



Hertsmere Sustainable  
Transport Appraisal and  
Outline Settlement  
Transport Studies

Sustainable Transport  
Appraisal

June 2023



a company of Royal HaskoningDHV

# Hertsmere Sustainable Transport Appraisal and Outline Settlement Transport Studies Sustainable Transport Appraisal

Version 8-0

June 2023

Produced by:



For:



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## Project Information Sheet

|                         |                                                                                    |
|-------------------------|------------------------------------------------------------------------------------|
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# 1. Introduction

- 1.1 Integrated Transport Planning (ITP) has been commissioned by Hertsmere Borough Council to prepare a Sustainable Transport Appraisal and Outline Settlement Transport Studies to support the preparation of its next Local Plan.
- 1.2 The Sustainable Transport Appraisal follows on from work completed as part of an Existing Transport Assessment. This first stage of work makes up the initial contents of the report, to provide suitable context for the remainder of the Sustainable Transport Appraisal. It demonstrates understanding of the baseline conditions, existing network opportunities and constraints and the planned implications of growth and existing supporting infrastructure. It is a foundation on which the primary purpose of the study – to determine what additional infrastructure may be required – is based.
- 1.3 This version of the Sustainable Transport Appraisal is presented to Hertsmere Borough Council as a draft for the purposes of internal review and stakeholder consultation.
- 1.4 It should be noted that since the commission was first instructed, the Local Plan context has shifted somewhat with the announcement that the emerging plan was to be reviewed. In discussion with Hertsmere Borough Council, it was determined that the study should continue and would still form a useful piece of evidence to support future emerging Local Plans, against a 'standard methodology' scenario for housing numbers.
- 1.5 On 27<sup>th</sup> April 2022, Hertsmere Borough Council agreed to formally set aside the current Regulation 18 draft Local Plan so that the additional work required to inform the Local Plan spatial strategy can be carried out whilst awaiting clarity from the Government on planning reforms. The Sustainable Transport Appraisal forms part of this additional Local Plan work. The study will seek to address the need for clear transport intervention within the Regulation 18 documentation by identifying and suggesting ways to cater for growth and mitigate the potential impact on the local and strategic transport network.
- 1.6 The interventions proposed within this commission provide an opportunity for growth patterns to be '*stress-tested*' in the latest Hertfordshire-wide COMET Transport Model run. The submission of a number of planning applications on sites previously identified in the draft Local Plan also necessitates the consideration of transport improvements as part of the determination of those applications. It is envisaged that off-site improvements and/or s106 funding may need to be sought for interventions identified in this commission should any of these applications be approved.

## 2. Methodology

- 2.1 This Sustainable Transport Appraisal and Outline Settlement Transport Studies project seeks to ultimately identify where improvements to the local transport network and services may be of most benefit and recommend deliverable infrastructure schemes focused to provide sustainable connections across Hertsmere. Drawing upon a gathered understanding of how current connectivity varies across the study area, existing and potential key corridors for movement will be identified with sustainable improvements recommended to encourage a modal shift and reduce dependency on the car.
- 2.2 Hertsmere's commitment to planned residential and employment growth over the next 15 years is likely to bring about an increase in travel demand, notwithstanding the uncertainty of future travel patterns and the 'new normal' following the COVID-19 pandemic. To support the achievement of net-zero carbon targets set out by the Department for Transport (DfT), additional journeys should be met by a higher proportion of active and sustainable modes than is the case today as well as making the most efficient use of existing infrastructure. An emphasis on a shift away from delivering increases in highway capacity towards other travel modes is also required and is a key consideration in the development of sustainable travel interventions recommended within this study. It is noted that the support of borough and county-wide policy specifically addressing, for example, the level of car parking provided in new developments and the additional vehicle trips these developments may induce, is needed to support the accomplishment of the active travel aspirations.
- 2.3 The methodology of the wider study is informed by the brief prepared by Hertsmere Borough Council and in summary consists of the following tasks and activities for Stage 1:
- 1) **Carry out an identification of the relevant policies and strategies that currently influence development and transport infrastructure planning and delivery at a local and regional level.** This includes pertinent evidence base documents and strategies for Hertsmere's emerging Local Plan. The Transport Vision provides a summary of reviewed documents and highlights the direction policies within Hertsmere and the surrounding will take to 2038 and beyond.
  - 2) **Prepare a desktop-based review of existing transport infrastructure baselines Hertsmere's connectivity to neighbouring cities and boroughs as well as the level of internal connectivity between local settlements.** The assessment is provided with particular focus on each of the main urban settlements identified in HBC's

Settlement Hierarchy Review and form the initial basis for the following Stage 2 Outline Settlement Transport Studies.

- 3) **Identify and provide analysis of origin-destination movements within the district, before identifying where key constraints of Hertsmere's transport network exist.** This provides an opportunity to draw out an assessment of the network's capacity to accommodate development, both residential and economic, and consider the potential future impact of the COVID-19 pandemic and the changes to travel patterns and behaviours it has introduced.
- 4) This also enables the potential assessment for future growth to address pre-existing issues or to enhance the offer to the existing community and allow a 'working with the grain' approach. This seeks to ensure growth provides benefits through of the transport network, rather than creating wholly new movement patterns that are challenging to accommodate sustainably.
- 5) **Propose a series of pre-feasibility-level detailed transport infrastructure schemes developed from the insights drawn upon from the desktop-based review.** These schemes provide focus on how Hertsmere's transport network responds to the opportunities and challenges of the planned growth over the Local Plan period (2021 – 2036/7) and present mitigation options where existing highway issues could impact delivery of growth. Schemes expect to include:
  - a) Multi-modal opportunities along existing key corridors
  - b) Development of sustainable transport corridors including, but not limited to, options for inter-urban cycle routes; enhanced bus services; enhancements to rail; potential for shared mobility schemes
- 6) Following indication of location, constraints, deliverability and a high-level cost, a Red Amber Green (RAG) analysis of the interventions provides an assessment of each dependent on a series of metrics. This ultimately identifies those likely to have the greatest positive impacts and deliver perceived sustainable benefits.

## Data Sources

- 2.4 A summary of the sources of data both readily available and requiring collation identified by ITP are shown in Table 2-1. All of which are useful to indicate the existing transport situation, travel patterns and the constraints and opportunities growth in Hertsmere may bring about. A wide range of data also provides an assessment of the local movement patterns and trends, including the annual Traffic & Transport Data Report produced by Hertfordshire County Council (available online).

Table 2-1: Summary of key data sources

| Data                         | Description                                                                                                                                                                           | Source                                                          |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Demographics                 | Population / Density / Social and Economic Factors                                                                                                                                    | Census 2011 & 2022, National/Hertfordshire County Travel Survey |
| Public transport networks    | Existing infrastructure to inform the transport baseline / travel patterns                                                                                                            | Datacutter, ORR                                                 |
| Trafficmaster                | Speed and journey time data – congested links within the borough                                                                                                                      | Hertfordshire County Council                                    |
| Origin-destination movements | Current road network capacity and traffic conditions on key routes.<br>Origin-destination movements – key travel to work movements – indicating key travel corridors within Hertsmere | Analysis of previously obtained v4 COMET outputs                |
| Key destinations             | Healthcare, Education and Employment sites, including business parks and town centres.                                                                                                | Hertsmere Borough Council                                       |
| Potential growth allocations | Housing Allocations from the emerging Local Plan – spatial visualisation of allocated growth.                                                                                         | Hertsmere Borough Council                                       |

## 3. Context

### Policy Review

- 3.1 This review draws upon the visions and objectives presented in existing and future policy documents for Hertsmere and the wider Hertfordshire area. These documents shape development growth within the Borough and as such is vital to reflect upon the aspirations these set out.

### National

#### *National Planning Policy Framework*

- 3.2 The National Planning Policy Framework (NPPF) sets out the government's planning requirements and regulations for England and is the basis for which Local Plans and Strategies are produced upon.
- 3.3 The NPPF recognises transport policies have an important role to play in facilitating sustainable development and places emphasis on developments being encouraged in areas which are or can be served by high quality passenger transport and walking and cycling links. It further states strategic policy should make sufficient provision for infrastructure and transport, with transport issues to be considered from the earliest stages of development planning and plan-making.
- 3.4 Para. 112a advises that development should prioritise pedestrian and cycle movements, both within the scheme and with neighbouring areas; and secondly, should facilitate access to high quality public transport.

### Regional

#### *Hertfordshire Local Transport Plan 2018-2031*

- 3.5 Hertfordshire's Local Transport Plan 4, adopted in 2018, recognises the issues arising from excessive car use and the consequences should car dependence rise in line with expected population growth within the county. Policies and objectives set out within the LTP4 ensure growth considers the opportunities to reduce travel demand with the aspiration 'to tip the balance in favour of non-car modes and to make journeys and their impact safer and healthier'.

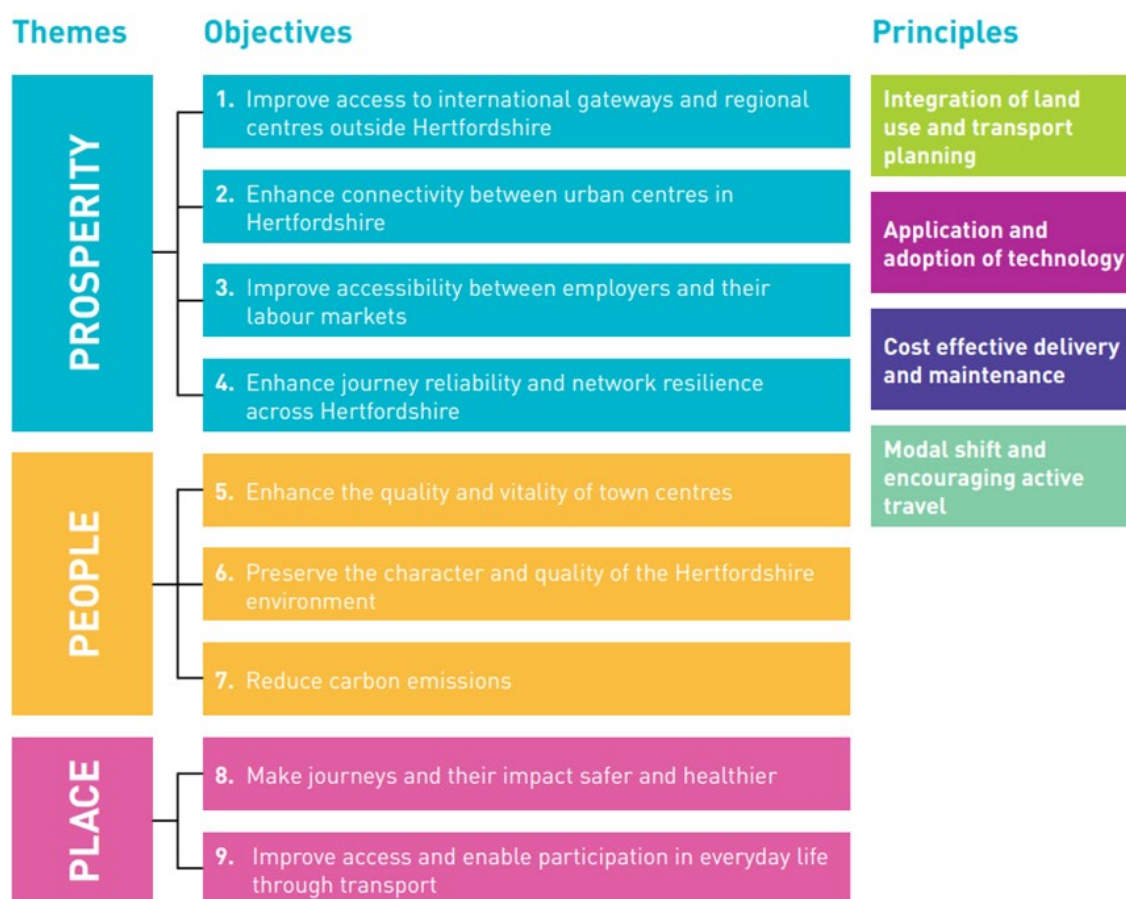
3.6 It further acknowledges that a move away from focused car-based investment and capacity enhancement is required and increasing road network capacity should not be the default option. However, the LTP4 goes on to state that a blended strategic approach combining improvements in walking, cycling, passenger transport and highways provision is seen as optimum.

3.7 Themes of People, Place and Prosperity guide the following LTP4 vision:

*'We want Hertfordshire to continue to be a county where people have the opportunity to live healthy, fulfilling lives in thriving, prosperous communities'*

These themes in turn relate to stated objectives and principles, to all support the above vision, with their relationship visualised in Figure 3-1.

Figure 3-1: LTP4 Themes, Objectives and Principles



Source: Hertfordshire LTP4

- 3.8 The Transport User Hierarchy supports ‘the creation of built environments that encourage greater and safer use of sustainable transport modes’ and should be applied to all schemes and transport strategies. The adopted hierarchy (ordered by priority consideration) is:
- 1) Opportunities to reduce travel demand and the need to travel
  - 2) Vulnerable road user needs (such as pedestrians and cyclists)
  - 3) Passenger transport user needs
  - 4) Powered two-wheeler (mopeds and motorbikes) user needs
  - 5) Other motor vehicle user needs
- 3.9 Whilst the hierarchy seeks to increase the attractiveness of alternative modes of transport, as previously noted the LTP4 recognises travel by car is still required for some journeys.
- 3.10 The LTP4 is further guided by a variety of specific transport planning strategies to aid in the delivery of the overarching priorities, summarised in Table 3-1.

**Table 3-1: LTP4 supporting transport strategies**

| <b>LTP4 Document</b>                                                         | <b>Description</b>                                                                                                                                                                                    | <b>Published</b>                                 |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>Accessibility Strategy</b>                                                | Accessibility assessment of key services and facilities within Hertfordshire for residents of the county.                                                                                             | July 2019                                        |
| <b>Active Travel Strategy</b>                                                | To encourage cycling and walking trips, particularly for shorter journeys and as part of longer journeys.                                                                                             | Revised strategy under development               |
| <b>Growth and Transport Plans</b>                                            | Detailed approach to deliver overarching LTP4 policies and objectives, focussing on more localised areas to identify possible interventions to current issues seen on the county’s transport network. | June 2019 (SW Herts) / July 2022 (South Central) |
| <b>Intalink Bus Strategy and Enhanced Partnership Scheme and Plan (2020)</b> | Provides more detailed plans and proposals to both improve existing bus travel and grow the local bus network for the future.                                                                         | February 2020                                    |

|                                             |                                                                                                                                                                                            |               |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Rail Strategy</b>                        | Ensures the railway in Hertfordshire can support economic growth and development and sets out HCC's aspirations for the development of the rail network.                                   | December 2020 |
| <b>Roads in Hertfordshire</b>               | Hertfordshire's Highway Design Guide incorporates a legal framework for which developments must design improvements to the highway network, underpinned by a philosophy of sustainability. | 2011          |
| <b>Sustainable Modes of Travel Strategy</b> | A focus on sustainable travel opportunities amongst children and young people to travel to, from and in between educational establishments.                                                | August 2021   |

- 3.11 Whilst not formally included within the suite of LTP4 supporting strategies, **Local Cycling and Walking Infrastructure Plans** should have a strong link with strategic planning documents to ensure consideration is given to cycling and walking, and the requirements for these road users are embedded in transport schemes. These have more recently been developed and promoted across Hertfordshire, including the Watford Borough LCWIP, adopted in January 2022.

### *South West Hertfordshire Joint Strategic Plan*

- 3.12 Hertsmere Borough Council, along with Dacorum Borough Council, St Albans City and District Council, Three Rivers District Council and Watford Borough Council are working together to consider the challenges of growth in the wider South West Hertfordshire area and how these can be addressed in the longer term (up to 2050). The plan should ultimately provide stronger co-ordination of the funding and delivery of essential infrastructure alongside new homes and jobs across the five authorities.

### *Hertfordshire Local Enterprise Partnership - Strategic Economic Plan*

- 3.13 The Hertfordshire Local Enterprise Partnership (LEP) is responsible for working with local businesses and partners to improve the county's business environment through identifying constraints and solutions for economic growth in the region. The [Hertfordshire Growth Deal](#) identified three growth areas around the main transport corridors of the A1(M), M1/M25 and M11/A10. The [Strategic Economic Plan \(2017\)](#) sets out the proposals for funding via the Growth Deals Single Local Growth Fund that facilitates growth around these corridors.

## Local

### *Hertsmere Emerging Local Plan*

- 3.14 The current Hertsmere Local Plan was adopted in January 2013 to help guide development in the Borough over the period 2012 – 2027. This was set to be superseded by the emerging Local Plan which aims to guide sustainable growth to 2038 and beyond. Its vision for Hertsmere over the next 15 years is:
- ‘Delivering a healthy, sustainable, connected, high quality and economically viable environment which meets the needs of all the borough’s communities, to 2038 and beyond’*
- 3.15 The emerging Local Plan is set to continue the focus on sustainable change, growth, and development to support Hertsmere’s environment, economy, and community through a series of key themes and objectives aligned with HCC’s LTP4.
- 3.16 **Policy SG1: Creating Sustainable Development** ensures development is holistically sustainable, with draft allocations guided by the settlement hierarchy. The spatial positioning and prioritisation of allocated development sites on urban brownfield sites aids in the promotion and facilitation of safe, affordable, and efficient sustainable travel to improve accessibility of the borough’s key facilities. It is however, anticipated ‘New Sustainable Neighbourhoods and Neighbourhood Extensions’ will account for a significant proportion of growth in the borough – providing attractive neighbourhoods, well-connected by sustainable modes of transport.
- 3.17 Growth is to be further supported by a collective group of sustainable travel policies to set out the path towards achieving the boroughs’ ambition to provide residents with a **real choice for sustainable travel**. A cohesive approach to addressing the way Hertsmere residents will travel in future allows these objectives to re-balance the transport system away from the dominating private car and, encouraging the adoption of more sustainable behaviours such as cycling and walking. Not only does allow development to enable people of all ages to choose healthier behaviours and live more healthy, active, and fulfilling lifestyles through travel, it contributes to priorities set out in Hertsmere’s Health and Wellbeing Strategy (2018-2022).
- 3.18 Although secondary to measures targeted towards reducing travel demand and providing car free alternatives, **shared mobility initiatives and Electric Vehicles (EVs)** are encouraged through Policies ST4 and ST5. Necessary implementation of new technologies further supports the provision of ‘real’ travel options and supports

Hertsmere's contribution to achieving the UK's net-zero targets as set out in DfT's Decarbonisation Strategy.

- 3.19 However, it is reiterated that it has been agreed to formally set aside the current Regulation 18 draft Local Plan so that the additional work required to inform the Local Plan spatial strategy can be carried out, and therefore seeks to broadly inform this Sustainable Transport Appraisal only. Studies comprising the evidence base to support this emerging Local Plan are referenced in Table 3-2

**Table 3-2: Draft Local Plan supporting studies**

| Document                                                            | Description                                                                                                                                                                                                                                                                                                       | Policy                                                |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>South West Hertfordshire Local Housing Needs Assessment 2020</b> | Identifies the future housing need across Hertfordshire and the specific requirements of certain demographic groups.                                                                                                                                                                                              | Policy H1 – The supply of New Homes                   |
| <b>High Level Transport Assessment</b>                              | Assesses identified housing and employment strategic growth locations in relation to the transport network and policies set out within Hertfordshire's LTP4.                                                                                                                                                      | -                                                     |
| <b>Infrastructure Delivery Plan</b>                                 | Identifies the timely provision of necessary infrastructure to support the spatial strategy and sustainable development within Hertsmere.                                                                                                                                                                         | SG4 – Infrastructure Delivery and Monitoring Strategy |
| <b>COMET v5 2014 Base Year Model enhancement in 2019</b>            | Two 2036 forecast scenarios were developed to help inform the emerging Local Plan – Of which, one scenario included the Local Plan aspirations (all employment and dwelling growth, regardless of certainty) of the 10 Hertfordshire districts, as well as the growth aspirations in selected neighbouring areas. | -                                                     |

- 3.20 HBCs [Draft Sustainable Transport and Parking Standards SPD](#) acts as draft guidance for developers to set an appropriate level of off-street parking and cycle parking provision at new developments within Hertsmere over the new plan period. HBC

recognises the need to *“achieve a balance between the potentially conflicting demands created by the demand for sufficient parking space within our communities”*

- 3.21 The SPD reflects updates in National Policy, changing priorities in relation to carbon emissions and Hertsmere’s declared climate emergency in 2019. It therefore supports the above emerging local plan policies and seeks to promote innovative and sustainable modes of travel over the private car, focusing on Electric Vehicle parking, Car Clubs and Bike Schemes.

### *Neighbourhood Plans*

- 3.22 Neighbourhood planning supports communities to shape the future of the places where they live and work. Radlett and Shenley have both adopted Neighbourhood Plans, allowing these communities to set localised visions and policies to guide development in their neighbourhood. Elstree and Borehamwood Town Council intend to prepare a Neighbourhood Plan for the entirety of its parish. HBC agreed the designation of a neighbourhood area for such purposes in July 2022.
- 3.23 Neighbourhood Plan policies, where they do not conflict with strategic or non-strategic policies in the emerging Local Plan, will continue to apply and those set out are currently aligned with Hertsmere’s 2012 – 2027 Local Plan.

## Transport Vision Summary

- 3.24 Based on the review of existing and emerging policy, and in conjunction with discussions with officers from Hertsmere Borough Council and Hertfordshire County Council, the following provides a summary of how ITP interpret the overall vision for the role and development of transport in Hertsmere going forward.
- 3.25 Current adopted transport policy and planning guidance is geared towards creating **more sustainable travel patterns** across the borough and ultimately nationwide. Planning for sustainable forms of mobility starts by **fully considering scope for walking, cycling and public transport trips**.
- 3.26 The LTP4 acknowledges improvement packages that focus solely on physical changes are likely to be ineffective in achieving the aspired modal shift. Following experience from previous Local Transport Plans, the LTP4 notes mechanisms to **manage demand** and **encourage behavioural change** are also required to effectively reduce private car use.

- 3.27 **Transport is the largest contributor to UK domestic greenhouse gas emissions** (accounting for 27% in 2019<sup>1</sup>), and without substantial, sustained policy intervention, direct transport carbon emissions could double by 2050. **The sector therefore needs to provide a significant contribution to reducing air pollutants** such as nitrous oxides, particulates and carbon dioxide.
- 3.28 Hertsmere's emerging Local Plan aligns with **environmental aspirations** set out in the LTP4. Declaring a climate emergency in 2019, Hertsmere's priority is to bring forward developments that mitigate against local impacts of climate change by being **net zero carbon** throughout their lifespan. **Sustainable transport** should be the first approach (aligned with LTP4's transport hierarchy) to provide the connectivity to surrounding areas and builds upon the previous Local Plan to **promote alternatives to the car** (Policy CS26), whilst recognising that there will always remain journeys that cannot be made by alternative modes.
- 3.29 **New technologies** and DfT national policy help support a sustainable approach to car use where these other alternatives are not appropriate for particular user groups and journeys. The ban on the sale of new petrol and diesel cars from 2030, and the associated **increases in the EV uptake** could ultimately result in a **reduction of (direct) emissions from traffic**.
- 3.30 The development and location of proposed intervention will partly be informed by where local trips made by car unnecessarily dominate, and therefore where greatest potential for modal shift may occur. They seek to increase the convenience of walking, cycling and public transport use relative to the private vehicle for shorter journeys, and promote greater impacts towards clean air, health and wellbeing and greenhouse gasses.
- 3.31 This understanding of the strategic context for transport intervention alongside growth will frame the approach to scheme development, ensuring that proposals can help to achieve the wider ambitions, not least in helping to deliver the critical net zero outcomes aspired to by Hertsmere and Hertfordshire.

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<sup>1</sup> [Decarbonising Transport; A Better Greener Britain](#), Department for Transport, 2021

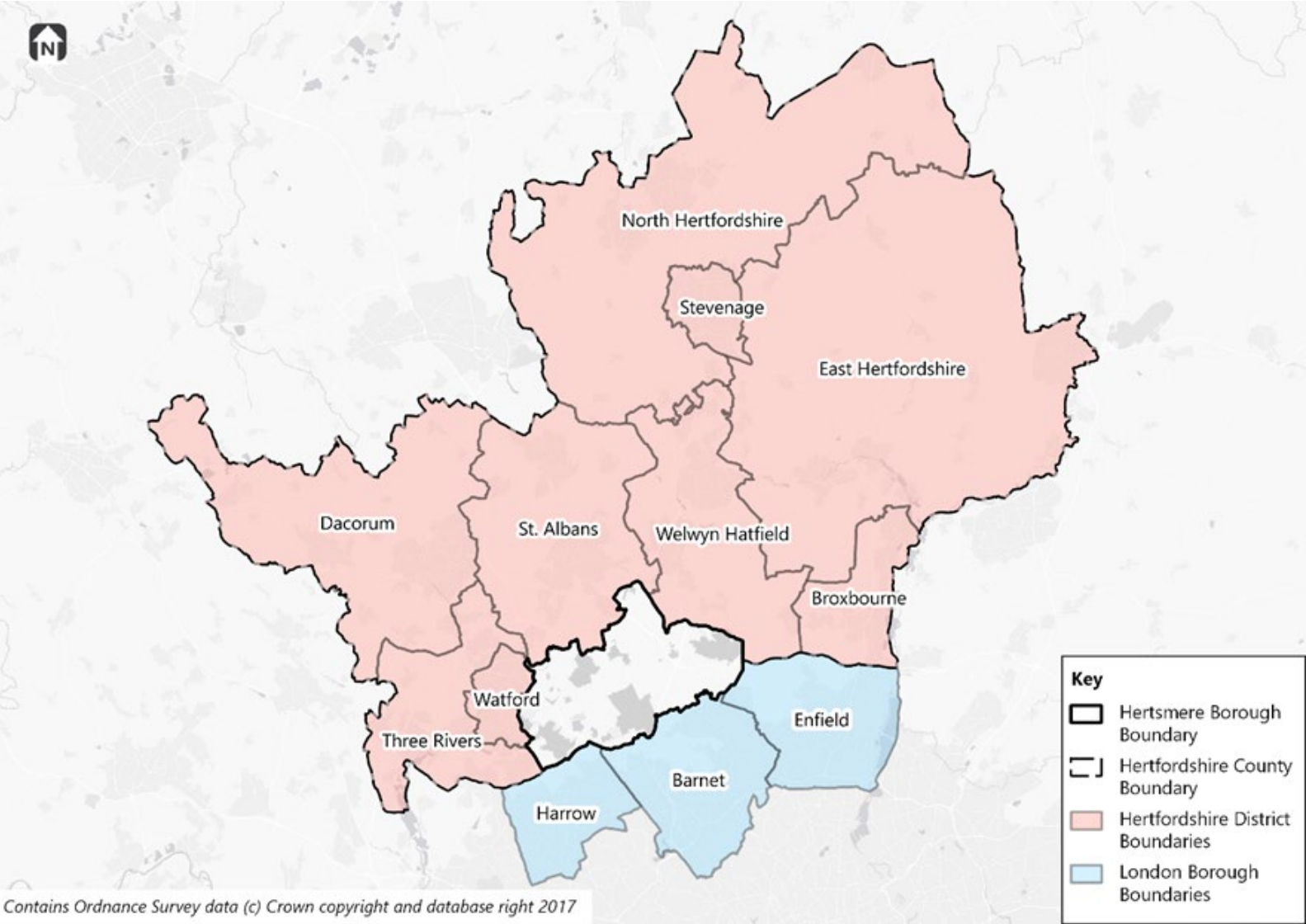
## 4. Transport Baseline

### Existing Transport Characteristics

#### Geographic Context

- 4.1 Hertsmere is one of ten boroughs with Hertfordshire and is the southernmost borough of the county. It covers approximately 100 square kilometres of Hertfordshire's 1,600 square kilometre area. It borders the Greater London Boroughs of Harrow, Barnet and Enfield immediately to the south and, despite this proximity to London, Hertsmere is largely rural with approximately 80% designated as green belt. The borough is bounded on its remaining sides by St Albans, Three Rivers, Watford and Welwyn Hatfield, as per Figure 4-1.

