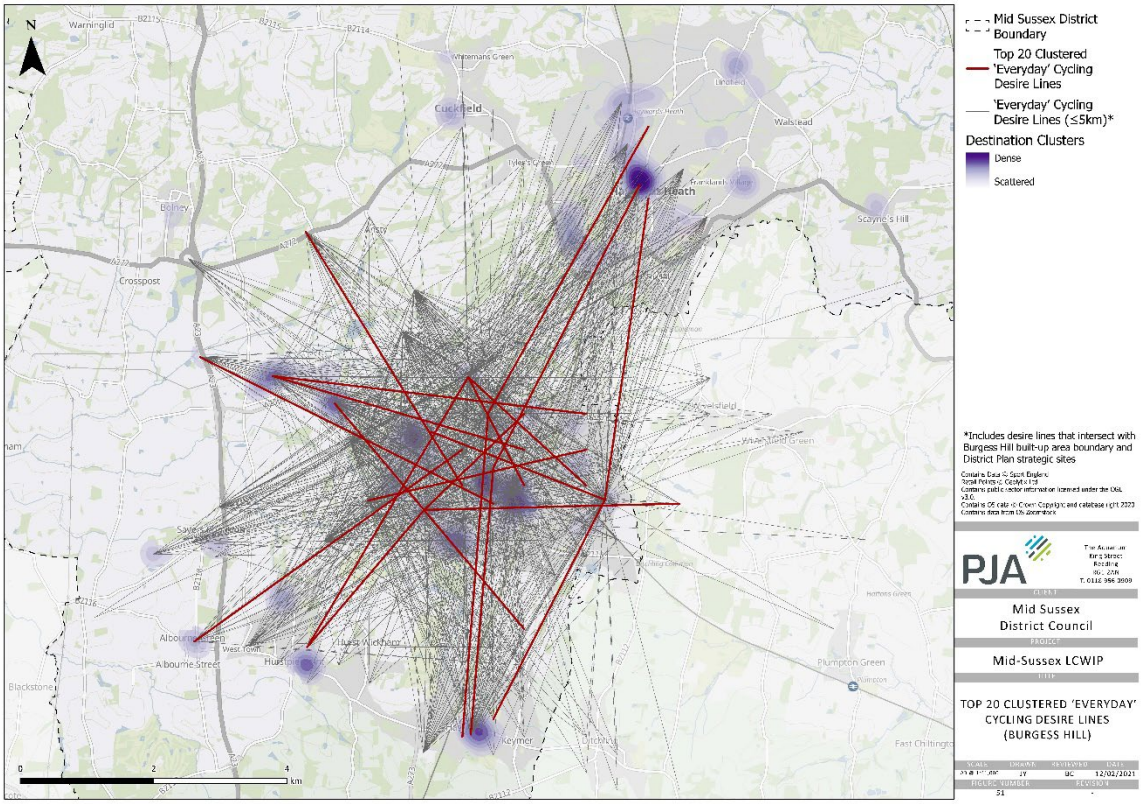


Figure 4-16: Top 20 'Everyday' Origin-Destination Pair Desire Lines (Burgess Hill)

To help compare the results from the PCT and Everyday Trip analysis, the below plan was prepared which highlights where the results overlapped. The combined results illustrate that the PCT results (green) are generally more concentrated in Burgess Hill and the town centre, whilst the 'everyday' desire lines (yellow) extend beyond Burgess Hill to nearby settlements.

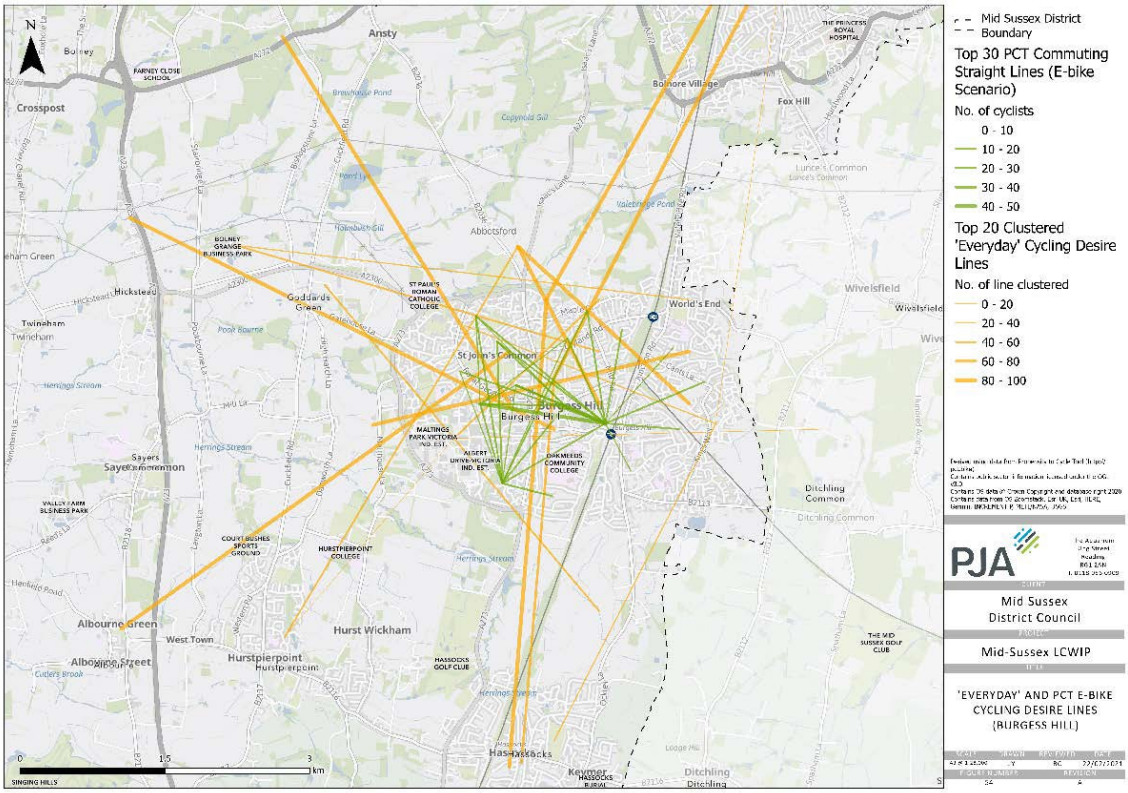


Figure 4-17: Comparison of Everyday and PCT Commuting Desire Lines (Burgess Hill)

4.2.8 LCWIP Network Recommendation

The data was reviewed with Mid Sussex District Council officers to present the findings from Stage 2 and to recommend the LCWIP walking and cycling networks. For the purposes of the network development, the LCWIP methodology recommends developing 'routes' which form the basis of the auditing in Stages 3 and 4. The network therefore represents indicative routes which might be followed for walking and cycling, however they are not intended to be routes that will necessarily be followed from beginning to end. A mixture of route types was selected, ranging from main routes into the town centre, routes through residential areas, and routes that provided onward connectivity to out of town sites.

Given the compact nature of the Mid Sussex LCWIP towns, a 'whole street' approach was adopted rather than proposing discrete networks. This approach is increasingly common in smaller settlements where there is a significant overlap of routes given the limited size of network. The approach is also more efficient in smaller settlements as it maximises the benefits for both walking and cycling by targeting key locations. Figure 4-18 summarises the combined LCWIP walking and cycling network to be audited in Stages 3 and 4.

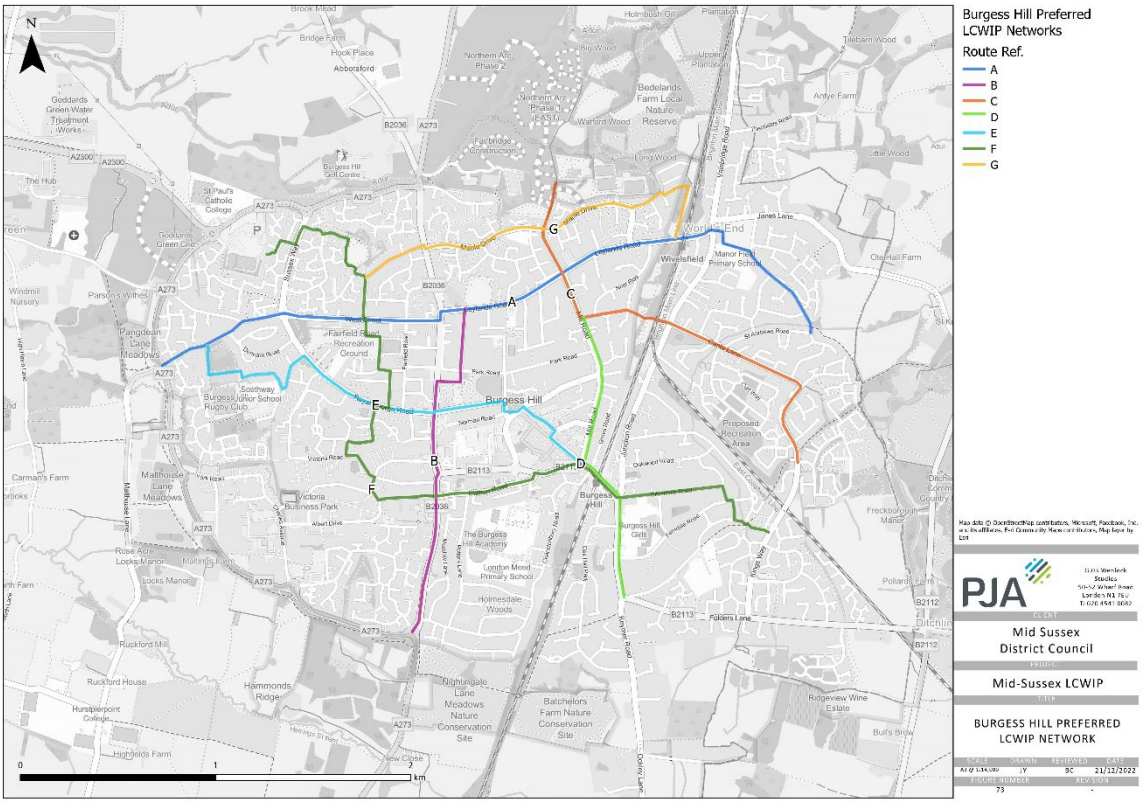


Figure 4-18: Preferred LCWIP Network (Burgess Hill)

4.3 Stage 3: Network Planning for Cycling

4.3.1 Route Selection Tool (RST)

Each route was audited using the "Route Selection Tool" as set out in the LCWIP guidance. The Route Selection Tool (RST) is an appraisal methodology that allows practitioners to determine the best route to fulfil a particular straight line corridor, referencing against existing conditions and the shortest available route. It considers the six important criteria that determine the quality of a cycling route as described below. The RST divides routes into shorter sections which should reflect changes in the character and layout of the alignment.

- Directness: Compares the length of cycle route against the equivalent vehicle route with cycle routes that are shorter than the vehicle are scored positively for Directness. Higher scores can be achieved through the introduction of modal filters or routing cyclists through parks/open spaces to provide a more direct connection.
- Gradient: Identifies the steepest section of route within the proposed alignment with gradients that exceed either 5% in gradient and/or 50m in length scoring lower.
- Safety: Considers vehicle flows and speeds to better understand the exposure of cyclists to vehicular traffic. Routes with either protected cycle facilities or low traffic environments score highest.

- Connectivity: Records the number of individual cycle connections into a section of route – routes should aim to have >4 connections per km.
- Comfort: Assesses the space available for cycling and the quality of surfacing with a preference for protected cycle facilities of >3m (bi-directional) or >2m (uniflow).
- Critical Junctions: Provides a number of critical junction design issues including vehicle flows, protection from vehicular traffic, wide junction splays, and junction geometries.

All routes were initially scored as a desktop exercise and the results were then validated during site visits. The remainder of this chapter summarises the results from the RST audits and initial design recommendations.

4.3.2 Audit Results

The Route Selection Tool consists of five scoring criteria (Directness, Gradient, Comfort, Connectivity, Safety) and the Critical Junctions assessment. Table 4-1 summarises the range of scores against each of these criteria which provides useful insight into how the network performed against. The average route score across the LCWIP routes in Burgess Hill was 59%. A breakdown of the scoring is presented in Table 4-1 and Figure 4-19.

The RST for Burgess Hill were heavily influenced by the extent to which cyclists mixed with general traffic, and the design/layout of those environments. The compact and relatively flat layout of Burgess Hill meant that the scores for Directness, Connectivity and Gradient were generally high. The low scores for Comfort and Safety are a reflection of the lack of dedicated cycle infrastructure in the town and the historic road environments in which cyclists are mixing with general traffic.

Criteria	Highest Score (%)	Lowest Score (%)	Average Score (%)
Directness	100%	0%	86%
Gradient	80%	34%	62%
Safety	60%	14%	33%
Connectivity	100%	96%	99%
Comfort	40%	0%	15%

Table 4-1: Route Selection Tool (RST) Scores Overview (Burgess Hill)

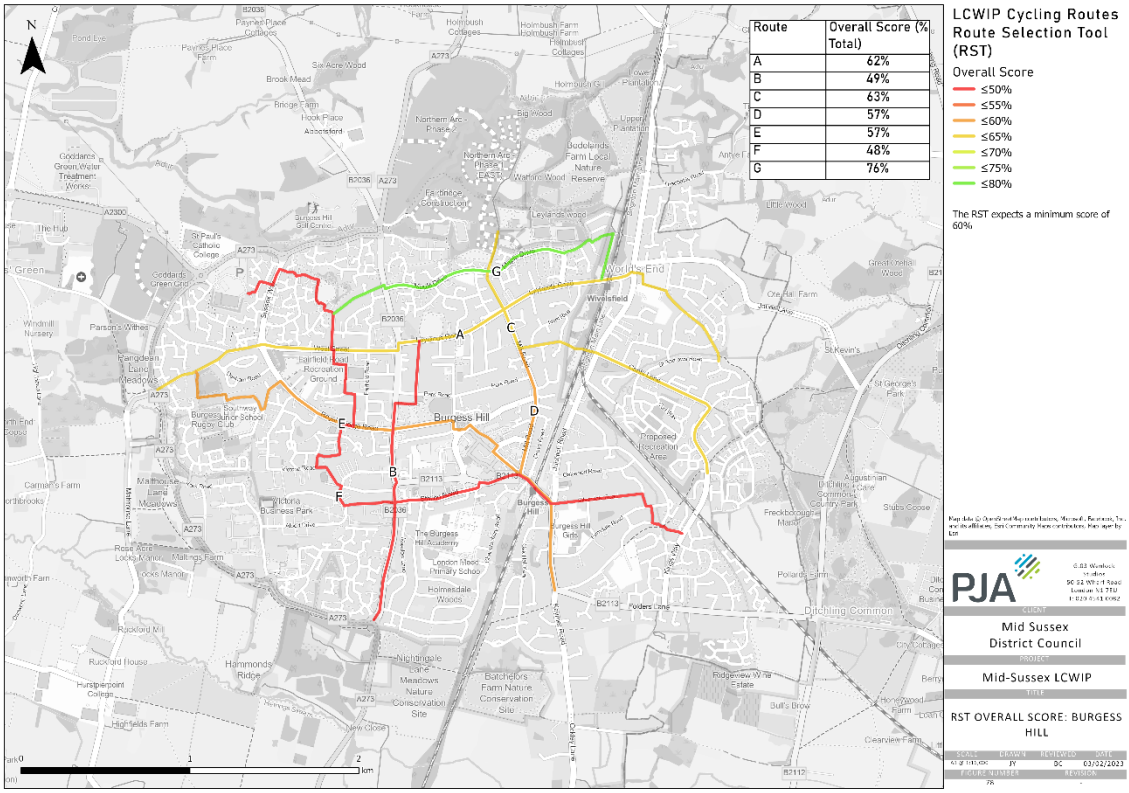


Figure 4-19: Route Selection Tool (RST) Scores (Burgess Hill)

4.4 Stage 4: Network Planning for Walking

4.4.1 Walking Route Audit Tool (WRAT)

Having confirmed the combined LCWIP walking and cycling network, each route was then audited on site by PJA using the Walking Route Audit Tool (WRAT) methodology set out in the DfT LCWIP process guidance. The Walking Route Audit Tool (WRAT) is divided into several categories for analysis and uses a Red Amber Green (RAG) scoring technique:

- Attractiveness: Considers the impact of maintenance, traffic noise, pollution and fear of crime upon the attractiveness of a route.
- Comfort: Reviews the amount of space available for walking and the impact of obstructions upon walking such as footway parking, street clutter and staggered crossings.
- Directness: Assesses how closely pedestrian facilities are aligned with the natural desire line and accommodating the crossing facilities are for pedestrians to follow their preferred route.
- Safety: Focusses on the impact of vehicle volumes and speeds and interaction with pedestrians.
- Coherence: Focuses on the provision of dropped kerb and tactile information for pedestrians.

4.4.2 Audit Results

This section summarises the results from the on-site assessments focussing particularly on the performance of the routes against the 20 WRAT scoring factors. Analysis of the factors' results provides a useful indication of the key strengths and weaknesses of Burgess Hill's walking network and helps to identify the areas for improvement.

The main challenge for the WRAT audits in Burgess Hill was related to the availability of footways which provided sufficient comfort and width, whilst also enablling safe and continuous walking and wheeled environments. The highest scoring sections of the network were concentrated in the traffic-free centre and the town's quieter residential areas.

The average WRAT score across the LCWIP routes in Burgess Hill was 67%. A breakdown of the scoring is presented in Table 4-2 and Figure 4-19.

Theme	Criteria	Average score (out of 2)	Average score (%)
Attractiveness	Maintenance	1.43	72%
	Fear of crime	1.51	76%
	Traffic noise and pollution	1.31	65%
Comfort	Condition	1.08	54%
	Footway width	0.86	43%
	Width on staggered crossings / pedestrian islands/refuges	1.00	50%
	Footway parking	1.60	80%
	Gradient	1.32	66%
Directness	Footway provision	1.66	83%
	Location of crossings in relation to desire lines	1.28	64%
	Gaps in traffic (where no controlled crossings present or if likely to cross outside of controlled crossing)	1.35	67%
	Impact of controlled crossings on journey time	1.99	99%
	Green man time	1.74	87%
Safety	Traffic volume	1.28	64%
	Traffic speed	1.39	69%
	Visibility	1.88	94%
Coherence	Coherence	0.67	33%

Table 4-2: Walking Route Audit Tool (WRAT) Scores Overview (Burgess Hill)

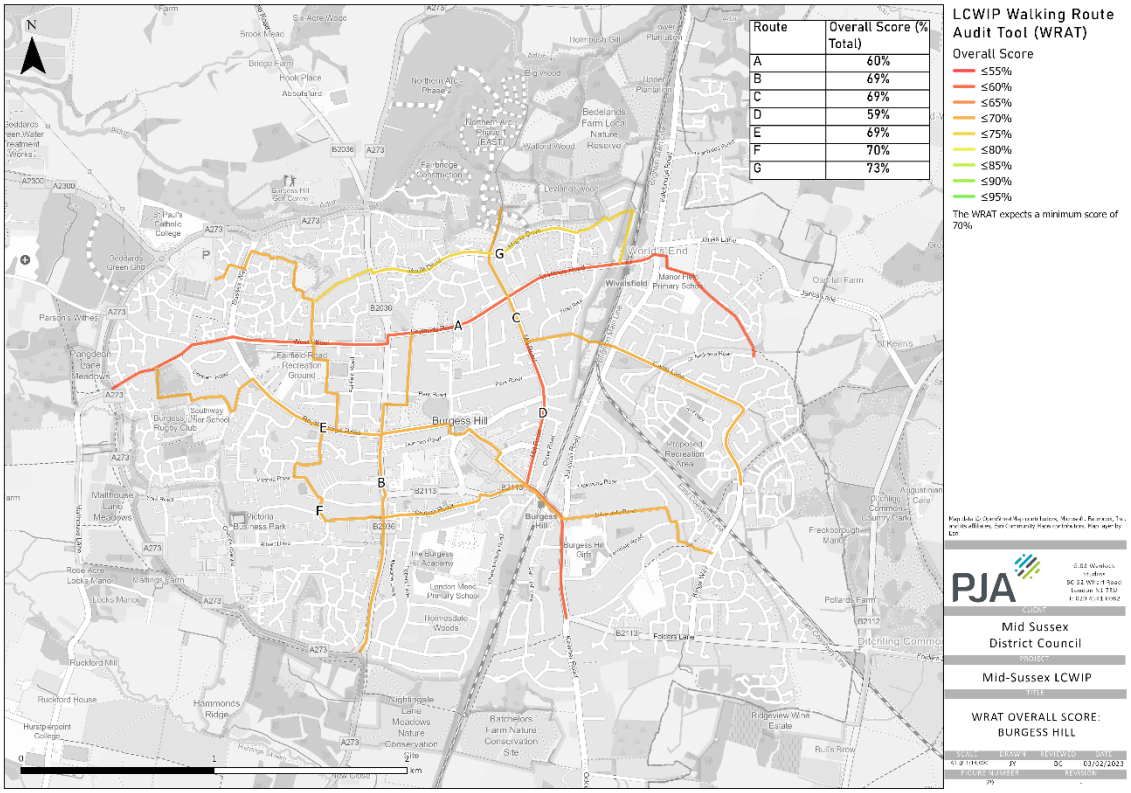


Figure 4-20: Walking Route Audit Tool (WRAT) Scores (Burgess Hill)

4.5 Stakeholder Engagement

- Stakeholders during the engagement sessions highlighted that walking and cycling is a key topic for residents of Burgess Hill. Particularly with the new schools in the Brookleigh development and we should be encouraging people to cycle and walk to those schools by having high quality infrastructure already in place.
- Stakeholders also highlighted that Place and Connectivity programme, which already has several walking and cycling route improvements, will be complementary to the LCWIP recommendations.

5 East Grinstead

5.1 Stage 1: Determining Scope

Stage 1 is focussed on understanding the local geographic context to help inform the LCWIP process. Our approach to determining the scope includes a high-level review of the below datasets which we have found to be highly influential on the geographic scope of LCWIPs:

- Local Context and Development Sites – understanding the local development context and how the town will develop is essential for developing a future-proofed LCWIP network.
- Walking and Cycling Catchment Areas: Walking and cycling isochrones help to provide a sense of scale and to better understand the extent to which trips could be walked and cycled. Comparing the isochrones also helps to understand the relationship between future walking and cycling routes in the LCWIP.
- First Impressions: Providing a summary of our first impressions helps to better understand the local context of the study area.

5.1.1 Local Context

The local context plan below (Figure 5-1) summarises the distribution of key destinations within East Grinstead, including schools, future development sites, leisure and retail facilities, cycle routes, Public Rights of Way (PRoW), open spaces and employment sites. Understanding the location of these sites provides important context in the development of the LCWIP routes – particularly in relation to future development sites. The plan highlights a cluster of destinations to the south of the A22/Beeching Way in and around the town centre, with several key housing and employment sites located to the north and west of the town. The plan also highlights two key cycling links which follow the old railway line to the southeast and west (National Cycle Route 21) and an extensive network of Public Rights of Way (PRoW) which radiate out from the town centre. Key trip attractors include East Grinstead railway station, Queen Victoria Hospital, the Sainsbury's on Brooklands Way and the ALDI on London Road.

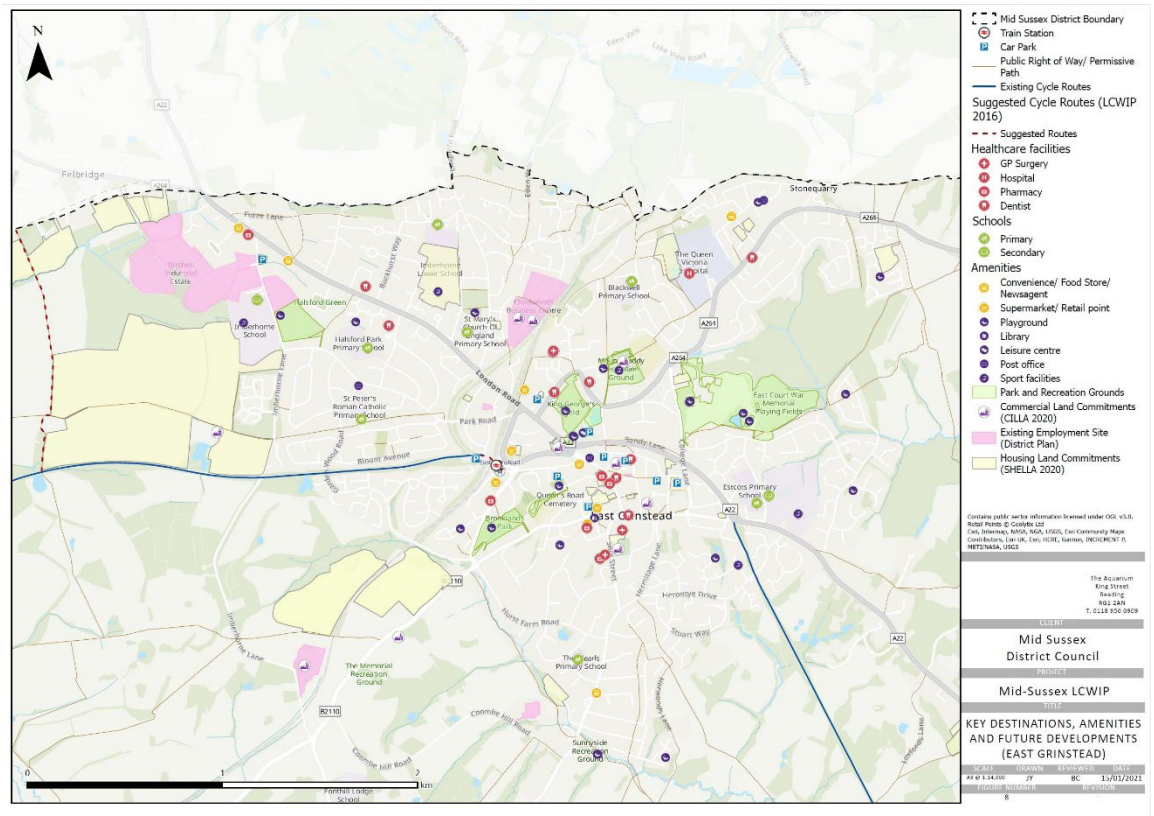


Figure 5-1: Local Context and Development Sites Plan (East Grinstead)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

5.1.2 Walking and Cycling Catchment Areas

The purpose of the walking and cycling isochrone plans is to understand the potential catchment area accessible within a 20-minute walk/cycle from the centre of East Grinstead. The isochrone plans are based on the existing street network, to give a more accurate representation of the areas accessible by walking/cycling.

The walking catchment plan (Figure 5-2) suggests that a majority of East Grinstead is within a 20-minute walk of the town centre. The walking isochrone stretches as far as the Queen Victoria Hospital, the Charlwoods Business Centre (a key employment site) and committed housing developments on the B2110/Turners Hill Road.

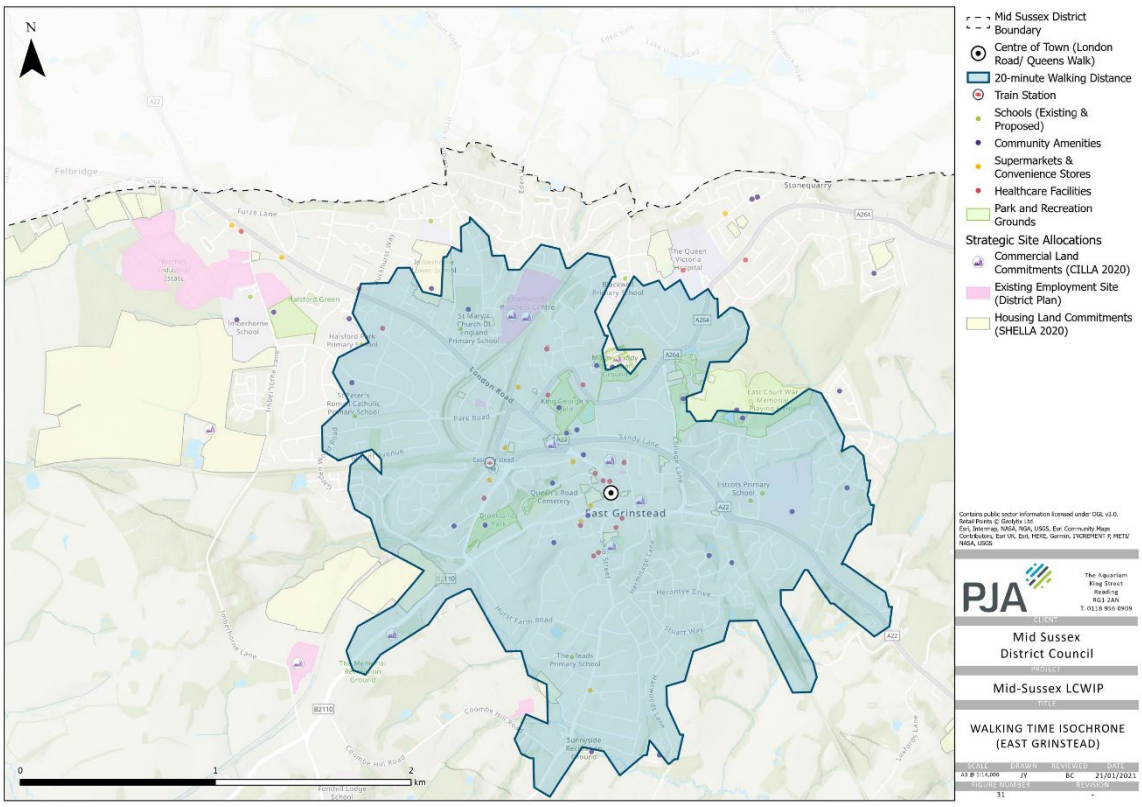


Figure 5-2: 20 Minute Walking Catchment Plan (East Grinstead)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

The cycling catchment plan (Figure 5-3) illustrates that several destinations further afield are within cycling distance of East Grinstead town centre, including the villages Lingfield to the north, Forest Row to the south and Felbridge to the west. Several key designated housing and employment sites located to the south of Felbridge are also captured by the 20-minute cycling isochrone.

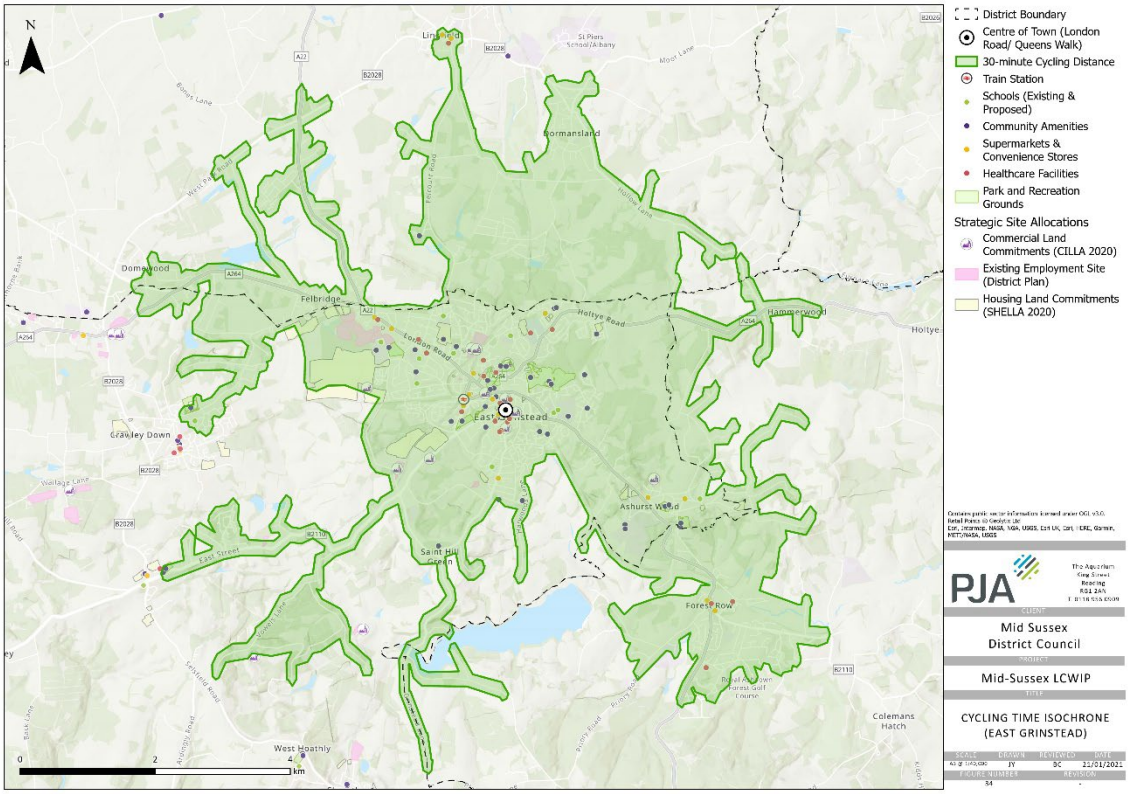


Figure 5-3: 20 Minute Cycling Catchment Plan (East Grinstead)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

5.1.3 First Impressions

This section summarises our first impressions of East Grinstead based on initial site visits completed during the project inception

- **Historic Town Centre**– East Grinstead has an attractive and vibrant town centre with high levels of footfall, and vehicular traffic. Footways are generally narrow throughout the centre which is further exacerbated by the presence of street clutter inc. advertising boards, and pedestrian guardrailing. There is no dedicated infrastructure for cycling although the historic highways network leaves minimal design scope for such infrastructure.

- **Severance** – The main road network surrounding the Town Centre is a major barrier to movement - limiting the number of crossing opportunities and creating intimidating conditions for walking and cycling. The network provides minimal dedicated cycle infrastructure except for London Road. The level of service for cycling is exacerbated by the one-way layout in sections of the road network which further limited the network's permeability. The one-way network also creates particularly hostile junctions e.g. London Road/Park Road


- **Neighbourhoods** – There are some existing 20mph areas, however these could be expanded to other neighbourhoods to reinforce low-speed environment. Footway provision is inconsistent in places, with sections of missing footway and sections obscured by parked vehicles. The basic functionality of the walking network could be improved i.e. dropped kerb and tactile information often missing at side-road junctions. Challenging topography may deter some from walking/cycling – also complicated by design of the one-way/main road network.


- **Traffic-Free routes** – Network of existing traffic-free routes is a key strength of the town and routes are well-used. Town Centre is currently a key gap between Worth Way and Forest Way routes. Some existing sections are narrow for shared-use paths. Lack of lighting and natural surveillance may deter use of some routes outside of daylight hours. Removal/reconfiguration of barriers would improve accessibility of some routes, as well as reviewing path accessibility from adjoining neighbourhoods.

5.2 Stage 2: Data Collection

The purpose of Stage 2 is to collect relevant datasets to inform the development of the LCWIP networks for walking and cycling. This chapter summarises the analysis completed for East Grinstead.

5.2.1 Topography

East Grinstead is situated on the northern edge of a ridge approximately 130m above sea level. The topography plan (Figure 5-4) highlights a varying topography within and around the town, with the elevation increasing to the south. Whilst there are some steep inclines, these generally run parallel to corridors such as roads, railway lines and cycle paths and are therefore unlikely to impact significantly upon walking and cycling journeys. The elevation profile north of the A22/Beeching Way is generally flat.

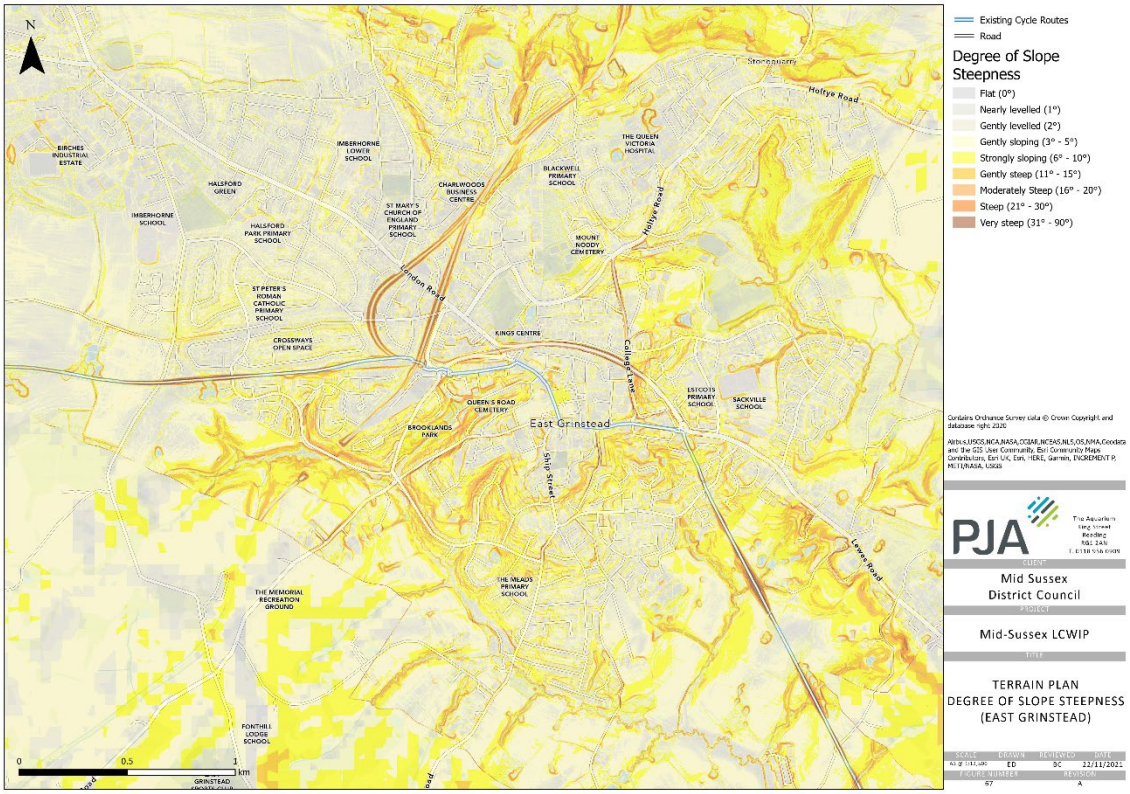


Figure 5-4: Topography Plan (East Grinstead)

5.2.2 Air Quality

Figure 5-5 summarises annual NO2 concentrations in East Grinstead. NO2 is a gas that is mainly produced during the combustion of fossil fuels along with nitric oxide (NO). The highest concentrations of NO2 were recorded near the A22/Beeching Way and the A264/Blackwell Road, two key road connections into the town. The majority of East Grinstead has NO2 concentrations well below the UK legal guideline limit of 40µg/m3 (the UK average annual mean concentration of NO2 at urban background sites in 2020 was at a record low of 15.1µg/m3).

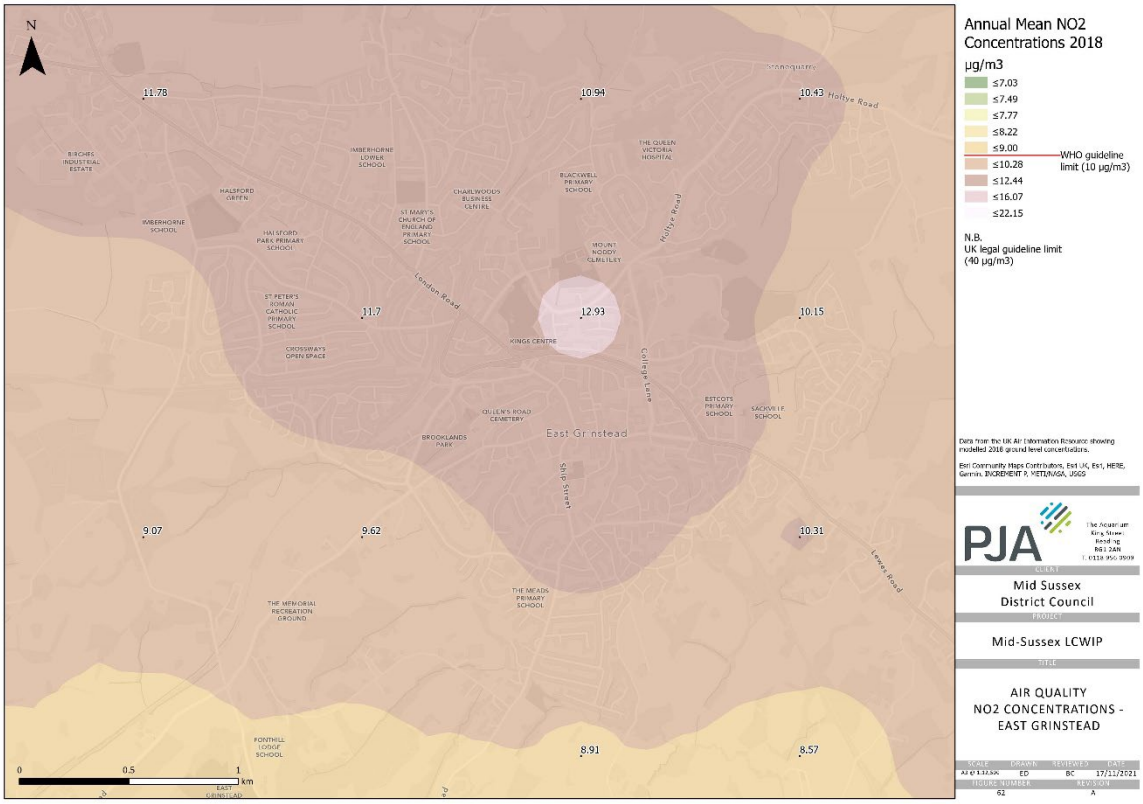


Figure 5-5: Air Quality Plan – NO2 Concentrations (East Grinstead)

Please Note: MSDC currently works to the UK National Air quality Objectives which is 40µg/m3

5.2.3 Severance and Permeability

Figure 5-6 highlights the key severance features in East Grinstead. Understanding the impact of severance is critical for contextualising how pedestrians and cyclists currently move through East Grinstead. For the purposes of this analysis, severance has been defined as features which interrupt the visual and/or physical continuity of routes and sightlines. Severance inadvertently causes bottlenecks in locations which provide the only route to overcome the severance features. Typical examples of bottlenecks in East Grinstead include pedestrian crossings, subways and bridges over the railway line and the A22/Beeching Way.

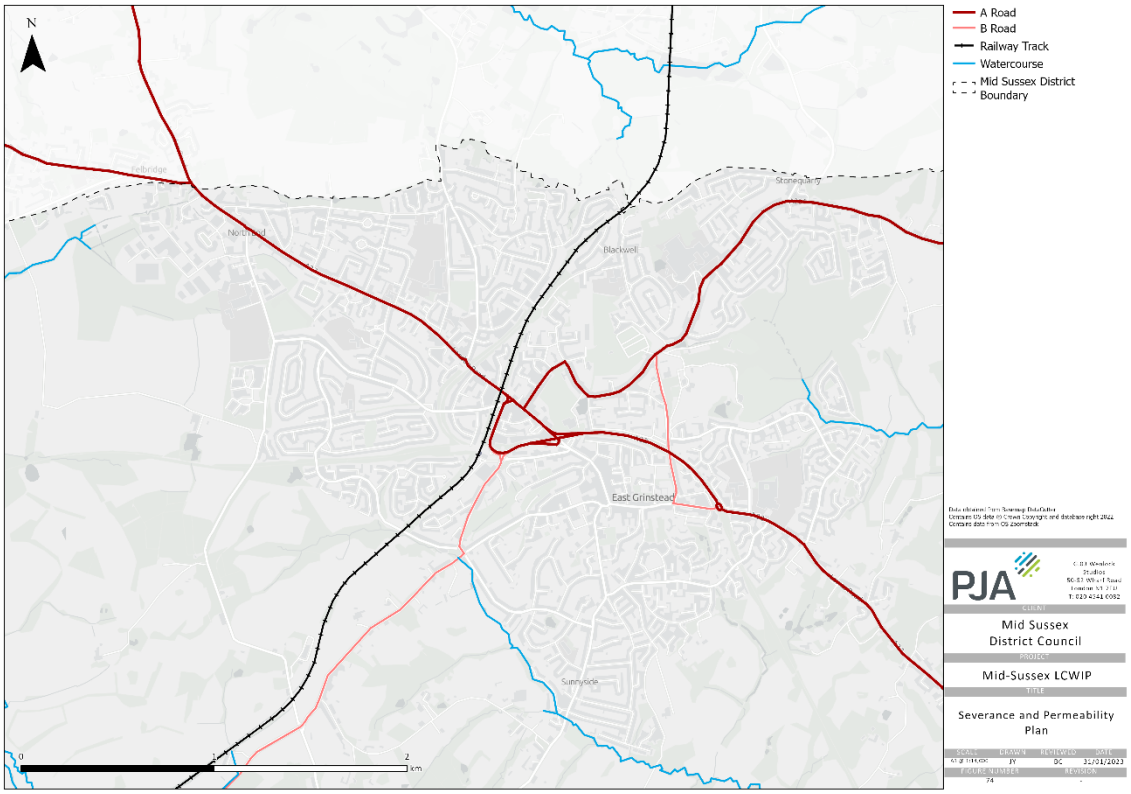


Figure 5-6: Severance and Permeability Plan (East Grinstead)

5.2.4 Collision Analysis

Figure 5-7 shows the distribution, type and severity of collisions which resulted in an injury to a pedestrian or cyclist during the 60-month period between October 2015 and September 2020. This data can be used to identify locations where pedestrians and cyclists come into conflict with vehicular traffic, with collisions often being the result of poor infrastructure provision. Whilst generally infrequent and mostly resulting in slight injuries, there was an increased incidence of collisions resulting in an injury to a pedestrian or cyclist at the B2110/Firbank Way/Railway Approach roundabout and along London Road from the northwest through the town centre to the east. A collision resulting a cyclist fatality was recorded at the A22/B2210 roundabout to the east of the town centre and another involving a pedestrian fatality occurred to the north of the town on Woodlands Road.

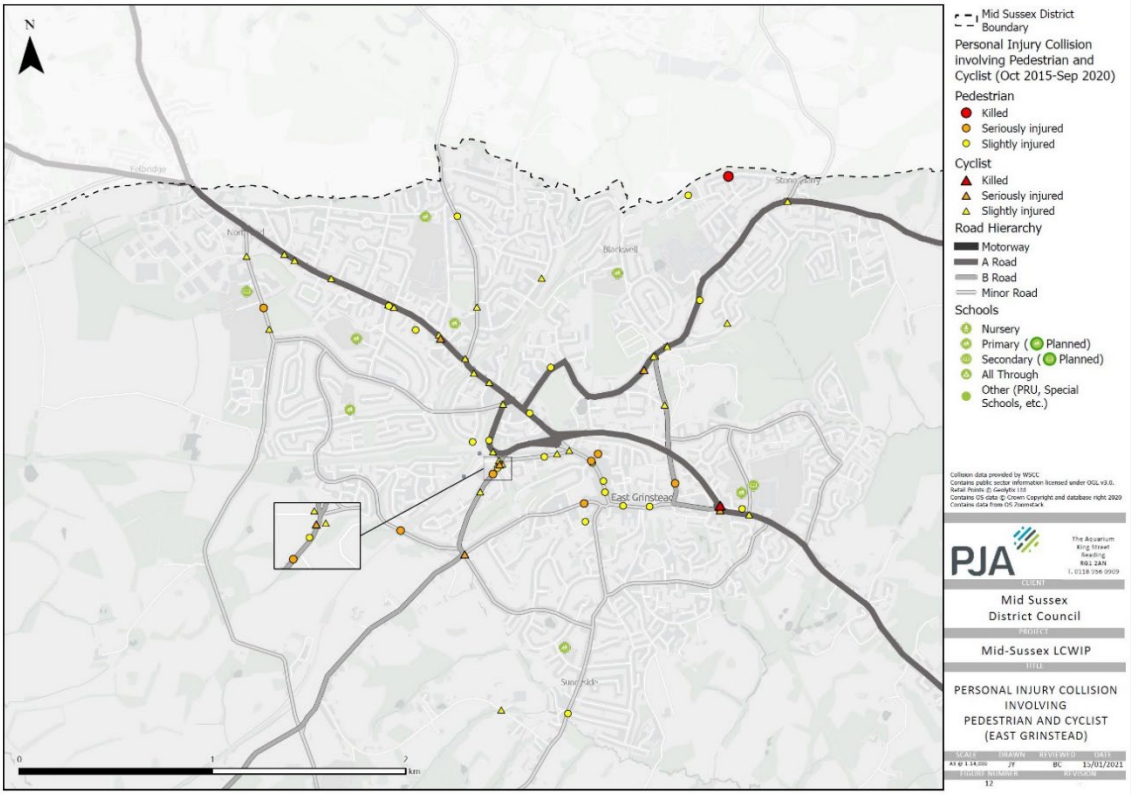


Figure 5-7: Walking and Cycling Collision Analysis Plan (East Grinstead)

5.2.5 Travel Patterns

The plan below illustrates the method of travel to work data for the local area alongside the proportion of residents who have a journey of less than 5km when commuting to work, taken from the 2011 Census. It is widely acknowledged that cycling has the potential to replace short car journeys, particularly those under 5km. The plan indicates that the car accounts for the highest percentage of people's' preferred modes of transport when commuting to work in East Grinstead. Moreover, a significant proportion of journey to work distances are under 5km, particularly on the outer fringes of the town, suggesting that there is the potential for many trips to be switched to walking or cycling within the urban extent of East Grinstead.