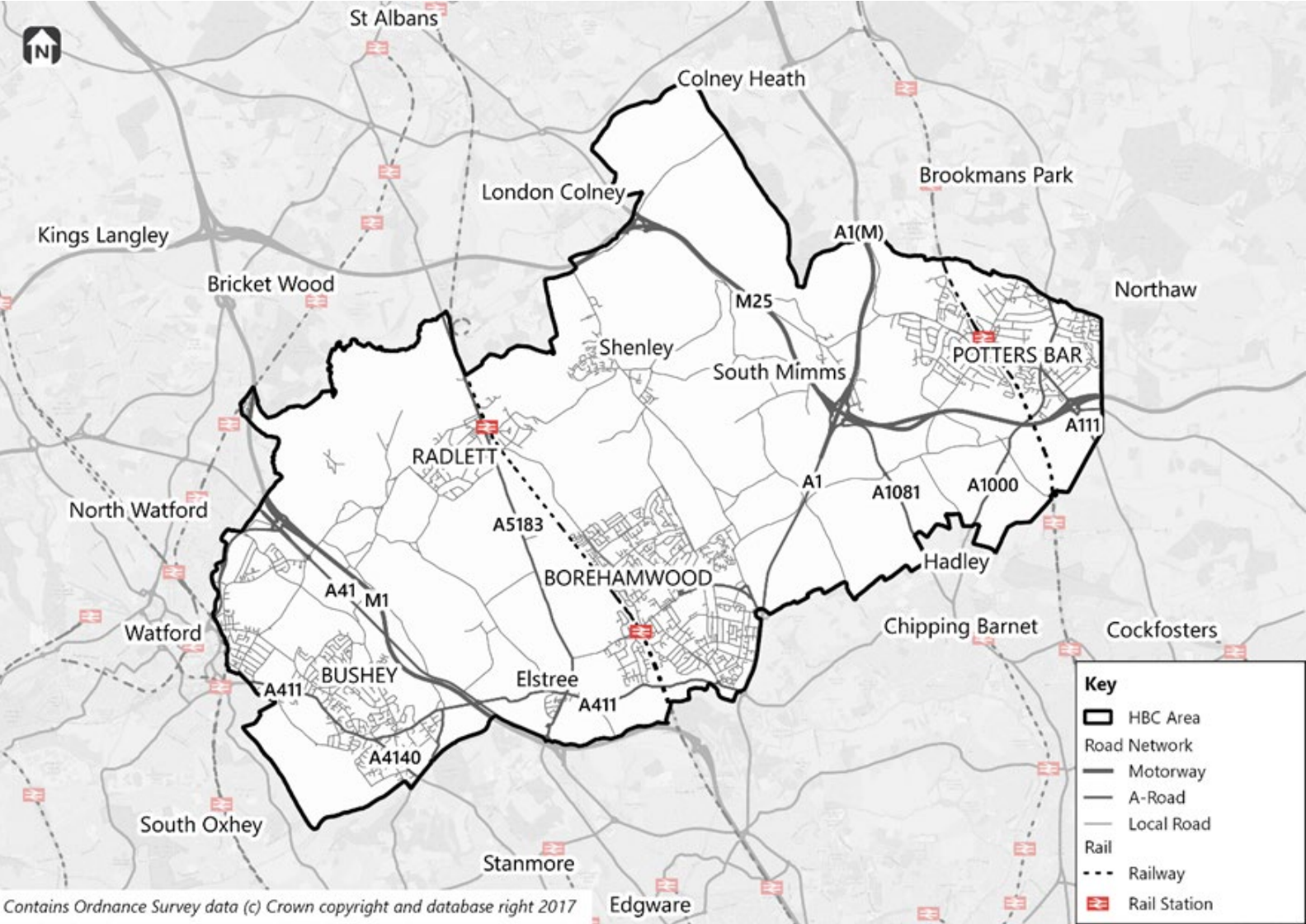
Figure 4-1: Hertsmere's geographic context



## Road and Rail

- 4.2 The M25, M1 and A1(M) run through Hertsmere with north-south alignments to provide the borough with strategic connections to London, North Hertfordshire, and the Midlands. This network is supported by a series of primary and secondary distributors for more localised connectivity.
- 4.3 Three railway stations are in the borough: Elstree & Borehamwood, Potters Bar and Radlett, again all providing north-south connections between London, Hertfordshire and onto destinations further north. Elstree & Borehamwood and Radlett are served by the Midland Main Line, with current services operated by Thameslink between London St Pancras and Bedford, whilst Potters Bar is located on the East Coast Mainline, with services operated by the Thameslink and Great Northern franchises. There are also additional railway stations serving Hertsmere, nonetheless, located outside of the borough. These include Bushey and Watford Junction located in Watford Borough, primarily to serve Bushey residents. Stations of Enfield, Cockfosters, High Barnet and Stanmore situated close to Hertsmere's southern boundary provide residents with access to Transport for London's Underground network. Hertsmere's road and rail networks are visualised in Figure 4-2.

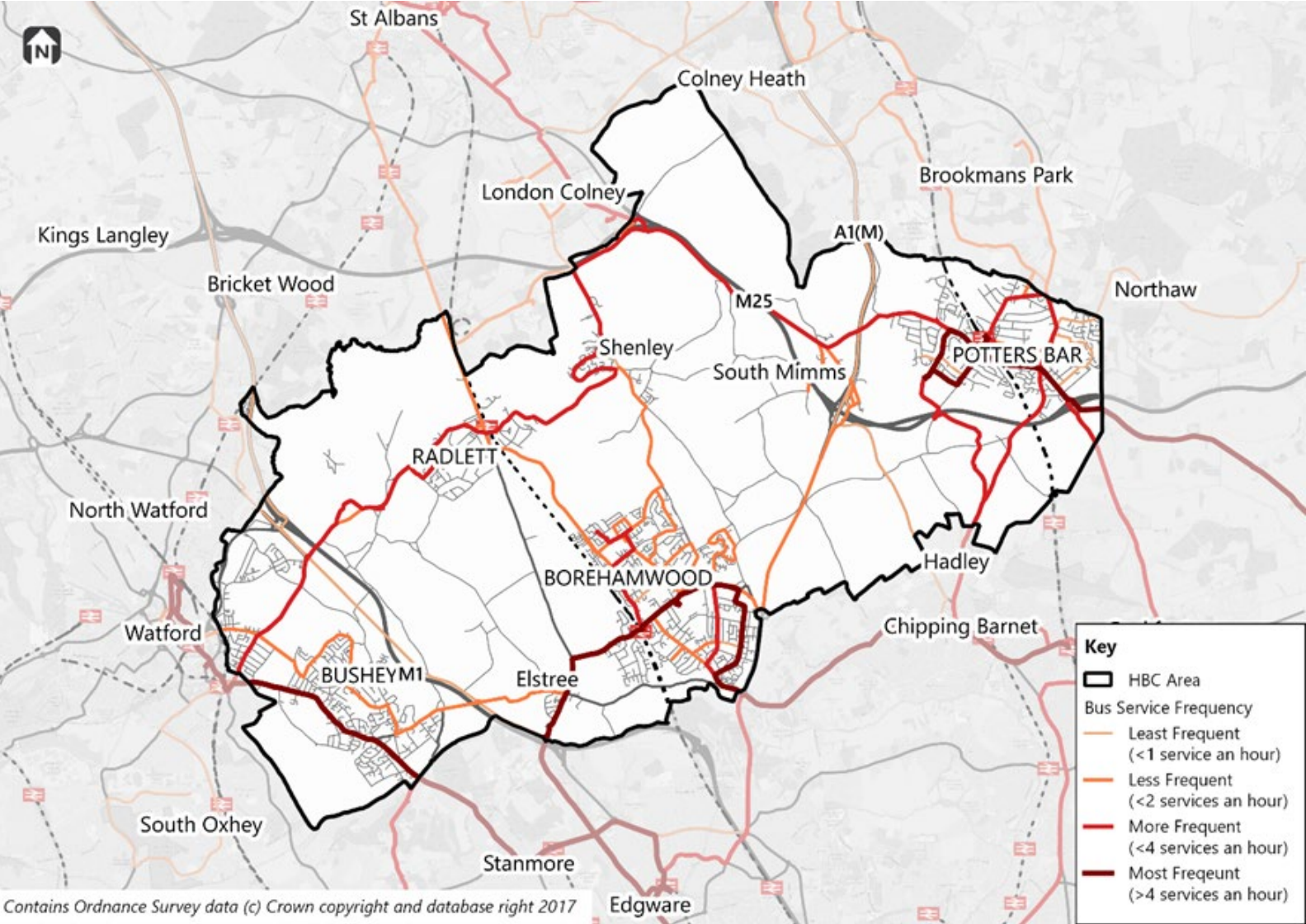
Figure 4-2: Existing road and rail network in Hertsmere



## Bus Services

- 4.4 Hertsmere is served by a network of bus routes, provided by operators including Arriva, London Sovereign, Metroline Travel, Sullivan and Uno. Figure 4-3 indicates the frequency of such bus services within Hertsmere for a typical Wednesday AM peak period as a proxy for the typical weekday service levels.
- 4.5 Higher frequency services – those operating with more than four buses an hour – typically connect southern areas of Hertsmere with neighbouring London boroughs to the south. The most frequent services– those operating at a frequency typically of one every 10-minutes - provide Potters Bar, Elstree and Borehamwood and Bushey with links to Transport for London’s Underground network, including Cockfosters, High Barnet and Stanmore.
- 4.6 Routes to connect elsewhere in Hertfordshire are typically served by services operating between one and four services an hour, with St Albans and Watford well served for connections into Hertsmere with a combination of bus and rail providing direct connections to all four major settlements.

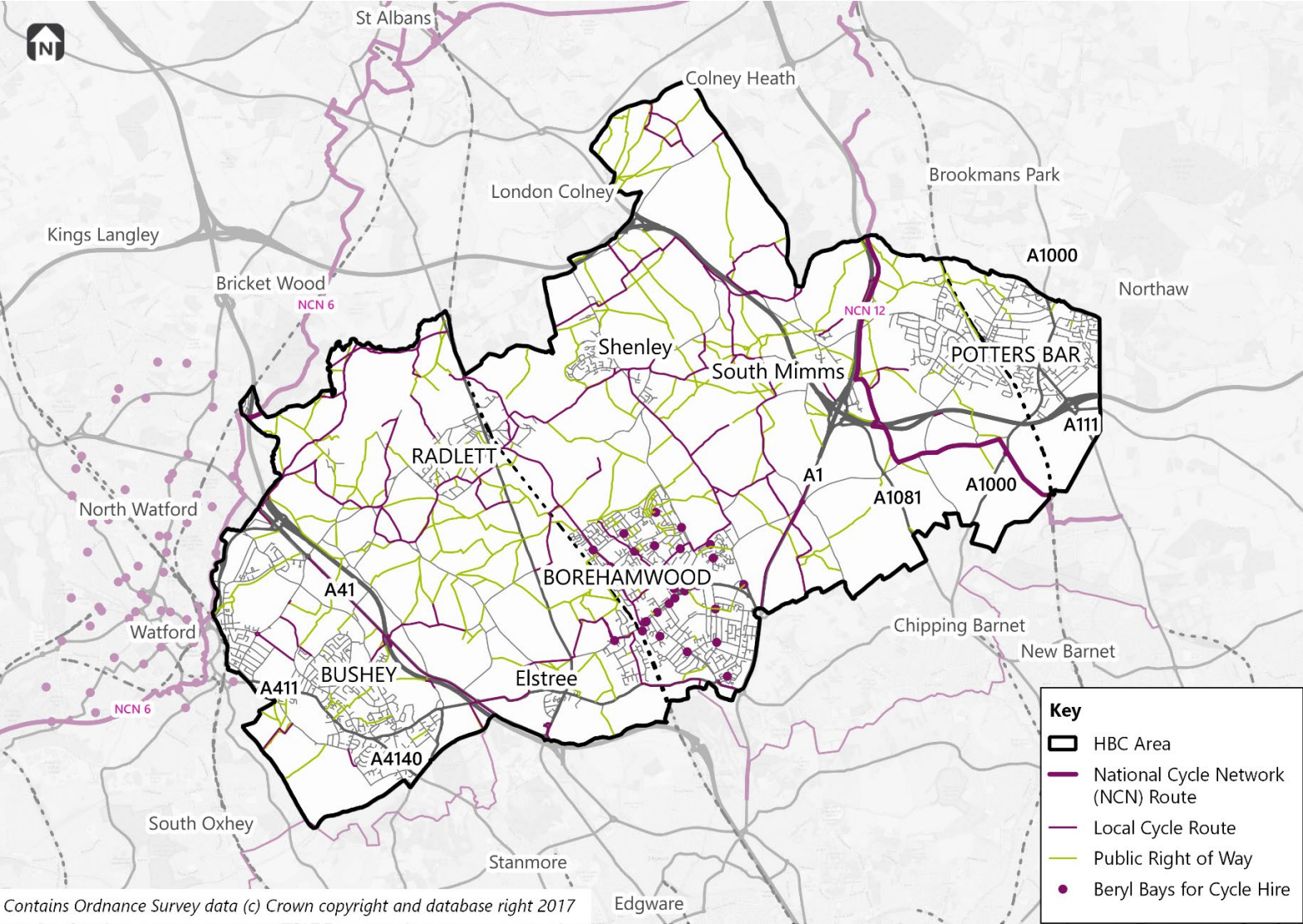
Figure 4-3: Bus service frequencies in Hertsmere, weekday AM peak period



## Active Travel Network

- 4.7 National Cycle Network (NCN) Route 12 runs through the east of the borough, adjacent to Potters Bar, connecting the borough by cycle to Enfield in north London, and Spalding in Lincolnshire (via Stevenage, St Neots and Peterborough). This route is characterised by a mix of on- and off-road provision. NCN Route 6 runs along the western borough boundary through Watford, to connect London with the East Midlands and to as far as the Lake District.
- 4.8 Hertsmere's local cycle network complements the NCN, including Shenley Ridge and Radlett Loops (Figure 4-4).
- 4.9 The London Outer Orbital Path (London LOOP) is a 150-mile, 24 section circular walking route encompassing Greater London, with some northern sections crossing into Hertsmere. Sections 15, 16 and 17 connect Hatch End to Enfield Lock, via Elstree, Barnet, and Cockfosters to provide residents with access to this leisure route.

Figure 4-4: Cycle network and Public Rights of Way



## Socio-Economic Context

- 4.10 Hertsmere has seen a population increase over the last 20 years; a trend set to continue for the next 20 and is the sixth most populated borough within Hertfordshire comprising of 9% of the county's population<sup>2</sup>. Hertsmere also has relatively low levels of unemployment, with further new jobs projected as part of planned growth within the Borough.
- 4.11 There are distinct areas across Hertsmere with opposing levels of deprivation creating significant differences in life expectancies (Figure 4-5). Borehamwood Cowley Hill is the most deprived Lower Super Output Area (LSOA) within Hertfordshire and in the top 10% of the most deprived nationally. On the other hand, Bushey Heath is in the top 1% of least deprived nationally.
- 4.12 Obesity acts as a general indicator of inactivity and an unhealthy lifestyle, and one that is predicted to see an increase in prevalence amongst the UK population<sup>3</sup>. There is a reported link between high levels of deprivation and obesity. The challenges Hertsmere currently faces with regards to poor health and high deprivation areas could be addressed through measures which promote an increase in everyday activity, including walking and cycling.
- 4.13 Vehicle ownership can also provide an indicator of socio-economic status in an area as well as the personal perception of the quality of other transport modes. Whilst only 17% of Hertsmere residents don't have access to a car compared to 26% nationally<sup>4</sup> (indicating a higher level of car ownership and reliance on such mode within Hertsmere), there is an essential need for non-car-based transport options for almost one in five of Hertsmere's households.

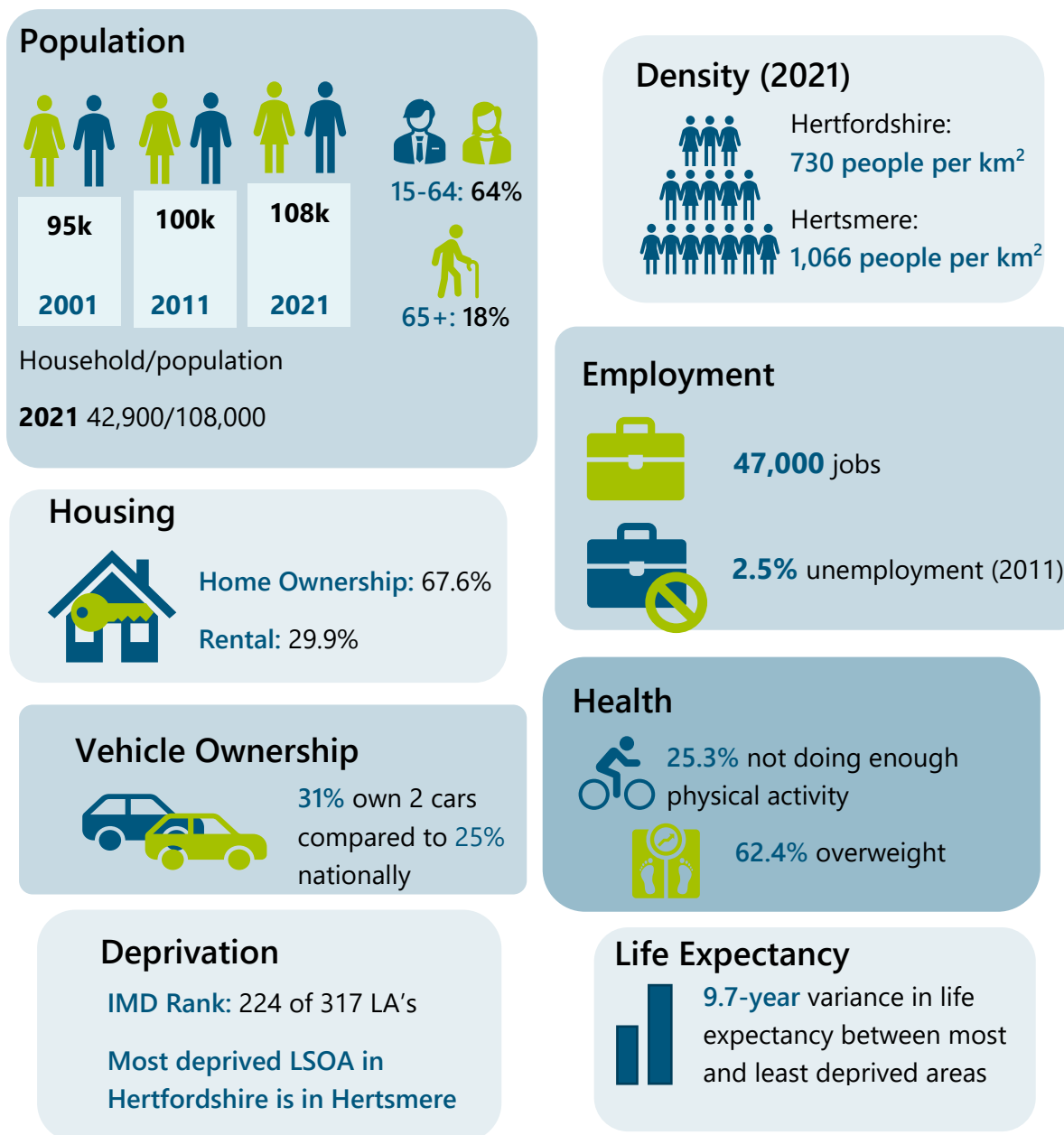
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<sup>2</sup>Census 2021 Population, Office of National Statistics

<sup>3</sup> [Health and wellbeing strategy 2018-22](#)

<sup>4</sup> Census 2011 (KS404EW). Table KS402EW

Figure 4-5: Hertsmere's Socio-Economic indicators

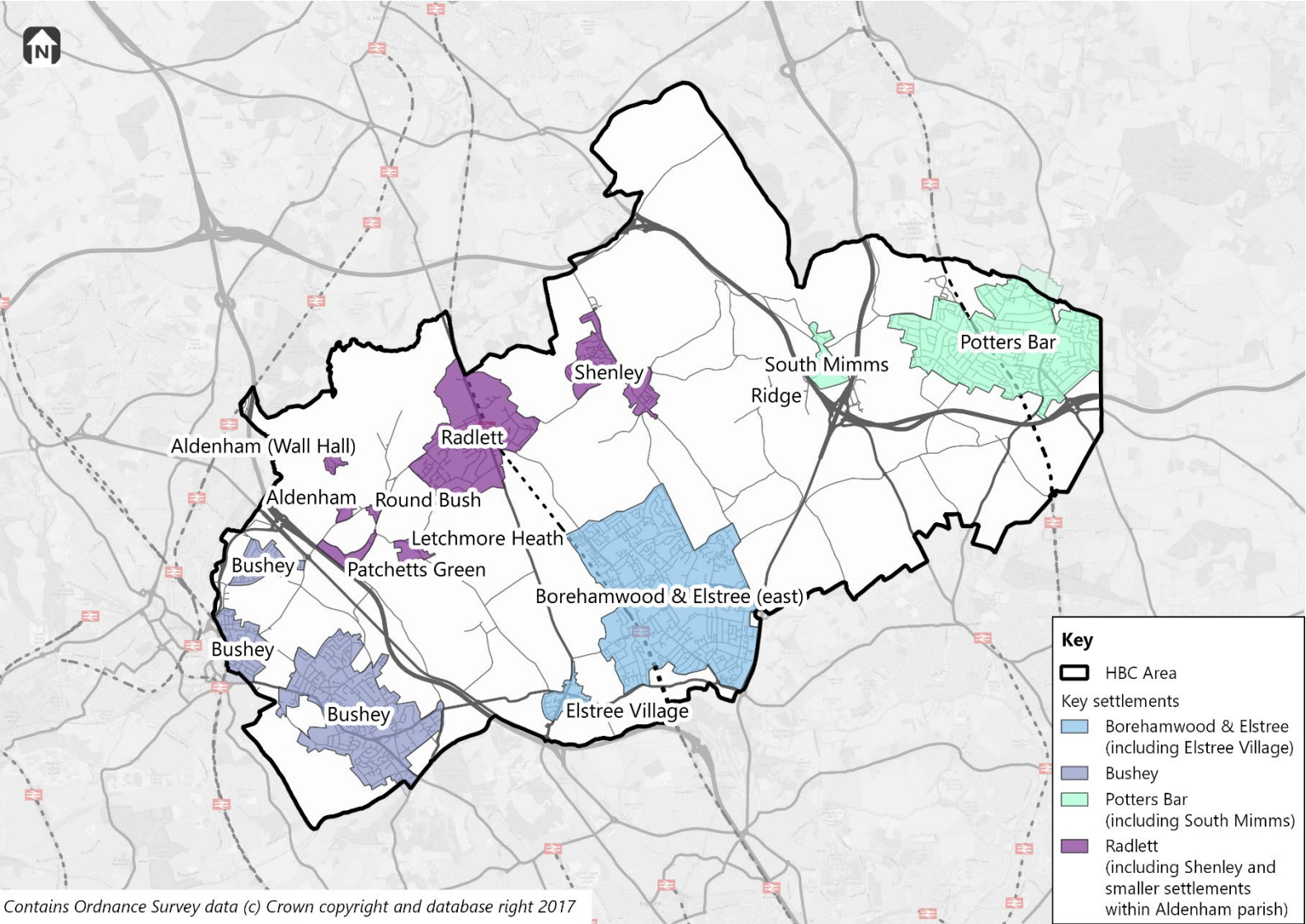


## Key Settlements

4.14 The primary distinct settlements within Hertsmere are all relatively small in comparison to other main towns of Watford, St Albans, and Hemel Hempstead within Hertfordshire. Each has their own individual characteristic, level of connectivity and constraint. These settlements tend to serve as local hubs for smaller villages in the borough and a number of the more rural locations are reliant on these larger settlements. Furthermore, these smaller, more rural locations tend to be mainly car reliant and not very accessible by other modes of transport. The main settlements are identified below along with the smaller settlements they serve (Figure 4-6).

- Borehamwood and Elstree (including Elstree Village)
- Bushey
- Radlett (including Shenley and smaller settlements within Aldenham parish)
- Potters Bar (including South Mimms)

Figure 4-6: Settlement boundaries



### *Borehamwood and Elstree*

- 4.15 As the only Tier I settlement within Hertsmere, the largest proportion of the borough's population reside in Borehamwood and Elstree (36,500 within Borehamwood and Elstree and a further 1,700 in Elstree Village<sup>5</sup>). This is considered to be the principle residential and economic centre for Hertsmere<sup>6</sup> and has a reputation for film and television.
- 4.16 Borehamwood is closely situated to Hertsmere's southern boundary, where this adjoins with the boundary of the London Borough of Barnet (Figure 4-1).
- 4.17 The M1 and A1 sandwich the settlement to the west and east respectively and directly connected by:
- A1; a north-south route alongside the eastern edge of the settlement, provides road connectivity between Central London, M25 and South Mimms.
  - The Elstree Way corridor is an east-west route for connectivity through the town centre. The Elstree Way Corridor Area Action Plan (EWCAAP) has guided development and regeneration along this corridor since adoption in 2015 and provides Borehamwood's town centre with a link to the A1 and Elstree Village.
    - A5135 Elstree Way; a connection between the A1, Sky Studios and Elstree Studios of eastern Borehamwood.
    - B5378 Shenley Road; aligns through Borehamwood's town centre, connecting Elstree Studios to the east and Elstree and Borehamwood Railway Station to the west. An Air Quality Management Area (AQMA) exists along part of this route.
    - B5378 Allum Lane; connects Elstree and Borehamwood Railway Station with Watling Street to provide a link between west Borehamwood and Elstree village.
  - A5183 Watling Street; a north-south route to connect Borehamwood and Elstree with Radlett, St Albans and the A414 for onward connections to North Hertfordshire.
  - A411 Barnet Lane; an east-west route directly aligned through Elstree village which continues to the south of Borehamwood and connects the settlement to Barnet in North London.

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<sup>5</sup> Census 2011 Population data, ONS

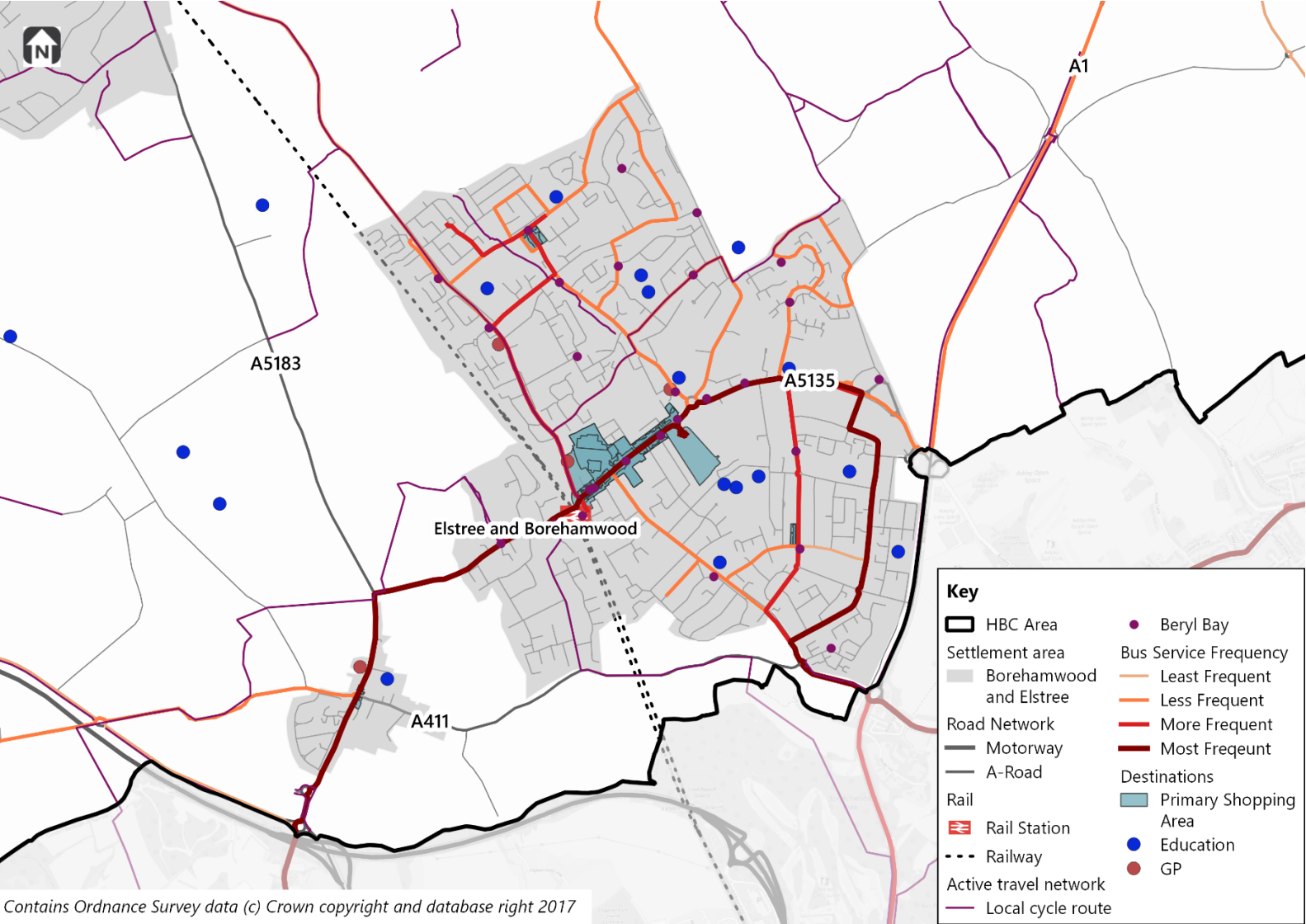
<sup>6</sup> [Settlement Hierarchy and Accessibility Mapping Analysis – Technical Study](#)

- 4.18 The smaller village of Elstree is dominated by a major junction (A411/A5183) in the centre of the village which is designated as an AQMA. This junction provides the village with connections to Borehamwood, Bushey and Radlett whilst also providing a link to the strategic M1, Junction 4.
- 4.19 The A5183 (Elstree Way, Rowley Lane) carries significant levels of traffic, providing access to local and adjoining employment areas and one of the most heavily trafficked routes in Hertfordshire.
- 4.20 Frequent weekday AM peak period bus services provide Borehamwood and Elstree with connections to areas within North London, including New Barnet and Edgware, in addition to more local services to Radlett, Shenley and Potters Bar. However, these local services are less frequent, with no more than two busses an hour within the same period.
- 4.21 Elstree and Borehamwood railway station services the Midland Mainline to provide north south rail links into central London via St. Pancras. There has been a slight overall increase in passenger numbers from 2012 to 2020 (5.9%) at Elstree and Borehamwood rail station and it is the busiest rail station within Hertsmeire. It was also the fourth busiest within Hertfordshire in 2019/2020<sup>7</sup>. Expectedly, the number of rail passengers has fallen since 2020 due to Covid-19 and the associated travel restrictions (a 43% decrease in passenger usage at Elstree and Borehamwood rail station from 19/20 to 21/22). A small network of cycleways exists within Borehamwood, primarily to the north of the main shopping area. An on-carriageway, non-segregated facility provides a cycle link between Elstree and Borehamwood rail station and Radlett, however the network is sparse south of the A5135. Cycle connectivity is also limited west of Borehamwood, particularly across the A5183, close to Hertsmeire Golf Course.
- 4.22 Borehamwood has recently introduced a [cycle hire scheme](#), provided and operated by Beryl. There are currently 25 Beryl Bays within the town, granting access to both traditional and electric bikes. Work is currently being undertaken to look at possibilities for improving the cycle network within Borehamwood.
- 4.23 Both Elstree village and Borehamwood provide residents with access to GP's and primary and secondary education facilities. Elstree Aerodrome is also located to the north-west of the settlement area and Elstree Studios is a key employment destination. Outside of the settlement, Barnet provides residents of Borehamwood and Elstree access to their nearest hospital, Barnet hospital and offers a close connection into London via Barnet underground station on the Transport for London network.

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<sup>7</sup> [ORR Table 1415 - Time series of passenger entries and exits and interchanges by station](#) - National Rail passengers only

Figure 4-7: Borehamwood and Elstree



## *Bushey*

- 4.24 Predominantly residential in nature, Bushey has a population of 27,500<sup>8</sup> and is the second largest town in Hertsmere (Tier II settlement). It is situated towards Hertsmere's westernmost extents and is closely located to the neighbouring borough of Watford and its town centre (Figure 4-8). Three distinct areas comprise the settlement, each with individual characteristics (Bushey Heath, Bushey Village and North Bushey).
- 4.25 Bushey lies to the west of the M1, equidistance between Junctions 4 and 5, and provides the settlement with a north-south connection immediately between London and Hertfordshire. A series of B-class roads support Bushey's primary road network of the A4140, A411, and the A41.
- A4140 London Road, High Street, Sparrows Herne, High Road; a northwest-southeast route from the town centre towards Stanmore in Barnet.
  - A411 Barnet Lane; a southeast-northwest route from the town centre towards Bushey rail station, Watford town centre and Borehamwood. It carries significant levels of traffic and is one of 25 most heavily trafficked routes within Hertfordshire<sup>9</sup>.
- 4.26 Bus operators utilise this road network heavily providing bus connectivity from Bushey to Watford and neighbouring London boroughs in the south. The 142 London Sovereign service operates every 10 minutes in the weekday AM peak, one of the more frequent services within Hertsmere as depicted in Figure 4-3. A less frequent service (two buses an hour) operated by Sullivan provides east-west connectivity from Bushey towards Elstree and Borehamwood.
- 4.27 Bushey's rail station is in the neighbouring borough of Watford and situated on the West Coast Mainline and Transport for London's overground line. Both offer services into London and has seen a rise in passenger numbers of approximately 200% between 2008/9 and 2018/19<sup>10</sup>, representing a significant demand increase over the last 10 years.
- 4.28 The existing cycle network is limited throughout Bushey, with small sections of cycle facility dispersed across the settlement with little connectivity. The A41 Cycle Track, however, provides a more continual shared-use, off-carriageway facility along the A41, east of the settlement.

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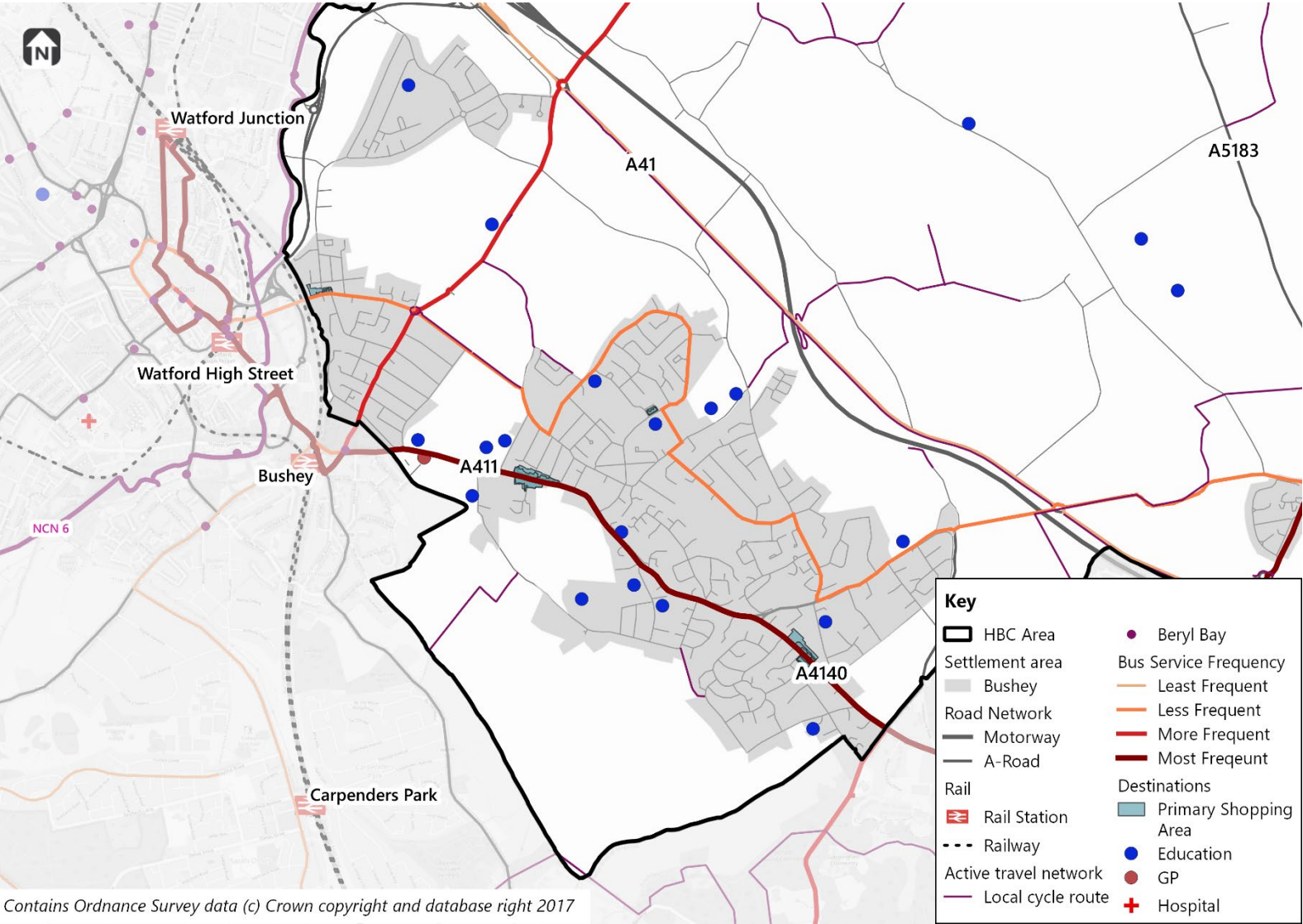
<sup>8</sup> As noted in the [Draft Local Plan, September 2021](#) – based on household number and average household size 2018

<sup>9</sup> Figure 3.2.1, [Traffic and Transport Data Report, 2019](#)

<sup>10</sup> [ORR Table 1415 - Time series of passenger entries and exits and interchanges by station](#) - National Rail passengers only

- 4.29 Watford implements a cycle hire scheme in its Borough, currently operated by Beryl Bikes. 76 Beryl Bays are currently provided, with closest access for Bushey residents at Oxhey Green and the A411/A4008/Aldenham Road junction.
- 4.30 Residents are served with a number of key facilities including GP's and primary and secondary education facilities. However, the closest A&E department is Watford General Hospital, located outside of the borough.

Figure 4-8: Bushey

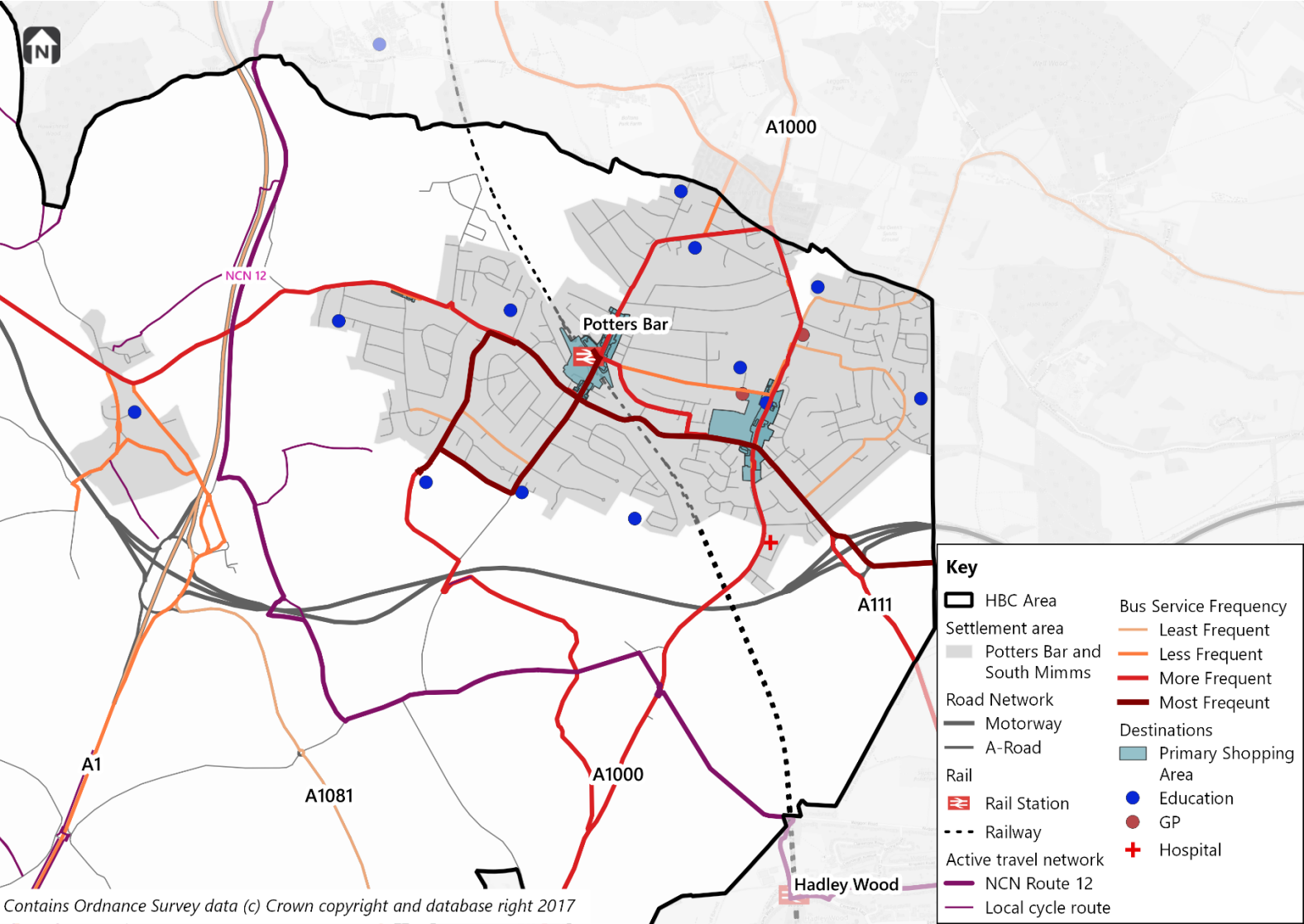


### *Potters Bar and South Mimms*

- 4.31 Potters Bar is situated to the east of Hertsmere and features varying characteristics between local areas. Its population is approximately 23,000 and comprises two distinct shopping areas (Figure 4-9).
- 4.32 The Middle Super Output Area (MSOA) Potters Bar Oakmere is one of the most deprived areas within Hertsmere which, however, also borders some of the least deprived areas in Hertsmere.
- 4.33 Potters Bar relates strongly to the M25 with junction 24 sitting at its southern extent, whilst the A1(M) further separates the town from the remainder of the Borough.
- 4.34 Other key road links from the town include:
- A1000 Barnet Road, High Street, Hatfield Road; a main distributor route to connect Hatfield, Hertfordshire with Barnet,
  - A111 Southgate Road; a north-south route from Potters Bar towards Cockfosters, Southgate and the North Circular (A406) in North London.
- 4.35 There is limited east-west connectivity utilising the strategic road network, which instead is provided by secondary distributors. The B556, B158 and B157 connect Potters Bar to settlements such as South Mimms and Cuffley and towards the A10.
- 4.36 Potters Bar rail station is situated on the East Coast Main Line providing a rail link between London and Peterborough. Rail station usage for 2018-19, indicates a 24% growth in entries and exits since 2008-09, the largest increase of Hertsmere's three railway stations.
- 4.37 High frequency bus services link Potters Bar to the London Borough of Enfield via the A1005. Arriva London typically operates at least four buses an hour in the weekday AM peak period towards Enfield whilst access to the London Underground network (High Barnet and Cockfosters stations) from Potters Bar is provided by bus route 298 to Cockfosters. Potters Bar is limited in its bus services to the west, with infrequent routes towards Borehamwood.
- 4.38 A very limited coverage of cycleways exists within Potters Bar and does not provide a connection to local facilities or nearby settlements. NCN Route 12 aligns to the west of the settlement, but again does not provide local access by cycle to key facilities. There is also a key point of severance for pedestrians and cyclists caused by the B556 (Mutton Lane) and its two key junctions where it meets the A1000 and Darkes Lane.

- 4.39 Potters Bar is served by two distinct shopping areas, with several healthcare and education sites. Potters Bar Community Hospital is the only hospital facility within the borough, but does not offer access to A&E.

Figure 4-9: Potters Bar and South Mimms

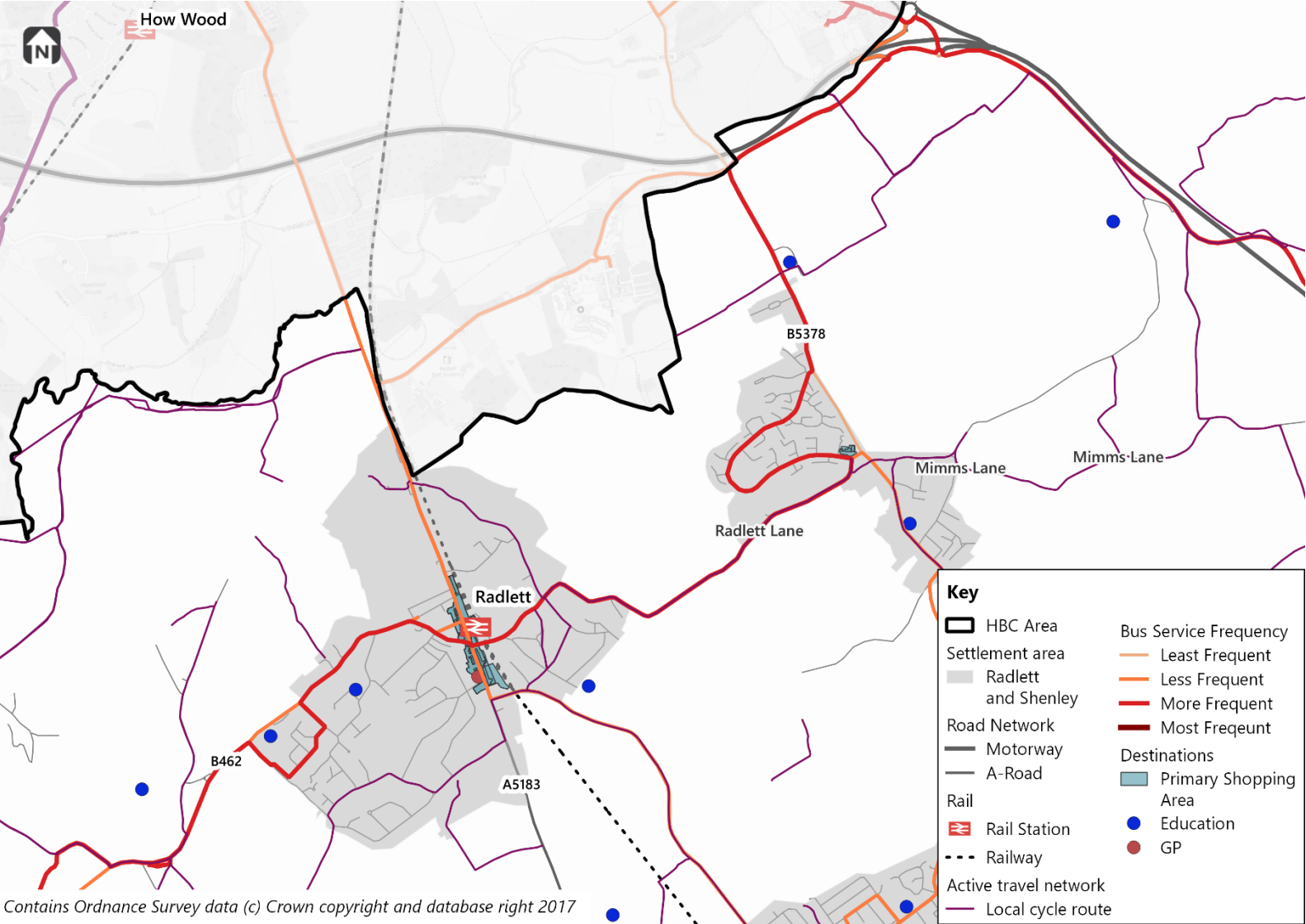


### *Radlett and Shenley*

- 4.40 Radlett is largely residential in nature, with areas of green belt surrounding the settlement. Approximately 8,300 people reside in Radlett, the fourth largest settlement within Hertsmere and classed as a Tier III settlement. Approximately an additional 4,000 Hertsmere residents reside in Shenley, one of the larger key villages within the borough (Figure 4-10). Both settlements lie in close proximity to each other, with key infrastructure links providing sustainable transport options within reasonable journey times across both Shenley and Radlett.
- 4.41 Radlett's road connectivity is provided by one prominent A-road and several B-roads:
- A5183 Watling Street; a north-south route aligned centrally through Radlett, with local connections to Radlett rail station, Elstree and St Albans
  - B462 Radlett Road; an east-west secondary distributor with connections to Bushey and Watford to the west of Radlett.
- 4.42 Shenley is predominantly connected by secondary distributors:
- B5378 Shenley Road; a north-south route, and the only secondary distributor connecting Shenley to Borehamwood in the south and London Colney in the north.
  - Shenley Hill/Radlett Lane directly links Radlett and Shenley
  - Mimms Lane connects Shenley to South Mimms and Ridge to the east, with access to the strategic A1(M).
- 4.43 Further connectivity from Shenley is granted via various narrow unclassified roads, such as Rectory Lane and Woodhall Lane. These characteristically provide circuitous routes to the classified road network.
- 4.44 Bus services provide east-west connections, ultimately linking Watford to St Albans and Hatfield through Hertsmere via Radlett and Shenley on long-distance routes. These services typically operate twice hourly on a weekday morning peak period by Sullivan and Uno.
- 4.45 An on-carriageway, non-segregated route links Radlett and Shenley via Shenley Hill/Radlett Lane, whilst both settlements also offer a continuous route towards the northern extents of Borehamwood. The route along Radlett Lane is a promoted route as part of the *Borehamwood Loop* Leisure Route, rather than a dedicated cycleway. The link along Shenley Ridge is also a promoted leisure route but does not benefit from any segregation or on-carriageway advisory lane and has a 60mph speed limit in places. It is noted the network coverage is poor towards the centres of both Radlett and Shenley, with limited connections to key facilities. These routes do not meet latest

national standards such as LTN 1/20, and the lack of connections to key facilities at settlement destination is a significant barrier to cycling.

Figure 4-10: Radlett and Shenley



## Summary

- 4.46 To assimilate the current condition (poor, average, good) of Hertsmere's transport network and level of connectivity per settlement a Red, Amber, Green (RAG) summary is shown in Table 4-1. This is based on the desktop assessment undertaken, with conclusions drawn from the information presented in Section 4. It is noted detailed site-based investigations of each settlement have not been carried out.

Table 4-1: Summary of Hertsmere's transport network in key settlements<sup>11</sup>

|         | Borehamwood and Elstree | Bushey  | Potters Bar and South Mimms | Radlett and Shenley |
|---------|-------------------------|---------|-----------------------------|---------------------|
| Walking | Good                    | Average | Poor                        | Average             |
| Cycling | Average                 | Average | Poor                        | Poor                |
| Bus     | Average                 | Good    | Good                        | Poor                |
| Rail    | Average                 | Poor    | Average                     | Average             |
| Highway | Average                 | Average | Good                        | Poor                |

## Current Movement Patterns

- 4.47 Movement and accessibility trends, including journey mode share and trip purpose, of Hertsmere residents have been understood through a range of data sources. In addition to those listed in Table 2-1, the Hertfordshire County Travel Survey (HCTS), 2018 provides detailed travel pattern information on journeys made within the county and, whilst unable to provide a direct comparison to Census 2011 data, is a more recent snapshot of travel patterns prior to COVID-19.

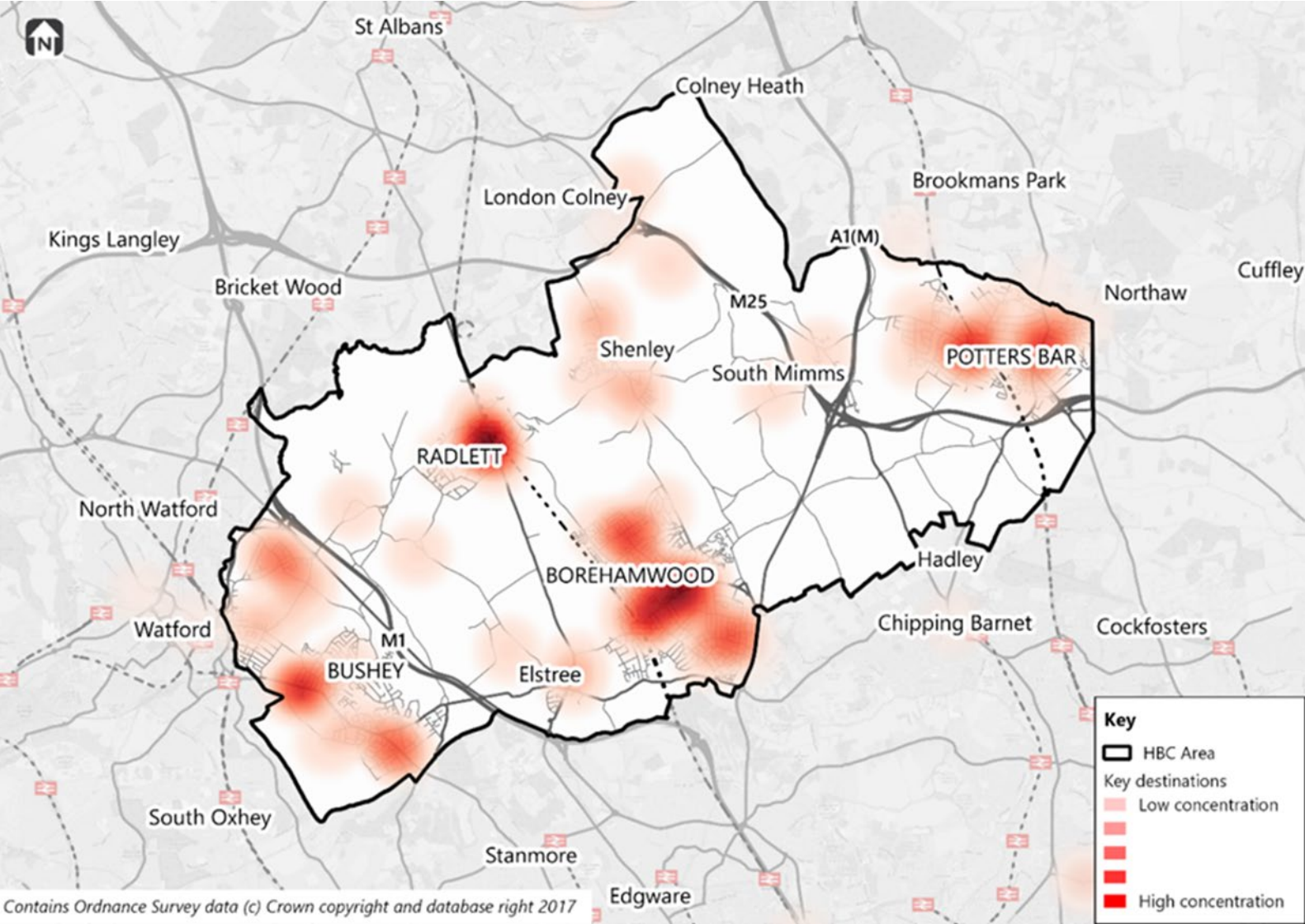
## Key Destinations

- 4.48 Key destinations providing a purpose for travel include primary, secondary, and further education sites, GP's and hospitals, community facilities such as libraries and

<sup>11</sup> An assessment regarding highway matters is predominantly driven by the perceived level of connectivity each settlement has due to its highway network and the destinations it provides links to, rather than solely relating to the level of traffic and congestion experienced. The assessment of walking and cycling modes across settlements is driven by the desktop research presented and no in-person auditing, healthy streets assessments, or stakeholder engagement exercises have been undertaken. It is noted that sections of Bushey's walking and cycling network have been assessed through the LCWIP for Watford Borough.

community centres and primary shopping areas. The concentration of such facilities within Hertsmere is visualised in Figure 4-11 indicating a clear correlation between the size and categorised tier of settlement and level of facility.

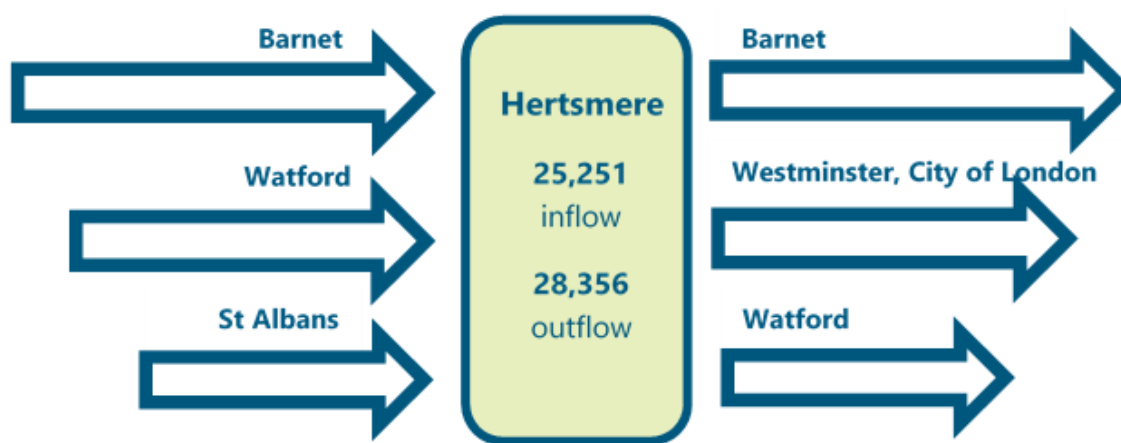
Figure 4-11: Key destination heatmap – Hertsmere



## Place of Work

- 4.49 Based on 2011 Census data, residents of Hertsmere were least likely to work within their home district (23.6%) when compared to other Hertfordshire districts<sup>12</sup> and 84.5% of journeys to work are between 10 and 20 miles, likely reflecting the high percentage of commuters traveling into Greater London by rail. There is a net outflow of commuters from Hertsmere with highest movements to and from Barnet (Figure 4-12).