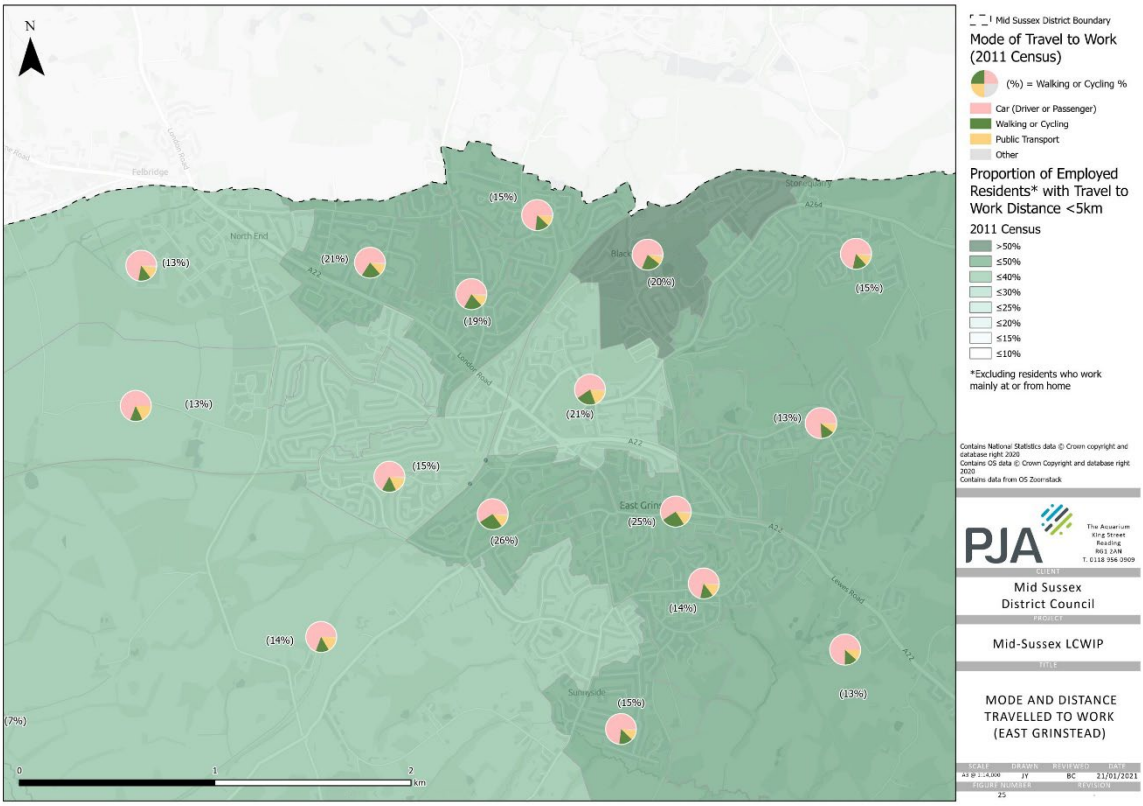


Figure 5-8: Preferred Mode and Distance Travelled to Work Plan (East Grinstead)

Figure 5-9 highlights the proportion of households in East Grinstead that do not have access to a car or van, taken from the 2011 Census. The plan in general suggests a high car ownership in East Grinstead, particularly within Lower Super Output Areas (LSOAs) to the south of the town, with most car-free households located around the town centre, towards the railway station and to the north. The highest percentage of car free households per LSOA was 34%.

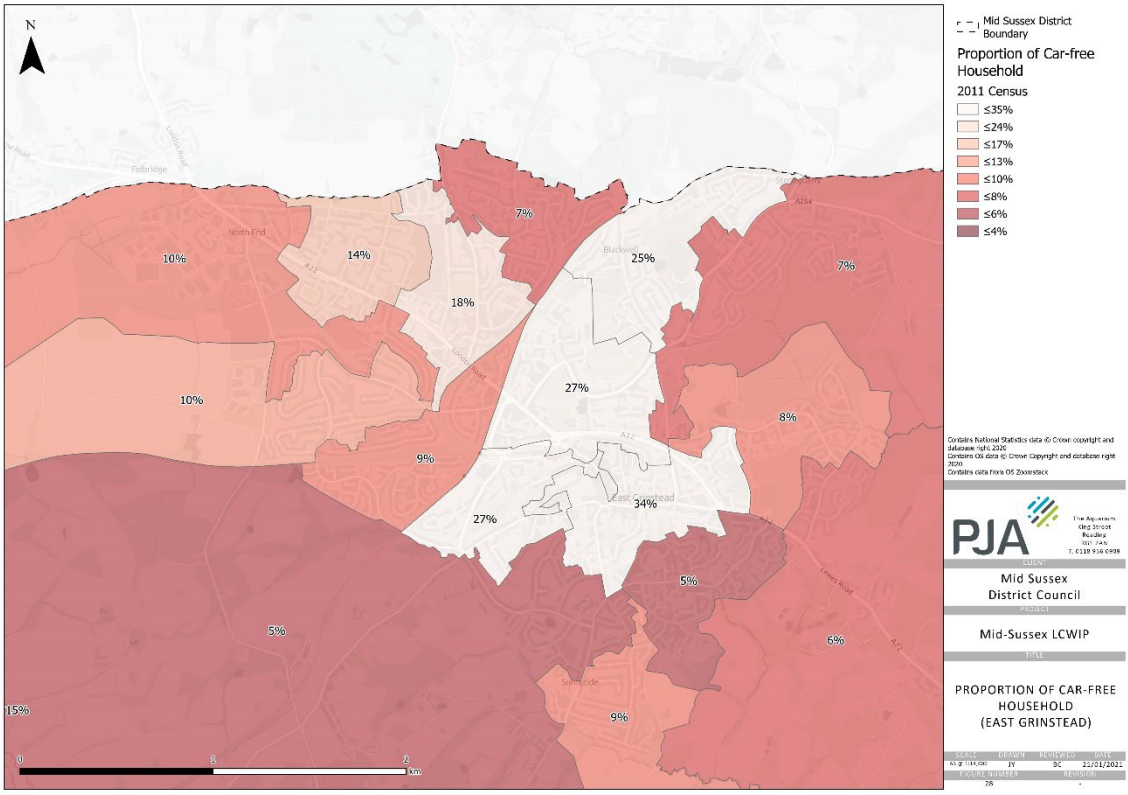


Figure 5-9: Car-Free Households Plan (East Grinstead)

5.2.6 Propensity to Cycle Tool (PCT) – Commuting Trips

The Propensity to Cycle Tool (www.pct.bike) is a nationwide model that identifies where increases in the rates of cycling can be expected through the provision of better infrastructure. It uses census travel to work data and school travel data, and looks at trip distances to see where there may be scope for more short journeys to be undertaken by cycling. The PCT provides seven scenarios for forecasting future levels of cycling which range in ambition from the 'Government Target' (assumes 6% of commuting trips by bicycle) up to the 'E-Bike' scenario (assumes 22% of commuting trips by bicycle and improved access to e-bikes). The PCT provides two sets of mapping outputs:

- Straight-Line Networks – these plans show direct paths between LSOA Origin-Destination points which gives an overview of the key desire lines for cycling flows
- Applied Networks – applies the straight desire line to the existing road network to provide a more detailed summary of where increased cycle flows would take place on the local network

The PCT tool was used to identify the greatest latent demand for cycle and school commuting. The PCT analysis used the 'E-Bike' scenario, which models the same mode share for cycling as in the Netherlands, adjusting for trip distance and topography and includes improved access to E-Bikes. Using the 'E-Bike' scenario provides a more ambitious and longer-term outlook for cycling flows which is advantageous in network planning as it ensures that the LCWIP cycle network will provide

for assumed future advances in the town's cycle network. To accommodate for future commuting demand from proposed developments, the population forecasts for each proposed site were incorporated into the PCT forecasts to provide a more accurate reflection of a potential future scenario. The forecast populations were assigned to the nearest available LSOA to each development site (n.b. this approach is limited as some development sites are currently >1km from the nearest LSOA).

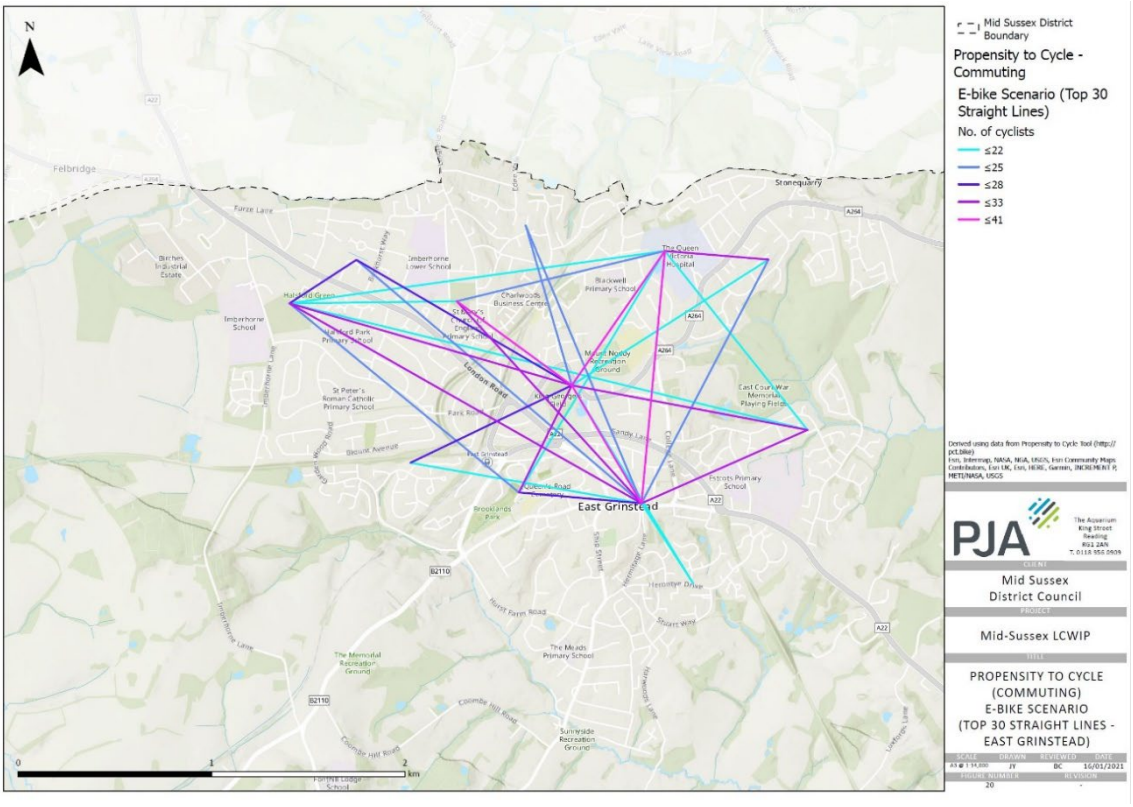


Figure 5-10: PCT 'E-Bike' Scenario: Top 30 Straight Desire Lines (East Grinstead)

The straight line results (Figure 5-10) suggest that the main concentration of commuting demand would be based within the existing town, with a particular focus around the town centre and areas towards the northern urban extents.

The PCT also provides an 'applied network' scenario which snaps the straight-line desire lines to closest applicable road alignment to provide an indication of a more applied demand, as shown in Figure 5-11.

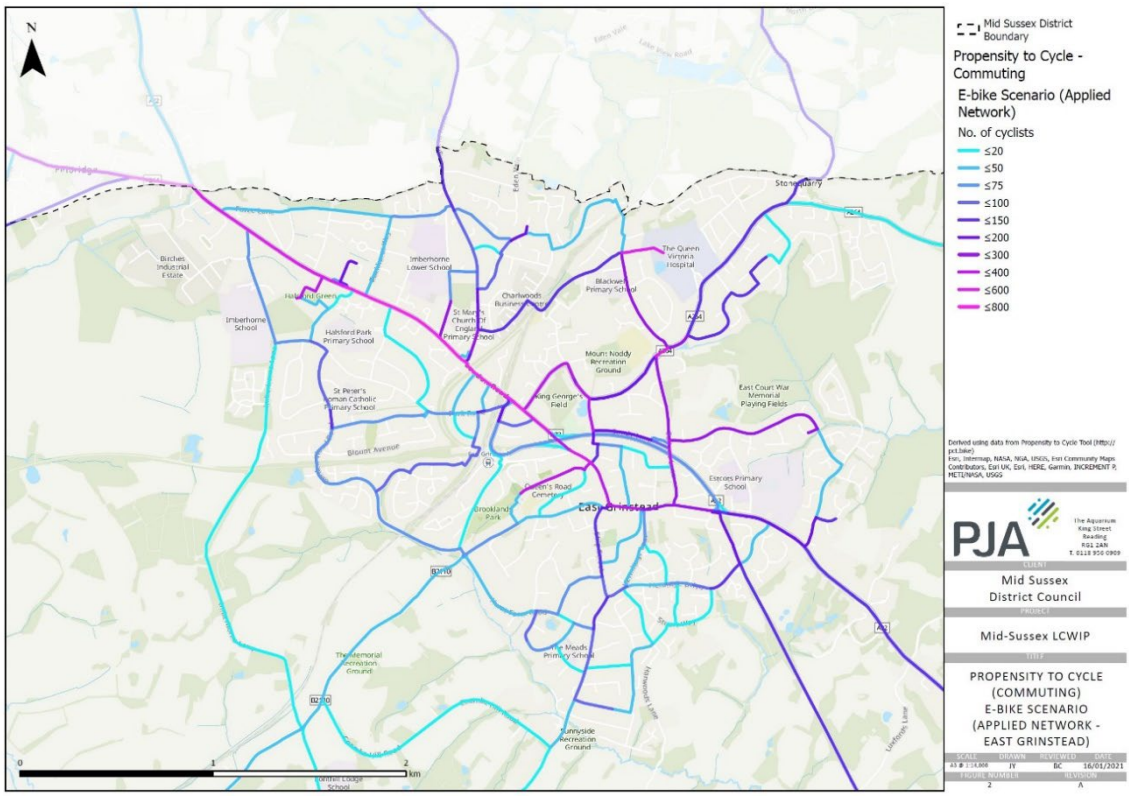


Figure 5-11: PCT 'E-Bike' Scenario: Top 30 Applied Network Desire Lines (East Grinstead)

The results suggest that future commuting demand would be highest on desire lines following, but not limited to, the A22/London Road, the A264/Moat Road, the B2110/High Street, Railway Approach and Oakfield Way. It's worth noting that the areas of high demand to the northwest of East Grinstead include future demand from committed development sites.

The PCT also provides a school travel scenario using the travel to school results from the 2011 Census. The below plan (Figure 5-12) presents the 'Go Dutch' school travel results for East Grinstead which assumes a cycle mode share of 41% of trips being cycled to school (the plan includes existing and proposed school locations in the town).

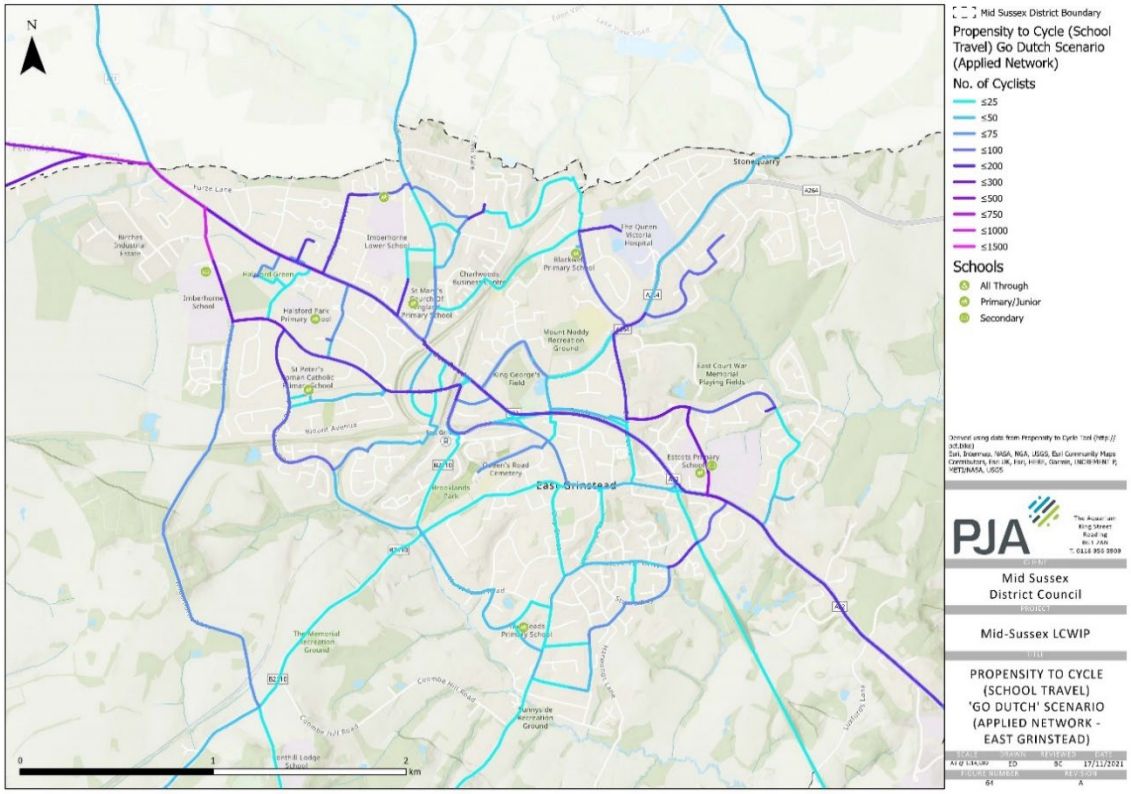


Figure 5-12: PCT 'Go Dutch' School Scenario: Top 30 Applied Network Desire Lines (East Grinstead)

The plan highlights several routes which are anticipated to have significant increases in the number of cycling trips to school, including most notably the A264/Copthorne Road, the A22/London Road and Imberthorne Lane.

A limitation of the PCT is its focus on commuting and school trips which tends to produce outputs focussed around key employment and education sites. The PCT results were used alongside an analysis of non-commuting, and leisure trips to enable the development of a cycle network that also includes leisure and recreation trips.

5.2.7 'Everyday' Trips

The purpose of this section is to provide an additional layer of analysis that focusses on 'Everyday' cycling trips which would include: leisure and recreation, trips to local centres, and amenity trips. Combining the 'Everyday' trips with PCT outputs provides a comprehensive demand model for developing the LCWIP network. It should be noted that desire lines that were longer than 5km were removed from the analysis for consistency with the LCWIP approach. This should not preclude the development of longer distance cycling routes in the wider area which could connect into East Grinstead. Indeed, future development of 'inter-urban' cycling routes will be an important step in the future development of the LCWIP.

Developing the Desire Lines for 'Everyday' trips required the identification of all Origins and Destinations within a 5km catchment area of East Grinstead using data supplied by the client team. The catchment area was divided into a hexagon grid using 0.25km2 hexoides. For the purposes of the analysis, all hexoides which currently contain >100 residential dwellings and/or are anticipated to include >100 residential dwellings in the future were included as Origins (see Figure 5-13).

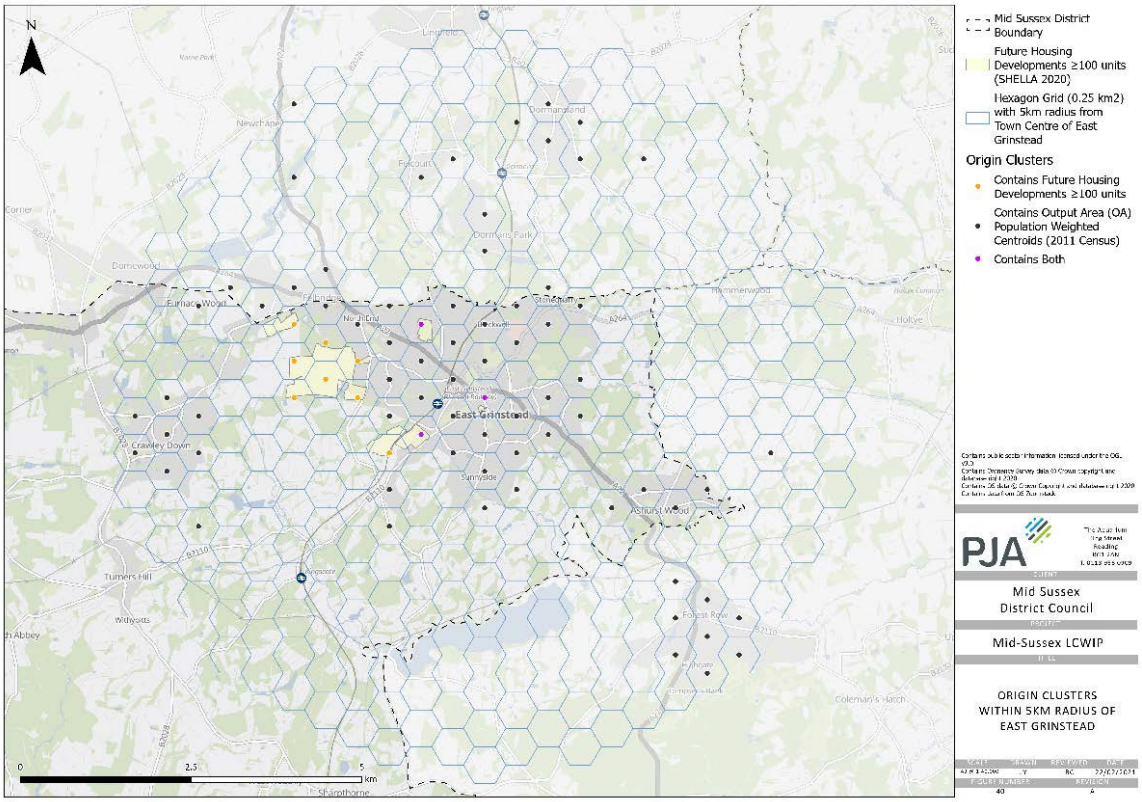


Figure 5-13: Origin Clusters (East Grinstead)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

Having identified the Origins, Destinations were identified based on data provided by the client and also clustered to highlight the areas with highest number of destinations. All destinations were categorised as below:

- Class 1: Town, Village and Local Centres; Key Employment Sites.
- Class 2: Bus Stops, Existing and Proposed Schools, Railway Stations, Hospitals, Supermarkets, Leisure Centres and Libraries.

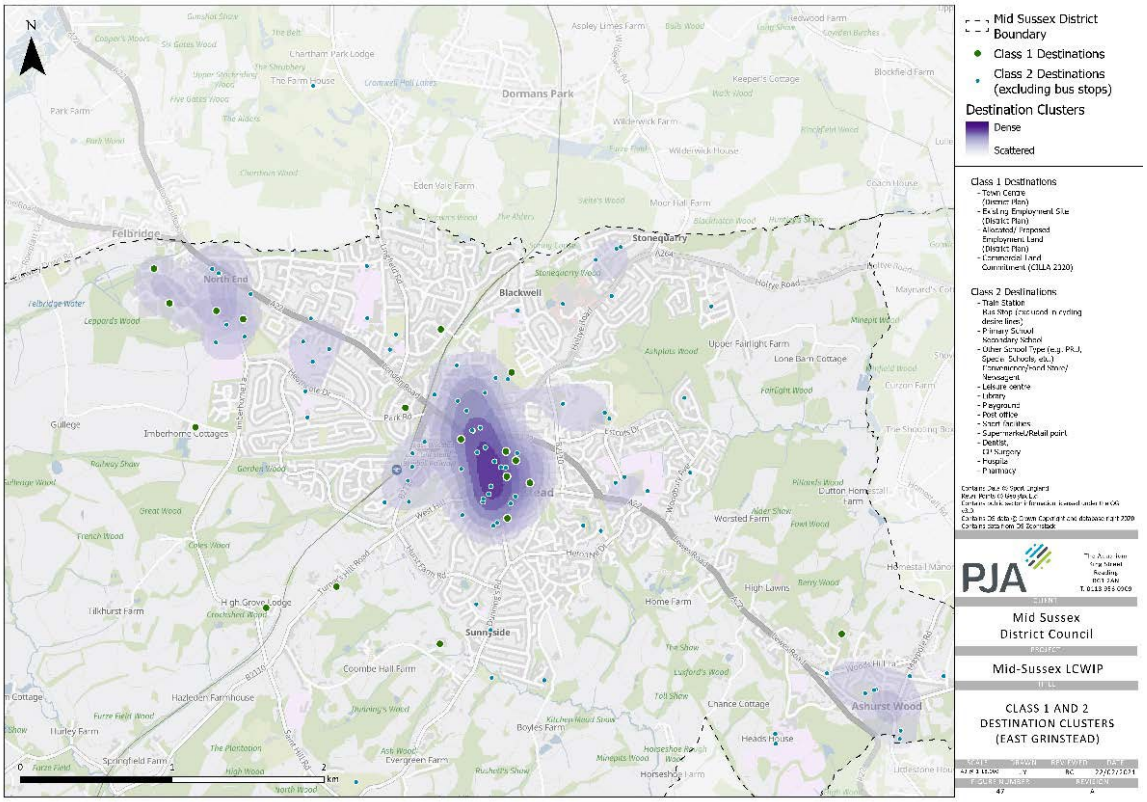


Figure 5-14: Destination Clusters (East Grinstead)

This analysis provided an important non-commuting dataset which was compared against the Propensity to Cycle Tool (PCT) outputs to provide a comprehensive review of desire lines within East Grinstead. It was assumed in the analysis that Class 1 destinations would generate a higher number of cycling trips and that they are also likely to have a larger catchment area of cyclists from across the town, compared to Class 2 destinations which would generate more locally based trips.

To determine the key desire lines for the LCWIP, the spatial relationship between Origin and Destinations was analysed. 'Everyday' Origin-Destination desire lines were created from each origin centroid to its nearest Class 2 destination, and then also to all Class 1 destinations in the Study Area (all desire lines >5km were excluded from the analysis). This was based on the assumption that the Class 1 destinations would generate a higher number of trips and that they are also likely to have a larger catchment area of trips from across the study area, compared to Class 2 destinations which would generate more locally based trips. Figure 5-15 provides an indication of the volume of desire lines that were considered in the development of the LCWIP network.

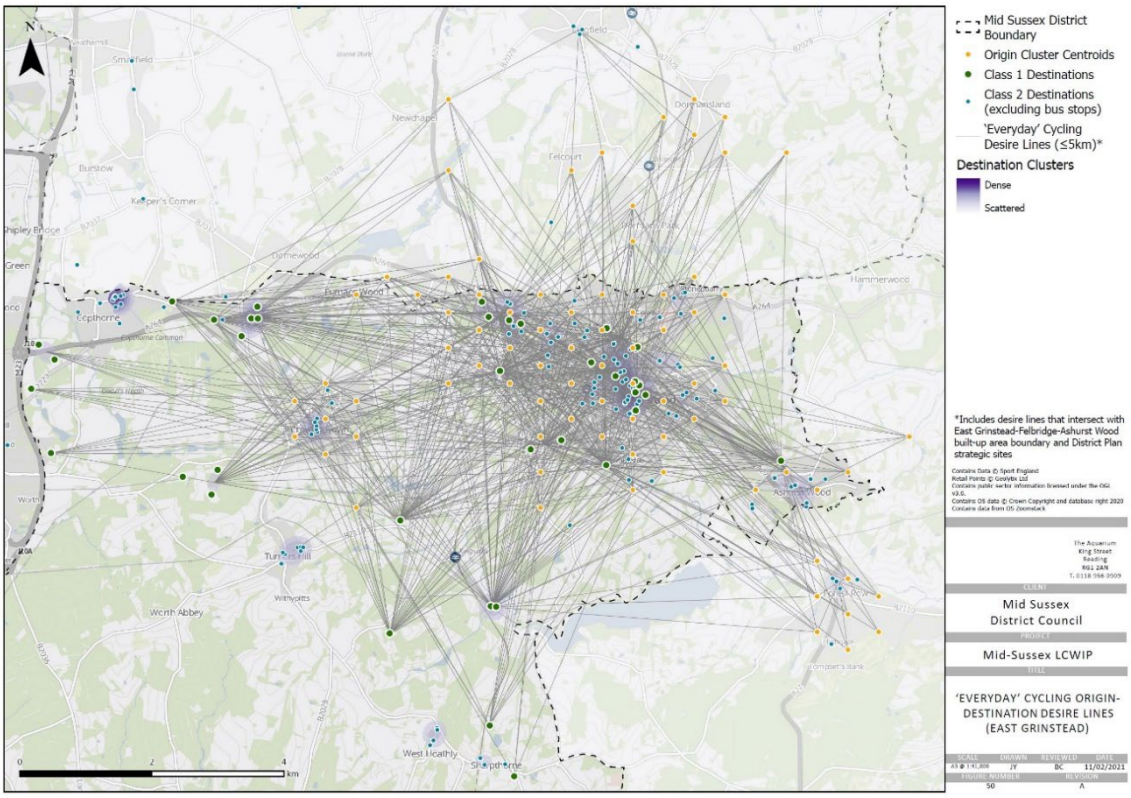


Figure 5-15: 'Everyday' Origin-Destination Pairs (East Grinstead)

Having identified all available desire lines, a "K-means" clustering analysis was used to cluster the above desire lines into a more refined plan which identified the top 20 desire line clusters (Figure 5-16). The K-means methodology identifies individual desire lines which are within close proximity to each other and combines these into grouped desire lines. The top lines therefore represent the general alignments which are likely to generate the highest number of everyday trips.

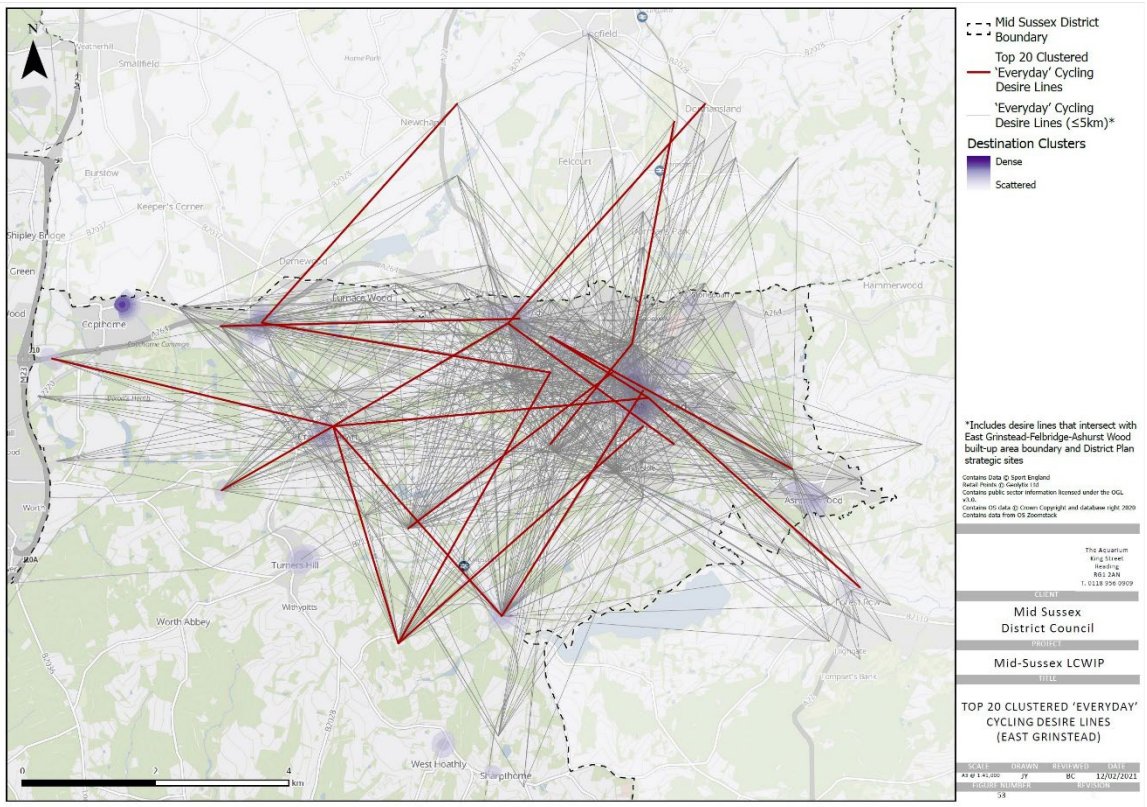


Figure 5-16: Top 20 'Everyday' Origin-Destination Pair Desire Lines (East Grinstead)

To help compare the results from the PCT and Everyday Trip analysis, the below plan was prepared which highlights where the results overlapped. The combined results illustrate that the PCT results (green) are generally more concentrated in East Grinstead and the town centre, whilst the 'everyday' desire lines (yellow) extend beyond East Grinstead to nearby settlements.

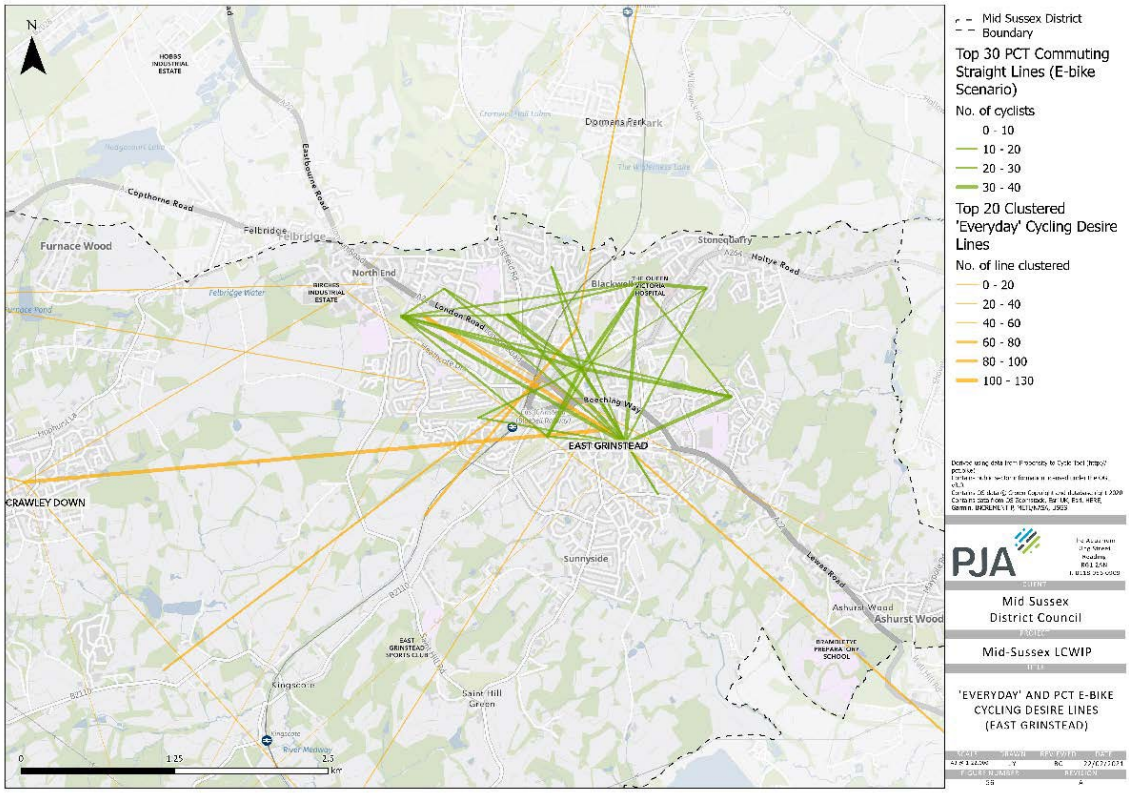


Figure 5-17: Comparison of Everyday and PCT Commuting Desire Lines (East Grinstead)

5.2.8 LCWIP Network Recommendation

The data was reviewed with Mid Sussex District Council officers to present the findings from Stage 2 and to recommend the LCWIP walking and cycling networks. For the purposes of the network development, the LCWIP methodology recommends developing 'routes' which form the basis of the auditing in Stages 3 and 4. The network therefore represents indicative routes which might be followed for walking and cycling, however they are not intended to be routes that will necessarily be followed from beginning to end. A mixture of route types were selected, ranging from main routes into the town centre, routes through residential areas, and routes that provided onward connectivity to out of town sites.

Given the compact nature of the Mid Sussex LCWIP towns, a 'whole street' approach was adopted rather than proposing discrete networks. This approach is increasingly common in smaller settlements where there is a significant overlap of routes given the limited size of network. The approach is also more efficient in smaller settlements as it maximises the benefits for both walking and cycling by targeting key locations. Figure 5-18 summarises the combined LCWIP walking and cycling network to be audited in Stages 3 and 4.

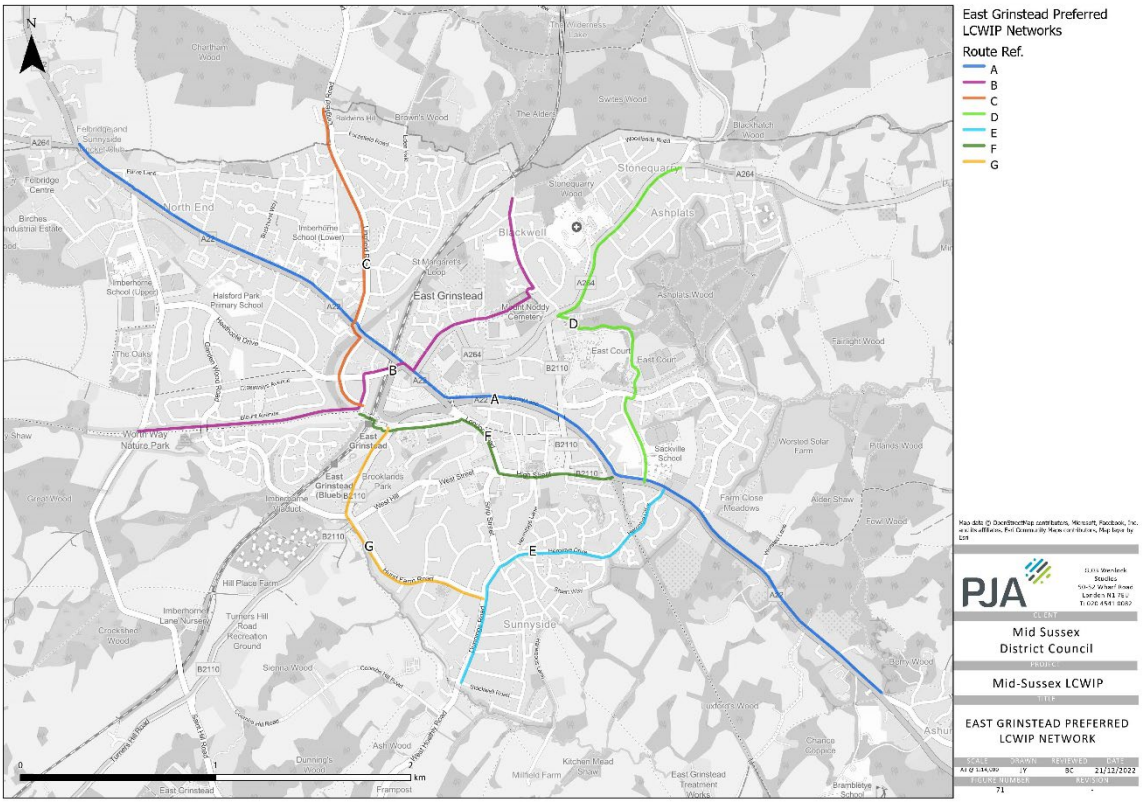


Figure 5-18: Preferred LCWIP Network (East Grinstead)

5.3 Stage 3: Network Planning for Cycling

5.3.1 Route Selection Tool (RST)

Each route was audited using the "Route Selection Tool" as set out in the LCWIP guidance. The Route Selection Tool (RST) is an appraisal methodology that allows practitioners to determine the best route to fulfil a particular straight line corridor, referencing against existing conditions and the shortest available route. It considers the six important criteria that determine the quality of a cycling route as described below. The RST divides routes into shorter sections which should reflect changes in the character and layout of the alignment.

- Directness: Compares the length of cycle routes against the equivalent vehicle routes with cycle routes that are shorter than the vehicle are scored positively for Directness. Higher scores can be achieved through the introduction of modal filters or routing cyclists through parks/open spaces to provide a more direct connection.
- Gradient: Identifies the steepest section of route within the proposed alignment with gradients that exceed either 5% in gradient and/or 50m in length scoring lower.
- Safety: Considers vehicle flows and speeds to better understand the exposure of cyclists to vehicular traffic. Routes with either protected cycle facilities or low traffic environments score highest.

- Connectivity: Records the number of individual cycle connections into a section of route – routes should aim to have >4 connections per km.
- Comfort: Assesses the space available for cycling and the quality of surfacing with a preference for protected cycle facilities of >3m (bi-directional) or >2m (uniflow).
- Critical Junctions: Provides a number of critical junction design issues including vehicle flows, protection from vehicular traffic, wide junction splays, and junction geometries.

All routes were initially scored as a desktop exercise and the results were then validated during site visits. The remainder of this chapter summarises the results from the RST audits and initial design recommendations.

5.3.2 Audit Results

The Route Selection Tool consists of five scoring criteria (Directness, Gradient, Comfort, Connectivity, Safety) and the Critical Junctions assessment. Table 5-1 summarises the range of scores against each of these criteria which provides useful insight into how the network performed against them. The average route score across the LCWIP routes in East Grinstead was 52%. A breakdown of the scoring is presented in Figure 5-19.

The overall RST results were low across East Grinstead – particularly against the key design criteria related to Gradient, Safety and Comfort. LCWIP Routes which were mixed with general traffic generally scored poorly due to the volumes of general traffic and lack of protection provided for cyclists from this traffic. The LCWIP routes through the town centre and along the Worth Way scored higher overall due to lower traffic/traffic-free environments, however these routes still had their own discrete challenges which need addressing.

Criteria	Highest Score (%)	Lowest Score (%)	Average Score (%)
Directness	100%	80%	97%
Gradient	52%	0%	29%
Safety	48%	10%	31%
Connectivity	100%	76%	94%
Comfort	30%	0%	7%

Table 5-1: Route Selection Tool (RST) Scores Overview (East Grinstead)

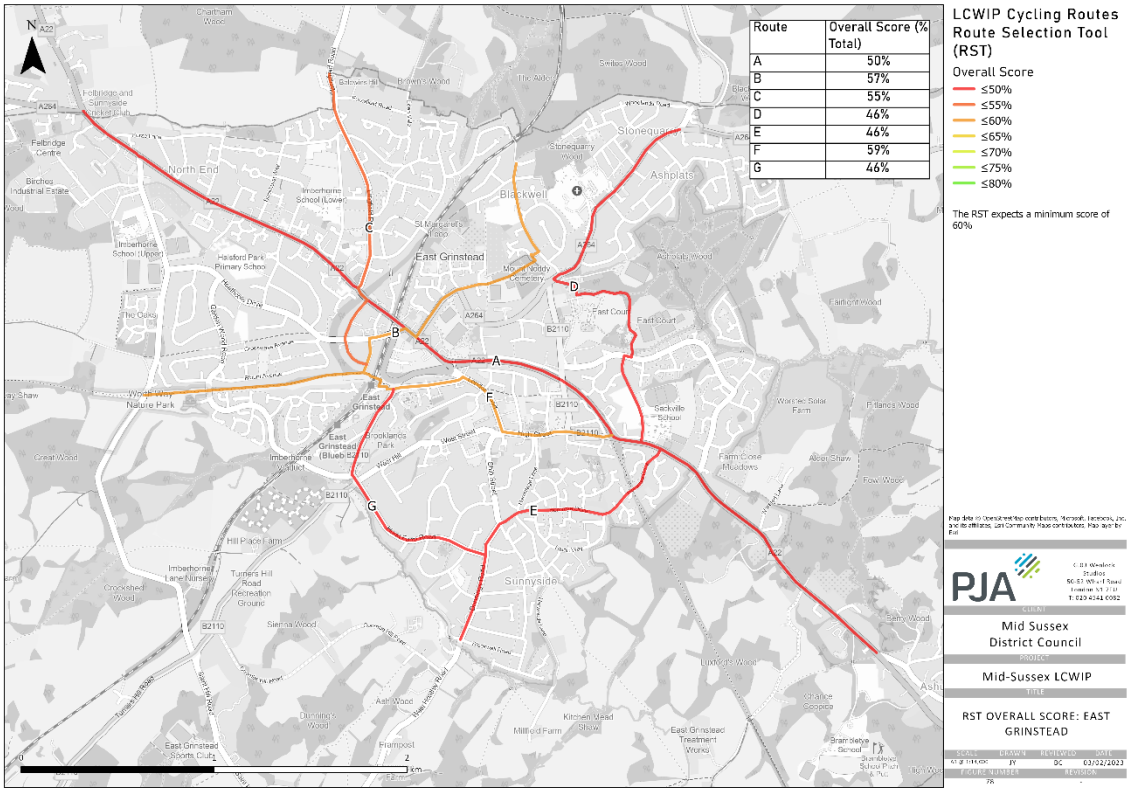


Figure 5-19: Route Selection Tool (RST) Scores (East Grinstead)

5.4 Stage 4: Network Planning for Walking

5.4.1 Walking Route Audit Tool (WRAT) – Audit Results

Having confirmed the combined LCWIP walking and cycling network, each route was then audited on site by PJA using the Walking Route Audit Tool (WRAT) methodology set out in the DfT LCWIP process guidance. The Walking Route Audit Tool (WRAT) is divided into several categories for analysis and uses a Red Amber Green (RAG) scoring technique:

- Attractiveness: Considers the impact of maintenance, traffic noise, pollution and fear of crime upon the attractiveness of a route.
- Comfort: Reviews the amount of space available for walking and the impact of obstructions upon walking such as footway parking, street clutter and staggered crossings.
- Directness: Assesses how closely pedestrian facilities are aligned with the natural desire line and accommodating the crossing facilities are for pedestrians to follow their preferred route.
- Safety: Focusses on the impact of vehicle volumes and speeds and interaction with pedestrians.
- Coherence: Focuses on the provision of dropped kerb and tactile information for pedestrians.

5.4.2 Audit Results

This section summarises the results from the on-site assessments focussing particularly on the performance of the routes against the 20 WRAT scoring factors. Analysis of the factors' results provides a useful indication of the key strengths and weaknesses of East Grinstead's walking network and helps to identify the areas for improvement.

The average WRAT score across the LCWIP routes in East Grinstead was 72%. A breakdown of the scoring is presented in Table 5-2 and Figure 5-20. A majority of the walking routes in East Grinstead achieved reasonably high scores – the lowest scoring routes were generally characterised by narrow footways/close proximity to vehicular traffic, and poor route coherence. Routes in residential areas tended to score higher due to lower traffic volumes.

Theme	Criteria	Average score (out of 2)	Average score (%)
Attractiveness	Maintenance	1.69	84%
	Fear of crime	1.69	84%
	Traffic noise and pollution	1.23	61%
Comfort	Condition	1.65	82%
	Footway width	0.77	39%
	Width on staggered crossings / pedestrian islands/refuges	1.17	58%
	Footway parking	2.00	100%
	Gradient	1.58	79%
Directness	Footway provision	1.42	71%
	Location of crossings in relation to desire lines	1.02	51%
	Gaps in traffic (where no controlled crossings present or if likely to cross outside of controlled crossing)	1.38	69%
	Impact of controlled crossings on journey time	2.00	100%
	Green man time	1.94	97%
Safety	Traffic volume	1.23	61%
	Traffic speed	1.48	74%
	Visibility	1.73	86%
Coherence	Coherence	0.96	48%

Table 5-2: Walking Route Audit Tool (WRAT) Scores Overview (East Grinstead)

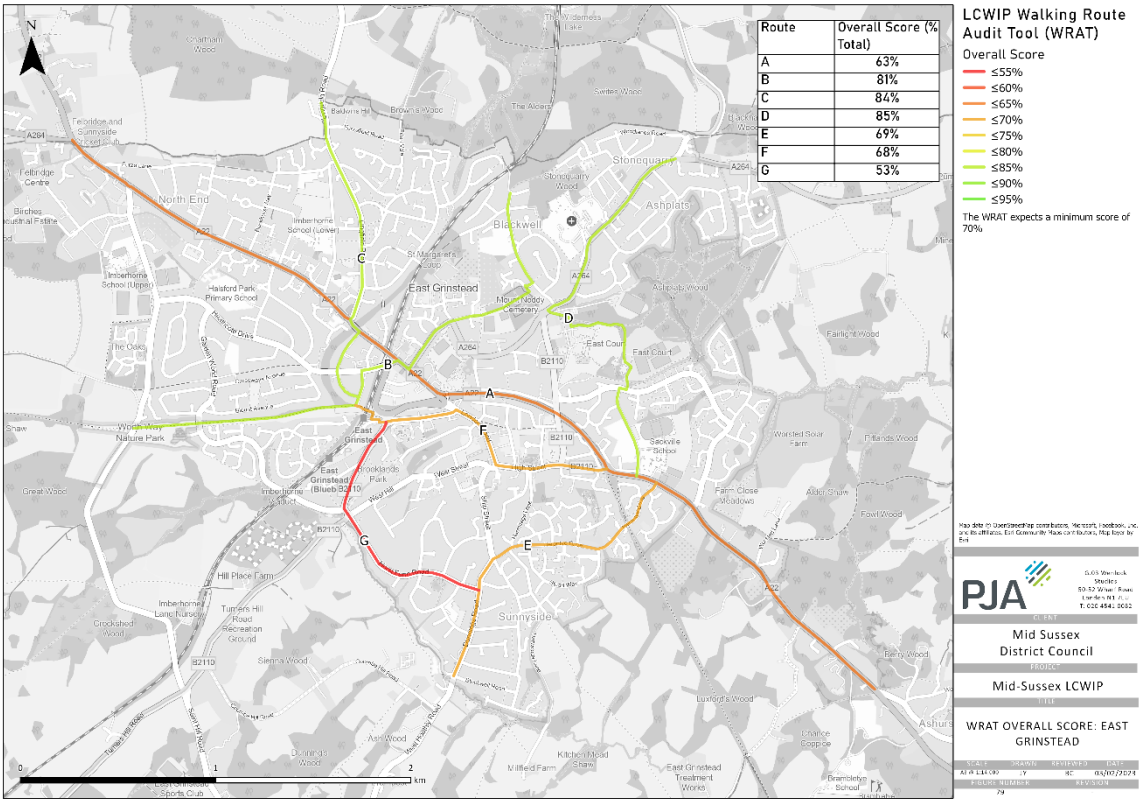


Figure 5-20: Walking Route Audit Tool (WRAT) Scores (East Grinstead)

5.5 Stakeholder Engagement

Stakeholders during the engagement sessions discussed the strategy of the LCWIP which is to create a network of LCWIP routes which respond to the analysis from Stages 1 and 2 of the LCWIP. The concentric layout of East Grinstead means that a majority of the proposed routes do connect with the town centre, however this was not necessarily a requirement of the route.

6 Haywards Heath

6.1 Stage 1: Determining Scope

Stage 1 is focussed on understanding the local geographic context to help inform the LCWIP process. Stage 1 is focussed on understanding the local geographic context to help inform the LCWIP process. Our approach to determining the scope includes a high-level review of the below datasets which we have found to be highly influential on the geographic scope of LCWIPs:

- Local Context and Development Sites – understanding the local development context and how the town will develop is essential for developing a future-proofed LCWIP network.
- Walking and Cycling Catchment Areas: Walking and cycling isochrones help to provide a sense of scale and to better understand the extent to which trips could be walked and cycled. Comparing the isochrones also helps to understand the relationship between future walking and cycling routes in the LCWIP.
- First Impressions: Providing a summary of our first impressions helps to better understand the local context of the study area.