Figure 4-12: Census 2011 top three origin and destinations for commuters



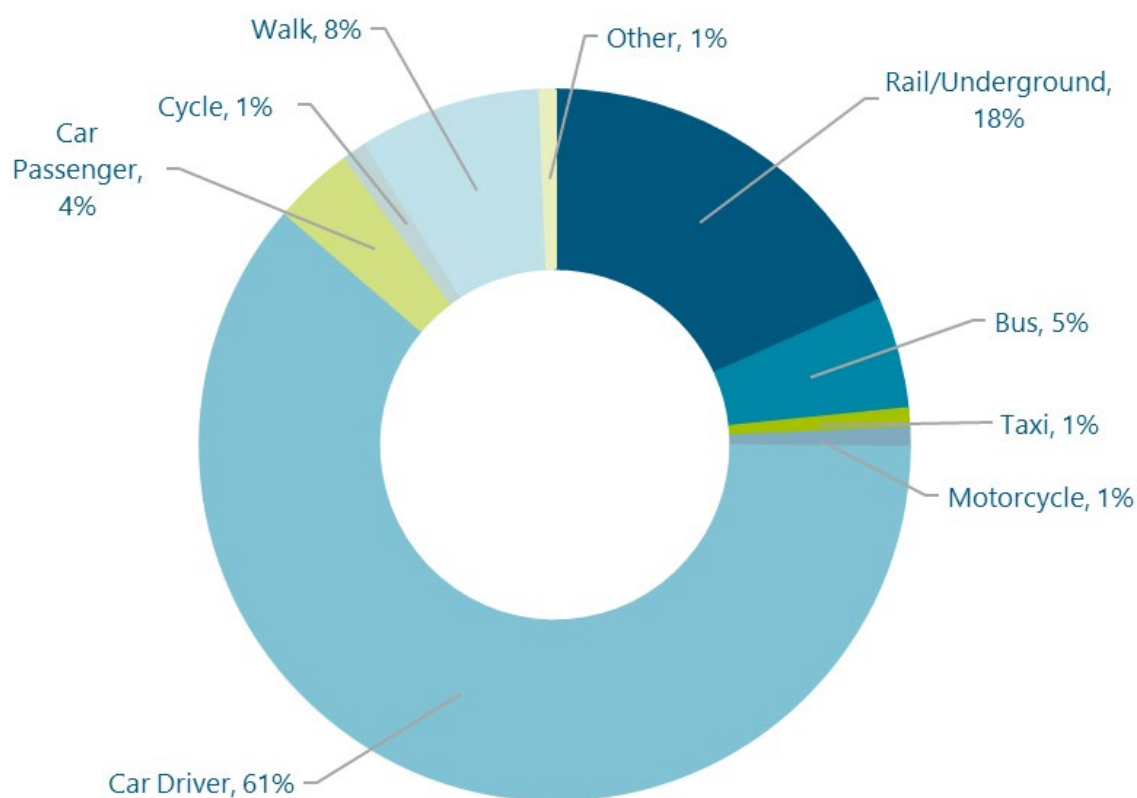
## Mode Share of Commuting Trips

- 4.50 Understanding the existing mode share for work trips undertaken within the borough forms part of a baseline of the current travel patterns and will ultimately inform key corridors and sustainable travel interventions. 'Method of Travel to Work' data provided by the 2011 Census notes the modal breakdown for journeys to work for Hertsmere commuters, depicted in Figure 4-13. For those in work and not predominantly working from home, the private car (either as a driver or passenger) is the dominant mode of transport (65%). Whilst Census 2021 data has yet to be released, the HCTS 2018 provides a more recent insight into the mode share of commuter journeys within Hertfordshire. This notes around 64% of journeys to work within Hertsmere were made by car, reflective of similar levels recorded by the Census in 2011. Of the commuting journeys undertaken over a distance of less than three miles, over half (52%) were made by car (either as a driver or passenger).

<sup>12</sup> [Hertfordshire Travel Survey 2018 Report](#) –Table D25, D49, 66

- 4.51 Hertsmere residents are the greatest users of bus and rail when compared to other Hertfordshire districts for commuter journeys<sup>13</sup>, likely reflecting the high volume of commuters into London (nearly half of Hertsmere residents travel to Greater London for work). The HCC evidence packs also note the mode share of the private car to be significantly lower for outbound commuter trips comparative to inbound movements, particularly for Potters Bar and Borehamwood/Radlett.

Figure 4-13: Method of journey to work, Hertsmere residents, 2011



Source: 2011 Census

- 4.52 Conversely, the number of work trips made by foot and bicycle are lower in Hertsmere compared to county averages, and likely reflects, in part, the low bike ownership in the borough (36.4% own a useable bicycle)<sup>14</sup>.
- 4.53 It is again noted the aforementioned patterns presented are based upon data collected pre-Covid and does not take into account the increases in hybrid working, during and post-lockdown.

<sup>13</sup> [Hertfordshire Travel Survey 2018 Report](#) – Tables D27 & D49

<sup>14</sup> [Hertfordshire Travel Survey 2018 Report](#) – Table D.5b, D.45, D.50a, D.59

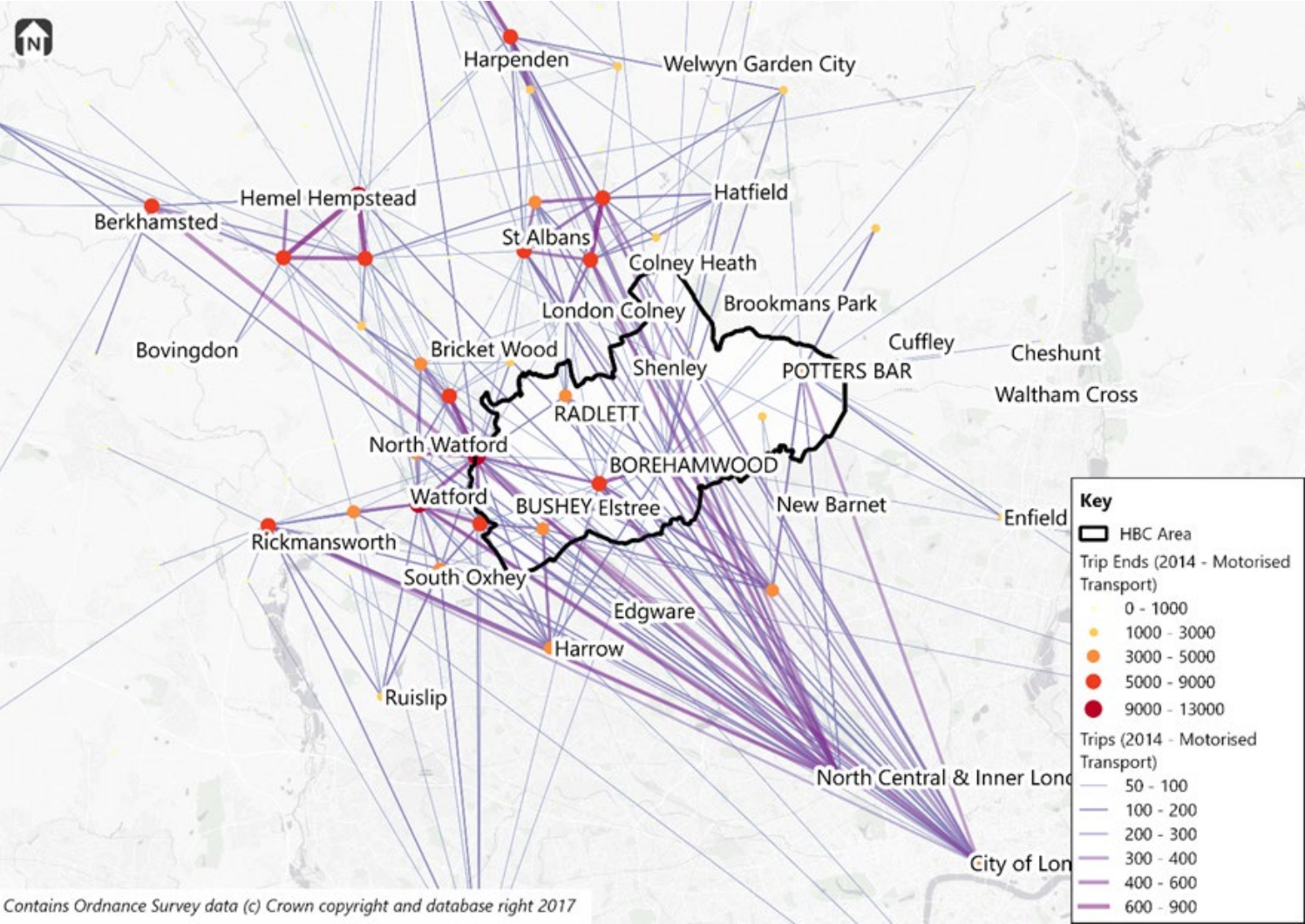
## Alternative Trip Purposes

- 4.54 Considering alternative trip purposes other to those journeys made for travel to work, social and leisure trips are also predominant reasons for travel within Hertsmere (approximately 25%) followed by shopping trips and education (16% and 11% respectively). Again, the private car (either as a driver or passenger) is the main mode used for these journeys and likely to contribute to the high traffic levels and congestion experienced on Hertsmere's network, particularly during inter-peak periods and at weekends.
- 4.55 **33.4% (HCTS, 2018) of all journeys (those made for any purpose) under three miles were made by car**, which is likely attributed to the high levels of car ownership and limited east-west connectivity. This is **a distance considered cyclable for many physically able people with the right infrastructure in place**. It is apparent there is a higher propensity to travel sustainably for journeys other than those made for commuting (where 52% of commuter journeys over the same distance are made by car).
- 4.56 Considering the modal share of journeys of alternative trip purposes, a similar trend occurs in comparison of Hertsmere to Hertfordshire. Generally, the percentage of Hertsmere journeys made by bus is one of the greatest within Hertfordshire (7.1%) and journeys by foot are one of the least (14.6%).

### *Private car*

- 4.57 Further detail of 'baseline' travel patterns in Hertsmere, and how they are forecast to change into the future, can be understood through origin-destination movement patterns derived from the Hertfordshire strategic transport model (COMET). The COMET model has a base year of 2014 and therefore data reflected represents origin-destination movements patterns in 2014. The model also reflects typical weekday conditions in the AM (08:00-09:00), inter-peak (10:00-16:00) and PM (17:00-18:00) periods. Data has been extracted from v4 of the model (the most recent detailed data output made available to ITP) and considers motorised trips only (Figure 4-14).

Figure 4-14: Origin-Destination motorised trip patterns in south Hertfordshire



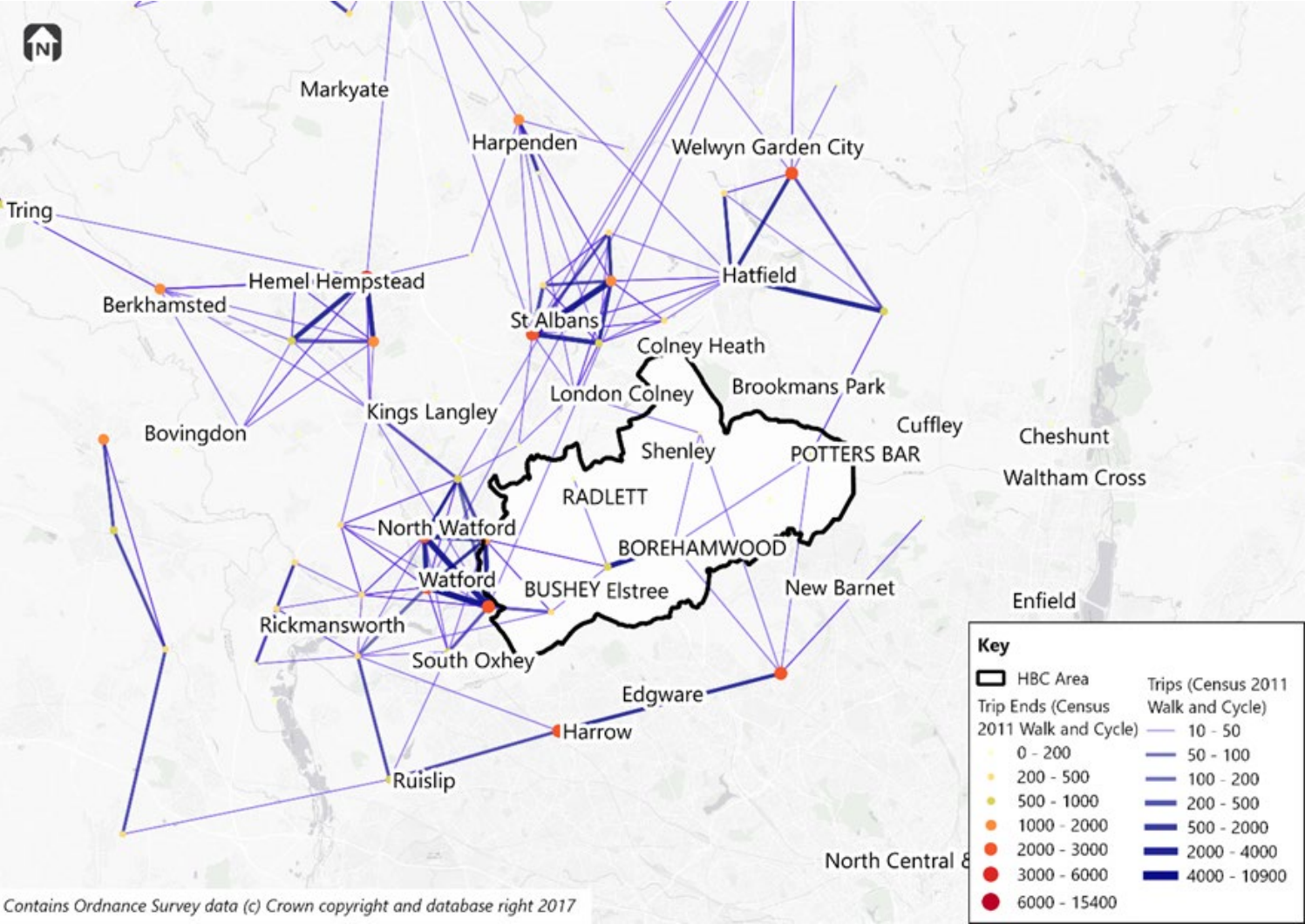
Source: COMET v4, 2014

- 4.58 It is evident that London, Watford and St Albans have a strong relationship with Hertsmere with Figure 4-14 showing a significant flow between these areas (for motorised transport, including travel by car and by public transport). Whilst there are strong flows from Hertsmere towards Greater London, the volume of such varies across settlement. A greater volume of trips is made between Elstree and Borehamwood and Greater London than those between Potters Bar and Greater London.
- 4.59 It is also apparent there is a strong relationship between the areas of Elstree and Borehamwood and, Bushey and Watford, whilst flows from Potters Bar to elsewhere in the district are weaker (noting the severance of Potters Bar to the rest of the borough by the M25 and A1). A correlation between trip ends and density of key destinations within Hertsmere can be inferred. As expected, these trips are typically across further distances than of those walking and cycling trips reflected in Census 2011 data.
- 4.60 Figure 4-14 also indicates a significant number of trips made through Hertsmere, particularly those between Dacorum and St Albans, and London.

### *Walking and cycling*

- 4.61 As the COMET model only considers motorised trips, an analysis of Census 2011 data has been undertaken to understand the pattern and volume of cycling and walking trips within Hertsmere and across Hertfordshire. These are illustrated in Figure 4-15 and is noted this data reflects commuting trips only.
- 4.62 There are clear concentrations of movement in towns and cities outside of Hertsmere, within St Albans, Watford and Hemel Hempstead. Generally, fewer cycling and walking trips are made within the borough. There is a strong link between Elstree and Borehamwood, whilst flows between Bushey and Watford are also significant.

Figure 4-15: Cycling and walking trip patterns in south Hertfordshire



Source: 2011 Census

## Network Constraints

### Active Travel

- 4.63 Few dedicated cycle routes exist between the urban areas in Hertsmere, despite some distances between towns being within reasonable cycle journey distances. There is intermittent provision of safe cycle routes between key towns with the road network constraining both Bushey and Potters Bar on the western and eastern most extents of the borough, reflective of the low cycling mode share.
- 4.64 Hertfordshire's LTP4 reveals that 63% of all trips in the county are less than five miles in length with 53% of journeys to work under 10 miles. Further to this, Hertsmere recorded cycling mode share of just 0.5% of all journeys made under three miles. This is lower than Hertfordshire's average share of 1.9% and well below the 2021 target of 5%; suggesting there is significant scope to encourage more widespread uptake in cycling and public transport use among existing residents if infrastructure and services were improved. Steps are already underway in Borehamwood to address this for example, including the current trial of the Beryl cycle hire scheme.
- 4.65 The previously noted issues with delays and congestion within the borough are likely to bring associated air quality issues and make environments hostile for those walking and cycling alongside idling vehicles.

### Bus

- 4.66 High-frequency services operate north-south but are limited in providing east-west connectivity. Inter-urban connections between local settlements within Hertsmere are predominantly of low frequency and offer poorer connections than those services operating towards London and Watford. The low frequencies of these intra-urban bus services likely compound the high car ownership.
- 4.67 Bus service operators within Hertsmere are faced with reduced punctuality and reliability of their services, likely caused by highway constraint<sup>15</sup> and significant levels of congestion on the highway network. The lack of priority given to bus services makes them particularly susceptible to traffic congestion and they do not have the flexibility of private car users to quickly adapt routes accordingly. Unreliable journey times and infrequent services are attributing factors to negatively impact passenger confidence

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<sup>15</sup> Highway constraint refers to the availability of road space and its capacity for vehicles

and bus usage which in turn leads to increasing operating and passenger costs – a negative cycle that ultimately erodes the commercial viability of services.

## Rail

- 4.68 The intercity service on the Midland Mainline is of low frequency and only serves a limited number of destinations directly. The Rail strategy highlights that despite recent improvements being delivered by the Thameslink programme, there are still peak overcrowding issues on local trains.
- 4.69 It is reported the Midland Main Line long distance services to St Pancras are forecast to be at 133% of capacity by 2031, with West Coast Main Line suburban services at 107%<sup>16</sup>. The Great Northern services to Moorgate that serve Potters Bar are also expected to be operating overcapacity at 104%. By 2043 forecast rail growth of up to 53% is anticipated on the Midland Main Line.
- 4.70 It is noted these forecasts were made prior to Covid-19. The Office of Rail and Road's latest release of rail station usage data presents an insight into passenger rail travel since the Covid-19 pandemic, where station usage has nearly increased three-fold between 2019/20 and 2021/22 across Hertfordshire, and therefore indicating a return in the demand for rail. Further to capacity issues, existing rail infrastructure aligns north to south, making east-west movements by rail not possible. This pattern extends to other districts with Hertfordshire.

## Highway

### *Severance*

- 4.71 The alignment of the strategic network provides clear points of severance through Hertsmere, limiting the east-west connectivity of the borough. The M1 to the west dissects Bushey from the remainder of the borough, restricting accessibility to eastern towns in Hertsmere including Borehamwood. The M25 and A1 to the east dissects Potters Bar and South Mimms to other key settlements.
- 4.72 This is not just an issue for those using the road network, who become dependent on a limited number of points to cross or join the strategic network, but also for users of other modes who are forced into taking less direct journeys or prevented from travelling sustainably at all due to a lack of permeability.

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<sup>16</sup> London and South East Route Utilisation Strategy (Network Rail 2011), Anglia Route Study (Network Rail March 2016), East Midlands Route Study (Network Rail March 2016).

### *Traffic levels*

- 4.73 Traffic condition summary outputs have been taken from the 2014 COMET Base Year model v5 (undertaken in 2020 and more recent to v4). COMET v5 includes an enhanced 2014 zoning system and network and most up-to-date assumptions to model the 2036 forecast scenarios more accurately. It illustrates that some of the longest delays would be experienced on the strategic road network surrounding Hertsmere<sup>17</sup>, and noted junctions of significant delay and where some sections approached 100% capacity include:
- Stirling Corner junction on the A1
  - M25 junction 23 with the A1
  - M1 junction 5 with the A41
- 4.74 Delays are reported to be less extensive on the local road network around Hertsmere. However notable delay hotspots/pinch-points include:
- The Elstree crossroads (up to 3-minute delay)
  - Several junctions in Bushey on Little Bushey Lane and High Road (2-minute delay)
  - Watford Road/Watling Street junction in Radlett (2-minute delay)
  - Junctions around Potters Bar town centre.
- 4.75 For reference, the latest DfT statistics reporting the average link delay on local 'A-roads' in England for 2021 has been made available (Table CGN05, DfT, 2021<sup>18</sup>). This notably recorded an average delay on both the A5183 and the A411 (as routes that make up the Elstree crossroads) of no more than 45 seconds, although delay greater than 60 seconds was recorded on routes such as the A412 and A4178 in Watford and the A4140 through Stanmore.
- 4.76 Further analysis on Hertsmere's network was undertaken using Trafficmaster 2018 data to provide a more recent insight into traffic levels and where sections of the road network experience delay.
- 4.77 Based upon the speed differences between AM peak hour journey speeds and 'free flow' overnight speeds, Figure 4-16 illustrates delays are greatest on the primary and secondary road network, particularly on approach links to and from key settlements, as well as those that align through these settlements.

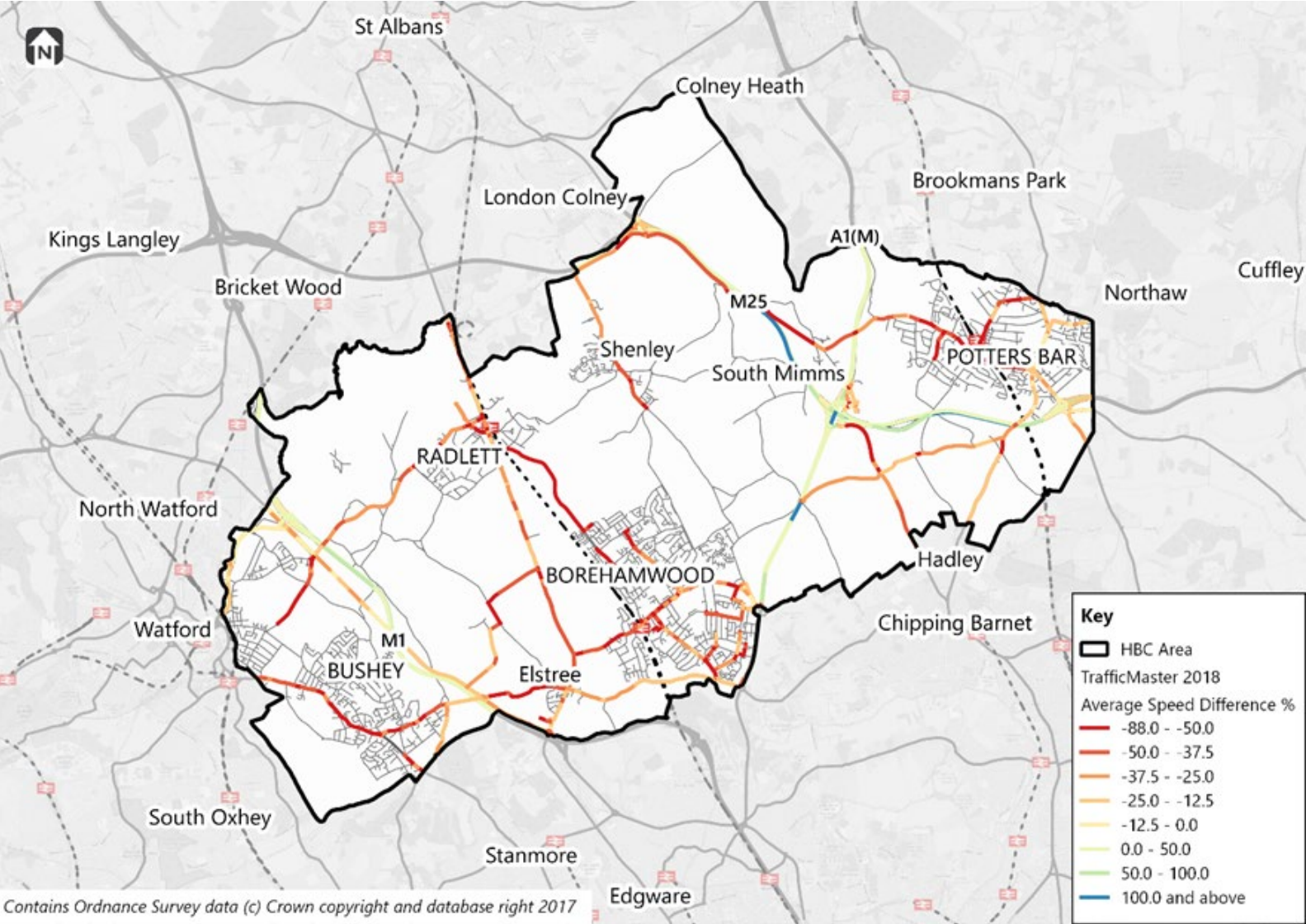
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<sup>17</sup> [Hertsmere Borough Council: Local Plan Analysis Hertfordshire County Council – TIPSF Additional Modelling Support](#)

<sup>18</sup> [Department for Transport, Average speed and delay on local 'A' roads \(CGN05\)](#)

- 4.78 Mutton Lane (B556) through Potters Bar, London Road/High Street (A411) through Bushey and Watling Street (A5183) towards Elstree Village are sections of note, recording some of the greatest negative speed differences within the borough. Congestion is also particularly prevalent on the main east-west routes – compounded by a lack of public transport alternatives for people travelling east west. Congestion related delays are also evident on approaches to M25 and M1 junctions.
- 4.79 Identified delay hotspots correlate with a number of Air Quality Management Areas in Hertsmere. There are currently six declared AQMAs within the borough, adjacent to either the strategic or principal road network. This includes areas comprising domestic properties around the Elstree crossroads, M1 (close to Otterspool Way) and the M25/A1(M) junction close to Potters Bar. Transport therefore is a key contributor to air quality, with an important role to play in the carbon reduction aspirations and improving air quality in Hertsmere.

Figure 4-16: Trafficmaster 2018 average speed differences on Hertsmere's road network



## Network Perceptions

- 4.80 The condition of the road surface and long journey times (congestion) were two of the main transport concerns Hertsmere residents reported at the time of the Hertfordshire County Travel Survey (HCTS (68% and 63% respectively)<sup>19</sup>. This reflects the delays apparent on approach links to key settlements.
- 4.81 Despite the high levels of bus and rail use for commuter journeys comparative to other Hertfordshire districts, Hertsmere residents perceived issues with the public transport frequency and reliability within the borough (Hertfordshire County Travel Survey, 2019). Hertfordshire County Council's Rail Strategy identifies a need to increase frequencies to London from Elstree & Borehamwood and Radlett, considering the importance the rail network carries in relation to the movements to and from London<sup>20</sup>.
- 4.82 A further common theme raised by Hertfordshire residents is the provision of cycle infrastructure and associated cycle safety. As previously noted, Hertsmere has a low level of bicycle ownership, and a small proportion of commuters' cycle to work. The existing low-level demand for cycle infrastructure (due to the current low cycle modal share in Hertsmere) may account for a small proportion of Hertsmere residents perceiving this as an issue (9% comparative to the county average of 16.7%).
- 4.83 The above issues are all limiting factors in providing Hertsmere residents with an optimal travel choice and can make journeys frustrating, unpleasant, and inconvenient particularly for peak period commuting journeys. Whilst these are all issues, they have the potential to negatively impact on the liveability and attractiveness of the area and residents' quality of life.

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<sup>19</sup> [Hertfordshire Travel Survey 2018 Report](#) –Table 18

<sup>20</sup> [Hertfordshire County Council Rail Strategy 2020](#)

## 5. Planned Growth

- 5.1 This section sets out locations of potential growth sites across the borough, as detailed in draft Local Plan Regulation 18 documents, that were subject to public engagement in 2021. It is important to understand the geographic positioning of these potential sites in relation to the existing transport networks to identify key corridors for movement within Hertsmere.

### Draft Allocations

The emerging Local Plan, as per the Regulation 18 public engagement, aligns with the nationally prescribed standard method for calculating local housing need within Hertsmere. This equates to 760 homes per year (a total of 12,160 between 2020 and 2038) and indicates a significant increase from the 266 homes per annum stated in the current Local Plan Core Strategy. Most promoted development is fairly evenly spread across the three main settlements of Borehamwood, Potters Bar and Bushey, and a reflection on their positions within the settlement hierarchy. The exception to this being the proposed new settlement at Bowmans Cross as noted in

5.2 Table 5-1.

- 5.3 The dispersal of growth shown in Table 5-1 reflects the overall spatial strategy for Hertsmere's emerging Local Plan, as per the Regulation 18 public engagement. The sites that are allocated for potential development have been assessed to establish their availability, suitability, and deliverability, and are supported by Hertsmere's Local Plan technical evidence base.
- 5.4 Growth during the existing local plan period was noted to be delivered within established main settlements in the borough, directing development towards the already more accessible locations. Many of the potential allocations identified adapt this spatial strategy, with locations well connected to the transport network as per Figure 5-1. It is noted these allocations may change following the Regulation 18 public engagement.

- 5.5 Despite the recent announcements regarding Hertsmere's Local Plan, Hertsmere Borough Council have highlighted the importance of having a consistent approach to the local evidence base and ensuring all current work continues to align with the existing growth scenario as presented within the draft Local Plan Regulation 18 documentation. This will ensure all transport evidence and modelling is based on the same growth scenario and that a rational approach can be taken to assessing the impact on the transport network and identifying the best methods for accommodating growth.
- 5.6 Any proposed changes to the Local Plan allocations will require suitable justification. It is important that this "standard methodology scenario" is thoroughly assessed so that it can inform the site selection process and any subsequent revisions to the overall spatial strategy. Additional transport work may be required once a new spatial strategy has been agreed. However, this study will provide a useful basis for identifying key transport improvements to support growth and will inform decisions on the overall spatial strategy.

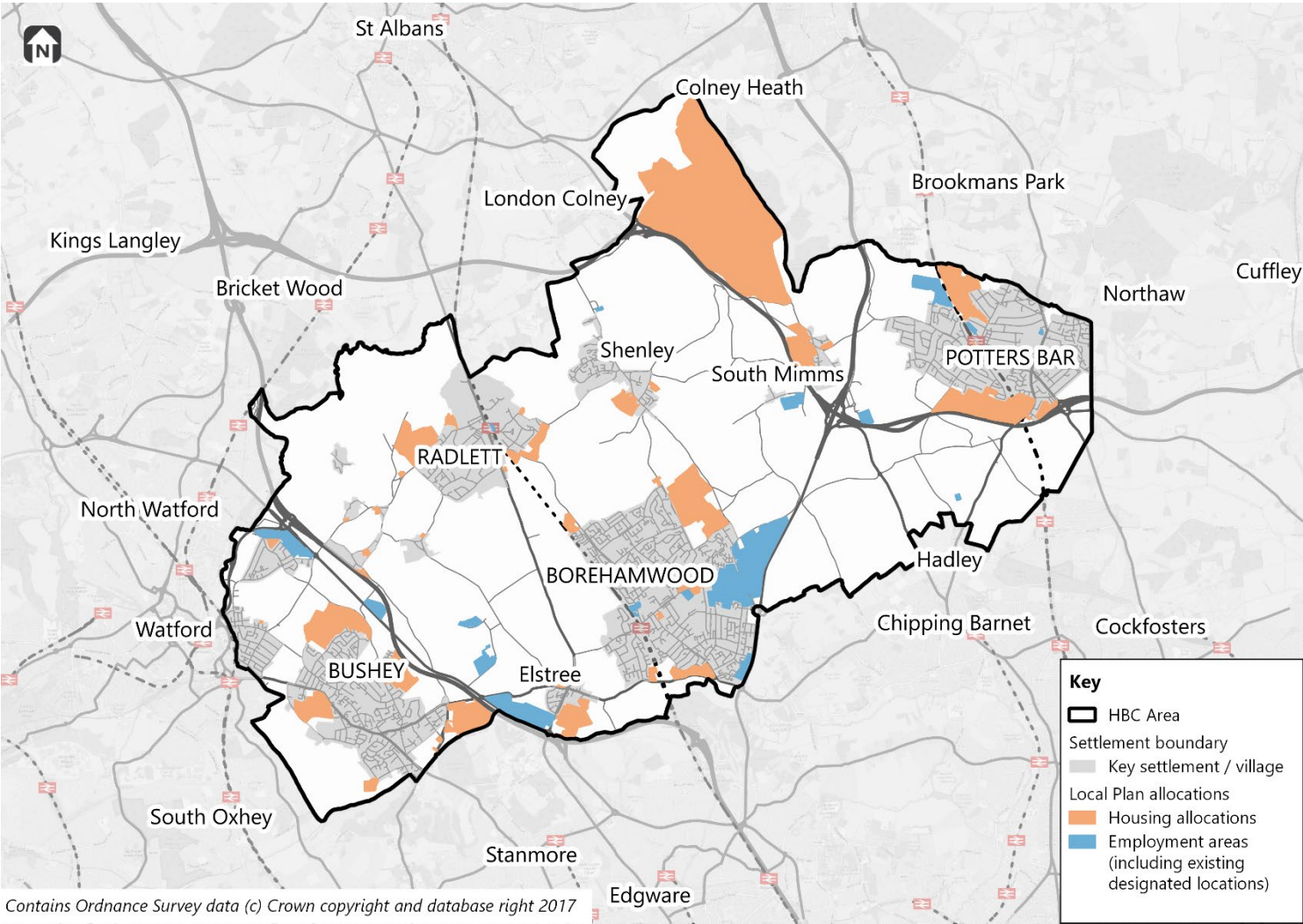
Table 5-1: Estimated potential housing delivery boroughwide to 2037/38<sup>21</sup>

| Settlement                        |                                    | Dwelling delivery<br>2018-2021 | Site<br>Allocations | Estimated<br>new dwellings<br>2021-2037/38 |
|-----------------------------------|------------------------------------|--------------------------------|---------------------|--------------------------------------------|
| Borehamwood<br>and Elstree        | <i>Borehamwood<br/>and Elstree</i> | 835                            | 2,155               | 2,770                                      |
|                                   | <i>Elstree Village</i>             | 5                              | 190                 | 235                                        |
|                                   |                                    | 840                            | 2,345               | 3,005                                      |
| Bushey                            |                                    | 515                            | 2,340               | 2,895                                      |
| Potters Bar<br>and South<br>Mimms | <i>Potters Bar</i>                 | 150                            | 1,750               | 2,180                                      |
|                                   | <i>South Mimms</i>                 | 15                             | 225                 | 260                                        |
|                                   |                                    | 165                            | 1,975               | 2,400                                      |
| Radlett and<br>Shenley            | <i>Radlett</i>                     | 70                             | 760                 | 940                                        |
|                                   | <i>Shenley</i>                     | 10                             | 290                 | 350                                        |
|                                   |                                    | 80                             | 1,040               | 1,290                                      |
| Bowmans Cross (Tyttenhanger)      |                                    | N/A                            | 2,400               | 2,400                                      |
| Aldenham Parish Villages          |                                    | -                              | 90                  | 130                                        |
| <b>Hertsmere</b>                  |                                    | -                              | 10,200              | 12,160                                     |

Source: Draft Local Plan, 2021 – Policy H10; Schedule of Housing Sites

<sup>21</sup> Based on the Regulation 18 Draft Local Plan, 2021

Figure 5-1: Draft site allocations



Source: Hertsmere Regulation 18 Draft Local Plan

- 5.7 The draft Local Plan Regulation 18 document identifies green belt land in the north east of Hertsmere as the preferred location for the new settlement, Bowmans Cross, between Colney Heath, Potters Bar and London Colney. This potential allocation currently accounts for 20% of total estimated dwelling delivery to 2037/38 within Hertsmere under the draft Regulation 18 Local Plan, but subject to change following public engagement outcomes.
- 5.8 As per draft Local Plan policies E1 and E2 to ensure scale, distribution and suitable provision of employment land, the Regulation 18 draft Local Plan aims to allocate at least 115ha of land for economic development as per Figure 5-1, with a particular focus on extending existing employment areas to the east of Borehamwood (East of Rowley Lane) and to the west and north west of Centennial Park, Elstree.
- 5.9 Three draft Special Policy Areas have also been recognised within the current draft Local Plan to acknowledge Hertsmere's unique strengths and opportunities in more specialist land use and forms of employment. The Regulation 18 draft Policies Map identifies:
- Policy E4: South Mimms Motorway Services Area
  - Policy E5: Elstree Aerodrome
  - Policy E6: Rowley Lane Media Quarter

## Planned Transport Improvement Schemes

- 5.10 Proposed improvements in highway, passenger transport, walking and cycling, have already been identified to address current transport issues and support the delivery of housing and employment growth within Hertsmere and the wider Hertfordshire area. Proposals contained within HCC's LTP4 focus on key movement corridors across Hertfordshire and notable Hertsmere proposals include:
- Cycle Infrastructure Improvement Towns encompassing Borehamwood and Potters Bar, where the Propensity to Cycle Tool identifies the greatest potential.
  - Sustainable Travel Towns comprising packages of improvements for walking, cycling and PT, combined with activity to encourage more sustainable travel.
  - Supporting works to mitigate the impact of investment and development of Elstree Way Corridor.
- 5.11 The transport improvement packages in the pipeline for Hertsmere and surrounding Hertfordshire areas, as detailed in the South-West Herts and South-Central Herts Growth and Transport Plans, are illustrated in Figure 5-2. This includes those schemes

identified within the South-West Herts GTP and Watford's adopted LCWIP in close proximity to the Watford/Bushey boundary. In brief, these are included within the following GTP Packages for South-West Herts:

- Package 5 – Watford Western Gateway
  - Holywell to South Oxhey Cross-Colne Sustainable Link (cycle and bus only)
  - The reconfiguration of bus services throughout Watford and connections to neighbouring settlements, including Bushey and the London fringe in liaison with TfL
- Package 7 – Watford Central
  - Improved walking and cycling environment on routes to Watford Junction Station and a new foot, cycle, and bus link bridge at Colonial Way.
  - Lower High Street shared use cycle path - between Bushey Arches and Dalton Way including provision of new cycle/pedestrian bridge over the River Colne or reducing the road width and reallocating space to footways.
- Package 8 – Watford South
  - Enhanced cycle and pedestrian links in Oxhey, South Oxhey, Carpenders Park and Bushey
  - Review of traffic and sustainable transport options on local road network around Bushey Arches

5.12 Routes identified for priority cycle and walking intervention in the Watford LCWIP, with connectivity towards Bushey include:

- Cycling Route 1: Green Loop East aligns north to south, east of Watford High Street rail station. Measures include wayfinding and decluttering improvements, making use of existing shared use for cyclists
- Walking Route 1: Watford Town Centre to Bushey Station includes intervention such as tactile paving, dropped kerbs and footway surface improvements

5.13 Lower priority routes identified, and visualised in [Appendix A of the LCWIP](#) include:

- Route 14: from Link Road, along Radlett Road and Orphanage Road, for connectivity between Bushey and Route 1.
- Route 18: from Bushey Mill Lane towards North Watford Rail Station

5.14 Furthermore, the recently adopted South Central GTP includes 36 proposed packages with the following relevant to Hertsmere:

- Package 17: Hatfield-Potters Bar cycle corridor enhancements

- Package 18: Potters Bar Active Travel Improvements
  - Package 19: Potters Bar Public Transport
  - Package 20: Borehamwood Active Travel Improvements
  - Package 21: Borehamwood-Elstree Village Connectivity
  - Package 22: Borehamwood-London Connectivity
  - Package 23: Radlett Station Accessibility
- 5.15 HCC have proposed an east-west Rapid Mass Transit link connecting Watford and Hemel Hempstead, west of Hertsmere to Harlow in the east. The Hertfordshire Essex Rapid Transit (HERT) was identified in the A414 Corridor Strategy<sup>22</sup> as a critical piece of infrastructure required to facilitate sustainable travel and address the pressure of delivering significant growth in housing and jobs in towns situated along the A414 corridor. While not linking to key settlements within Hertsmere directly, its alignment would be relatively close to the new proposed Bowmans Cross settlement, provide east-west connectivity to the existing north-south rail links Hertsmere towns currently have access to and will give communities attractive sustainable travel choices.
- 5.16 A Strategic Rail Freight Interchange is proposed on the former Radlett Aerodrome site, close to the strategic highway network. Proposals comprises an intermodal rail freight terminal with circa 3.5million square foot of rail linked logistics buildings.
- 5.17 The LTP4 schemes are complemented by those proposals included within the COMET v5 Scenario 2 model run (also visualised in Figure 5-2) and Hertsmere's Infrastructure Delivery Plan, summarised in Table 5-2 and Table 5-3, respectively.
- 5.18 It is noted, that in parallel to this study, a new 2036 Forecast COMET Model Run was undertaken in 2022, to include latest Local Plan development assumptions and transport mitigation measures. The transport interventions for inclusion in this COMET v7 model run not only included those associated with planned development and previous local plan work, but also hypothetical conceptual schemes across Hertfordshire. These schemes can be found in full in HCCs 'Interpretation of COMET Model Results' Report for Hertsmere.

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<sup>22</sup> [A414 Corridor Strategy, September 2019, Hertfordshire County Council](#)

Figure 5-2: Transport improvement proposals

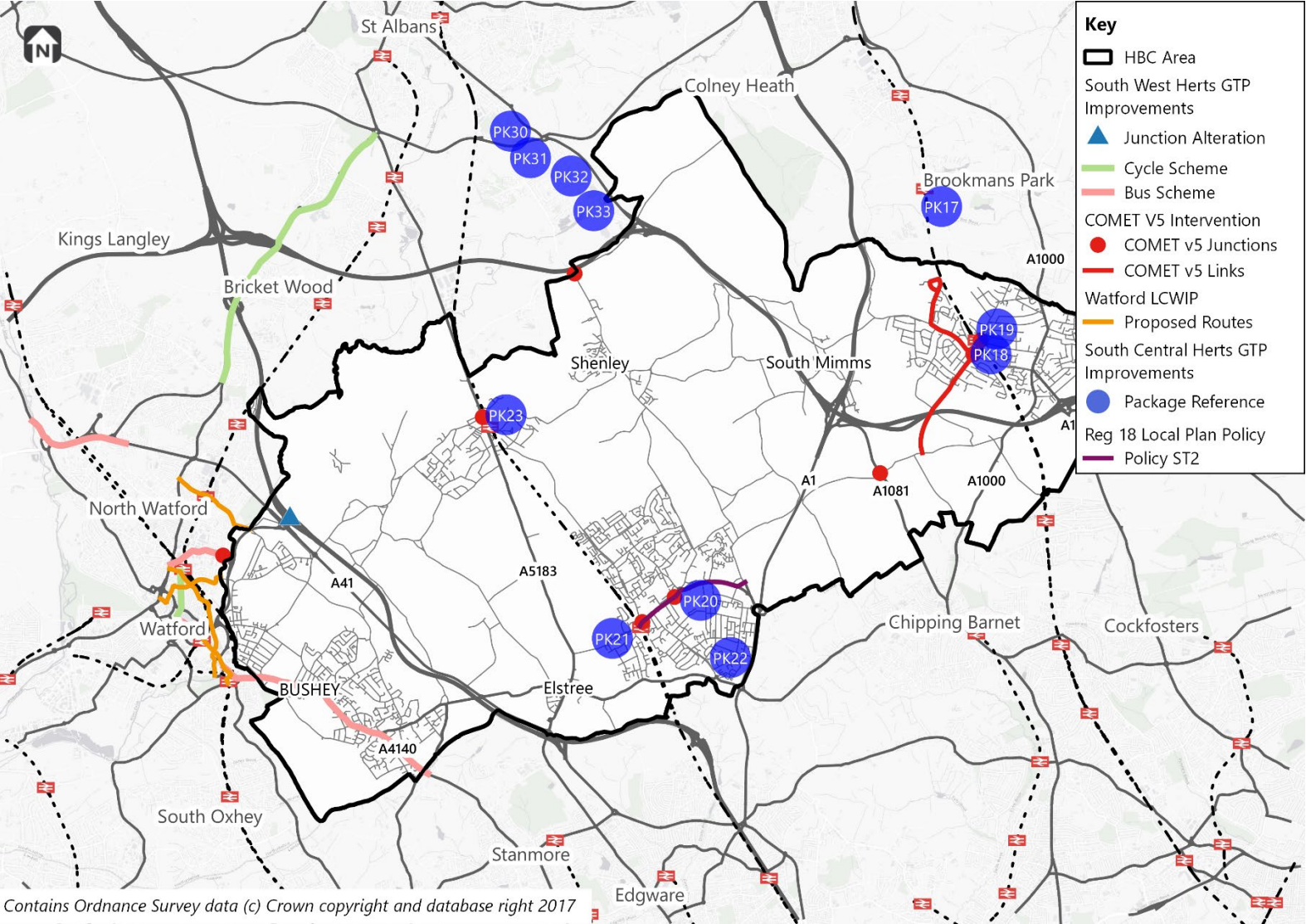


Table 5-2: COMET v5 Scenario 2 Infrastructure Log

| COMETv5<br>Scenario 2 | Scheme or Project<br>Name                               | Description/Rationale                                                                                                                                               | Mode        | Area         | Delivery<br>Year |
|-----------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|------------------|
| Hertsmere 1           | Cranborne Road<br>Industrial Estate                     | Reinstate service 298 through to Cranbourne Road via Mutton Lane with one-hour frequency (previously modelled as 20 min frequency)                                  | Bus         | Potters Bar  | 2021             |
| Hertsmere 2           | Baker Street                                            | New on street cycle lanes within existing road width - Baker Street                                                                                                 | Cycle       | Potters Bar  | 2031             |
| Hertsmere 3           | B556 /Baker Street /<br>Darkes Lane junction            | Rephase signals - B556 / Baker Street /<br>Darkes Lane junction                                                                                                     | Highway     | Potters Bar  | 2036             |
| Hertsmere 4           | Darkes Lane / The<br>Walk junction by<br>station        | Junction improvements at Darkes Lane/The Walk to improve conditions for pedestrians and cyclists as well as broader urban realm enhancements along the high street. | Multi-modal | Potters Bar  | 2031             |
| Hertsmere 5           | M25 Junction 18-25                                      | Smart motorway with hard shoulder running                                                                                                                           | Highway     | M25 J18-25   | 2016             |
| Hertsmere 6           | M25 Junction 23                                         | Capacity Improvements                                                                                                                                               | Highway     | M25 J23      | 2020             |
| Hertsmere 7           | A1081 / Trotters<br>Bottom / Dancers Hill<br>roundabout | Convert to signalised junction and optimise timings                                                                                                                 | Highway     | Dancers Hill | 2036             |
| Hertsmere 8           | A1 / A411 Barnet Lane<br>(Stirling Corner)              | Changes to signal staging and timing                                                                                                                                | Highway     | Borehamwood  | 2017             |

| COMETv5<br>Scenario 2 | Scheme or Project<br>Name                                | Description/Rationale                                                                         | Mode    | Area        | Delivery<br>Year |
|-----------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------|-------------|------------------|
| Hertsmere 9           | Station Road /<br>Theobald St / Allum<br>Lane            | Upgrade of junction to continental<br>roundabout                                              | Highway | Borehamwood | 2031             |
| Hertsmere 10          | Elstree Way Corridor                                     | Junction improvement with replacement of<br>the Tesco roundabout with signals                 | Highway | Borehamwood | 2031             |
| Hertsmere 11          | Park Road / Watling<br>Street                            | Convert to signalised junction & optimise<br>timings                                          | Highway | Radlett     | 2036             |
| Hertsmere 12          | B556 / B5378<br>roundabout north of<br>Shenley           | Convert to signalised junction & optimise<br>timings with potential widening of<br>approaches | Highway | Shenley     | 2036             |
| Hertsmere 13          | Bushey Hall Road,<br>Bushey Grove Road,<br>Greatham Road | Traffic calming & pedestrian enhancements                                                     | Highway | Bushey      | 2021             |
| Hertsmere 14          | A4008 /Radlett Road<br>roundabout                        | Convert to signalised junction & optimise<br>timings                                          | Highway | Watford     | 2036             |

Table 5-3: Hertsmere Infrastructure Delivery Plan

| Scheme name                                                                                                                                                                                         | Mode    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Enhancing bus priority infrastructure and services through Bushey and Carpenters Park                                                                                                               | Bus     |
| Cycling links in Oxhey, Carpenders Park, and Bushey                                                                                                                                                 | Cycle   |
| Introduction of slips at M1 Junction 4 to allow all movements between the M1 and A41 alongside a P&R facility at M1 J5                                                                              | Highway |
| Priority highways projects including the Elstree Way Corridor; Station Road / Allum Lane / Theobald Street / Shenley Road Junction improvements; Hertswood School access; and Hartspring roundabout | Highway |
| ThamesLink Programme - Seeking to 'unlock' greater frequency services across the county to central London.                                                                                          | Rail    |

## 6. Implications of Growth

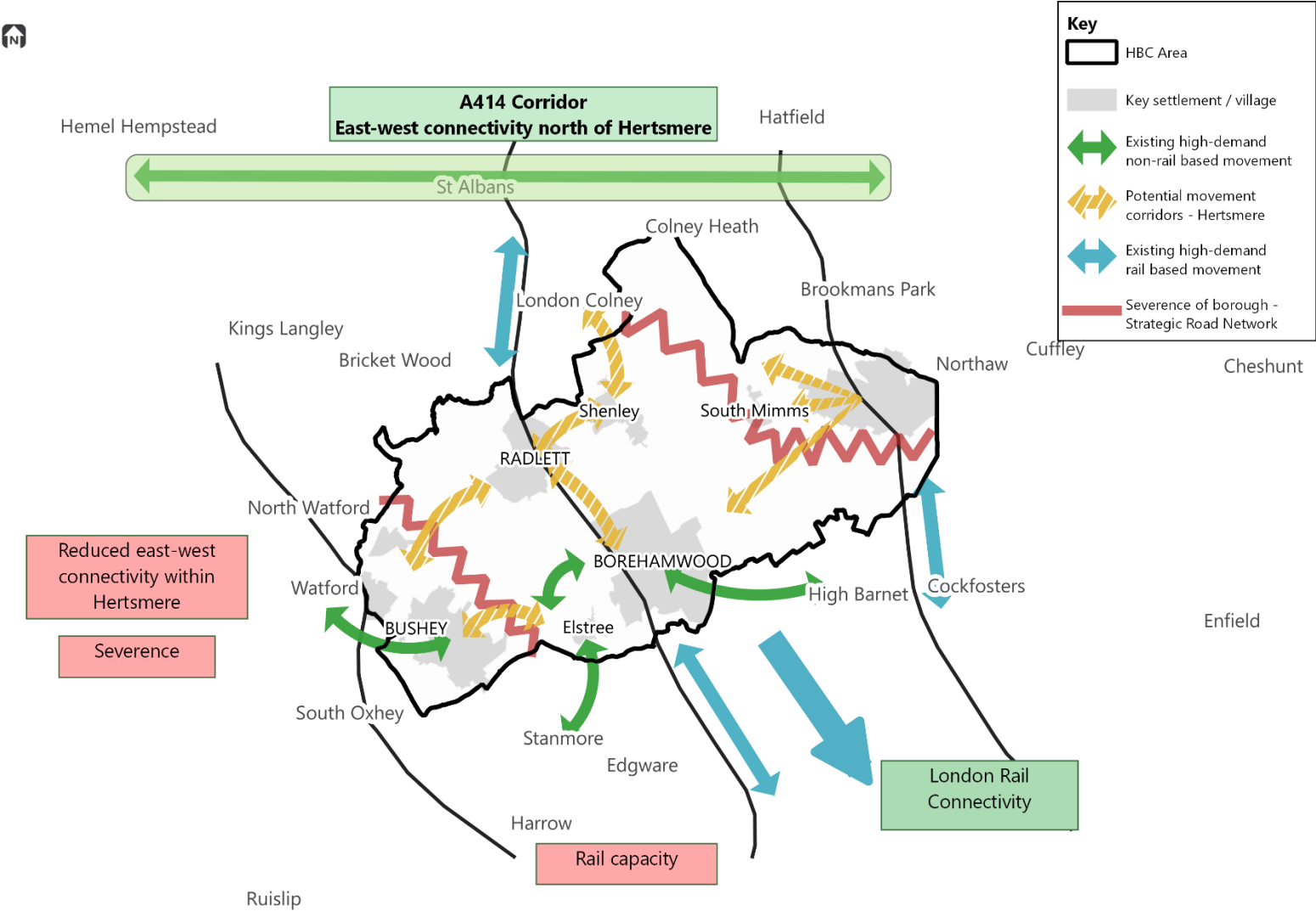
### Impact on Existing Network Constraints

- 6.1 A forecast growth in travel demand, as noted in HCC's LTP4 and the Traffic and Transport Data Report, is anticipated to impact on highway network performance overall and therefore exacerbate highway delay unless significant levels of modal shift are achieved. It is noted the network is already at capacity during peak periods and therefore, in the absence of any substantial increase in highway capacity, any new trips forecast could be made by other modes so as not to impact highway performance even further. Interventions to improve and increase active and sustainable transport not only relieve the pressure on the road network but also reduce transport associated emissions and improve air quality. However, the impact on network capacity may not itself be grounds for rejecting development on highways grounds unless the highway authority consider there to be an adverse safety impact or there are demonstrable air quality affects.
- 6.2 Any further delay on the strategic network within Hertsmere may also impact traffic movements on the local network as users could attempt to use these routes rather than experience delays on the approaches to the M1 and M25 and the A1 and A41. Traffic displacement and increasing delay on the local network may also compound the existing limited frequency and journey time reliability of bus services, as well as the attractiveness of walking and cycling trips due to perceived reductions in air quality. This would result in a negative feedback loop that would be increasingly challenging to rectify.
- 6.3 Where the network is already at capacity, further development will therefore require consideration of the extent to which users of the network will tolerate further delays in their journey time.
- 6.4 Figure 6-1 illustrates the strong movement through the borough, particularly along the rail corridors, between Hertsmere, Hertfordshire districts in the north and Greater London. Whilst the existing rail network is limited to particularly cater for those who wish to travel north south, there is opportunity to strengthen this to accommodate for the forecasted growth in London rail commuting through the existing Thameslink Programme. A growing demand on these services due to further growth is likely to lead to increased overcrowding on both rail and at the stations. However, it is noted it is unclear as to the impacts COVID-19 will bring about for long-term travel patterns and whether a long-term trend of increasing rail demand is likely to be halted. Whilst

some COVID-19 related restrictions remained in place during 2021/22, station usage across Hertfordshire was at 59% of the levels recorded in 2019/20, although this was an increase of nearly three-fold on the level of usage during 2020/21.

- 6.5 The severance the M1 and M25 bring about within Hertsmere, as per Figure 6-1, may extend across the new areas of growth, creating further divides between settlements. However, there is the opportunity for growth to work with the existing movement patterns identified to ensure improved future sustainability and accessibility of settlements. Bowmans Cross is located close to existing settlements such as St Albans and London Colney with the potential to create sustainable transport links between them.

Figure 6-1: Existing constraints and opportunities



## 7. Baseline Summary

- 7.1 As with elsewhere in Hertfordshire, Hertsmere is facing challenges in both a socio-economic and transport context and anticipated to undergo significant growth over the next 15 years. A sub-optimal road network struggles with current demand as car dependency is generally high and the private vehicle is the dominate choice for travel.
- 7.2 Public transport networks are also struggling under current demand due to the high concentration of peak commuting journeys made by rail into London, whilst offering limited east west connectivity for residents. Alongside this, the active travel network is sparse, incoherent and unattractive for users.
- 7.3 There is however evidence to suggest there is opportunity for mode shift, particularly targeting the journeys made by car between and within key settlements over short distances for both commuting and education. This aligns with the national aspirations for increasing active and sustainable travel modes in the wake of the Covid-19 pandemic and COP26 climate change conference.

### Next Steps

- 7.4 The proposed spatial distribution of growth is generally aligned with key transport infrastructure to offer the opportunity for key settlements within Hertsmere to become more sustainable and provide wider benefits to the community. Although for potential new settlements of a scale such as that proposed at Bowmans Cross, existing transport accessibility is typically lacking. Given the reduced transport connectivity, it is essential for these sites to secure the required public transport facilities to meet objectives set out in local and national policy.
- 7.5 In the next stages of our work, ITP examines the potential schemes that could help to deliver development that enables sustainable travel behaviour and limits negative impact on existing communities.
- 7.6 The current study is set within a growth scenario in the now set-aside Regulation 18 draft Local Plan. This study will play an important role in informing any revisions to the overall spatial strategy. However, additional work may be required once a new spatial strategy has been drafted.
- 7.7 The Regulation 18 draft Local Plan public engagement highlighted the importance of transport matters. A targeted stakeholder engagement has been conducted on this study with Hertfordshire County Council and National Highways and we will continue

to collaborate with these stakeholders moving forward. Once feedback has been received and reviewed, the intention is for a full audit of the proposed schemes to be undertaken. This will result in a list of preferred schemes to be revised and tailored for inclusion in an additional bespoke model transport model run, where the schemes and revised spatial strategy can be thoroughly tested.