6.1.1 Local Context

The local context plan below (Figure 6-1) summarises the distribution of key destinations within Haywards Heath, including schools, future development sites, leisure and retail facilities, cycle routes, Public Rights of Way (PRoW), open spaces and employment sites. Understanding the location of these sites provides important context in the development of the LCWIP routes – particularly in relation to future development sites. The plan highlights a cluster of destinations in the town centre extending up towards the B2028/Sydney Road, including several retail/leisure/healthcare facilities, public open spaces such as Clair Park, Haywards Heath railway station and multiple car parks.

There are several committed housing development sites on the outskirts of the town, notably to the south (off the A272/Rocky Lane), to the northwest (off Hanlye Lane) and to the east (north of Snowdrop Lane). Key employment sites to the north include Bridge Road and Burrell Road Business Park. The plan also highlights an existing east/west cycle route through the town centre. Key trip attractors include Haywards Heath railway station, the Princess Royal and Nuffield Health hospitals, the Sainsbury's on Bannister Way and the Waitrose on Sydney Road.

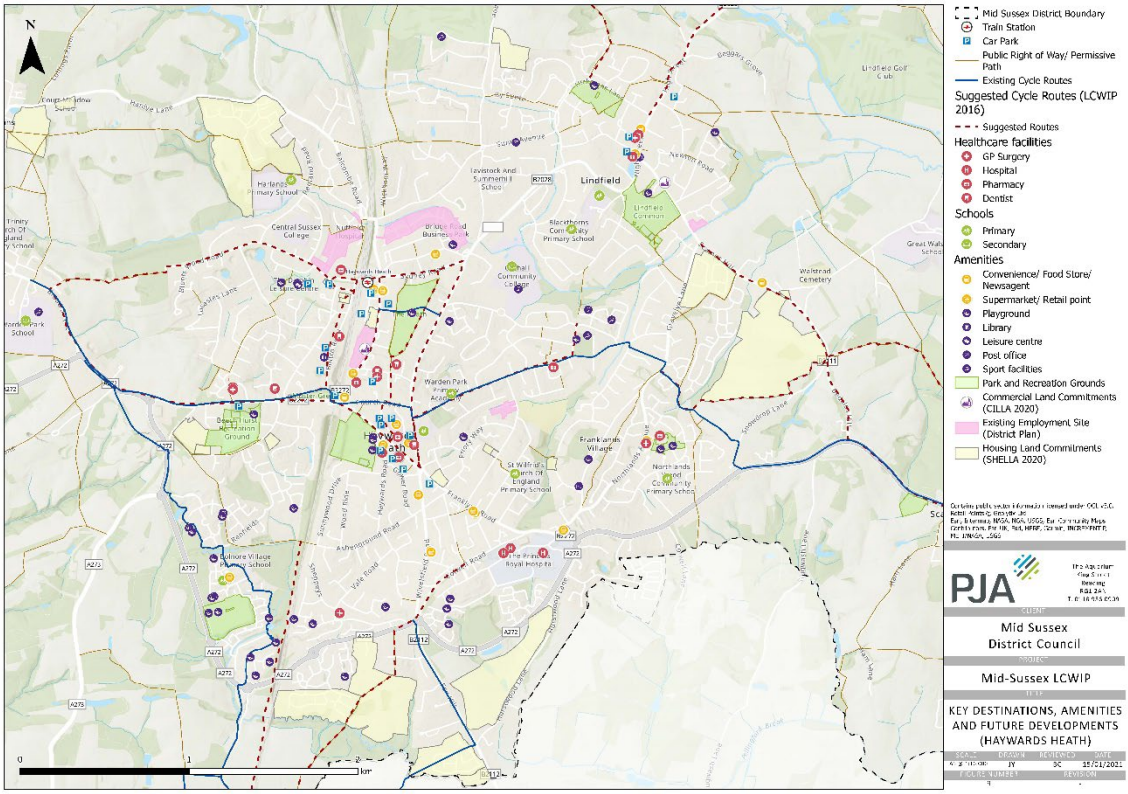


Figure 6-1: Local Context and Development Sites Plan (Haywards Heath)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

6.1.2 Walking and Cycling Catchment Areas

The purpose of the walking and cycling isochrone plans is to understand the potential catchment area accessible within a 20-minute walk/cycle from the centre of Haywards Heath. The isochrone plans are based on the existing street network, to give a more accurate representation of the areas accessible by walking/cycling.

The walking catchment plan (Figure 6-2) suggests that a majority of Haywards Heath is within a 20-minute walk of the town centre. The walking isochrone encompasses several amenities and extends out towards key employment sites and committed development sites to the south.

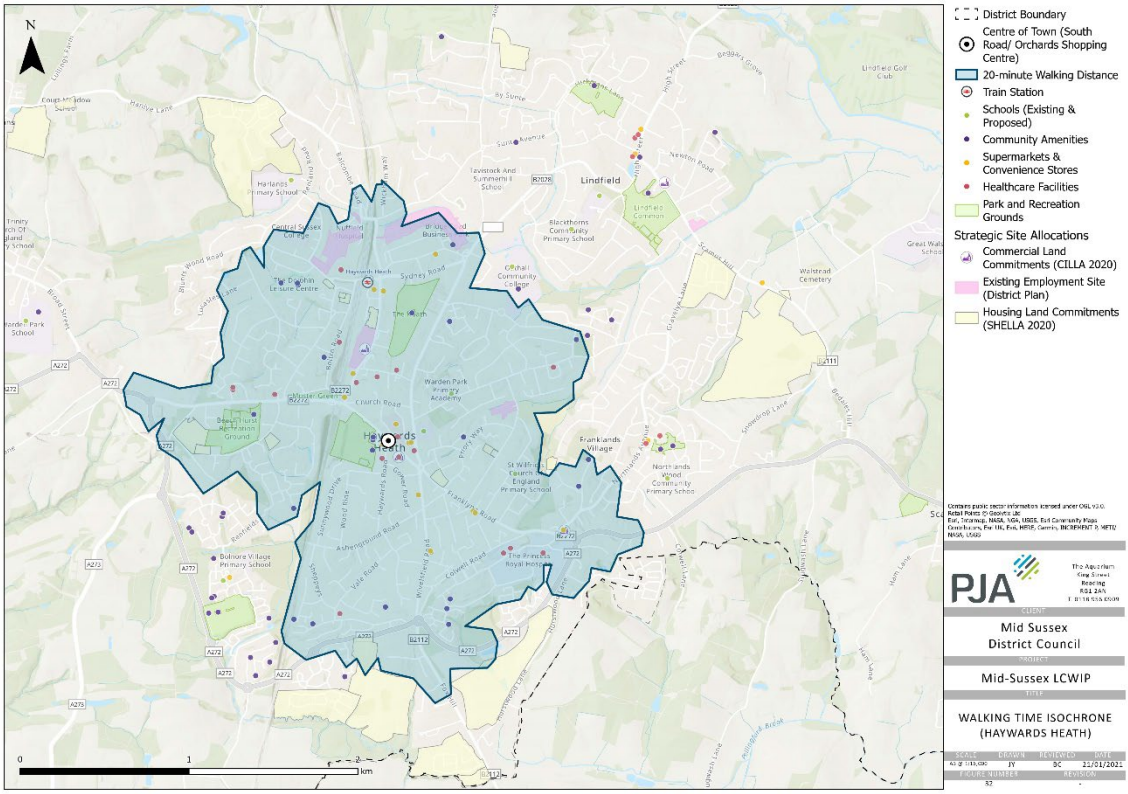


Figure 6-2: 20 Minute Walking Catchment Plan (Haywards Heath)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

The cycling catchment plan (Figure 6-3) illustrates that several destinations further afield are within cycling distance of Haywards Heath town centre, including Burgess Hill town centre to the south and several smaller settlements including Scaynes Hill, Wivelsfield Green, Ansty and Cuckfield. Several additional designated housing and employment sites are also captured by the 20-minute cycling isochrone, notably the Burgess Hill Brookleigh development.

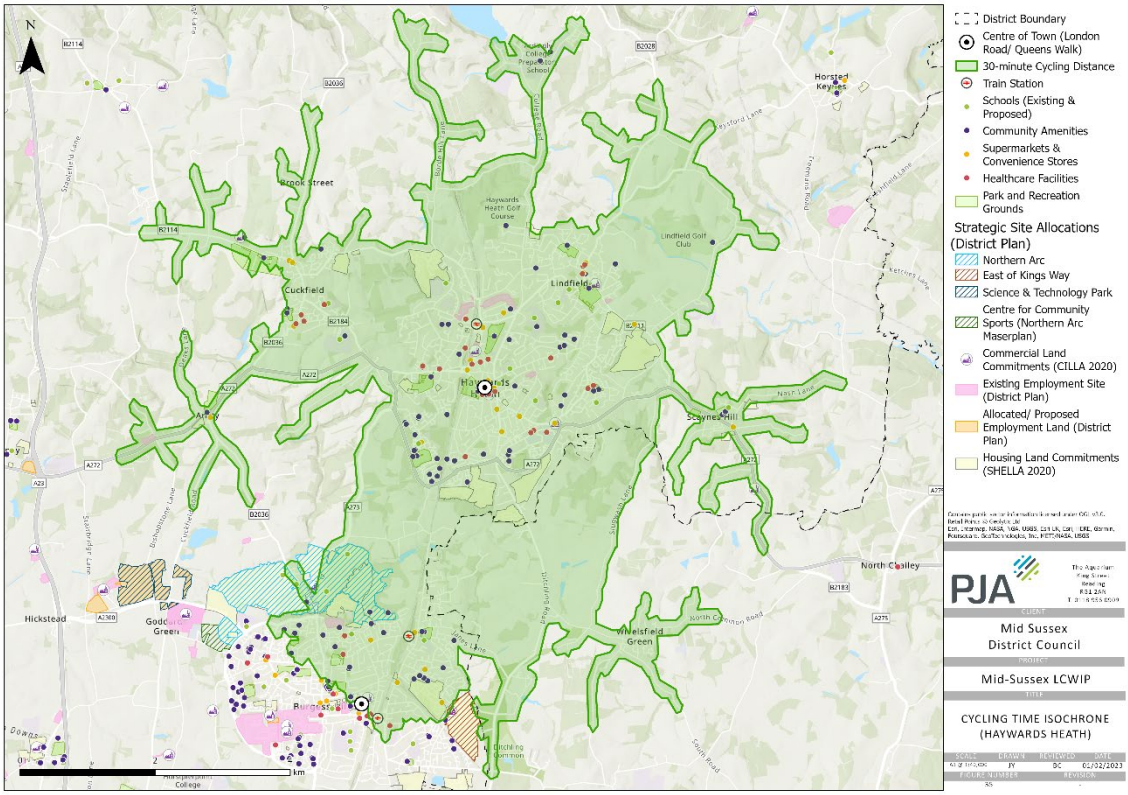


Figure 6-3: 20 Minute Cycling Catchment Plan (Haywards Heath)

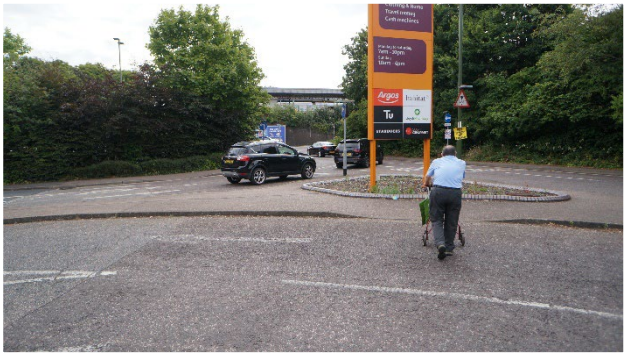
Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

6.1.3 First Impressions

Based on our initial site visits to Haywards Heath, this section briefly summarises our first impressions which will be useful in the development of the LCWIP design response.

- **Town Centre** – Concentration of the 'town centre' environment located along Perrymount Road/ South Road/The Orchards Shopping Centre and Lindfield which also has its own historic High Street. Generally narrow footways and minimal cycle facilities throughout town centre. The experience of the town centre is dominated by the impact of severance features, particularly the railway line and one-way gyratory. This is exacerbated by limited crossing facilities on main junctions surrounding the town centre.


- **Severance and Gyratory** – The town's main road network and railway line is a major barrier to movement - limiting the number of crossing opportunities and creating intimidating conditions for walking and cycling. The network provides minimal dedicated cycle infrastructure. The level of service for cycling is exacerbated by the one-way layout in sections of the road network which further limited the network's permeability. The one-way network also creates particularly hostile junctions e.g. London Road/Park Road




- **Neighbourhoods** – A majority of the town is comprised of suburban, low traffic-environments. Despite low-traffic volumes, the cul-de-sac layout restricts the porosity of the walking and cycling networks. This is further undermined by limited legibility to help navigate the town. Bolnore Village is a good example of a low-traffic environment connecting with open spaces and onwards to the town centre. Basic functionality of the walking network could be improved i.e. dropped kerbs and tactile information is often missing at side-road junctions.


6.2 Stage 2: Data Collection

The purpose of Stage 2 is to collect relevant datasets to inform the development of the LCWIP networks for walking and cycling. This chapter summarises the analysis completed for Haywards Heath.

6.2.1 Topography

Haywards Heath is situated within the High Weald and is approximately 80m above sea level. The topography plan (Figure 6-4) highlights that the town is relatively flat and whilst there are some elevated locations dotted around the town, these are generally infrequent and are unlikely to impact significantly upon walking and cycling journeys. The elevation profile increases gradually to the west of the town towards Whitemans Green.

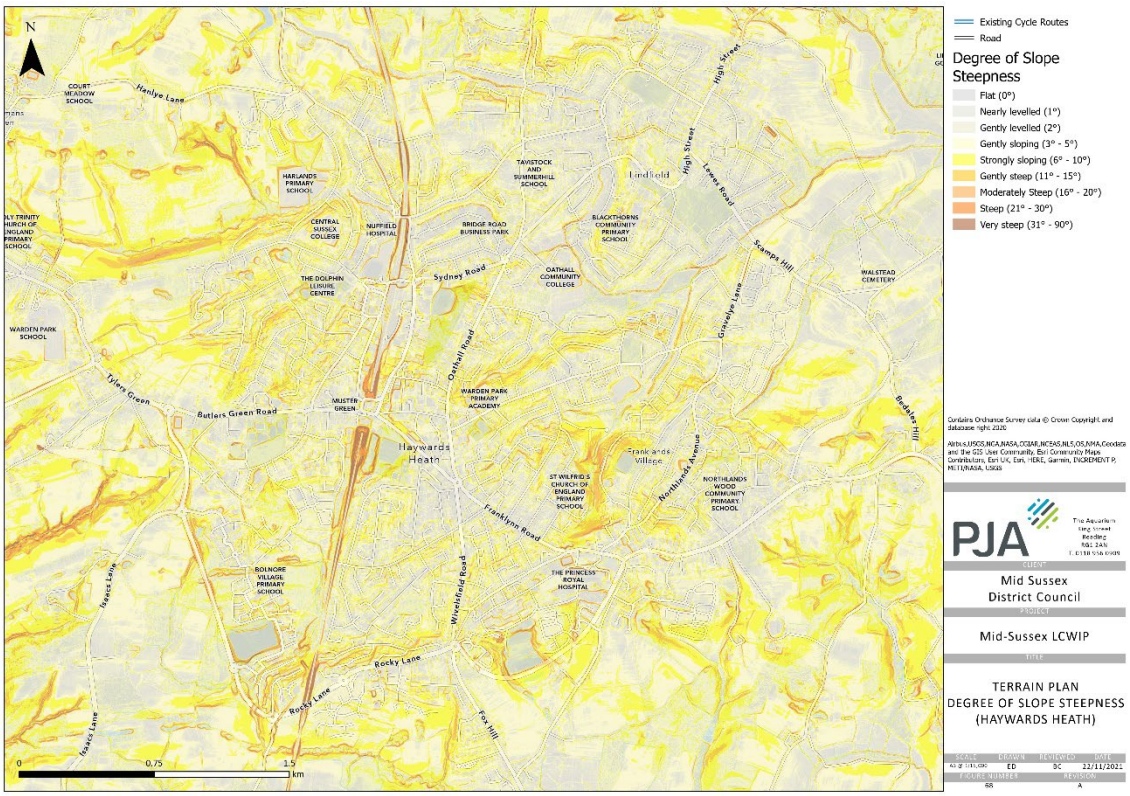


Figure 6-4: Topography Plan (Haywards Heath)

6.2.2 Air Quality

Figure 6-5 summarises annual NO2 concentrations in Haywards Heath. NO2 is a gas that is mainly produced during the combustion of fossil fuels along with nitric oxide (NO). The highest concentrations of NO2 were recorded near the town centre along the B2112/Oathall Road, the key north/south road connection into the town. The majority of Haywards Heath has NO2

concentrations well below the UK legal guideline limit of 40µg/m3 (the UK average annual mean concentration of NO2 at urban background sites in 2020 was at a record low of 15.1µg/m3).

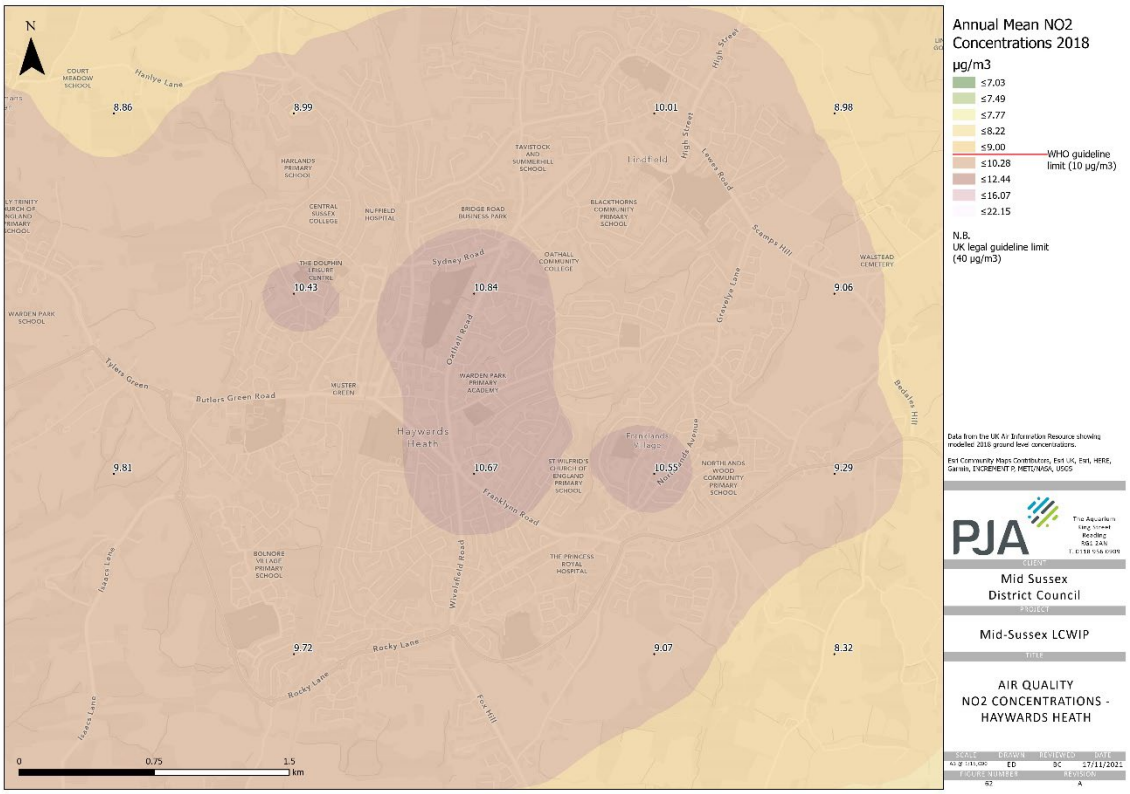


Figure 6-5: Air Quality Plan – NO2 Concentrations (Haywards Heath)

Please Note: MSDC currently works to the UK National Air quality Objectives which is 40µg/m3

6.2.3 Severance and Permeability

Figure 6-6 highlights the key severance features in Haywards Heath. Understanding the impact of severance is critical for contextualising how pedestrians and cyclists currently move through Haywards Heath. For the purposes of this analysis, severance has been defined as features which interrupt the visual and/or physical continuity of routes and sightlines. Severance inadvertently causes bottlenecks in locations which provide the only route to overcome the severance features. A typical example of a bottleneck in Haywards Heath is Market Place, which provides a road link under the railway line. Other severance features include the B2112/Oathall Road, the B2028/Perrymount Road, the B2028/Sydney Road, the B2272/South Road and the A272/Rocky Lane.

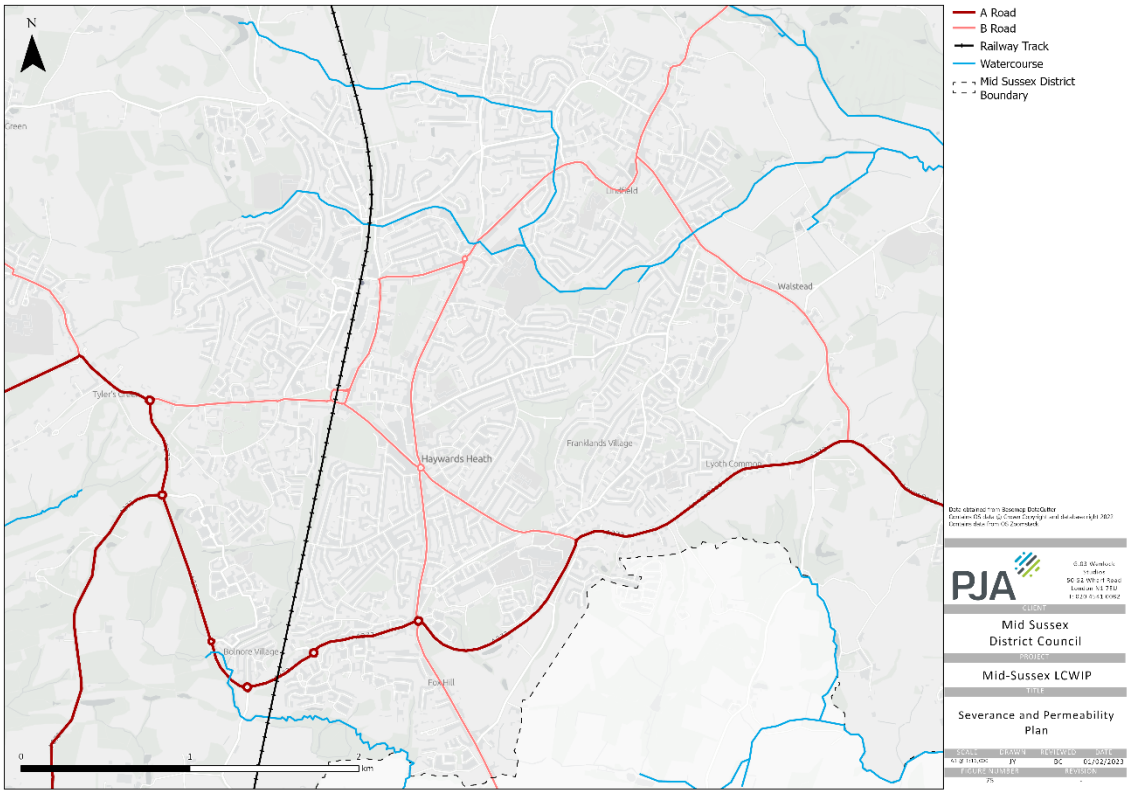


Figure 6-6: Severance and Permeability Plan (Haywards Heath)

6.2.4 Collision Analysis

Figure 6-7 shows the distribution, type and severity of collisions which resulted in an injury to a pedestrian or cyclist during the 60-month period between October 2015 and September 2020. This data can be used to identify locations where pedestrians and cyclists come into conflict with vehicular traffic, with collisions often being the result of poor infrastructure provision. There is a clear clustering of collisions which resulted in an injury to a pedestrian or cyclist to the south of the town centre on the B2112/Wivelsfield Road. Several collisions also occurred on the B2272/South Road, including one which occurred in close proximity to the town centre and resulted in a pedestrian fatality.