## 8. Potential Transport Schemes

### Context

- 8.1 Drawing upon the understanding of the current transport connectivity within Hertsmere and the opportunities and constraints this presents, ITP has developed a series of pre-feasibility-level detailed transport infrastructure schemes to be considered for inclusion in Hertsmere's Sustainable Transport Strategy to support Hertsmere's emerging Local Plan.
- 8.2 These schemes provide focus on how Hertsmere's transport network responds to the opportunities and challenges of the planned growth over the Local Plan period (2021 – 2036/7) and present mitigation options where existing highway issues could impact delivery of growth. Schemes expect to include:
- Multi-modal opportunities along existing key corridors
  - Development of sustainable transport corridors including, but not limited to, options for inter-urban cycle routes; enhanced bus services; enhancements to rail; potential for shared mobility schemes
  - Improvements to settlements and local centres
- 8.3 Existing transport infrastructure within Hertsmere is likely to need to be repurposed to support more efficient forms of transport, mode shift to more active and sustainable journey choices, and reduced car-dependency if Hertsmere Borough Council is to contribute to its Net-Zero target by 2050 and sustainably deliver on its ambitious period of growth.
- 8.4 Ultimately, any proposed intervention should aim to reflect the policy vision, aims and objectives, such as **Strategic Objective 15**:

*'Encourage increasingly sustainable patterns of local travel behaviour, secure the provision of better opportunities to travel by foot, cycle and public transport and reduce the need to travel by unsustainable modes of transport'*

Draft Hertsmere Local Plan, Sept 2021

- 8.5 Predominantly focused on the delivery of a comprehensive active and sustainable movement network, to benefit everyone with or without transport or mobility challenges, long-listed schemes have been developed from the following broad principles, based on the objectives set out in the emerging Local Plan:

- Encouraging self-sufficient settlements
- Reducing through-trips
- Promoting the role of the SRN
- Behavioural change
- Prioritising sustainable transport

8.6 This approach reflects on how Hertsmere,

*'Seeks an integrated approach to transport and land-use planning by moving away from car dependency to more sustainable transport options including walking and cycling and improving connectivity between neighbouring towns to secure significant improvements in modal shift.'*

*'Aims to achieve a low carbon and less-car dominated future, within Hertsmere and the wider area.'*

*'And provide residents with a real choice of sustainable travel options'*

Draft Hertsmere Local Plan, Sept 2021

8.7 The scheme identification process resulted in a longlist of 49 schemes across the borough, all of which are detailed in **Appendix A**. These are also contained in **Appendix B**, where further detail is packaged within a series of pro forma.

8.8 The following sections provide some introduction to the concepts employed in the suggested schemes, alongside relevant case studies that may be of interest to see the effect of interventions elsewhere in the UK.

## Walking and Cycling

- 8.9 Prioritising walking and cycling for internal trips within settlements, rather than longer distance journeys into settlements other than that of the origin, can encourage self-sufficiency within more sustainable settlements.
- 8.10 The delivery of significant improvements to key walking and cycling route networks to offer journey times, safety and journey quality that are better than or at least equal to those achievable by car for the widest possible range of everyday journey purposes improves the sustainability of settlements, shifting local journeys to active modes.
- 8.11 Interventions aim to be comprehensive and coherent, removing barriers and pinch points which discourage walking and cycling. Such intervention includes:
- An active travel network along key corridors to facilitate prioritised walking and cycling movements between key destinations
  - A network of cycle routes on less-trafficked tertiary roads to facilitate shorter journeys by cycle, help encourage less-confident cyclists and connect to the more heavily prioritised and longer cycle and walk corridors
  - Integration of public rights of way into the active network to enable those journeys where journey time and directness may not be the priority, e.g. Leisure Travel
  - Comprehensive signage and wayfinding to help promote and navigate the cycle and walk network



### Case Study – Cycle Parking

- 8.12 Nottingham achieved a 28% uplift in cycling levels under the Local Sustainable Transport Fund project, due to interventions including the introduction of 14 secure cycle parking hubs, which were accessed over 900 times per month in 2014/15. Survey evidence indicated that these hubs had encouraged 38,500 additional cycle trips since their implementation.<sup>23</sup> The hubs were integrated with the Nottingham Express Transit (NET) tram network, linking up active travel with public transport.



<sup>23</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/738264/evaluation-and-synthesis-of-lstf.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/738264/evaluation-and-synthesis-of-lstf.pdf)

### *Case Study – Cycling Demonstration Towns*

- 8.13 The Cycling Demonstration Town programme led by Cycling England and DfT between 2005 and 2011 focussed on increased levels of cycling for short 'everyday' urban trips in six medium-sized towns. This included Aylesbury, Darlington, and Derby.
- 8.14 The programme involved the implementation of a range of improvements, including in cycle infrastructure; development of town-wide signed networks of cycle routes and branding and marketing of those routes which have delivered an increase in cycling uptake.
- 8.15 On average, the annual expenditure was just £17 per person, which in turn increased cycling trips across the six demonstration towns by an average of 29 percentage points in 2011 (relative to a 2005 baseline).
- 8.16 **The programme evaluation report notes that with collaborative and consistent effort, it is possible to achieve significantly higher levels of cycling in the UK.**
- 8.17 Reducing the barriers to cycling, in particular is a key challenge in suburban and semi-rural areas. It is necessary to consider how people travel, and therefore the systems most appropriate for them. For example, are they making several point-to-point journeys or do they always start and finish at the same location.

### *Case Study – Cycle hire*

- 8.18 Public bike hire has contributed to increasing cycling rates. After the first ten weeks of operation of TfL's Santander bike hire scheme, one million cycle rides were taken, 95% of which were previously made by another mode or not at all. Seven out of ten users said the scheme had prompted them to start cycling in the city or to cycle more often.<sup>24</sup> This has been the case across cities that have implemented such schemes – in Lyon a 44% increase in cycling mode share was achieved within the first year of implementation of Velo-v, its bike-share system<sup>25</sup>.
- 8.19 Whilst public cycle hire may work well in built-up areas, it is unlikely that sufficient density will be achievable in more rural locations, necessary to enable the variety and distance of trips. In this case, more reliance is placed on individuals who already have access to a bicycle and therefore are held back by a lack of safe cycle infrastructure.

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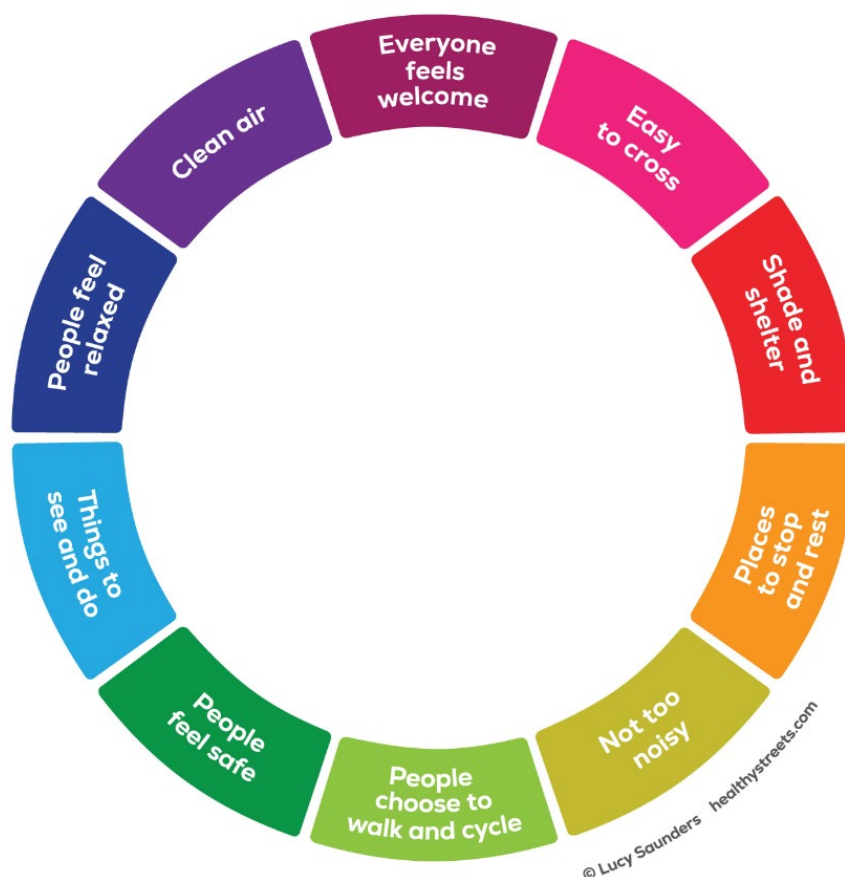
<sup>24</sup> <https://www.centreforpublicimpact.org/case-study/londons-cycle-hire-scheme/>

<sup>25</sup> <https://en.wikipedia.org/wiki/V%C3%A9lo%27v>

### Healthy Streets

- 8.20 [The Healthy Streets](#) approach provides the framework for putting human health and experience at the heart of planning for the future of towns and places. It identifies the importance of embedding public health in transport, public realm and planning for all users, including minority groups such as the disabled and elderly, who disproportionately experience the negative impacts of a car-dependent environment. The framework is focussed around ten evidence-based indicators to support an uptake in walking and cycling (Figure 8-1)

Figure 8-1: Healthy Streets indicators



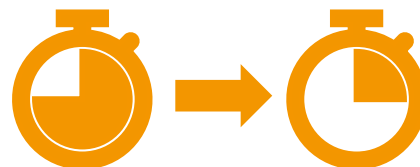
Source: Healthy Streets

### Public Transport

- 8.21 The quality of the public transport provided within Hertsmere is vitally important to providing a viable alternative to private car use for longer journeys, where cycling and

walking is not appropriate. Buses provide transport for all members of the community, reducing the reliance on the car for those that have the choice, and providing mobility for those who may not own a car.

- 8.22 Prioritisation can offer a reduction in bus journey times and delay, comparative to the private vehicle, whilst also increasing its service visibility and viability.



- 8.23 Intervention targeted to improve the bus network include:

- High priority corridors with focus on journey time reliability and a high level of service
- Bus priority measures at junctions where existing high frequency services currently operate – including bus gates and modal filters
- Improvement to bus stop accessibility and access to real-time information
- Demand Responsive Transport services to support multi-modal transport journeys – for example Arriva Click, as currently operated in Watford

### *Case Study – Park and Ride*

- 8.24 [Portsmouth's Park & Ride](#) site provides a 663-space car park built around a central bus terminal. The car park is attractively landscaped and includes disabled and parent-and-child bays, electric vehicle charging points, cycle stands and a 'Brompton Dock' for the hire of folding bikes. Providing a dedicated bus service enables frequent (every 15 minutes), reliable, direct connections to the city centre.

- 8.25 In the first five months of operation of Portsmouth Park & Ride (April-August 2014), around 55,000 cars parked at the site and there were 105,000 return journeys. There was a wide range in patronage on individual days, with the busiest Saturdays in August experiencing over twice the average level of usage. Demand has been strongest at weekends and during the school holidays, showing the strength of the leisure and shopping markets.<sup>26</sup>



<sup>26</sup> [Portsmouth Park and Ride 9-month Review](#)

### *Case Study – Increasing PT Quality and Attractiveness*

- 8.26 Fastway, a guided bus scheme in Crawley (delivered between 2003 and 2006) has increased patronage by 160% over ten years and facilitated a 19% decrease in traffic levels between 2006 and 2013.<sup>27</sup> Between the 2001 and 2011 Census bus use in Crawley for travel to work increased by 30%<sup>28</sup>. Some of the key factors for success include:
- **Availability:** Many existing services operated at low frequencies and home-destination journeys often required interchange. A fully integrated system was introduced to provide a comprehensive service across the area and increase the availability of direct services.
  - **Speed:** Bus speeds were low and unreliable due to congestion and lack of priority, giving little incentive to use buses for car users. Road space reallocation and priority improved journey times by 20%.
  - **Perception:** There had been a long-term decline in patronage across Crawley prior to introduction of the service. The overall branding, communications and customer service enhancements negated people's reluctance to try the bus, resulting in the growth in mode share set out above.
- 8.27 Whilst it may not be possible for all destinations in Hertsmere to be linked by direct bus services, strategic decisions can be made to focus services on the most viable locations, delivering a high-quality service where it is most likely to make an impact. This includes cross-boundary transport connectivity between Hertsmere and Watford / Barnet to link key facilities and destinations such as Barnet Hospital and Watford General Hospital.
- 8.28 Developer-led shuttle buses can be used to link a specific destination to a public transport hub/interchange. These shuttle buses, which can be subsidised by the developer of a particular site, enable residents/employees to get from A to B quickly and directly, without necessarily having to stop and pick up other passengers. However, dependent on route alignment and availability, they could compete with existing bus routes, and therefore undercut their commercial viability.

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<sup>27</sup> <https://greenerjourneys.com/wp-content/uploads/2015/09/Ex-Post-Evaluation-of-Bus-Infrastructure-150908-v-STC-FINAL.pdf>

<sup>28</sup> Census Travel to Work data 2001 and 2011

### *Case Study – Increasing PT Connectivity*

- 8.29 Existing large-scale destinations such as hospitals or universities are often under-served by dedicated public transport, which can be a barrier to increasing sustainable mode shares. Increasing bus access to Nottingham City Hospital increased the proportion of public transport travel by 9%, while solo car use declined by 17%.<sup>29</sup>

### Private Car

- 8.30 HBC acknowledges there is high car dependency for inter-town trips and private car trips make up the largest share of all trips taking place between Borehamwood and Elstree. Through-routes across Hertsmere induce additional traffic on the local road network, increasing hostility for pedestrians and cyclists and inducing delay on public transport services around local centres. Options for drivers to use these through-routes can be made less attractive (or 'stickier' for private cars), particularly where these originate and finish outside of the Borough, to again minimise the use of private vehicles at the heart of Hertsmere's settlements.
- 8.31 It is recognised however, that for some population groups, such as those with disabilities or mobility issues, the private car may remain the preferred mode of travel. Minimising the use of the private vehicle and achieving a modal shift towards more sustainable modes will release space on the road network for those who need to use it most.
- 8.32 Filtered permeability is a key traffic management design tool used in Low Traffic Neighbourhoods and help support the development of safe and attractive active travel routes. Sections of routes are closed to general traffic, whilst maintaining accessibility for pedestrians and cyclists, as well as public transport, servicing, and freight.



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<sup>29</sup><http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/pgr/sustainable/travelplans/work/ngtravelplansworklessons5783.pdf> (Page 52)

### *Case Study – Filtered permeability*

8.33 In the UK, filtered permeability has been used successfully in the London borough of Waltham Forest, which was awarded £30m to increase cycling in the borough as part of the London Mayor's 'Mini Holland' programme. In Walthamstow Village (in Waltham Forest), the transformation of Orford Road has reduced the daily traffic flow on the street by almost half (from 8,493 to 4,808).



8.34 In the wider neighbourhood traffic volumes decreased on internal by around 56%, or 14,516 cars. The traffic increase on the roads outside of the town centre was significantly lower, being 4,113 cars, representing a net overall reduction in traffic.<sup>30</sup> The initial assessments of the Mini Holland scheme suggest they have increased the amount of active travel by around 41 minutes per person per week.<sup>31</sup>

8.35 Low Traffic Neighbourhoods are a similar concept that makes use of filtered permeability across traffic 'cells'. These are local areas that are typically only accessible by car from one side, therefore eliminating the possibility of through trips whilst retaining essential access for cars. They are typically applied to residential streets, where through trips are more suitably carried by surrounding distributor routes.

8.36 Whilst low traffic neighbourhoods have been showcased, resulting in some controversy, through the Covid-19 pandemic, they have been used for many decades to achieve the same outcomes of making local streets more attractive to local residents, pedestrians and cyclists.

<sup>30</sup> <https://www.enjoywalthamforest.co.uk/work-in-your-area/walthamstow-village/comparison-of-vehicle-numbers-before-and-after-the-scheme-and-during-the-trial/>

<sup>31</sup> <https://www.sciencedirect.com/science/article/pii/S0965856417314866#b0160>

### *Case Study – Low traffic neighbourhoods*

- 8.37 A Low Traffic Neighbourhood in London Fields, Hackney used a combination of transport tools to encourage lower levels of traffic in the area including three new bus gates. These were successful in reducing traffic by 44% on boundary roads and 21% inside the LTN and shows how lowering road capacity can reduce traffic levels.



### Town Centre Parking

- 8.38 The private car is often the default mode choice where parking provision is cheap and convenient at both ends of a journey. Parking location, quantity, cost and the way users pay for it are all key influences, whilst also a useful demand management tool available to local authorities.
- 8.39 Whilst a reduction in car dependency will be delivered primarily through the availability and promotion of alternative sustainable modes, changes to the availability and location of car parking bays is also essential to see a shift away from the private car.
- 8.40 Through a reduction of on-street parking, unnecessary traffic from drivers hunting for spaces can be reduced, with drivers instead directed to one of many existing off-street car parks. Ensuring that such car parks are located on all sides of the town centre can help to ensure that drivers seeking to reach the car parks don't have to drive through the high street first, thereby further improving the local environment.
- 8.41 The space freed-up from vehicle dominated parking provision can create spaces that are people-focussed and increase dwell time, driving up the quality of local retail. It enables steps such as bus prioritisation to take place and presents the opportunity to re-allocate the space for cycle lane and parking provision. Furthermore, free or low-cost parking provision within town centres is often subsidised by the taxpayer. This can typically be at the expense of walking and cycling investment and therefore the attractiveness of these modes.
- 8.42 HBCs existing Parking Management Strategy<sup>32</sup> and Draft Sustainable Transport and Parking Standards SPD ensures that the supply, demand and cost of on- and off-street town centre car parking across the key settlements in Hertsmere is managed effectively and sustainably. The policy can support the drive towards modes of travel away from

<sup>32</sup> [Parking Management Strategy](#), Hertsmere Borough Council

the private car, and ensure future development adopts sustainable characteristics in their designs.

### *Case Study – Road space reallocation*

- 8.43 Letchworth Garden City has recently undergone a significant transformation of its town centre and high streets. This has resulted in significantly more space for pedestrians, whilst retaining access for service vehicles. High quality materials and street furniture clearly demark different areas for different purposes and stress the concept of 'cars as guests'.



- 8.44 Wider parking measures could be considered to provide a more holistic approach to parking provision and management. Through means of a borough-wide parking strategy, adjusting parking standards in new developments, increasing charges at paid-for locations, workplace parking levies and controlled parking zones could further strengthen behavioural change.
- 8.45 The adoption of future technologies, including EV charging facilities, will also be vital should Hertsmere achieve its net-zero targets, albeit in a secondary role to trip reduction methods and the provision of car-free alternatives. Consideration should be given to ensure the right types of charging point is available in the right locations, in line with the [HCC EV Strategy](#) published in November 2022.



### **Future and Shared Mobilities**

- 8.46 Site allocations are well placed for Hertsmere residents to benefit from emerging shared mobility options, particularly due to their location relative to existing transport hubs and local centres. These technologies have developed rapidly and include:
- E-bikes/E-Scooters
  - Cycle Hire
  - Car Clubs
- 8.47 Provision of cycle routes supporting e-bikes will allow active travel to not only be suitable for relatively fit and confident riders, but also encourage those who may have been apprehensive about cycling in the past. This emerging e-mobility market will also be a key tool to encourage more sustainable journeys in the hillier areas of Hertsmere.

- 8.48 Demand Responsive Transport offers a flexible approach to public transport services and can complement fixed route bus services to improve accessibility in low-density areas at times of low demand. It can encourage traditional car users towards shared transport through its flexibility and possible expansive service area.
- 8.49 Services can typically be booked via an app, where passengers are able to request pick-up and drop-off points during specific operating periods. An example of such service in operation in Hertfordshire is ArrivaClick, serving Watford residents across the borough.

### *Case Study – Mini hubs*

- 8.50 Whilst the 'mobility hub' is an emerging concept, the first accredited mini hub in the UK has been developed in the London Borough of Redbridge, reclaiming one traditional on-street car parking space in favour of an integrated provision of an electric car club bay, a community-led café and an outdoor seating area with a fast EV charger. Redbridge intends to deliver further hubs in the future.
- 8.51 As defined within CoMoUK's [Mobility Hubs Guidance \(2019\)](#), a mobility hub has three key characteristics:
- Co-location of public and shared mobility modes
  - Re-design of space to reduce private car use, improving surrounding public realm
  - A pillar or sign which identifies the space as part of a wider transport network and ideally provide digital travel information

### *Case Study – Mobility hub strategy*

- 8.52 Plymouth City Council, through investment from the Transforming Cities Fund, aim to deliver up to 50 multi-modal Mobility Hubs across Plymouth, creating a Mobility Hub Network, strategically integrated into the public transport network for business and the public. These will consist of 300 electric vehicle charge points, 400 e-bikes, a car club, 0.5 megawatts of solar carports and a smart journey planning system.



### **Behavioural Change**

- 8.53 'Nudging' techniques can subtly change travel behaviours alongside physical improvements to the sustainable transport network to result in a greater cumulative impact to normalise desired and more positive behaviours.
- 8.54 One-off infrastructure improvement can help to alter peoples everyday travel but should be supported by a package of wider measures to ensure a sufficient change to habitual behaviour and perceptions towards more sustainable and active modes of transport.
- 8.55 Delivery of borough-wide walking and cycling events, including guided walks and cycle rides, cycle training and cycle maintenance training (Dr. Bike) can encourage less confident users to increase travel by these active modes. The promotion and involvement in national travel related events could also benefit perceptions towards cycling and walking and engrain a positive behavioural change, with events such as:
- National Lift-Share Day
  - Energy Saving Week
  - Cycle to Work Day / Bike Week
  - National Walking Month
- 8.56 Residents will need to be well consulted and informed on new transport measures that will become options for their journeys, whilst access to pre-travel information, personalised travel planning and smoothing multi-modal journeys can help make changes to peoples travel behaviour more attractive.



## 9. Next Steps

- 9.1 Interventions developed by ITP seek to align with policies and objectives set out in Hertsmere's emerging Local Plan and Hertfordshire's LTP4, with the following overall desired outcomes across all modes of transport:
- More people walking, cycling, and using shared mobility options more regularly for everyday journeys
  - Less demand for private car travel for shorter trips, therefore reducing the number of vehicles on the network, whilst creating a higher perception of safety and quality and more social interaction amongst people
  - Creation of people-focussed spaces and increased dwell time at local centres
  - Longer-distance trips moved away from the local road network sooner – increased journey time reliability and reduction in delays for public transport on the local road network
  - More people using local bus services to complete everyday journeys to new and existing key destinations
  - Decarbonisation of motorised modes of travel, with a shift towards electric vehicles for private and commercial purposes
- 9.2 Whilst each potential intervention listed within **Appendix A** considers the desired outcomes as set out in the emerging Local Plan, it is acknowledged that 'packages' of intervention may be suitable and more appropriate in bring about a greater desired shift in travel pattern and behaviours. **Appendix B** details the relationship that any potential intervention has amongst others and some suggested intervention packages that would be deemed successful.
- 9.3 Whilst the long-listed schemes predominantly encapsulate targeted improvements where baselining has identified key constraint and/or opportunity within each settlement, it is acknowledged that there may be the opportunity to consider any potential intervention in additional locations elsewhere in Hertsmere. This includes extended active travel routes, local areas for pedestrianisation and the introduction of transport interchange/mobility hub at smaller local centres.
- 9.4 It is key for these long-listed schemes to be considered in the context of those interventions proposed in existing GTPs and any future Hertsmere LCWIP to secure funding, including through developer contributions, to maximise modal shift and achieve a genuine choice of sustainable modes of transport.

- 9.5 As previously alluded to, this Sustainable Transport Strategy will provide the basis for any future growth scenario to be supported by a suite of various transport intervention to help achieve the desired outcomes listed above.
- 9.6 Whilst this document is not intended for inclusion in the formal suite of planning document, it seeks to provide guidance to HBC and developers alike to encourage the development of sustainably connected growth sites through the consideration of the potential listed interventions.