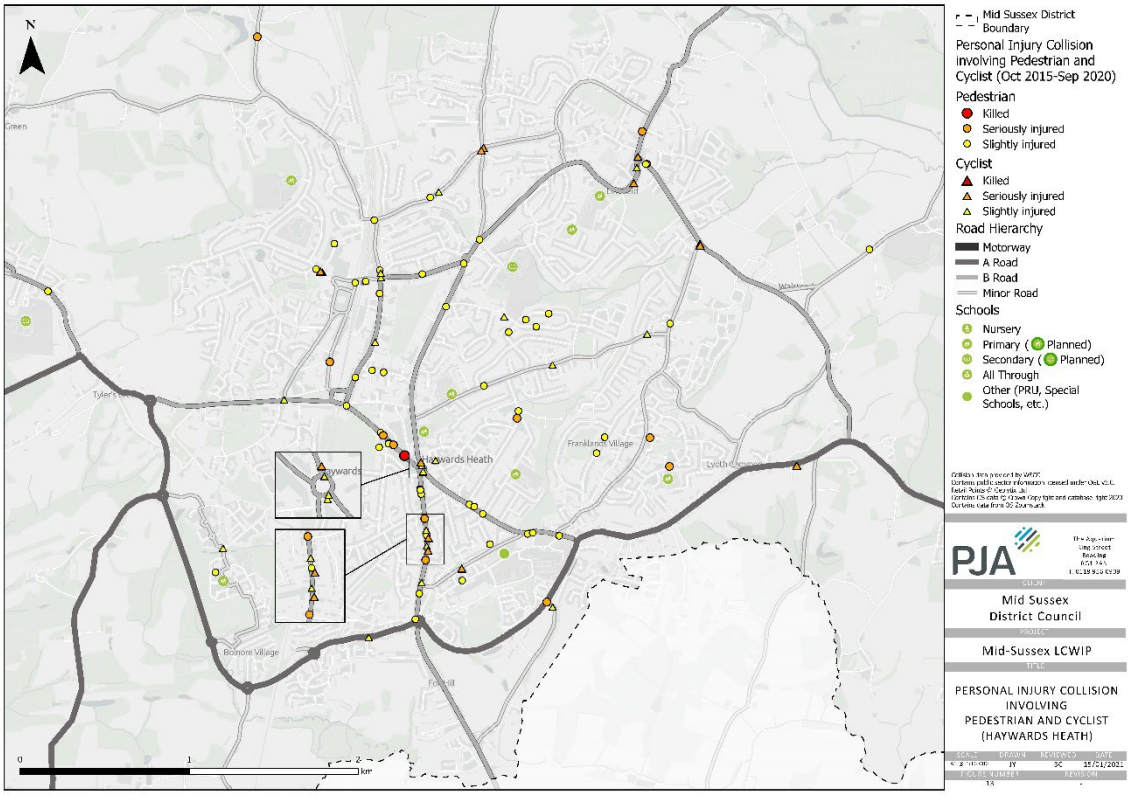


Figure 6-7: Walking and Cycling Collision Analysis Plan (Haywards Heath)

6.2.5 Travel Patterns

The plan below illustrates the method of travel to work data for the local area alongside the proportion of residents who have a journey of less than 5km when commuting to work, taken from the 2011 Census. It is widely acknowledged that cycling has the potential to replace short car journeys, particularly those under 5km. The plan indicates that the car accounts for the highest percentage of people's' preferred modes of transport when commuting to work in Haywards Heath. Moreover, a significant proportion of journey to work distances are under 5km, particularly for residents in the central and eastern areas of the town. This suggests that there is the potential for many trips to be switched to walking or cycling within the urban extent of Haywards Heath.

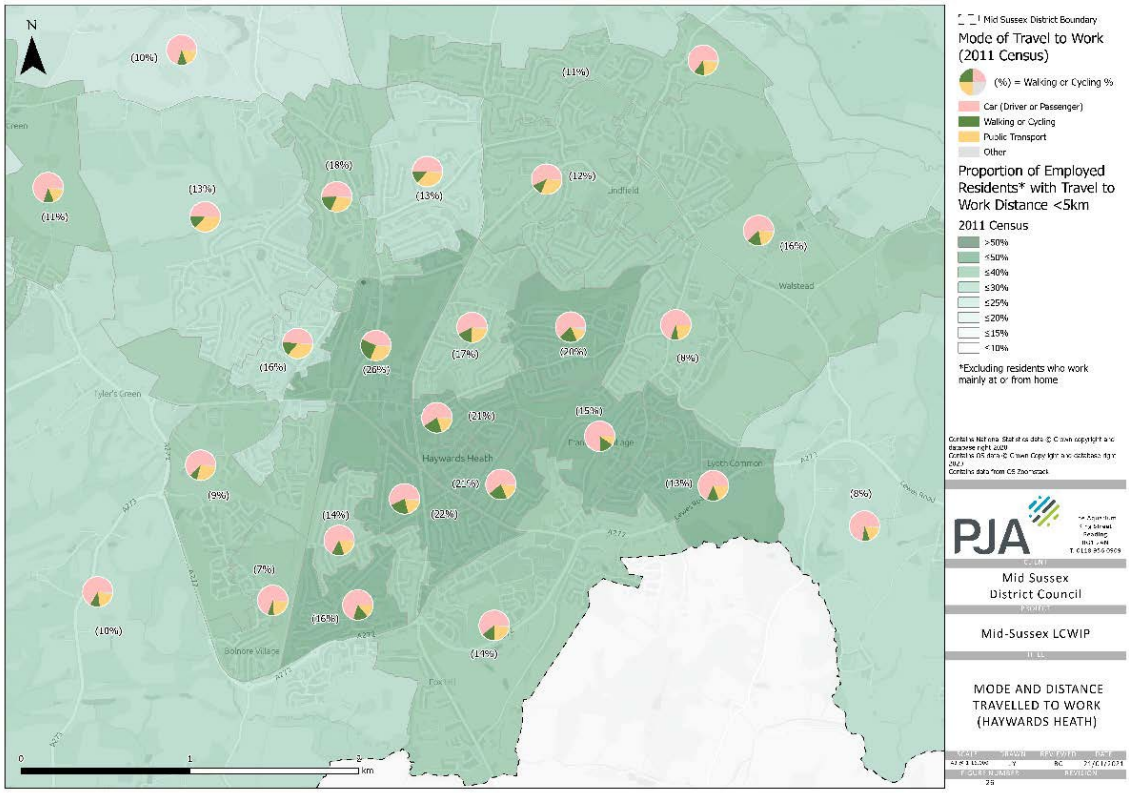


Figure 6-8: Preferred Mode and Distance Travelled to Work Plan (Haywards Heath)

Figure 6-9 highlights the proportion of households in Haywards Heath that do not have access to a car or van, taken from the 2011 Census. The plan in general suggests a relatively high car ownership in Haywards Heath, with most car-free households located around the town centre. The highest percentage of car free households per LSOA was 33%.

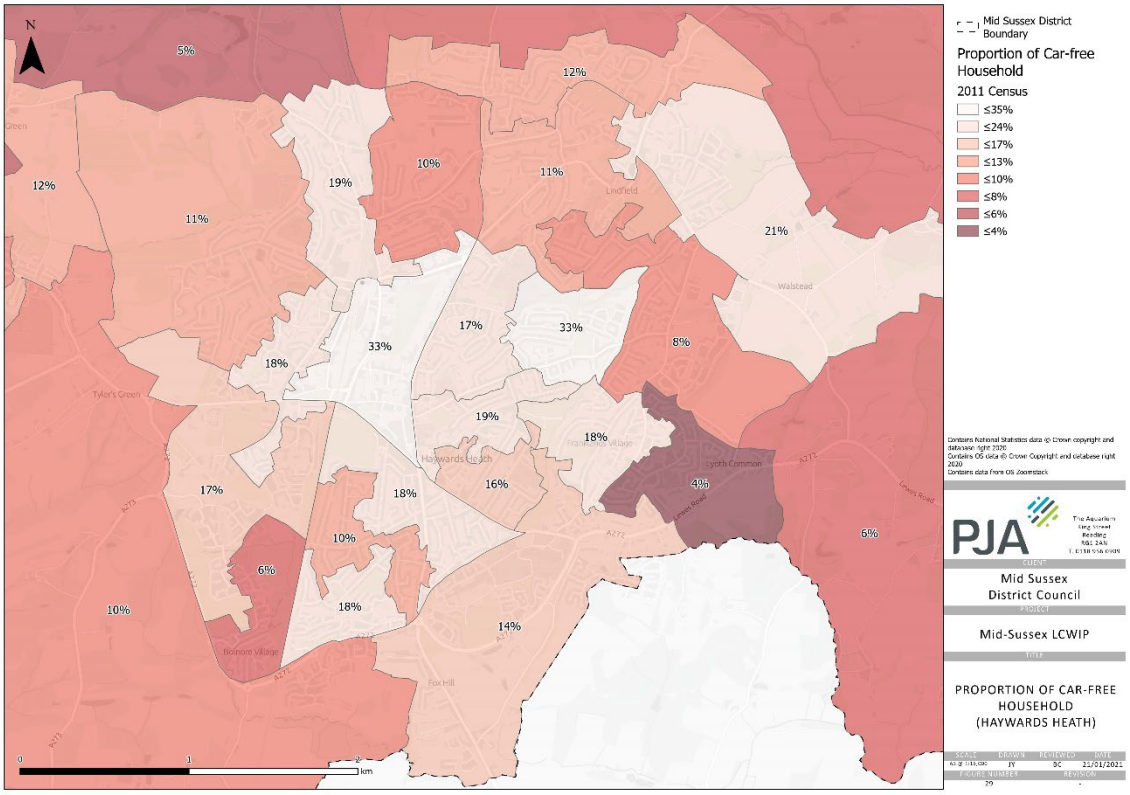


Figure 6-9: Car-Free Households Plan (Haywards Heath)

6.2.6 Propensity to Cycle Tool (PCT) – Commuting Trips

The Propensity to Cycle Tool (www.pct.bike) is a nationwide model that identifies where increases in the rates of cycling can be expected through the provision of better infrastructure. It uses census travel to work data and school travel data, and looks at trip distances to see where there may be scope for more short journeys to be undertaken by cycling. The PCT provides seven scenarios for forecasting future levels of cycling which range in ambition from the 'Government Target' (assumes 6% of commuting trips by bicycle) up to the 'E-Bike' scenario (assumes 22% of commuting trips by bicycle and improved access to e-bikes). The PCT provides two sets of mapping outputs:

- Straight-Line Networks – these plans show direct paths between LSOA Origin-Destination points which gives an overview of the key desire lines for cycling flows
- Applied Networks – applies the straight desire line to the existing road network to provide a more detailed summary of where increased cycle flows would take place on the local network

The PCT tool was used to identify the greatest latent demand for cycle and school commuting. The PCT analysis used the 'E-Bike' scenario, which models the same mode share for cycling as in the Netherlands, adjusting for trip distance and topography and includes improved access to E-Bikes. Using the 'E-Bike' scenario provides a more ambitious and longer-term outlook for cycling flows which is advantageous in network planning as it ensures that the LCWIP cycle network will provide

for assumed future advances in the town's cycle network. To accommodate for future commuting demand from proposed developments, the population forecasts for each proposed site were incorporated into the PCT forecasts to provide a more accurate reflection of a potential future scenario. The forecast populations were assigned to the nearest available LSOA to each development site (n.b. this approach is limited as some development sites are currently >1km from the nearest LSOA).

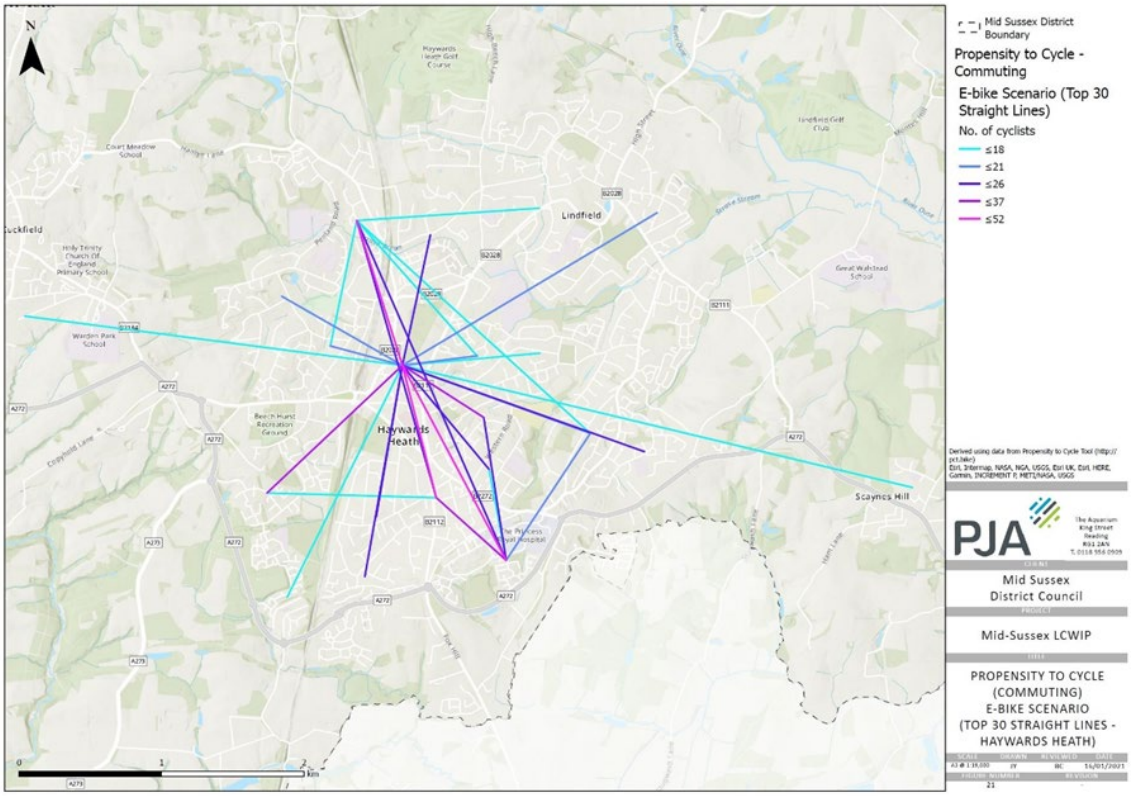


Figure 6-10: PCT 'E-Bike' Scenario: Top 30 Straight Desire Lines (Haywards Heath)

The straight-line results (Figure 6-10) suggest that the main concentration of commuting demand would be based within the existing town's urban extents, with additional demand generated by the villages of Scaynes Hill and Cuckfield.

The PCT also provides an 'applied network' scenario which snaps the straight-line desire lines to closest applicable road alignment to provide an indication of a more applied demand, as shown in Figure 6-11.

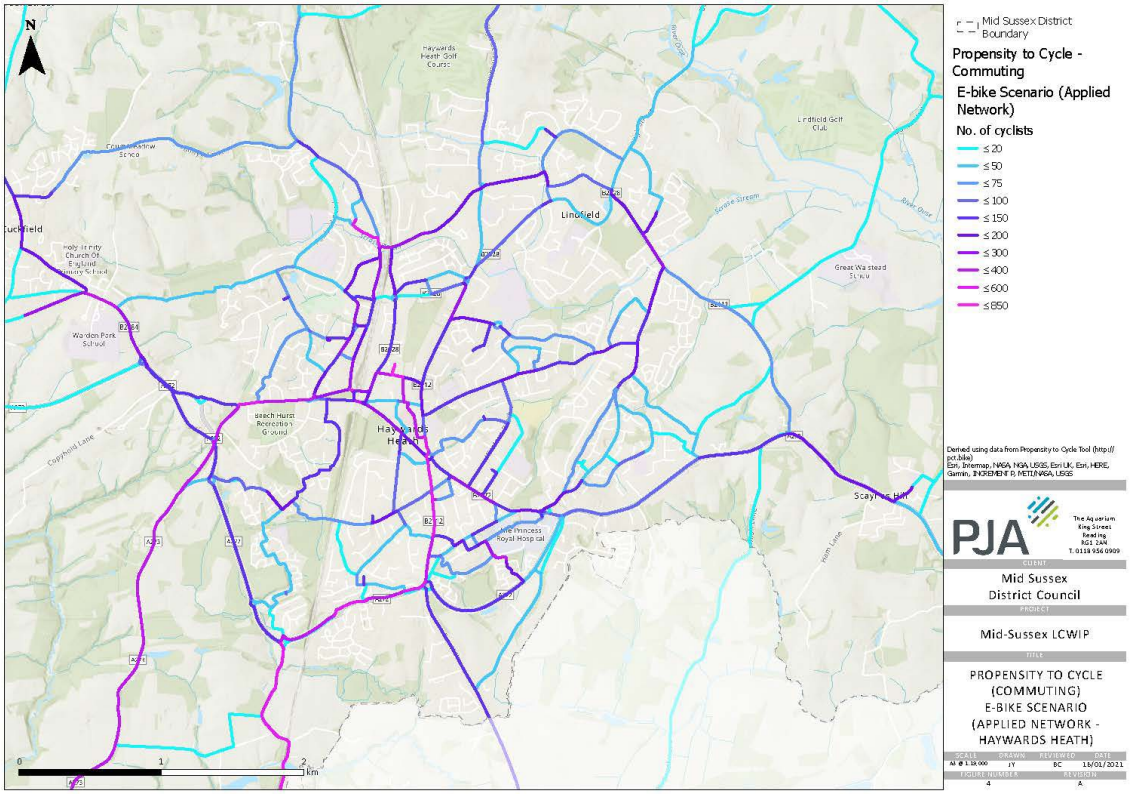


Figure 6-11: PCT 'E-Bike' Scenario: Top 30 Applied Network Desire Lines (Haywards Heath)

The results suggest that future commuting demand would be highest on desire lines following, but not limited to, the B2112/Wivelsfield Road, the A272/Rocky Lane, the B2272/South Road/Butler's Green Road, the A273/Isaac's Lane, St Joseph's Way, Heath Road and Bolnore Farm Lane. It's worth noting that the areas of high demand to the south of Haywards Heath include future demand from committed development sites.

The PCT also provides a school travel scenario using the travel to school results from the 2011 Census. The below plan (Figure 6-12) presents the 'Go Dutch' school travel results for Haywards Heath which assumes a cycle mode share of 41% of trips being cycled to school (the plan includes existing and proposed school locations in the town).

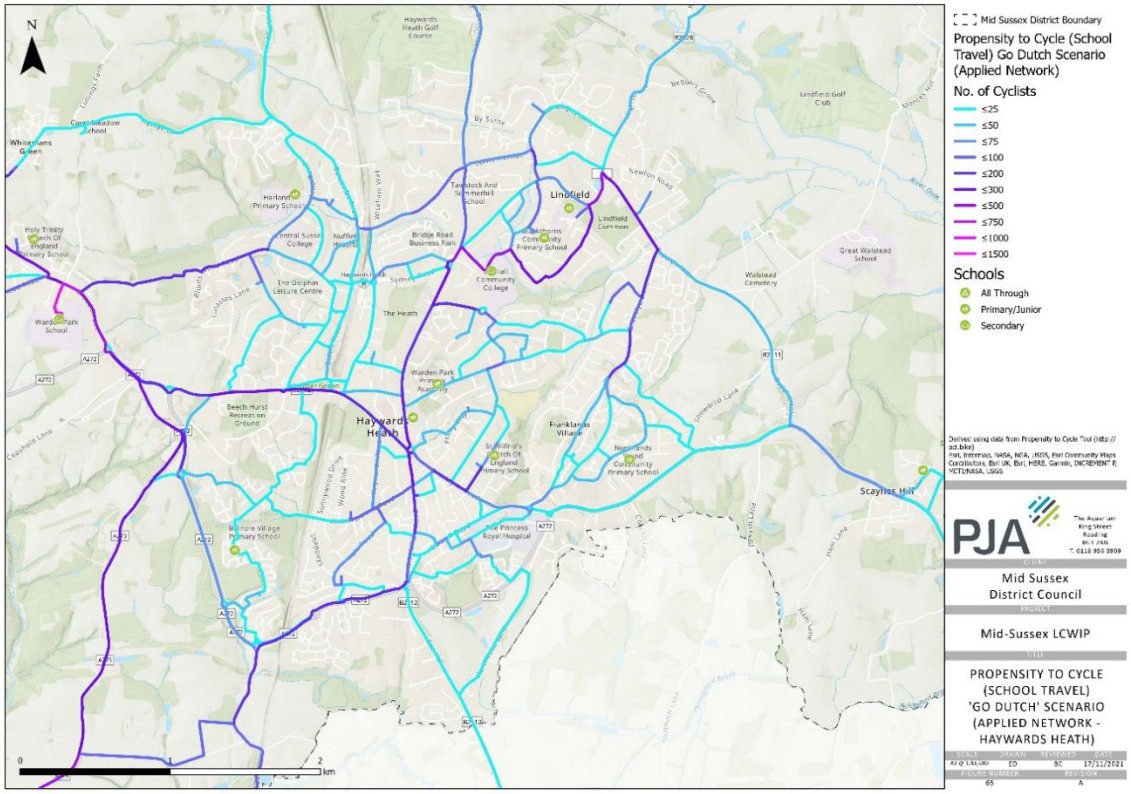


Figure 6-12: PCT 'Go Dutch' School Scenario: Top 30 Applied Network Desire Lines (Haywards Heath)

The plan highlights several routes which are anticipated to have significant increases in the number of cycling trips to school, including most notably routes into town from schools to the west via Broad Street/the B2272, Hatchgate Lane/the Bluntswood Road link and from the east via Appledore Gardens/the B2112/Oathall Rd. The plan also highlights anticipated increases from the south via the A273/Isaac's Lane.

A limitation of the PCT is its focus on commuting and school trips which tends to produce outputs focussed around key employment and education sites. The PCT results were used alongside an analysis of non-commuting, and leisure trips to enable the development of a cycle network that also includes leisure and recreation trips.

6.2.7 'Everyday Trips'

The purpose of this section is to provide an additional layer of analysis that focusses on 'Everyday' cycling trips which would include: leisure and recreation, trips to local centres, and amenity trips. Combining the 'Everyday' trips with PCT outputs provides a comprehensive demand model for developing the LCWIP network. It should be noted that desire lines that were longer than 5km were removed from the analysis for consistency with the LCWIP approach. This should not preclude the development of longer distance cycling routes in the wider area which could connect into Haywards

Heath. Indeed, future development of 'inter-urban' cycling routes will be an important step in the future development of the LCWIP.

Developing the Desire Lines for 'Everyday' trips required the identification of all Origins and Destinations within a 5km catchment area of Haywards Heath using data supplied by the client team. The catchment area was divided into a hexagon grid using 0.25km2 hexoides. For the purposes of the analysis, all hexoides which currently contain >100 residential dwellings and/or are anticipated to include >100 residential dwellings in the future were included as Origins (see Figure 6-13).

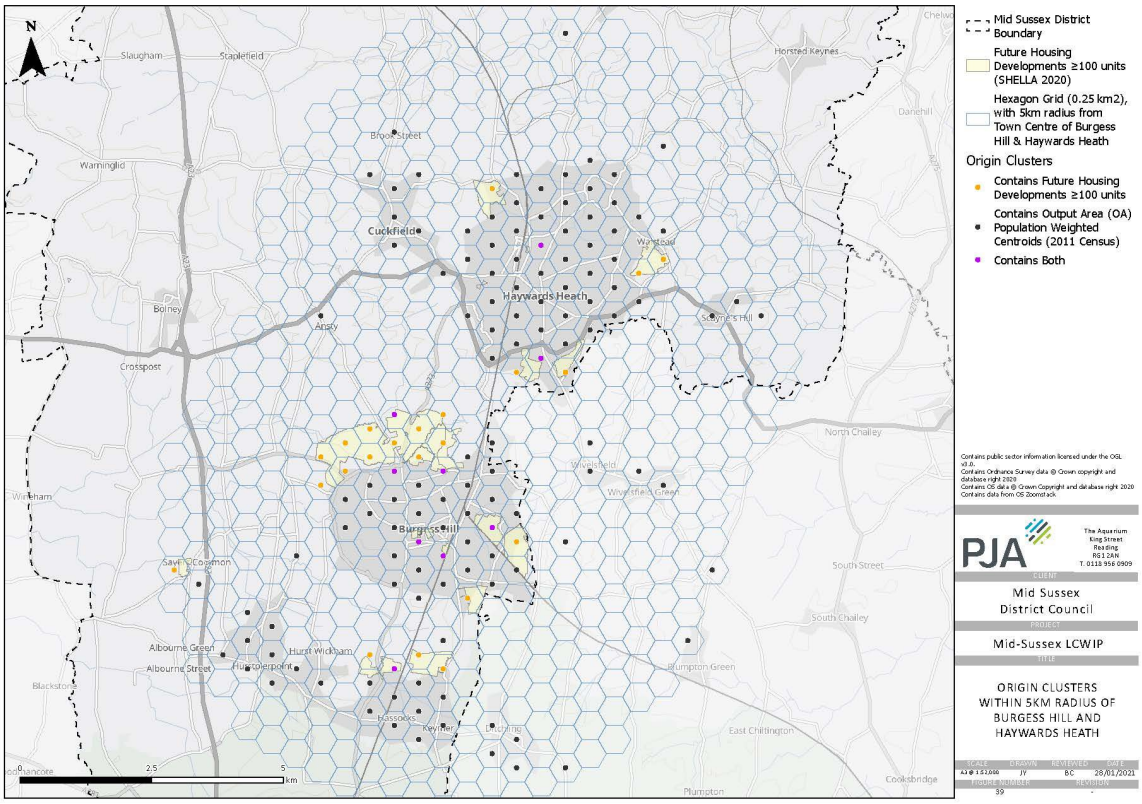


Figure 6-13: Origin Clusters (Haywards Heath and Burgess Hill)

Please Note: The LCWIP Technical Guidance recommends that routes to/from existing points of interest should be considered. Because the LCWIP is a 10-year plan, PJA has also included datasets that identify possible future points of interest.

Having identified the Origins, Destinations were identified based on data provided by the client and clustered to highlight the areas with highest number of destinations. All destinations were categorised as below:

- Class 1: Town, Village and Local Centres; Key Employment Sites.
- Class 2: Bus Stops, Existing and Proposed Schools, Railway Stations, Hospitals, Supermarkets, Leisure Centres and Libraries.