## Appendix A

### Proposed Scheme Interventions – Long List

| Ref | Intervention                                                                                                                                   |                                                                                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Area                    | Mode |    |       |      | Viability / Cost | Timescale  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------|----|-------|------|------------------|------------|
|     | Name                                                                                                                                           | Package                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         | Road | PT | Cycle | Walk |                  |            |
|     | Proposed active travel network - Shenley and Radlett                                                                                           |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
| 1   | Proposed active travel link between Shenley High Street and Andrews Close                                                                      | Local active travel links to provide connections to local services                           | a)<br>1. Upgrade of existing footpath for cycle and walk provision. Upgrade Shenley010 to bridleway<br>2. Cycleway along London Road either on the highway or by creating high quality shared use cycle/footways<br>b) Pedestrian cut-through to be opened up through Shenley Park to avoid Porters Park Drive/London Road mini-roundabout<br>c) Mini-roundabout signalised with phased <b>cycle priority</b> - Separate cycle signal phase LTN 1/20 aligned.                                                                                                                                                                                                                                                                                                                                                    | Shenley                 |      |    | ✓     | ✓    | Medium           | 0-2 years  |
| 2   | Proposed active travel link between Shenley and Radlett (Radlett Lane/Shenley Road)                                                            | Local active travel links to provide connections to local services and other transport modes | a) Includes light-segregated cycleways and shared facilities to support any potential Quietway network through Shenley and Radlett<br>b) Fully segregated cycleway aligned north of Radlett Lane (through Shenley Park) and west of Black Lion Hill (currently Promoted Cycle Route 57 - Advisory, on-road)<br>c) Extension of cycle route, along upgraded neighbouring PRoW's (change of classification for cycle use) and onto Theobalds Lane                                                                                                                                                                                                                                                                                                                                                                  | Shenley / Radlett       |      |    | ✓     | ✓    | Medium           | 2-5 years  |
|     | Proposed active travel network - Potters Bar                                                                                                   |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
| 3   | Proposed active travel link between Potters Bar High Street and Darkes Lane                                                                    | Local active travel links to provide connections to local services                           | a) Low-traffic cycle route along Billy Lows Lane and Mount Grace Road - this includes signing, lining and lightly segregated route to offer protection from parked vehicles<br>b) The Walk - sustainable travel priority route (as per intervention through the Park and Ride proposal)<br>c) Associated improvements where routes cross junctions required (upgrade of mini-roundabouts along both Potters Bar High Street and Darkes Lane to provide cycle segregation)                                                                                                                                                                                                                                                                                                                                        | Potters Bar             |      |    | ✓     | ✓    | Medium           | 5-10 years |
|     | Proposed active travel link between Bushey and Watford/Stanmore                                                                                |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
| 4   | Proposed active travel link between Bushey High Street and Watford Junction/Bushey Rail Station                                                | Local active travel links to provide connections to local services and other transport modes | <b>Cycleway either on the highway or by creating high quality shared use cycle/footway.</b> Associated improvements where routes cross junctions required. LTN 1/20 aligned.<br><i>(Co-ordination with Watford LCWIP proposals under GTP to provide coherent, connected network into Watford)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Bushey                  |      |    | ✓     | ✓    | Medium           | 5-10 years |
|     | Proposed active travel link between Elstree and Borehamwood                                                                                    |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
| 5   | Link between Elstree and Borehamwood                                                                                                           | Local active travel links to provide connections to local services and other transport modes | <b>Cycleway either on the highway or by creating high quality shared use cycle/footway.</b><br>a) Creation of route along Allum Lane with footpath (Elstree/Borehamwood 007) altered for cycle use<br>b) Active travel link between Theobald Street (edge of Borehamwood South) to Elstree and Borehamwood Station - Connects to existing Byway060 - mixture of both full and light segregated cycle provision<br>c) Extension along High Street for connectivity to Sky Studios. Increased feasibility of delivery alongside REF 10 - traffic calming/Core Walking Zone/reduced vehicle movement<br><i>Ensure co-ordination with cycle proposals currently under discussion) - Some works are to be undertaken under development proposals e.g. cycle phase on proposed signalised crossing at Elstree Hill</i> | Elstree and Borehamwood |      |    | ✓     | ✓    | High             | 5-10 years |
|     | Network of 'Quietway's'                                                                                                                        |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
| 6   | Quietway's linking residential areas with local centres in Bushey, including High Road, Bushey High Street, Harcourt Road and Bushey Hall Road | Local cycle links to provide connections to local services                                   | <b>Network of 'Quietway's'</b> - on-road cycle provision on predominantly low-trafficked tertiary roads to link residents with local centres within Bushey. Includes, but not limited to Moatfield Road, Herkomer Road, Giant Tree Hill and Hartsbourne Avenue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Bushey                  |      |    | ✓     |      | Medium           | 2-5 years  |
| 7   | Quietway's linking residential areas with local centres in Shenley                                                                             | Local cycle links to provide connections to local services                                   | <b>Network of 'Quietway's'</b> - on-road cycle provision on predominantly low-trafficked tertiary roads to link residents to local centres within Shenley. Includes, but not limited to Cage Pond Road, Harris Lane, Porters Park Drive and Grace Avenue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Shenley                 |      |    | ✓     |      | Medium           | 2-5 years  |
|     | Interventions currently under consideration                                                                                                    |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |      |    |       |      |                  |            |
|     | Elstree Way Corridor and Shenley Road Improvements                                                                                             |                                                                                              | Package of measures with potential to be funded through S106 agreements (development at Media Quarter). Includes<br>a) continuous footways at T-junctions<br>b) new controlled pedestrian and cycle crossing points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Elstree and Borehamwood |      |    | ✓     | ✓    | *                | *          |
| 8   | Improved pedestrian crossing at Station Road/Theobald Street mini-roundabout                                                                   | Improved local pedestrian links to local services and other transport modes                  | a) <b>Medium intervention option</b> - Controlled crossing to replace current uncontrolled crossing between Elstree and Borehamwood Rail Station and the High Street<br>b) <b>High intervention option</b> - Signalisation of the junction with dedicated pedestrian staging/phasing - alternative proposal suggested under the Elstree and Borehamwood Urban Transport Plan                                                                                                                                                                                                                                                                                                                                                                                                                                     | Elstree and Borehamwood |      |    |       | ✓    | *                | *          |

| Notes/References                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                   |
| Consideration alongside REF 2 and REF 7                                                                                                                                                                                                                                                           |
| Option to complete a circular route linking REF 21 and into existing Promoted Cycle Routes 53 and 57                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                   |
| The Walk offers promotion of sustainable travel access to key community facilities (Parkfield Medical Centre, Potters Bar Football Club and Ladbroke Primary School)                                                                                                                              |
|                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                   |
| Quietway's -Cycle routes whereby provision for cyclists is on quieter, lesser trafficked roads - designed to appeal to new and less confident cyclists. Requires well-signed routes with complementary infrastructure measures such as introduction of new speed limits and filtered permeability |
|                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                   |
| Accident hotspot –consider the needs of pedestrians and turning circle of buses (Station Road) Elstree and Borehamwood UTP - signalisation scheme at Station Road under development                                                                                                               |



|    |                                                                                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |   |   |   |   |           |             |
|----|-------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---|---|---|---|-----------|-------------|
| 24 | Bus Stop Improvement programme                                                      |                                        | Programme to bring all <b>bus stops to the same standard</b> in the Borough, including shelters and provision of real-time information - Locations include Centennial Park, Studio Way, Church Road, B462, and B556 (real-time information to be provided)                                                                                                                                                                                                                                           | Borough-wide                                                                          |   | ✓ |   |   | Low       | 0-2 years   |
| 25 | Public transport ticketing                                                          |                                        | Improved multi-operator ticketing across the Borough (Intalink Explorer)                                                                                                                                                                                                                                                                                                                                                                                                                             | Borough-wide                                                                          |   | ✓ |   |   | Low       | 0-15 years  |
| 26 | Sandy Lane multi-modal improvements                                                 |                                        | a) <b>One-way</b> vehicle access<br>b) <b>Bus priority</b><br>c) <b>Cycle contraflow</b>                                                                                                                                                                                                                                                                                                                                                                                                             | Bushey                                                                                | ✓ | ✓ | ✓ |   | Medium    | 0-5 years   |
| 27 | Park Road multi-modal improvements                                                  |                                        | a) Park Road <b>one-way</b> eastbound to give width for a <b>right hand bus lane</b> .<br>b) <b>Contraflow (uphill) cycle lane</b> .<br>c) Replace mini-roundabout (at Watling Street) with signals.                                                                                                                                                                                                                                                                                                 | Radlett                                                                               | ✓ | ✓ | ✓ |   | Medium    | 0-5 years   |
| 28 | The Avenue/Bushey Hall Road multi-modal improvements                                |                                        | <b>Segregated roundabout</b> with the introduction of signals to give phased priority for cyclists (Dutch-style roundabout)                                                                                                                                                                                                                                                                                                                                                                          | Bushey                                                                                |   |   | ✓ |   | Medium    | 0-5 years   |
|    | Darkes Lane multi-modal improvements                                                |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |   |   |   |   |           |             |
| 29 | Darkes Lane/Mutton Lane Junction                                                    |                                        | Dutch-style segregated junction with two-stage right-turn for cyclists                                                                                                                                                                                                                                                                                                                                                                                                                               | Potters Bar                                                                           |   |   | ✓ |   | Medium    | 5-10 years  |
| 30 | The Walk/Darkes Lane                                                                |                                        | T-Junction signalised with bus priority between The Walk and Potters Bar Rail and Bus Interchange. Allow buses to cross Darkes Lane with restricted turns for vehicles                                                                                                                                                                                                                                                                                                                               | Potters Bar                                                                           | ✓ | ✓ | ✓ | ✓ | Medium    | 5-10 years  |
|    | Multi-Modal Interchanges                                                            |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |   |   |   |   |           |             |
| 31 | Proposed Rail and Bus Interchange - Potters Bar - existing rail station             | Larger Multi-Modal Interchange         | <b>A multi-modal interchange hub connecting local bus and rail services</b> (including proposed park and ride), bus information, cycle parking and e-bike docking, shared mobility options including car clubs and bike hire.                                                                                                                                                                                                                                                                        | Potters Bar                                                                           |   | ✓ | ✓ | ✓ | Medium    | 5-15 years  |
| 32 | Proposed Rail and Bus Interchange - Elstree and Borehamwood - existing rail station | Larger Multi-Modal Interchange         | <b>A multi-modal interchange hub connecting local bus and rail services</b> , bus information, cycle parking and e-bike docking, shared mobility options including car clubs and bike hire.                                                                                                                                                                                                                                                                                                          | Elstree and Borehamwood                                                               |   | ✓ | ✓ | ✓ | Medium    | 5-15 years  |
| 33 | Proposed Rail and Bus Interchange - Bushey - existing rail station                  | Larger Multi-Modal Interchange         | <b>A multi-modal interchange hub connecting local bus and rail services</b> , bus information, cycle parking and e-bike docking, shared mobility options including car clubs and bike hire.                                                                                                                                                                                                                                                                                                          | Bushey                                                                                |   | ✓ | ✓ | ✓ | Medium    | 5-15 years  |
| 34 | Local centre multi-modal interchanges                                               | Local Centre Multi-Modal Interchanges  | <b>Locations within neighbourhoods</b> where <b>bus and active travel combine with local facilities</b> to become a destination as well as an interchange point. Facilities could include, but not limited to, parcel collection lockers, cycle storage and hire, and act as an information point.                                                                                                                                                                                                   | Borough-wide with identified locations including Radlett, Shenley and Centennial Park |   | ✓ | ✓ | ✓ | Medium    | 5-15 years  |
| 35 | Improvements to The Bell Roundabout                                                 |                                        | a) <b>Throughabout</b> for bus services to 'cut-through' the junction giving <b>bus priority</b> for services to connect to the Bowman's Cross site.<br>b) Improve access for pedestrians and cyclists with new signalised crossings across 'arms' of the roundabout. All crossing points to be designed for users with disabilities.                                                                                                                                                                | Potters Bar / (Bowman's Cross)                                                        | ✓ | ✓ |   |   | Very High | 5-10 years  |
| 36 | M1 London Gateway Services - Additional slip towards Borehamwood                    | Promote Role of Strategic Road Network | <b>Provide the Scratchwood Link</b> at the M1 London Gateway Services (Junction 3) to provide <b>greater access to the SRN</b> from Borehamwood<br>a) An additional two-way dual slip-road at Junction 3 to connect the M1 to Barnet Way and Stirling Corner. Alignment through Scratchwood Open Space<br>b) New slip-road on and off the A1 Barnet Way<br>c) re-configuration of the existing roundabout at the Gateway Services to accommodate <b>additional and alternative traffic movements</b> | Elstree and Borehamwood                                                               | ✓ |   |   |   | Very High | 10-15 years |
| 37 | "One-way" networks                                                                  |                                        | A network of one-way movements to restrict private vehicle movement, allowing for two-way bus operation.<br>Example locations include Darkes Lane (Potters Bar) and Park Road (Radlett)                                                                                                                                                                                                                                                                                                              | Borough-wide                                                                          |   |   |   |   | Medium    | 0-5 years   |
| 38 | Signal re-phasing and optimisation                                                  |                                        | Undergo a programme of <b>traffic signal upgrades</b><br>a) <b>Green-wave effect</b> along Mutton Lane - (signalise mini-roundabouts and T-junctions)<br>b) Along A41<br>c) B462 Watford Road/Radlett Road                                                                                                                                                                                                                                                                                           | Borough-wide                                                                          | ✓ |   |   |   | Medium    | 0-5 years   |
| 39 | Road Signage Review                                                                 | Promote Role of Strategic Road Network | Review and <b>improvement of existing vehicular traffic signage</b> at existing junctions to <b>prevent priority routings through key settlements</b>                                                                                                                                                                                                                                                                                                                                                | Borough-wide                                                                          | ✓ |   |   |   | Low       | 0-15 years  |
|    | Review of town centre parking                                                       |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |   |   |   |   |           |             |
| 40 | Reduction in on-street standard car parking spaces                                  | Town Centre Parking                    | <b>On-street, standard parking spaces</b> at local centres/High Streets within Hertsmere to be <b>reduced to allow for public realm improvements</b> and free up space for <b>additional cycle/pedestrian facilities</b> .<br>a) Follow-on from the temporary removal of spaces to promote social distancing along Borehamwood High Street.<br>b) Public realm improvements could include introduction of lower 20mph speed limits to <b>reduce hostility where traffic flows are higher</b> .       | Borough-wide                                                                          |   |   | ✓ | ✓ | Medium    | 0-5 years   |
| 41 | Parking consolidation into a smaller number of high-quality off-street facilities   | Town Centre Parking                    | <b>Consolidation of off-street car parks</b> towards to edge of the town centre                                                                                                                                                                                                                                                                                                                                                                                                                      | Borough-wide with Borehamwood focus                                                   | ✓ |   |   |   | Medium    | 5-10 years  |
| 42 | Intelligent Kerbside Management                                                     |                                        | <b>Dynamic management of the kerbside</b> within settlements of busy high streets - pre-booked virtual loading bays for the management of LGV's/HGV's                                                                                                                                                                                                                                                                                                                                                | Borough-wide                                                                          | ✓ |   |   |   | Low       | 5-10 years  |
| 43 | EV infrastructure roll-out                                                          | Behaviour Change / Town Centre Parking | Encourage use of <b>ULEV's</b> where journeys by car still need to be made - charging infrastructure located at key destinations/at on and off-street parking locations                                                                                                                                                                                                                                                                                                                              | Borough-wide                                                                          | ✓ |   |   |   | Medium    | 0-5 years   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phased approach as and when additional bus services are introduced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| To link to Watling Street improvements for better access to Radlett Rail Station and High Street                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Radlett Railway Station, Andrews Close - Shenley, Centennial Park, and Otterspool Way                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Green-wave effect' = whereby traffic lights at signalised junctions along major arteries/routes to key destinations are co-ordinated to allow for a more continuous flow of traffic. Vehicles should be able to approach each junction under a green signal and not have to stop at each junction. The aim is for an improvement in road safety and a reduction in vehicle emissions and fuel consumption (less demand for accelerating and braking).<br>This idea could be extended to cycle flows (under separate cycle phasing) once network of core routes has been developed |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |



## Appendix B

### Proposed Scheme Interventions – Pro Forma

|              |                                           |
|--------------|-------------------------------------------|
| Project      | Hertsmere Sustainable Transport Appraisal |
| Title        | Long List Pro Forma                       |
| Date         | June 2023                                 |
| Project Code | 3684                                      |
| Version      | 5                                         |



## 1. Overview

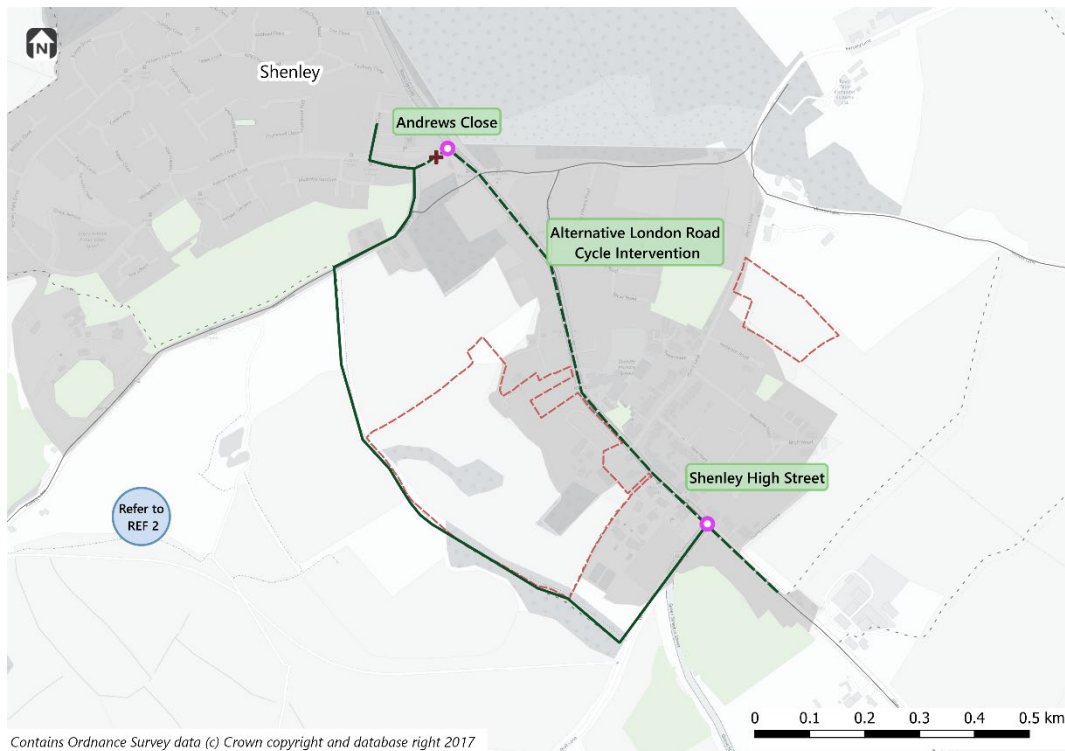
### Context

- 1.1 The context of this study shifted when the emerging plan was announced to be reviewed. However, it was decided in consultation with Hertsmere Borough Council that this should continue as it would still provide valuable evidence for future Local Plans. On 27th April 2022, Hertsmere Borough Council agreed to formally set aside the current Regulation 18 draft Local Plan so that the additional work required to inform the Local Plan spatial strategy can be carried out whilst awaiting clarity from the Government on planning reforms. The Sustainable Transport Appraisal is part of this additional work and seeks to address the need for clear transport intervention within the Regulation 18 documentation by identifying and suggesting ways to cater for growth and mitigate the potential impact on the local and strategic transport network.

### Transport Interventions

- 1.2 Low, medium, high, and very high interventions refer to the scale of intervention required and inform the costing.
- Low interventions— modest infrastructure investment such as light segregation.
  - Medium interventions— larger inventions such as changes to car parking and some road space reallocation.
  - High interventions— substantial changes such as major junction upgrades and significant road space reallocation
  - Very high interventions – substantial major changes such as strategic junction upgrades

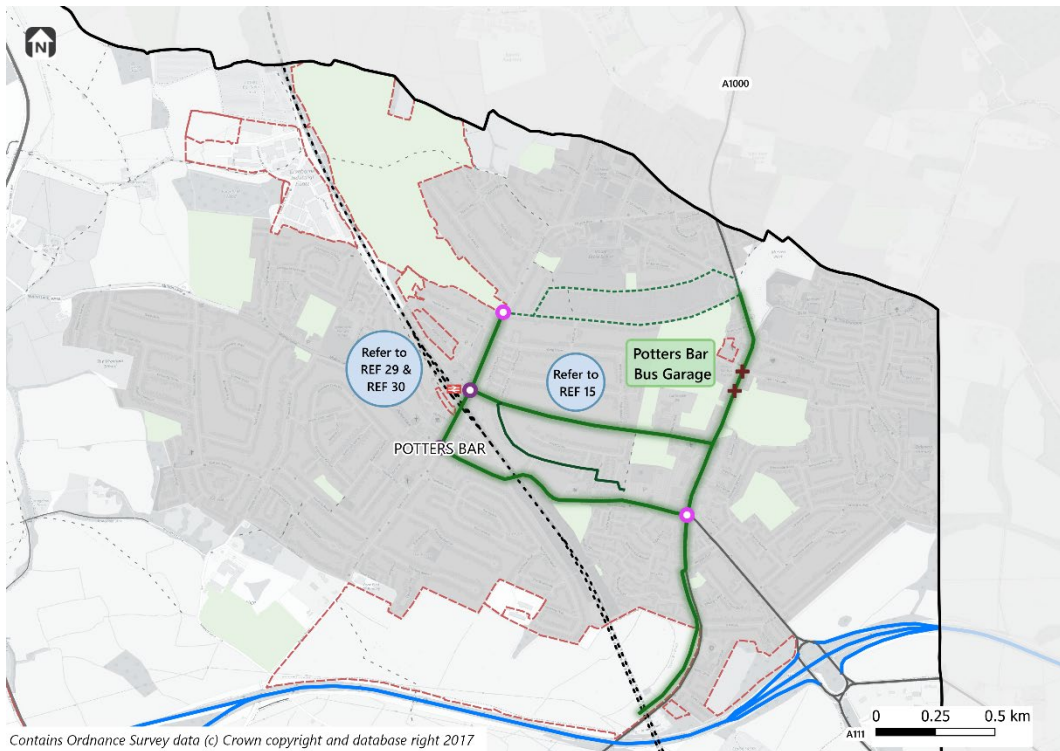
| Key                                                                                                            |                                                                                                       |                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Context                                                                                                        | Interventions                                                                                         | Multi-modal Interchanges                                                                                                              |
|  Potential Growth Site        |  Cycle - High        |  Transport hub                                       |
|  Existing cycle route         |  Cycle - Medium      |  Local Centre                                        |
|  Existing Public Right of Way |  Cycle - Low         | Route Audit and Intervention                                                                                                          |
|  Motorway                     |  Bus - Very High     |  Existing Cycle Route Audit                          |
|  A Road                       |  Bus - High          |  Existing Public Right of Way Audit and Intervention |
|                                                                                                                |  Bus - Medium        |                                                                                                                                       |
|                                                                                                                |  Bus - Low           | Junction Intervention                                                                                                                 |
|                                                                                                                |  Public Realm        |  Major                                               |
|                                                                                                                |  Highway - Very High |  Minor                                               |
|                                                                                                                |  Highway - Medium    |  Crossing Upgrade                                    |

| Proposed Active Travel Network – Radlett and Shenley |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                             |            |           |                |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|-----------|----------------|
| REF 1                                                | Active travel link between Shenley High Street and Andrews Close                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                             |            |           |                |
| Overview                                             | Proposed new and upgraded high-quality active travel link between Shenley High Street and Andrews Close.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                             |            |           |                |
| Intervention                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                             |            |           |                |
| Additional Details                                   | <ul style="list-style-type: none"><li>Existing PRoW (Footpath 010) upgraded to bridleway to allow cycle use</li><li>Alternative option for on-road light-segregated cycleways and shared facilities in accordance with LTN 1/20 (London Road) - two signalised junctions with phased cycle priority</li><li>Crossings and junctions to be improved along chosen route, with upgrades also improving pedestrian environment</li><li>Indicative cost and timescale are reflective of either potential routing</li><li>Cycle parking to be installed near to key destinations such as High Street and Andrews Close (REF 14)</li></ul> |                                                                                                             |            |           |                |
|                                                      | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Medium                                                                                                      |            |           |                |
|                                                      | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0 – 2 years                                                                                                 |            |           |                |
|                                                      | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Shenley                                                                                                     |            |           |                |
|                                                      | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 11, REF 13</td><td>REF 7</td></tr></table> | 'Requires' | 'Enables' | REF 11, REF 13 |
| 'Requires'                                           | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                             |            |           |                |
| REF 11, REF 13                                       | REF 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                             |            |           |                |

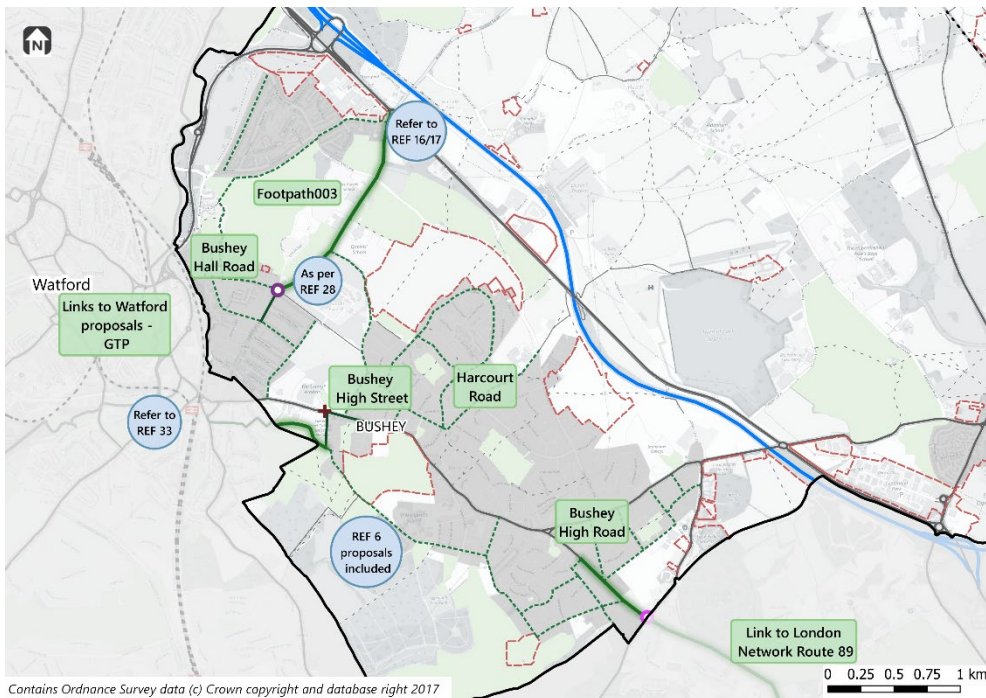
On April 27, 2022, the council formally set aside the current Regulation 18 draft Local Plan so that the additional work required to inform the Local Plan spatial strategy can be carried out whilst awaiting clarity from the Government on planning reforms. The Sustainable Transport Appraisal is part of this additional work and seeks to address the need for clear transport intervention within the Regulation 18 documentation by identifying and suggesting ways to cater for growth and mitigate the potential impact on the local and strategic transport network.

| Proposed Active Travel Network – Radlett and Shenley |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                             |            |           |                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|-----------|----------------|
| REF<br>2                                             | Active travel link between Shenley and Radlett                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                             |            |           |                |
| Overview                                             | Proposed active travel link between Shenley and Radlett (Radlett Lane/Shenley Road)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                             |            |           |                |
| Intervention                                         | <div><p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                             |            |           |                |
| Additional Details                                   | <ul style="list-style-type: none"><li>Offers potential for sustainable connections to potential future development sites. Option to complete a circular route in co-ordination with REF21</li><li>Fully segregated cycleway along Radlett Lane with connection to existing Promoted Cycle Routes 57 and 58, neighbouring PRow's and Theobald Street</li><li>Supports any potential network of 'quietways' (from existing promoted cycle routes) and a multi-modal interchange at Radlett</li><li>Potential routes and infrastructure changes to link Shenley to Radlett Station by bike could be explored through the development of an LCWIP.</li></ul> |                                                                                                             |            |           |                |
|                                                      | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Medium                                                                                                      |            |           |                |
|                                                      | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0 – 2 years                                                                                                 |            |           |                |
|                                                      | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Radlett and Shenley                                                                                         |            |           |                |
|                                                      | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 11, REF 13</td><td>REF 7</td></tr></table> | 'Requires' | 'Enables' | REF 11, REF 13 |
| 'Requires'                                           | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |            |           |                |
| REF 11, REF 13                                       | REF 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                             |            |           |                |

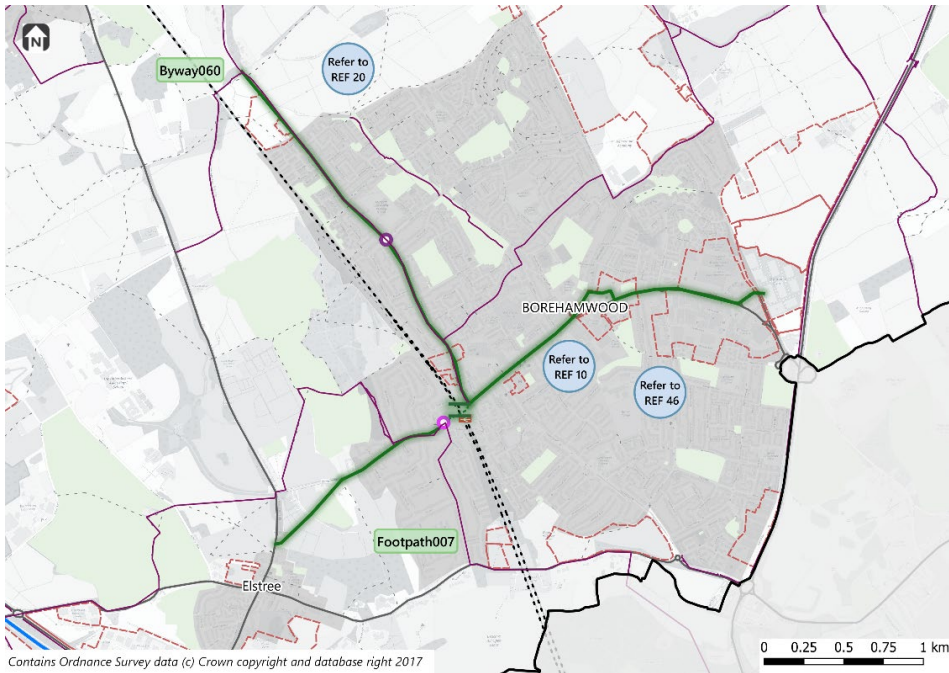
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| Proposed Active Travel Network – Potters Bar |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |           |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------|
| REF<br>3                                     | Active travel link between Potters Bar High Street and Darkes Lane                                                                                                                                                                                                                                                                                                                                                                    |                                              |           |
| Overview                                     | Proposed upgraded high-quality active travel links between Potters Bar High Street and Darkes Lane. Linked routes include Billy Lows Lane, The Walk, Stafford Circus and Mount Grace Road.                                                                                                                                                                                                                                            |                                              |           |
| Intervention                                 |                                                                                                                                                                                                                                                                                                                                                    |                                              |           |
| Additional Details                           | <ul style="list-style-type: none"> <li>Includes segregated cycleways in accordance with LTN 1/20 along A1000</li> <li>Junction and crossing alterations – including additional controlled crossings and Dutch-style segregated junctions with two-stage right-turn for cyclists (REF 29 and REF 30)</li> <li>Full audits of potential routes and infrastructure changes to be explored through the development of an LCWIP</li> </ul> |                                              |           |
|                                              | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                       | Medium                                       |           |
|                                              | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 - 10 years                                 |           |
|                                              | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                            | Potters Bar                                  |           |
|                                              | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                         | 'Requires'<br>REF 13, REF 29, REF 30, REF 40 | 'Enables' |

On April 27, 2022, the council formally set aside the current Regulation 18 draft Local Plan so that the additional work required to inform the Local Plan spatial strategy can be carried out whilst awaiting clarity from the Government on planning reforms. The Sustainable Transport Appraisal is part of this additional work and seeks to address the need for clear transport intervention within the Regulation 18 documentation by identifying and suggesting ways to cater for growth and mitigate the potential impact on the local and strategic transport network.