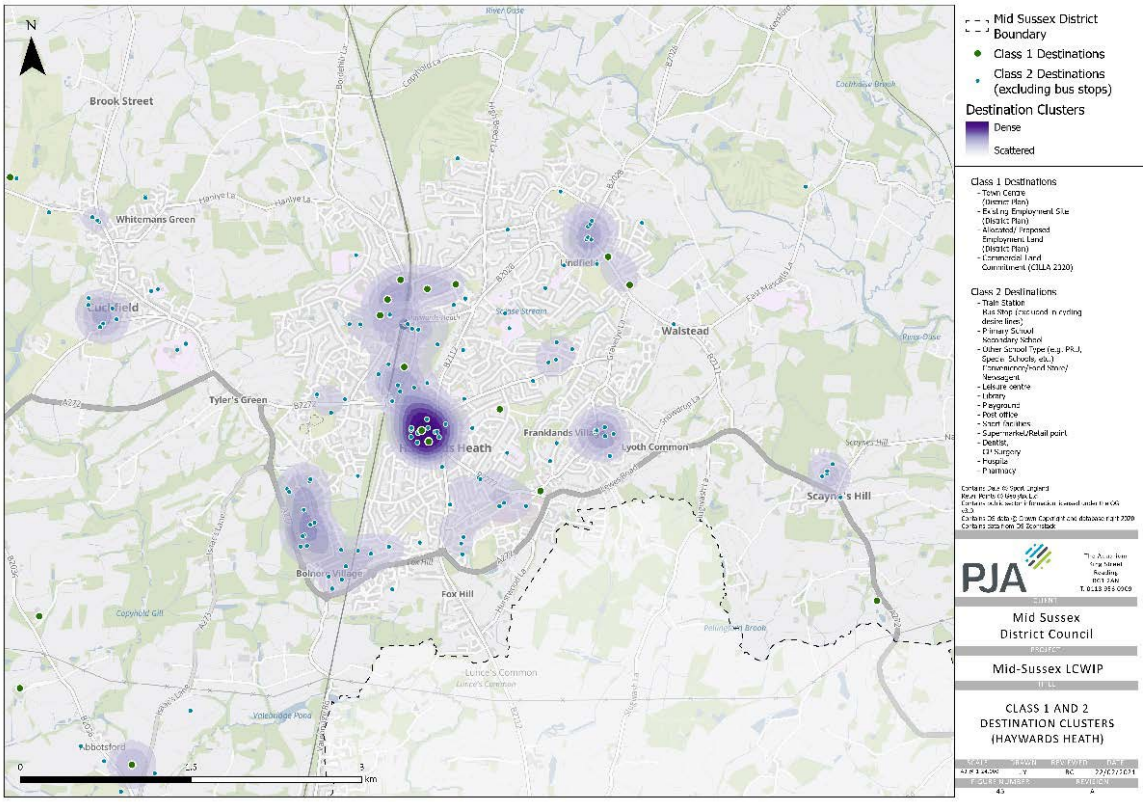


Figure 6-14: Destination Clusters (Haywards Heath)

This analysis provided an important non-commuting dataset which was compared against the Propensity to Cycle Tool (PCT) outputs to provide a comprehensive review of desire lines within Haywards Heath. It was assumed in the analysis that Class 1 destinations would generate a higher number of cycling trips and that they are also likely to have a larger catchment area of cyclists from across the town, compared to Class 2 destinations which would generate more locally based trips.

To determine the key desire lines for the LCWIP, the spatial relationship between Origin and Destinations was analysed. 'Everyday' Origin-Destination desire lines were created from each origin centroid to its nearest Class 2 destination, and then also to all Class 1 destinations in the Study Area (all desire lines >5km were excluded from the analysis). This was based on the assumption that the Class 1 destinations would generate a higher number of trips and that they are also likely to have a larger catchment area of trips from across the study area, compared to Class 2 destinations which would generate more locally based trips. Figure 6-15 provides an indication of the volume of desire lines that were considered in the development of the LCWIP network.

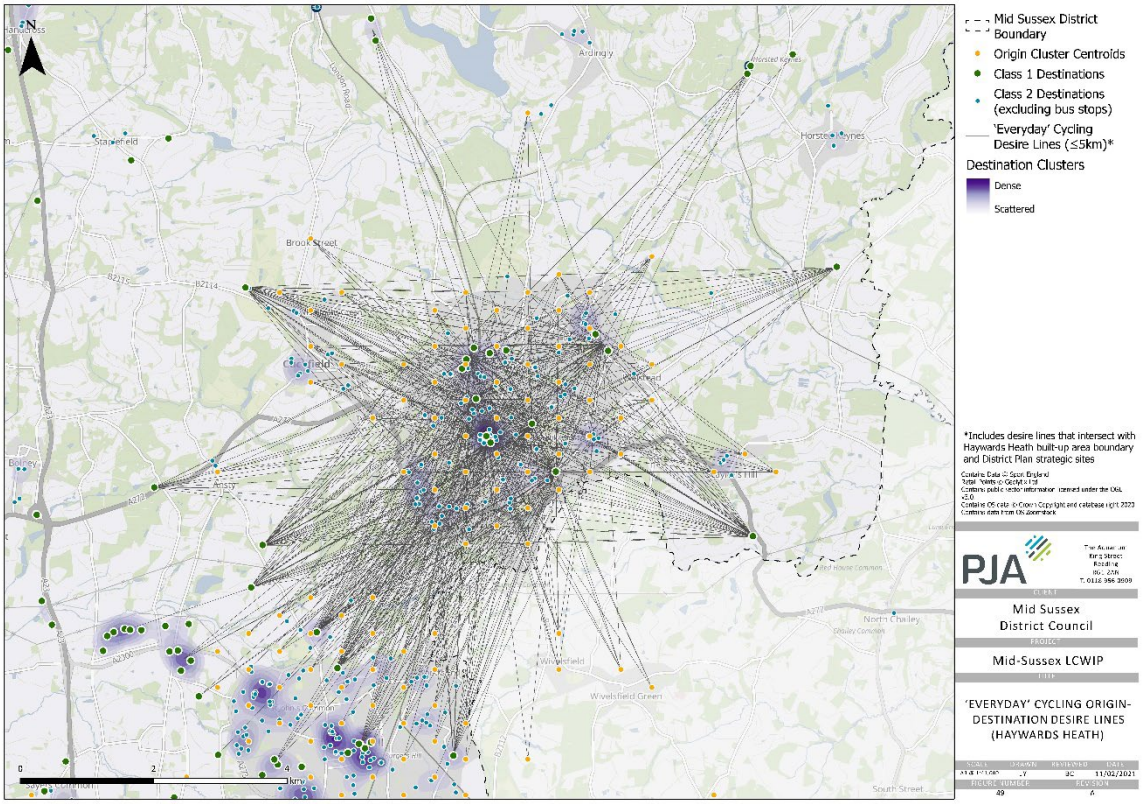


Figure 6-15: 'Everyday' Origin-Destination Pairs (Haywards Heath)

Having identified all available desire lines, a "K-means" clustering analysis was used to cluster the above desire lines into a more refined plan which identified the top 20 desire line clusters (Figure 6-16). The K-means methodology identifies individual desire lines which are within close proximity to each other and combines these into grouped desire lines. The top lines therefore represent the general alignments which are likely to generate the highest number of everyday trips.

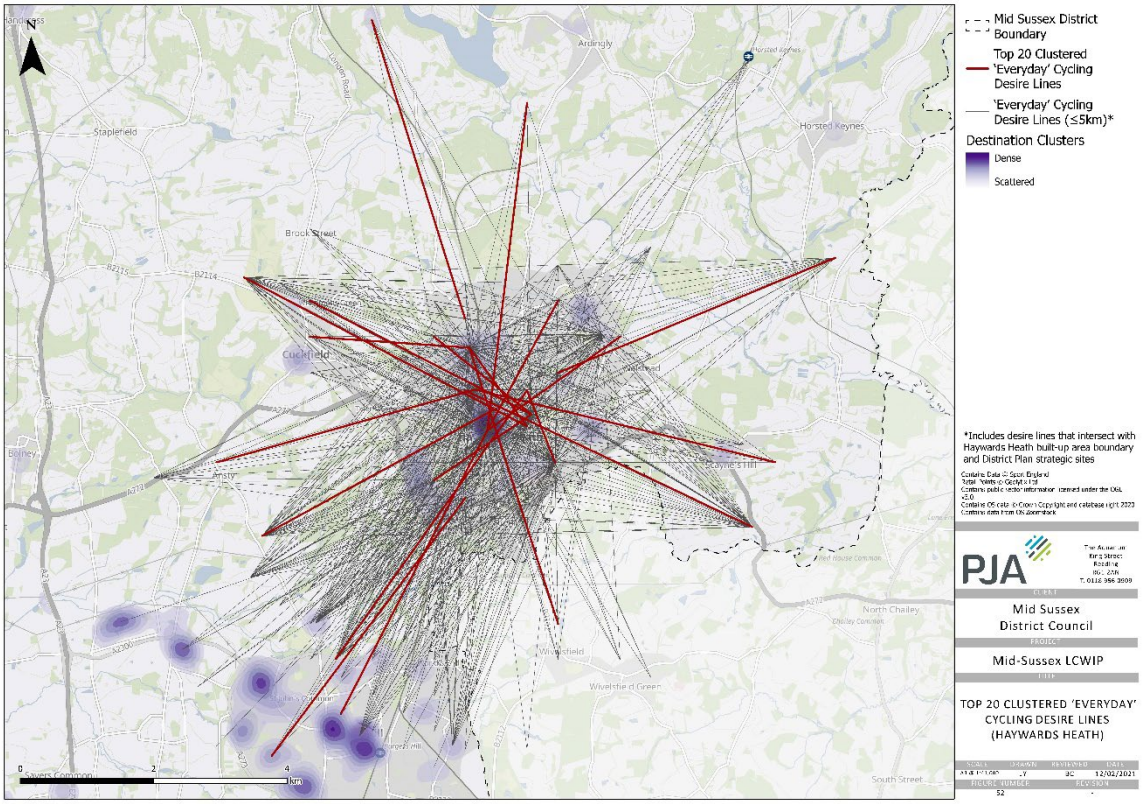


Figure 6-16: Top 20 'Everyday' Origin-Destination Pair Desire Lines (Haywards Heath)

To help compare the results from the PCT and Everyday Trip analysis, the below plan was prepared which highlights where the results overlapped. The combined results illustrate that the PCT results (green) are generally more concentrated in Haywards Heath and the town centre, whilst the 'everyday' desire lines (yellow) extend beyond Haywards Heath to nearby settlements.

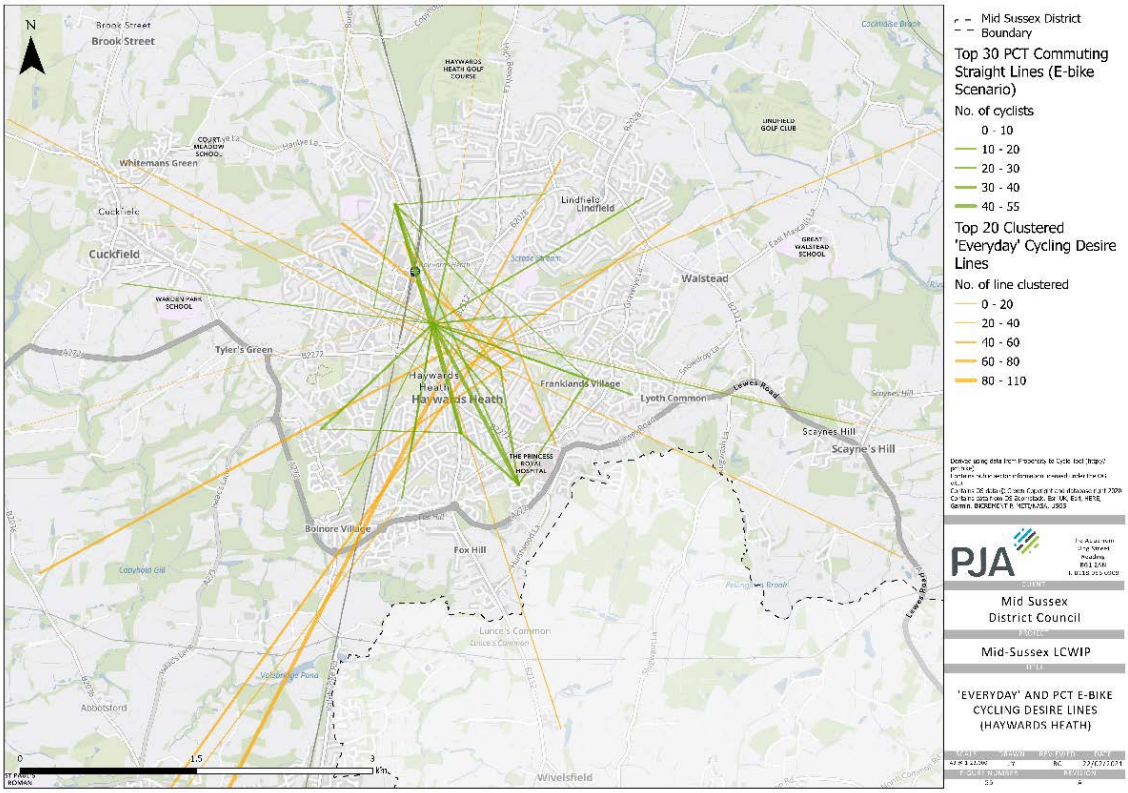


Figure 6-17: Comparison of Everyday and PCT Commuting Desire Lines (Haywards Heath)

6.2.8 LCWIP Network Recommendation

The data was reviewed with Mid Sussex District Council officers to present the findings from Stage 2 and to recommend the LCWIP walking and cycling networks. For the purposes of the network development, the LCWIP methodology recommends developing 'routes' which form the basis of the auditing in Stages 3 and 4. The network therefore represents indicative routes which might be followed for walking and cycling, however they are not intended to be routes that will necessarily be followed from beginning to end. A mixture of route types was selected, ranging from main routes into the town centre, routes through residential areas, and routes that provided onward connectivity to out of town sites.

Given the compact nature of the Mid Sussex LCWIP towns, a 'whole street' approach was adopted rather than proposing discrete networks. This approach is increasingly common in smaller settlements where there is a significant overlap of routes given the limited size of network. The approach is also more efficient in smaller settlements as it maximises the benefits for both walking and cycling by targeting key locations. Figure 6-18 summarises the combined LCWIP walking and cycling network to be audited in Stages 3 and 4.

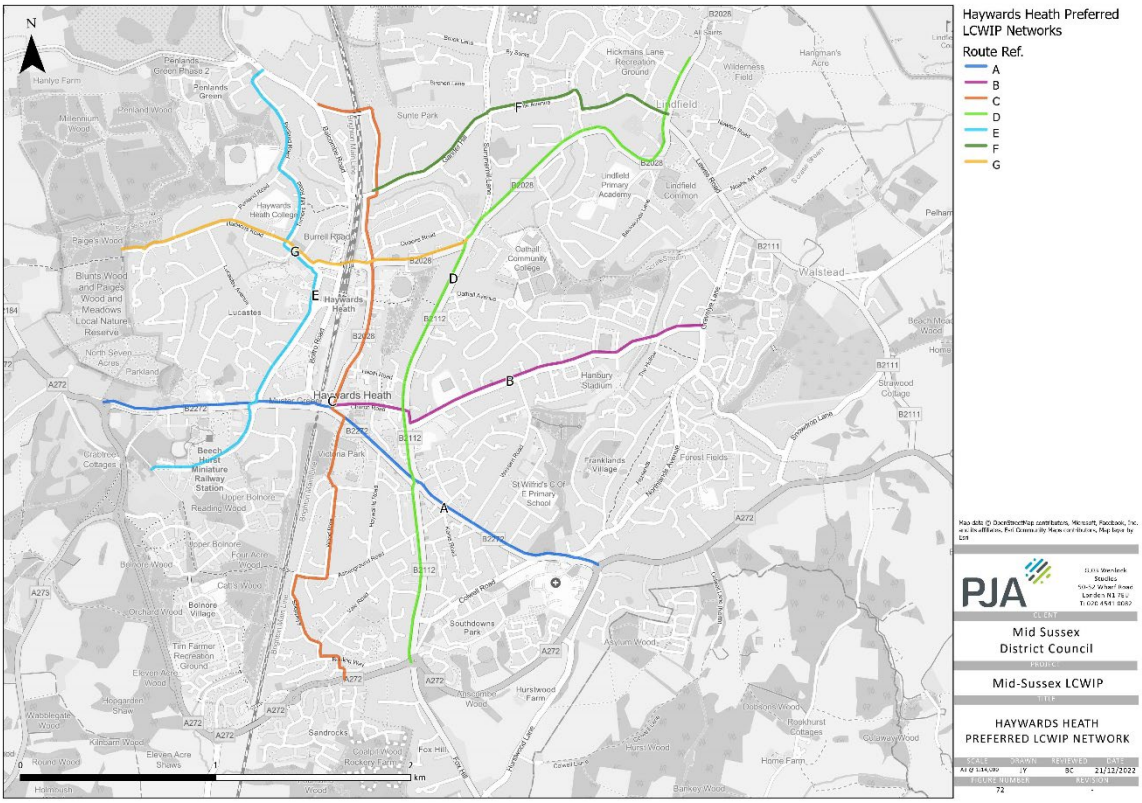


Figure 6-18: Preferred LCWIP Network (Haywards Heath)

6.3 Stage 3: Network Planning for Cycling

6.3.1 Route Selection Tool (RST)

Each route was audited using the "Route Selection Tool" as set out in the LCWIP guidance. The Route Selection Tool (RST) is an appraisal methodology that allows practitioners to determine the best route to fulfil a particular straight line corridor, referencing against existing conditions and the shortest available route. It considers the six important criteria that determine the quality of a cycling route as described below. The RST divides routes into shorter sections which should reflect changes in the character and layout of the alignment.

- Directness: Compares the length of cycle route against the equivalent vehicle route with cycle routes that are shorter than the vehicle are scored positively for Directness. Higher scores can be achieved through the introduction of modal filters or routing cyclists through parks/open spaces to provide a more direct connection.
- Gradient: Identifies the steepest section of route within the proposed alignment with gradients that exceed either 5% in gradient and/or 50m in length scoring lower.
- Safety: Considers vehicle flows and speeds to better understand the exposure of cyclists to vehicular traffic. Routes with either protected cycle facilities or low traffic environments score highest.

- Connectivity: Records the number of individual cycle connections into a section of route – routes should aim to have >4 connections per km.
- Comfort: Assesses the space available for cycling and the quality of surfacing with a preference for protected cycle facilities of >3m (bi-directional) or >2m (uniflow).
- Critical Junctions: Provides a number of critical junction design issues including vehicle flows, protection from vehicular traffic, wide junction splays, and junction geometries.

All routes were initially scored as a desktop exercise and the results were then validated during site visits. The remainder of this chapter summarises the results from the RST audits and initial design recommendations.

6.3.2 Audit Results

The Route Selection Tool consists of five scoring criteria (Directness, Gradient, Comfort, Connectivity, Safety) and the Critical Junctions assessment. Table 6-1 summarises the range of scores against each of these criteria which provides useful insight into how the network performed against them. The average route score across the LCWIP routes in Haywards Heath was 55%. A breakdown of the scoring is presented in Table 6-1 and Figure 6-19.

The RST results were consistently low in Haywards Heath – this is perhaps unsurprising given the lack of cycle facilities in the town. The routes which scored slightly higher with those using quieter residential streets which reduced cyclists' exposure to general traffic. Junctions were another key issue identified during the audits with no dedicated facilities to provide safer cycle crossings.

Criteria	Highest Score (%)	Lowest Score (%)	Average Score (%)
Directness	100%	100%	100%
Gradient	42%	8%	24%
Safety	54%	20%	32%
Connectivity	92%	100%	99%
Comfort	78%	0%	21%

Table 6-1: Route Selection Tool (RST) Scores Overview (Haywards Heath)

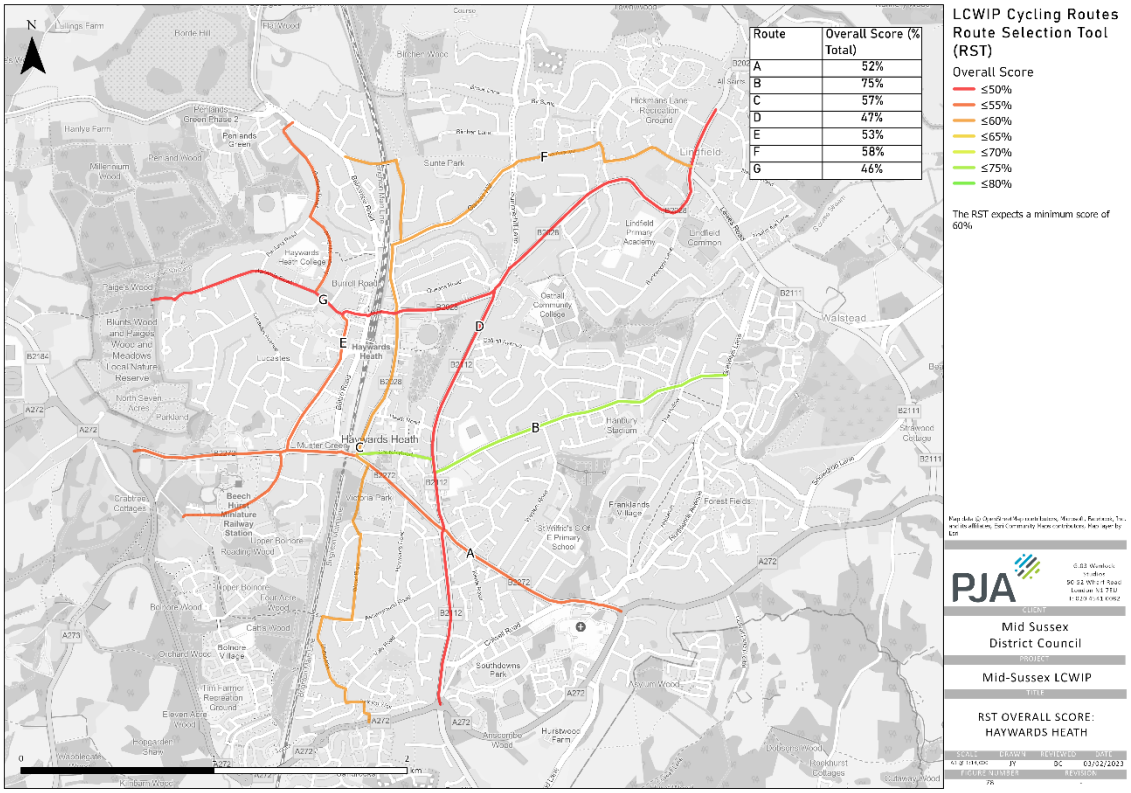


Figure 6-19: Route Selection Tool (RST) Scores (Haywards Heath)

6.4 Stage 4: Network Planning for Walking

6.4.1 Walking Route Audit Tool (WRAT) – Audit Results

Having confirmed the combined LCWIP walking and cycling network, each route was then audited on site by PJA using the Walking Route Audit Tool (WRAT) methodology set out in the DfT LCWIP process guidance. The Walking Route Audit Tool (WRAT) is divided into several categories for analysis and uses a Red Amber Green (RAG) scoring technique:

- Attractiveness: Considers the impact of maintenance, traffic noise, pollution and fear of crime upon the attractiveness of a route.
- Comfort: Reviews the amount of space available for walking and the impact of obstructions upon walking such as footway parking, street clutter and staggered crossings.
- Directness: Assesses how closely pedestrian facilities are aligned with the natural desire line and accommodating the crossing facilities are for pedestrians to follow their preferred route.
- Safety: Focusses on the impact of vehicle volumes and speeds and interaction with pedestrians.
- Coherence: Focuses on the provision of dropped kerb and tactile information for pedestrians.

6.4.2 Audit Results

This section summarises the results from the on-site assessments, focussing particularly on the performance of the routes against the 20 WRAT scoring factors. Analysis of the factors' results provides a useful indication of the key strengths and weaknesses of Haywards Heath's walking network and helps to identify the areas for improvement.

The average WRAT score across the LCWIP routes in Haywards Heath was 70%. A breakdown of the scoring is presented in Table 6-2 and Figure 6-20. The WRAT results were strongly correlated with volumes of vehicle traffic and the town's street hierarchy. A majority of The Walking routes followed busier roads within the town and therefore tended to provide a poorer quality experience for walking and wheeled trips, particularly in relation to general traffic.

Theme	Criteria	Average score (out of 2)	Average score (%)
Attractiveness	Maintenance	1.32	66%
	Fear of crime	1.60	80%
	Traffic noise and pollution	1.23	62%
Comfort	Condition	1.28	64%
	Footway width	0.94	47%
	Width on staggered crossings / pedestrian islands/refuges	1.51	76%
	Footway parking	1.60	80%
	Gradient	1.81	90%
Directness	Footway provision	1.66	83%
	Location of crossings in relation to desire lines	1.24	62%
	Gaps in traffic (where no controlled crossings present or if likely to cross outside of controlled crossing)	1.00	50%
	Impact of controlled crossings on journey time	1.57	79%
	Green man time	1.70	85%
Safety	Traffic volume	1.13	56%
	Traffic speed	1.34	67%
	Visibility	1.34	67%
Coherence	Coherence	0.98	49%

Table 6-2: Walking Route Audit Tool (WRAT) Scores Overview (Haywards Heath)

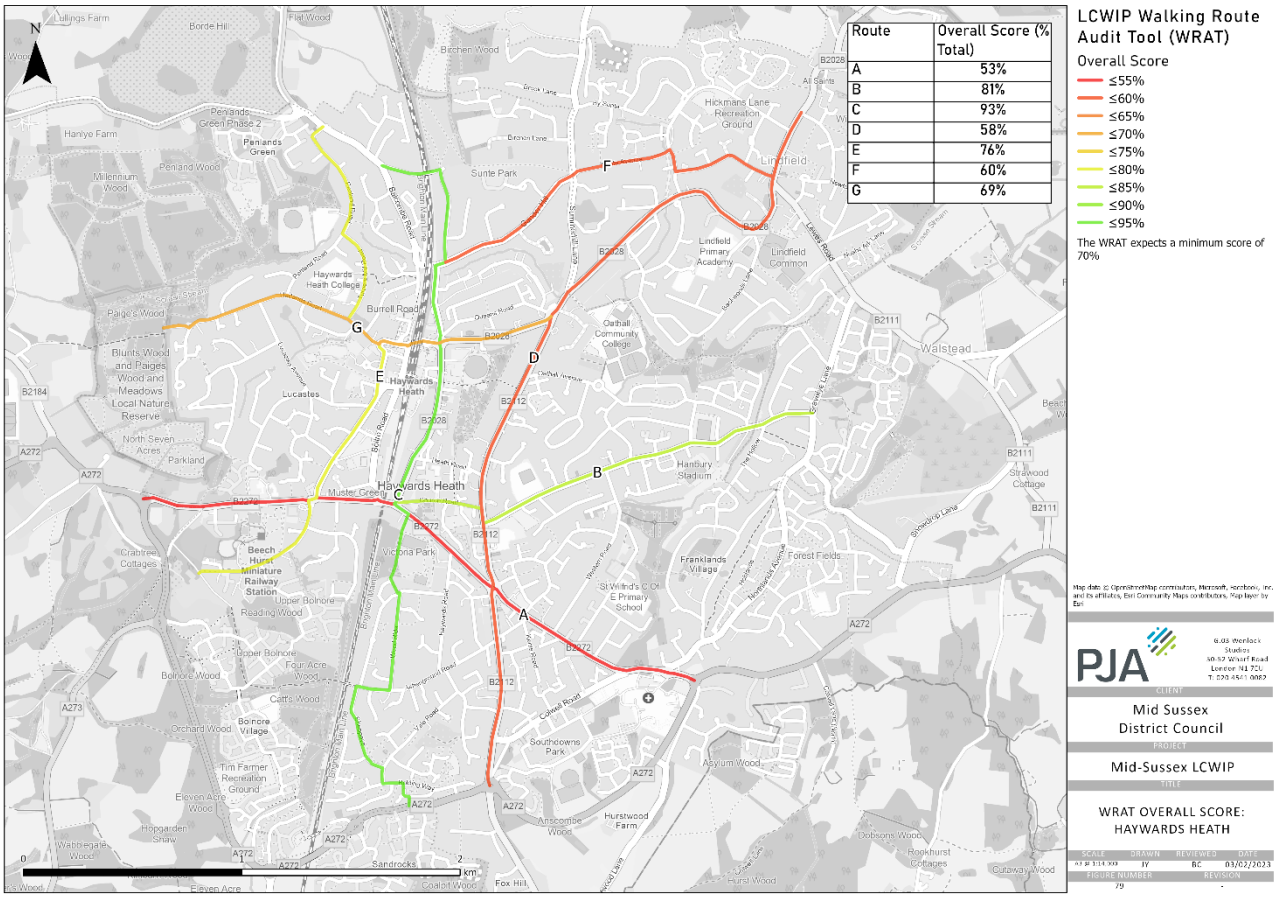


Figure 6-20: Walking Route Audit Tool (WRAT) Scores (Haywards Heath)

6.5 Stakeholder Engagement

Stakeholders during the engagement sessions identified that the LCWIP captured the challenges of the linear routes and challenging junctions in Haywards Heath.

Stakeholders also highlighted the importance of the LCWIP being considered in conjunction with the Haywards Heath Masterplan and the sustainable transport schemes that West Sussex County Council are currently working on.

7 Prioritisation

The purpose of Stage 5 is to establish a prioritised programme for the delivery of the walking and cycling measures identified in Stages 3 and 4 of the LCWIP. The prioritised list of measures should aid future network development by outlining the top priority schemes for delivery. The results can also be used as a mechanism for funding applications or seeking developer contributions towards new walking and cycling infrastructure. As noted previously, LCWIPs are considered to be 'live' documents by the DfT and local authorities therefore should consider updating/revising the prioritisation table to reflect latest developments. The LCWIP methodology includes a suggested approach for prioritising measures, however it also emphasises that the methodology should be tailored to the local context. The recommended results from the individual LCWIP towns have been compared to enable prioritisation across the District.

This chapter presents the combined design recommendations for each of the LCWIP towns. The below section provides an overview of the key design recommendations for the LCWIP using examples of best practice to help illustrate the recommendations.

7.1 Design Recommendations

This chapter presents the combined design recommendations for each of the LCWIP towns. The below section provides an overview of the key design recommendations for the LCWIP using examples of best practice to help illustrate the recommendations.

As well as developing measures based on the LCWIP routes, the designs have also been categorised based on the type and scale of intervention i.e footway improvements, new crossing, protected cycle facilities etc (see below points). Categorising the design recommendations provides an alternative option for the implementation of schemes, and some local authorities have opted to focus on the delivery of design categories rather than the LCWIP routes. For example, Brighton & Hove City Council used the findings from their pilot LCWIP to deliver a programme of dropped kerb and tactile paving improvements at sites identified in the study area.

- **Linear Improvements**: Measures focussed on improving longer sections of street, including measures such as footway widening, and new cycle facilities.
- **Crossings**: Focussed on improving facilities for uncontrolled crossings in the four towns, with particular focus on minor junctions and providing tactile information and dropped kerbs.
- **Junctions**: Identified sites for improving and/or installing improved controlled crossing facilities for walking and cycling. These measures generally focussed on more significant junctions with either high volumes of vehicular traffic and/or walking/cycling.

- **Complementary Measures** – these proposals targeted a wider neighbourhood/town scale for improvement and were generally focussed on reducing the impact of traffic volumes to improve conditions for walking and cycling.
- **Additional Measures/opportunities** - In addition to identifying discreet design measures to improve both walking and cycling conditions, complementary measures have been identified which would produce more transformational changes in the three study towns. These measures would help to reduce the impact of general traffic on walking and cycling, and help to overcome issues related to severance caused by the railway line and main road network. Given the ambitious scale of these measures, it is likely that they will need to be considered as medium/long-term approaches.

7.2 Design Principles

To help inform the development of LCWIP's design proposals, the below examples of existing best practice have been included to illustrate the level of service which the LCWIP is aspiring to. These design principles and precedent schemes were shared with MSDC officers and stakeholders at individual town presentations to ensure the design proposals were responding to the key requirements in each LCWIP town.

7.2.1 Continuity and Accessibility

Missing dropped kerbs/tactile information was an issue throughout the LCWIP towns and was further exacerbated by wide side-junction entries which increased crossing distances – particularly in larger suburban developments in each of the towns. Resolving these points in the LCWIP is a critical issue for creating a coherent and continuous walking network. The examples below provide examples of side-entry junctions and headway treatments which have prioritised pedestrian desire lines over vehicle movements. This approach will help provide a basic level of service and reinforce the LCWIP's movement hierarchy with pedestrian needs as the first consideration. These design principles could be further enhanced and embellished in the town centre proposals for high quality public realm interventions.

Figure 7-1: Continuous footway provision (Left – Claylands Road) and Dropped kerb with tactile paving (Right – Sans Walk)

7.2.2 Crossings

In addition to issues of continuity, the WRAT assessments reviewed the 'Directness' of walking routes and the scores for these assessments were generally acceptable, however there were several important locations where crossings were either missing or not on the natural desire line, for example: Park Road/London Road (East Grinstead), Muster Green/Church Road/Perrymount Road Junction (Haywards Heath) and Church Road/Station Road (Burgess Hill).

Similarly to the recommendations for improving continuity, the LCWIP will need to consider improving the provision of controlled crossing points on the main walking and cycling routes, particularly around town centres and at major junctions. This will help to enhance the continuity of key walking routes and prioritise the walking network over vehicular traffic. The below images provide examples of where the streetscape design embeds the natural pedestrian desire line over the carriageway.

Figure 7-2: Controlled pedestrian and cycle crossing (Left - Lea Bridge Road), and parallel zebra crossing (Right – Richmond Road)

Figure 7-3: Implied crossing provides direct crossing on pedestrian desire line (Left- Downs Road), and example of a raised table crossing in Norwich (Left – Westlegate)

7.2.3 Footway provision

The WRAT tool aims for a clear footway width of 2m (unfortunately this is not feasible in all locations given highways constraints, particularly on more historic streets, for example sections of Junction Road (Burgess Hill), and Market Place (Haywards Heath). However, the effective width of footways could still be enhanced by: removing street clutter and excess signage, prohibiting footway parking, providing recessed loading/parking bays to enable local footway widening and addressing issues of poor maintenance to maximise the use of existing footways and path. The examples below therefore focus on enhancements that could be made to maximise the effectiveness of footways even in more constrained environments.

Figure 7-4: Example of clear footway space incorporating SUDs (Left – Crossway) and Recessed loading pads enable footway widening in constrained streetscapes (right – Clapham Old Town)

7.2.4 Cycle Infrastructure

There is currently limited dedicated cycle infrastructure in the three LCWIP towns, except for sections of shared use path alongside main roads and also off-road infrastructure. The RST audits identified safety and comfort as the main issues currently affecting levels of service for cycling. Where feasible, new protected cycle measures have been recommended, however the overall design scope and feasibility for introducing dedicated measures in the LCWIP towns is limited by the highways layouts of the routes. A majority of LCWIP routes follow constrained historical alignments where the design scope is limited especially where footways are also already narrow and compromised (e.g. Junction Road (Burgess Hill), High Street/London Road (East Grinstead) and West Common (Haywards Heath).

At locations where protected facilities are not feasible, the recommendation is to consider alternative approaches where design feasibility is limited. This approach is focussed on the creation of low speed and low traffic environments to help improve conditions for cycling, whilst also improving the overall attractiveness of streetscapes.

7.2.5 Low Speed Measures

Reducing vehicle speeds will help to improve the level of service for cycling particularly in relation to cyclists' 'comfort'. The LCWIP's recommendations are focussed on a) introducing lower speed limits where feasible, and b) installing complementary traffic calming measures at existing and proposed locations to enforce the reduced speed limits.

Figure 7-5: Examples of residents in Haywards Heath (left) and East Grinstead (Right) asking drivers to reduce their speed

7.2.6 Low-Traffic Measures

Given the limited design scope in the more historic and constrained town centres for new dedicated cycle facilities, an alternative approach may be required to improve cycle conditions without necessarily introducing dedicated facilities. 'Low Traffic' arrangements are an increasingly popular tool for reducing flows of vehicular traffic which in turn enables area-wide improvements to walking and cycling facilities, and recent DfT guidance promotes the use of such arrangements. 'Modal filters' are used to remove vehicle access whilst retaining access for all other users. This approach significantly reduces volumes of vehicular traffic and therefore improves local conditions for cycling. Typically, modal filters are enforced using bollards, planters or even outdoor seating to physically prevent vehicle access. The development of low-traffic environments requires extensive data collection and stakeholder engagement to ensure that proposals do not adversely affect streets in surrounding areas and to maximise the benefits beyond focussing only on traffic flows.

Creating a series of low-traffic environments can help to increase network coverage at a lower cost than installing protected facilities. For example, the London Borough of Lambeth has started including streets within Low-Traffic areas in their Healthy Streets network to raise the profile of these routes as the vehicle volumes are sufficiently low to satisfy TfL's requirements.

Figure 7-6: Bolnore Village in Haywards Heath is an example of a low-traffic development which does not provide access for through-traffic

Both of these approaches would respond to the issues identified in the RST by reducing the scope for conflict between cyclists and vehicles and therefore improve the safety and comfort of these routes. The below example of Walthamstow Village illustrates how a 'low-traffic' approach was implemented using a combination of one-way restrictions and modal filters installed throughout the neighbourhood. There is also an example from Street where the Couture Grove development has used modal filters and pocket parks to reduce vehicle access.

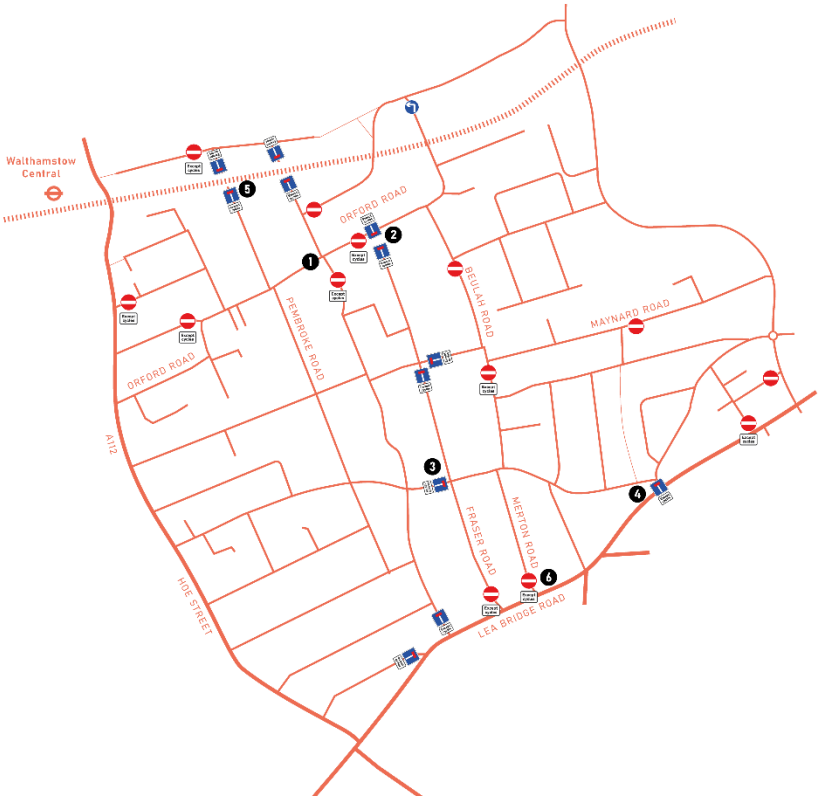


Figure 7-7: Walthamstow Village – example of a 'Low Traffic Neighbourhood' layout

7.2.7 'Off-Road' Routes

Each of the LCWIP towns has walking and cycling facilities, however the level of service varies considerably. these recommendations therefore are concentrated on ensuring a minimum and consistent level of service to increase the usability of these routes and better integrate them into the wider networks. It's also important to consider accessibility along the length of the existing off-road routes from adjoining neighbourhoods e.g. north-south connectivity into the Worth Way.

Figure 7-8: The Green Circle route in Burgess Hill is an example of a high-quality off-road and integrated route

7.3 Design Recommendation Overview

Design recommendations have been prepared for each of the LCWIP routes. The design recommendations for each town would be developed concurrently and as part of a wider design strategy for each of the towns - this section briefly outlines the strategy for each of the towns and the rationale for the LCWIP measures. This is not an explicit step contained within the LCWIP methodology, however we feel it's important that all design proposals are complementary and part of a longer term vision for improving conditions for walking, wheeled and cycle trips.

7.3.1 Burgess Hill

The recommendations for Burgess Hill are concentrated on enhanced connectivity between key trip generators in the south of the town (Town Centre, Burgess Hill Station and Victoria Business Park), and the more suburban north of the town, and to incorporate the Brookleigh masterplan development. The recent Place and Connectivity programme has provided an important platform from which to expand and improve the town's LCWIP network. The associated works with the Brookleigh Masterplan will also provide new infrastructure to the north of Burgess Hill – these improvements have been co-ordinated to interface with the LCWIP network.

Currently, there is limited infrastructure to satisfy LTN 1/20 guidance. LCWIP Routes 1, 2, 4 and 5 are routed along key roads in the town (London Road, Leylands Road, Royal George Road, and Station Road) and these locations are the focus of recommendations for installing dedicated cycle infrastructure (where practicable). The main challenge in Burgess Hill is the construction of some of the main roads in the town, including Junction Road, Lower Church Road and Royal George Road, where the full carriageway width is c. 10m. In these instances, the LCWIP recommends consideration of more ambitious low-traffic measures as means of improving the level of service.

The remainder of the LCWIP network largely follows quieter residential routes and/or utilises the Place and Connectivity routes. The design focus on these alignments should be concentrated on improving conditions for walking/wheeled trips, particularly in relation to side-entry junctions, and crossings/junctions of main roads.

Throughout the LCWIP in Burgess Hill, there is also a recommendation to enhance connectivity with the Green Circle route where alignments overlap.

7.3.2 East Grinstead

The recommendations for East Grinstead are focused on reconciling connectivity between the historic town centre and surrounding residential areas. Currently, the combination of Beeching Way (A22) and the one-way gyratory (London Road/ Station Road) severs the town centre from the

northern half of East Grinstead. It is only possible to cross the one-way gyratory at a few locations with limited/no controlled crossing facilities.

The recommendations for the town consists of two key components; overcoming the severance caused by the existing one way road network, and also considering longer term, and more ambitious measures to remove through access for general traffic in the town centre. Improving conditions for walking /wheeled /cycling trips on the gyratory would require the rationalisation of the existing road layout to create more space for improved facilities. Given the proximity to the town centre, it is recommended that these improvements are considered an extension/ enhancement of the town centre rather than focusing solely on walking/ cycling improvements. Rationalising the gyratory arrangement, would also enable improvements of several key junctions around the town centre, including Station Road/London Road, Park Road/Station Road/London Road, London Road/Railway Approach, and College Lane/High Steet.

The other key linear improvements for East Grinstead include upgrading the existing advisory cycle lanes on London Road (between Copthorne Road – St. James's Road) to protected cycle facilities (with a recommendation to consider providing facilities on the sunken section of the A22 between St. James's Road – Lewes Road), and enhancement of the Beeching Way (focussed on access to East Grinstead station and adjoining neighbourhood links). The design scope on the remaining LCWIP routes (#3/4/5/7) is more limited due to the constrained highways layout available. In these locations, a more holistic improvement is recommended which considers a town-wide 20mph

speed limit and supplementary traffic calming improvements including: increased crossing provision (controlled and uncontrolled), centre line removal and footway widening.

7.3.3 Haywards Heath

The recommendations for Haywards Heath seek to expand on the previous recommendation centre Masterplan and better integrate suburban Haywards Heath with the town centre. The main barrier to overcoming this severance is ultimately rationalising and/or altogether removing the one way gyratory that encircles the town centre. The gyratory creates an incredibly hostile environment for walking, wheeled and cycle trips and furthermore prioritises the needs of drivers over all other users.

The LCWIP's Recommendations in the town centre are therefore focused on expanding the design scope of the Masterplan to provide a comprehensive design response for the town centre. The report includes options for addressing this challenge, including conversion of the one-way gyratory to full two-way working, or to rationalise the existing one-way layout to enable footway widening and the installation of protected cycle facilities. The recommendations also identify all major junctions surrounding the town centre for improvement to include walking and cycling controlled crossings.

Beyond the gyratory improvements, the LCWIP proposes installation of protected cycle facilities (where feasible) on main roads within the town including Wivelsfield Road, Oathall Road,and Butler's Green Road. Given the varying carriageway widths and local constraints, the recommended cycle infrastructure would consist of stepped tracks which would provide a more flexible and continuous facility. There are also several key junctions beyond the town centre which are identified for improvement, including Sussex Road/Franklynn Road/Caxton Way roundabout, Bolnore Road/Muster Green/Paddockhall Road roundabout, Sydney Road/Oathall Road/Queens Road roundabout.

Several of the LCWIP routes (#2/5/6/7), were identified as they would be routed through predominantly residential/ low traffic environments and therefore provide alternative routes to the main road network. On these routes the focus is predominantly on localised junction/ crossing improvements, and providing continuous wayfinding to ensure the route's legibility.

Recommendations are also made for Lindfield High Street, however the project team feels that the historic centre would warrant its own stand alone public realm improvements beyond the scope of an LCWIP.

7.4 Prioritisation Criteria

For consistency, the MSDC LCWIP prioritisation has followed the methodology developed by West Sussex County Council (WSCC) for all of their LCWIPs. Adopting WSCC's approach ensures that all LCWIP schemes have been scored consistently and also increases the chances of attracting future funding for schemes from WSCC/Active Travel England (ATE).

The table below outlines the Prioritisation Criteria and describes how each criteria was assessed – the WSCC approach uses a Likert scale for scoring ranging from -2 (Minimum Score) up to 2 (Maximum Score).

Table 7-1: WSCC Prioritisation Criteria

Criteria	Description
LTN 1/20 Compliance	This criteria assesses the extent to which the LCWIP design recommendations comply with LTN 1/20 design guidance. Whilst LTN 1/20 is titled 'Cycle Infrastructure Design' – it includes significant recommendations for the design of infrastructure for walking/wheeled trips which would be applied.
Provides segregation (for cycling facilities) or restricts motorised through-traffic	This measure is more focussed on the design recommendations for cycling infrastructure and the extent to which cyclists are exposed to general traffic. As mentioned earlier in this chapter, the feasibility of providing dedicated cycle infrastructure on the more historic road network is limited which affected scoring of these LCWIP routes. The LCWIP contains recommendations for restricting through-traffic access however these were included in the 'Design Maximum' scenarios for these routes.
Contributes to a wider cycling or walking network	All proposals for the LCWIP network were identified in response to the towns' existing networks and to ideally integrate with these networks, as well as connecting with future development sites. A majority of the proposed LCWIP routes scored highly on this point.

Criteria	Description
Deliverability (including within highway boundary)	This criteria reviews the combined cost and design feasibility of the LCWIP design recommendations. Design feasibility considers a range of factors including design complexity, extent of works, and timescales for delivery. A large majority of the proposed measures are within the existing Highways Boundary and therefore scored highly on this element.
Value for Money category (AMAT)	The AMAT tool assesses the business case/value for money based on anticipated route patronage. At this stage in the LCWIP – AMAT assessments have not been undertaken and MSDC are awaiting further updates from WSCC.
Strength of Stakeholder Support	MSDC officers provided a response on this point based on local knowledge and the feedback received during the LCWIP engagement sessions.

The WSCC approach relies heavily on the LTN 1/20 Cycle Infrastructure Design Guidance to determine the scores. Using LTN 1/20 in this approach provides consistency and credibility for the LCWIP prioritisation, however application of the LTN 1/20 guidance is not universal and necessarily always case sensitive, particularly in relation to more historic and constrained street environments. The rankings therefore should be considered within this context, particularly in relation to 'Compliance with LTN 1/20' and 'Provides segregation or restricts motorised through traffic'. The LCWIP design proposals followed the LTN 1/20 guidance as much as practicable, however there are some instances, particularly in historic centre/constrained main road networks, where it was not practicable.

7.5 Prioritisation Results

A summary of the prioritisation results for the three towns are presented below using the WSCC prioritisation factors. The scores are presented based on the combined walking/cycling routes as analysed in Stages 3 and 4 of the LCWIP. The final column ranks the MSDC LCWIP routes' scores against each other to help identify the top priority routes within Mid Sussex for development in the LCWIP.

Table 7-2: LCWIP Combined Prioritisation Scores

Town	LCWIP Route No.	Prioritisation Total Score (%)	MSDC Combined Route Ranking
Burgess Hill	A	42%	4
Burgess Hill	B	50%	3
Burgess Hill	C	50%	4
Burgess Hill	D	17%	7
Burgess Hill	E	17%	7
Burgess Hill	F	25%	6
Burgess Hill	G	42%	4
East Grinstead	A	42%	4
East Grinstead	B	50%	3

Town	LCWIP Route No.	Prioritisation Total Score (%)	MSDC Combined Route Ranking
East Grinstead	C	42%	4
East Grinstead	D	17%	7
East Grinstead	E	33%	5
East Grinstead	F	33%	5
East Grinstead	G	25%	6
Haywards Heath	A	58%	2
Haywards Heath	B	25%	6
Haywards Heath	C	42%	4
Haywards Heath	D	25%	6
Haywards Heath	E	67%	1
Haywards Heath	F	42%	4
Haywards Heath	G	33%	5

8 Recommendations

8.1 LCWIP Recommendations

The LCWIP has developed a comprehensive set of design measures which would improve conditions for walking and cycling across Burgess Hill, East Grinstead and Haywards Heath, and also integrated with future development sites. The recommended measures have also been prioritised and therefore provide a clear strategy for delivery over the next ten years.

It is recommended that the LCWIP is considered in all future developments and applications in the town which either directly impact upon the LCWIP networks or are likely to affect conditions for walking and cycling in general. Whilst the LCWIP has developed measures only for the LCWIP network, a majority of these recommendations could be adopted and applied to sites across the town to further improve the town's walking and cycling conditions.