| Proposed Active Travel Network – Bushey (links to Watford and Stanmore) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |           |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| REF 4                                                                   | Active travel link between Bushey, Watford, and Stanmore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |           |
| Overview                                                                | Proposed active travel links between Bushey High Street and Watford Junction/Bushey Rail Station and between Bushey and Stanmore. A continuous cycle link with associated junction and crossing upgrades.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |           |
| Intervention                                                            | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |           |
| Additional Details                                                      | <ul style="list-style-type: none"><li>Includes fully-segregated cycleways in accordance with LTN 1/20 – Aldenham Road to facilitate a two-way cycle track</li><li>Alteration to Footpath Bushey003, as shown, for cycle use</li><li>Includes light-segregated cycleways and shared facilities to support any potential quietway network for less confident cyclists (REF 6)</li><li>Junction and crossing alterations include new toucan crossings and signalised junctions with cyclist priority by means of additional cycle phasing</li><li>Full audits of potential routes and infrastructure changes could be explored through the development of an LCWIP – linking to Watford LCWIP routes 3, 5 and 16</li></ul> |                        |           |
|                                                                         | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Medium                 |           |
|                                                                         | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 – 10 years           |           |
|                                                                         | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Bushey                 |           |
|                                                                         | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 'Requires'             | 'Enables' |
|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | REF 11, REF 13, REF 28 | REF 6     |

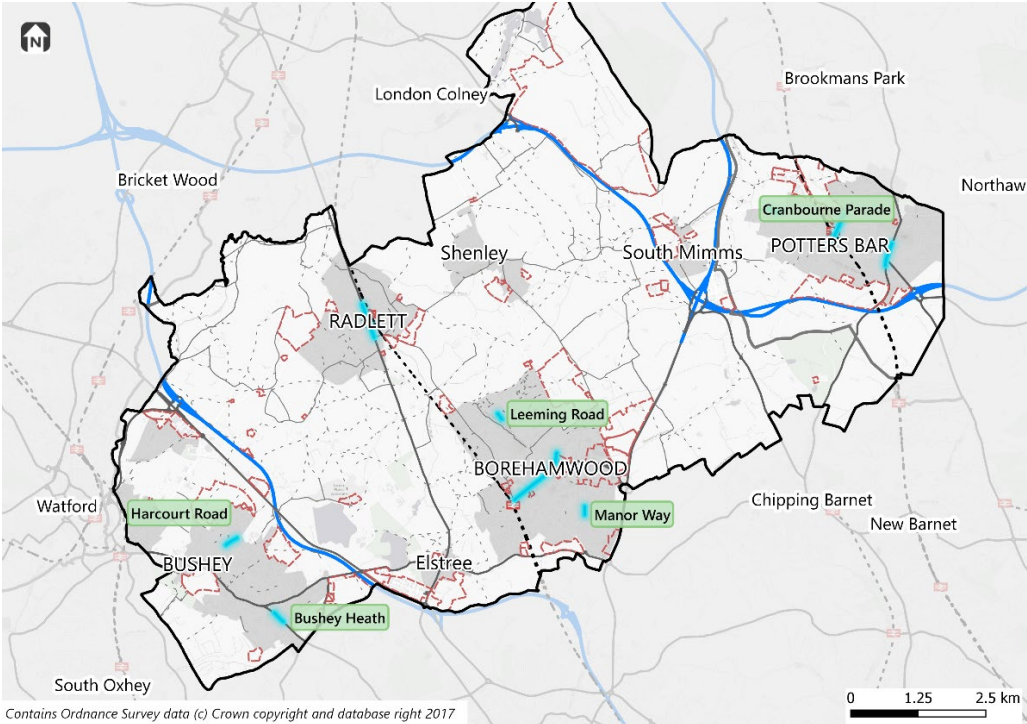
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| Proposed Active Travel Network – Elstree and Borehamwood |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                     |                       |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------|
| REF 5                                                    | Active travel link between Elstree and Borehamwood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                     |                       |
| Overview                                                 | Proposed upgraded high-quality active travel links between Borehamwood and Elstree.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |                       |
| Intervention                                             |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                     |                       |
| Additional Details                                       | <ul style="list-style-type: none"> <li>Includes upgrade of existing PRoW to allow for comfortable and legal cycle use (Footpath Elstree and Borehamwood 007, as shown)</li> <li>Sustainable link to Elstree and Borehamwood Rail Station via Theobald Street - Connects to existing Byway060 with a mixture of both full and light segregated cycle provision</li> <li>Elements reflected in the South Central GTP (PR124) for extension to Sky Studios</li> <li>Opportunity for additional pedestrian and cycle only bridge adjacent to Station Road railway crossing across Allum Lane – providing dedicated facility for active travel</li> </ul> |                                                     |                       |
|                                                          | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | High                                                |                       |
|                                                          | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5 - 10 years                                        |                       |
|                                                          | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Elstree and Borehamwood                             |                       |
|                                                          | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>'Requires'</b><br>REF 10, REF 11, REF 13, REF 40 | <b>'Enables'</b><br>- |

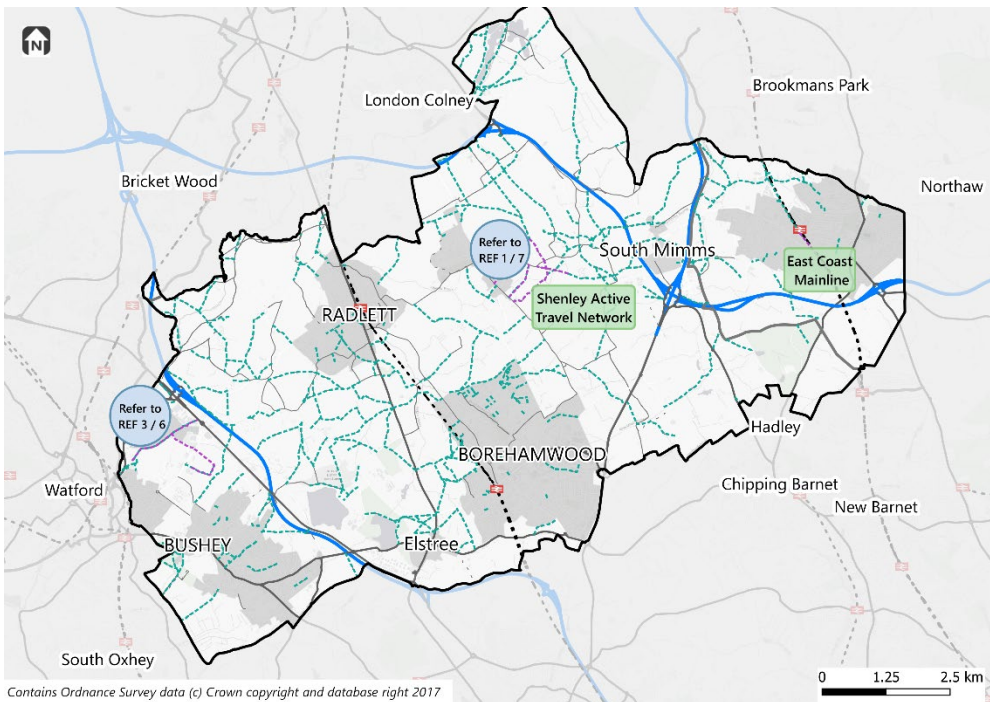
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| Network of Quietway's |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------|
| REF 6 & REF 7         | Developed Network of Quietway's – Bushey and Shenley                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                          |                       |
| Overview              | <p>Quietway's are known to be cycle routes whereby infrastructure provision for cyclists is on quieter, lesser trafficked roads - designed to appeal to new and less confident cyclists. Predominantly low-trafficked tertiary roads, these provide residents of Bushey and Shenley a connection by cycle to their respective local centres.</p>                                                                                                                                                            |                                          |                       |
| Intervention          | <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |                       |
| Additional Details    | <ul style="list-style-type: none"> <li>Shenley – Links to proposals set out in the Shenley Neighbourhood Plan (new routes from London Road to the Spinney)</li> <li>Traffic management interventions including lower speed limits, sinusoidal speed humps and filtered permeability to ensure safer vehicle speeds for cyclists</li> <li>Additional signing and lining</li> <li>Full audits of potential routes and infrastructure changes could be explored through the development of an LCWIP</li> </ul> |                                          |                       |
|                       | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Medium                                   |                       |
|                       | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 - 5 years                              |                       |
|                       | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Bushey and Shenley                       |                       |
|                       | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>'Requires'</b><br>REF 1, REF 2, REF 4 | <b>'Enables'</b><br>- |

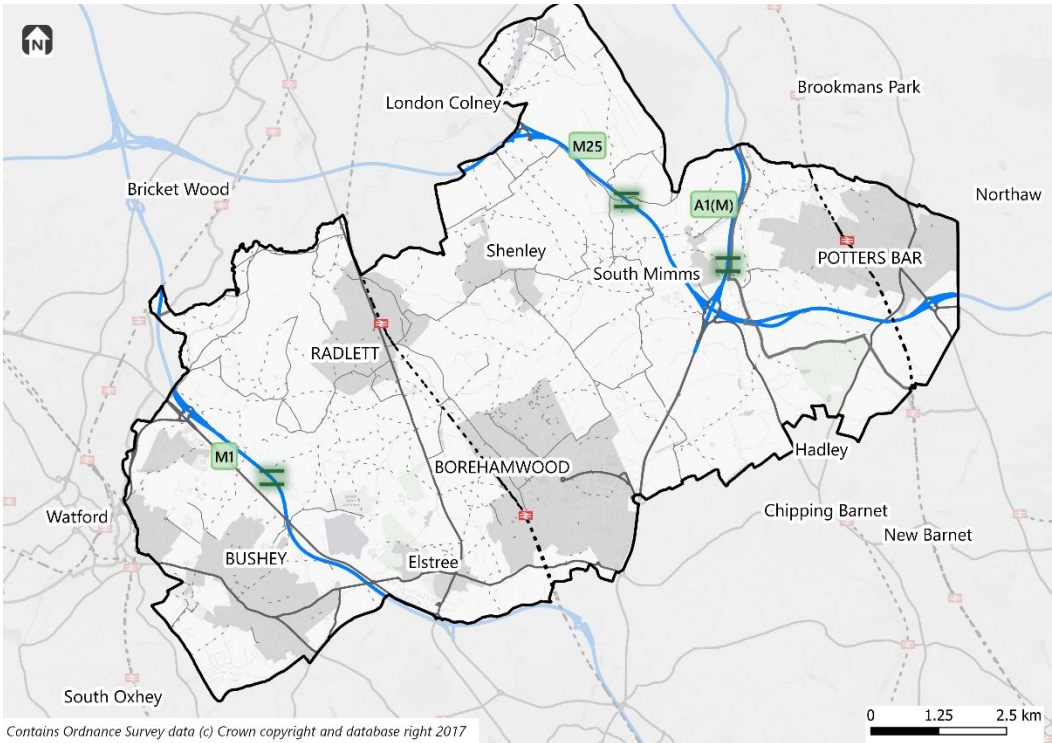
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| Pedestrian Improvements |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------|
| REF 8 –<br>REF 10       | Includes package of various interventions with focus on walking facilities and public realm improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                                  |
| Overview                | Package of crossing upgrades and footway improvements with a high specification walking environment – generous footways, extensive greenery, no obstructions (e.g., parked cars), lighting, continuous footways across side roads.                                                                                                                                                                                                                                                                                                                                       |                                     |                                                  |
| Intervention            |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                                                  |
| Additional Details      | <ul style="list-style-type: none"> <li>Completion of crossing upgrade at Station Road/Theobald Lane currently in development</li> <li>Wider, more attractive footways e.g., Aldenham Road with traffic calming measures implemented through the removal of guard railing for example.</li> <li>Implementation of traffic calming measures such as narrowing road widths along high streets and local centres to apply 'Core Walking Zones' (Leeming Road, Manor Way, Shenley Road – Borehamwood, Harcourt Road – Bushey, and Cranbourne Parade – Potters Bar)</li> </ul> |                                     |                                                  |
|                         | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | High                                |                                                  |
|                         | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5 - 10 years                        |                                                  |
|                         | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Borough-wide                        |                                                  |
|                         | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>'Requires'</b><br>REF 40, REF 44 | <b>'Enables'</b><br>REF 3, REF 5, REF 45, REF 46 |

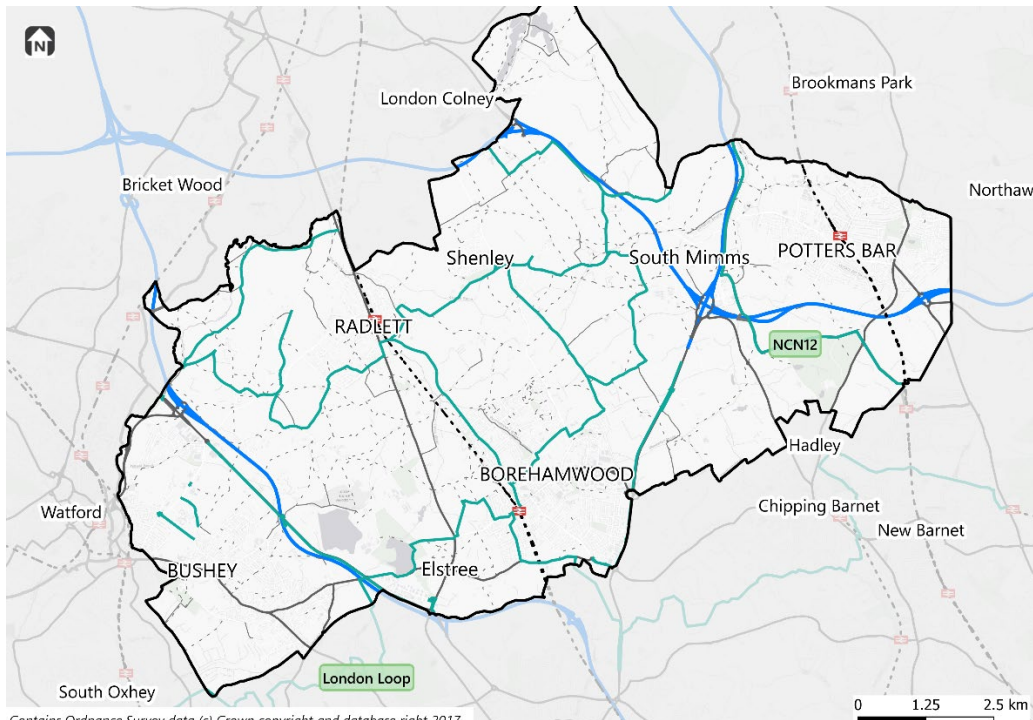
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| Active Travel Leisure Routes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                  |            |           |        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------|
| REF 11                       | PRoW review and upgrade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                  |            |           |        |
| Overview                     | Network of improved leisure routes that would link into potential active travel network interventions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                  |            |           |        |
| Intervention                 |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                  |            |           |        |
| Additional Details           | <ul style="list-style-type: none"><li>• Upgrade of PRoW's to allow for cycle use e.g.<ul style="list-style-type: none"><li>• Route alongside East Coast Mainline - Potters Bar (Link into Hertfordshire Way)</li><li>• Route along Park Avenue (Link into other leisure facilities, schools and onto Footpath 011 - Bushey)</li><li>• Active travel network in Shenley – links to nature trail proposed in the Shenley Neighbourhood Plan</li></ul></li><li>• Vegetation clearance, change in legal use, widening e.g.</li><li>• To be developed in co-ordination with GTP schemes and inclusion in any proposed schemes in a future LCWIP within Hertsmeire</li></ul> |                                                                                                                                  |            |           |        |
|                              | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | High                                                                                                                             |            |           |        |
|                              | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0 – 10 years                                                                                                                     |            |           |        |
|                              | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Borough-wide                                                                                                                     |            |           |        |
|                              | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 13</td><td>REF 1, REF 2, REF 4, REF 5, REF 12</td></tr></table> | 'Requires' | 'Enables' | REF 13 |
| 'Requires'                   | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                  |            |           |        |
| REF 13                       | REF 1, REF 2, REF 4, REF 5, REF 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                  |            |           |        |

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| M1 and M25 cycle and pedestrian crossings |                                                                                                                                                                                                                                                                                                                                                                                 |                           |           |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| REF 12                                    | East-West cycle and pedestrian links across existing infrastructure                                                                                                                                                                                                                                                                                                             |                           |           |
| Overview                                  | East-West cycle and pedestrian links, particularly across the M1, M25, A1(M) and existing railway lines - unlocking east-west active travel movements                                                                                                                                                                                                                           |                           |           |
| Intervention                              |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                            |                           |           |
| Additional Details                        | <ul style="list-style-type: none"> <li>Sandy Lane cycle and pedestrian bridge crossing the M1</li> <li>Equestrian Link to Shenley via Pegasus Crossing across Blackhorse Lane at existing M25 underpass (as per Bowman's Cross Mobility Vision)</li> <li>A1(M) cycle and pedestrian bridge crossing – connectivity between Footpath040, Footpath042 and Footpath033.</li> </ul> |                           |           |
|                                           | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                 | Very High                 |           |
|                                           | Timescale                                                                                                                                                                                                                                                                                                                                                                       | 10 – 15 years             |           |
|                                           | Settlement                                                                                                                                                                                                                                                                                                                                                                      | Bushey and Bowman's Cross |           |
|                                           | Relationships                                                                                                                                                                                                                                                                                                                                                                   | 'Requires'                | 'Enables' |
|                                           |                                                                                                                                                                                                                                                                                                                                                                                 | REF 11, REF 13            | -         |

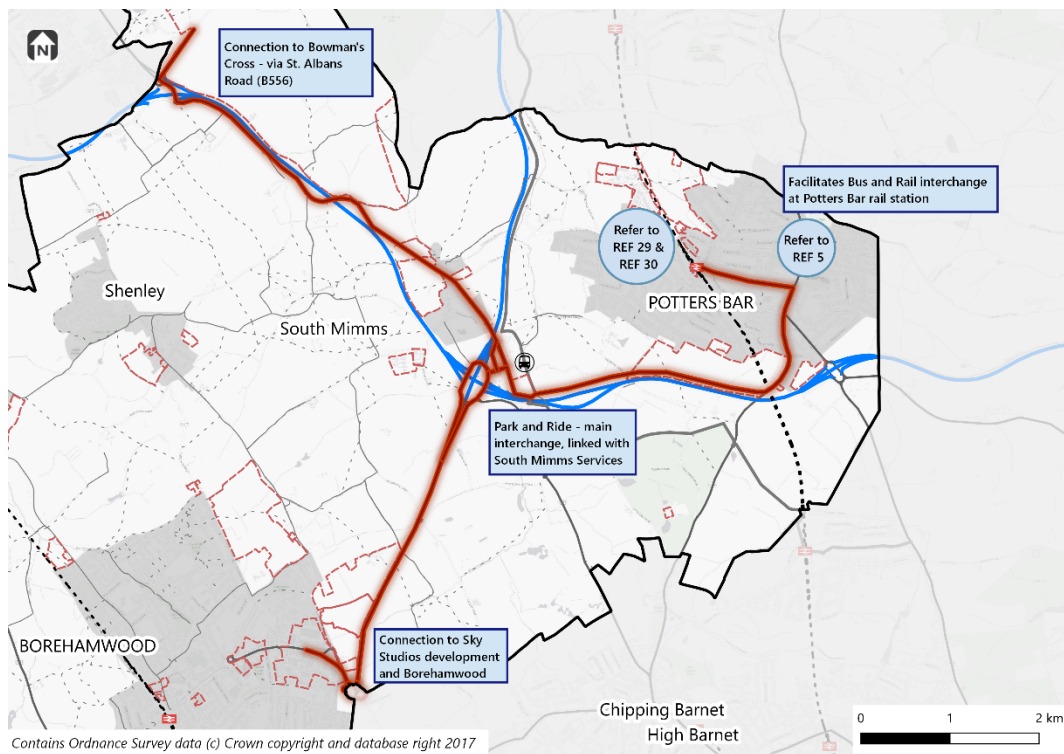
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| Signage Review and Improvement |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                              |            |           |   |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------|-----------|---|
| REF 13<br>& REF 39             | Upgrade of existing signage – ProW, Cycle Network & Vehicular Traffic Signage                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                              |            |           |   |
| Overview                       | Standardised signage based on best practice, including time to destination, route branding and complementary wayfinding – integrate into a coherent settlement-wide network. Includes review and improvement of existing vehicular traffic signage at existing junctions                                                                                                                                                                                                           |                                                                                                                              |            |           |   |
| Intervention                   |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                               |                                                                                                                              |            |           |   |
| Additional Details             | <ul style="list-style-type: none"><li>Ensure signage is in accordance with LTN1/20 and the Traffic Signs Manual</li><li>Inclusion of additional wayfinding at key decision points along the network with indicative journey times to other key routes (London Loop, NCN)</li><li>Width restriction signage and alternative route directional signage – particularly through Elstree and Borehamwood and South Mimms to prevent priority routings through key settlements</li></ul> |                                                                                                                              |            |           |   |
|                                | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Low                                                                                                                          |            |           |   |
|                                | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0 – 15 years                                                                                                                 |            |           |   |
|                                | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Borough-wide                                                                                                                 |            |           |   |
|                                | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>-</td><td>REF 1, REF 2, REF 3, REF 11, REF 12</td></tr></table> | 'Requires' | 'Enables' | - |
| 'Requires'                     | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                              |            |           |   |
| -                              | REF 1, REF 2, REF 3, REF 11, REF 12                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                              |            |           |   |

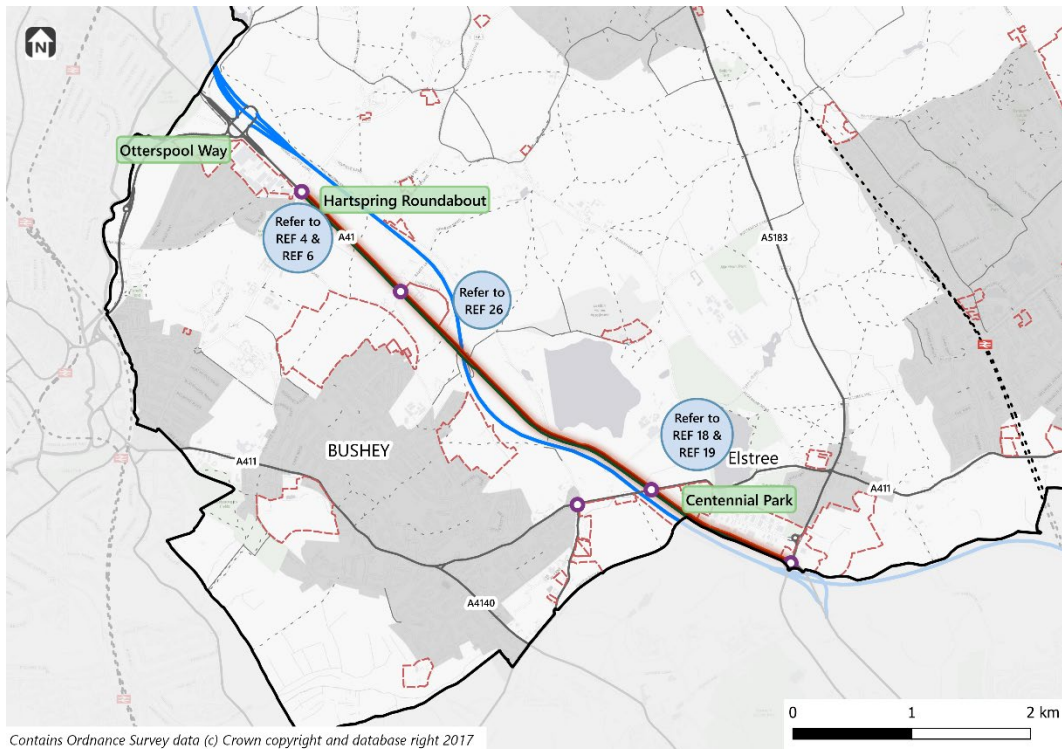
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| Cycle Parking      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| REF<br>14          | Additional cycle parking at key destinations                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |           |
| Overview           | Provision of secure, accessible, and convenient cycle parking at key destinations to encourage cycle usage                                                                                                                                                                                                                                                                                                                                                                    |              |           |
| Intervention       | <ul style="list-style-type: none"> <li>Cycle hangers (Waltham Forest)</li> <li>Cycle Stands (improved with additional locking points)</li> </ul>                                                                                                                                                                                                                                           |              |           |
| Additional Details | <ul style="list-style-type: none"> <li>Implementation of cycle hangers in residential areas of Borehamwood, Potters Bar and Bushey</li> <li>Additional cycle stands at points along busy high streets / local centres where there is typically higher footfall and general traffic</li> <li>Locations include High Street and Andrews Close (Shenley), Harcourt Road/Moatfield Road, London Road/Falconer Road (Bushey), Mutton Lane/Mimms Hall Road (Potters Bar)</li> </ul> |              |           |
|                    | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Medium       |           |
|                    | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0 – 15 years |           |
|                    | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Borough-wide |           |
|                    | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 'Requires'   | 'Enables' |
|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | REF 40       | -         |

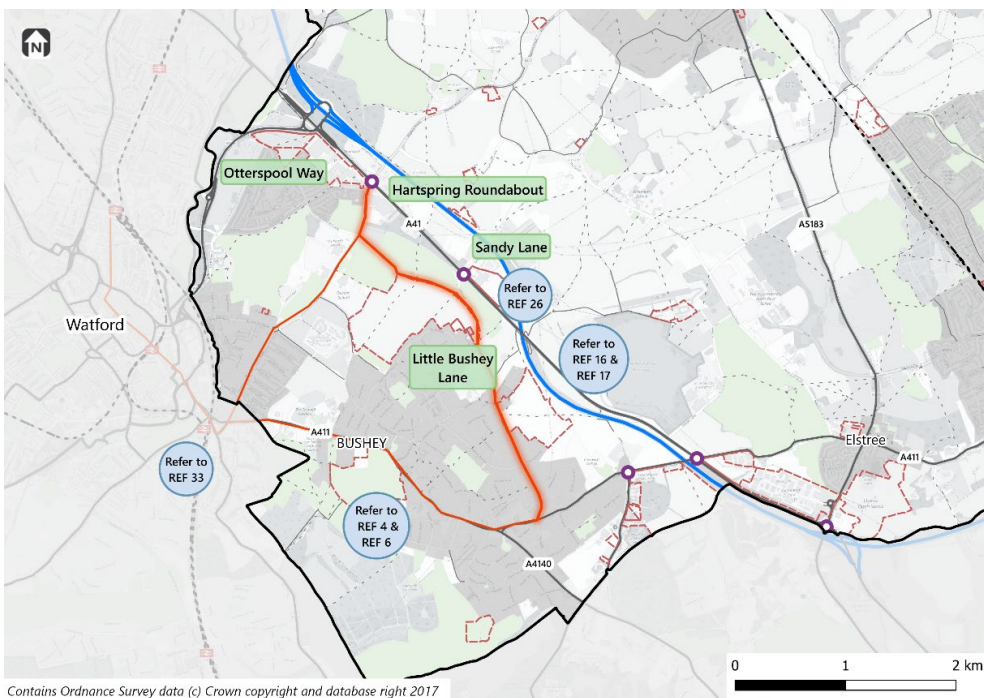
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| South Mimms Park and Ride |                                                                                                                                                                                                                 |                                                                                                         |            |           |                |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|-----------|----------------|
| REF 15                    | New Park and Ride site at South Mimms with services for Potters Bar, Borehamwood, and Bowmans Cross                                                                                                             |                                                                                                         |            |           |                |
| Overview                  | Provide a priority bus service by means of additional bus lanes connecting key settlements to the east of the borough. Bus priority along the A1 and B556, with new Park and Ride site at South Mimms Services. |                                                                                                         |            |           |                |
| Intervention              |                                                                                                                              |                                                                                                         |            |           |                |
| Additional Details        | <ul style="list-style-type: none"><li>Bus priority along the A1 and B556 provided with new bus lanes to accommodate Park and Ride services towards Borehamwood and Bowman’s Cross</li></ul>                     |                                                                                                         |            |           |                |
|                           | Indicative Cost                                                                                                                                                                                                 | Very High                                                                                               |            |           |                |
|                           | Timescale                                                                                                                                                                                                       | 5 - 10 years                                                                                            |            |           |                |
|                           | Settlement                                                                                                                                                                                                      | Borehamwood and Potters Bar                                                                             |            |           |                |
|                           | Relationships                                                                                                                                                                                                   | <table><tr><th>‘Requires’</th><th>‘Enables’</th></tr><tr><td>REF 30, REF 35</td><td>-</td></tr></table> | ‘Requires’ | ‘Enables’ | REF 30, REF 35 |
| ‘Requires’                | ‘Enables’                                                                                                                                                                                                       |                                                                                                         |            |           |                |
| REF 30, REF 35            | -                                                                                                                                                                                                               |                                                                                                         |            |           |                |

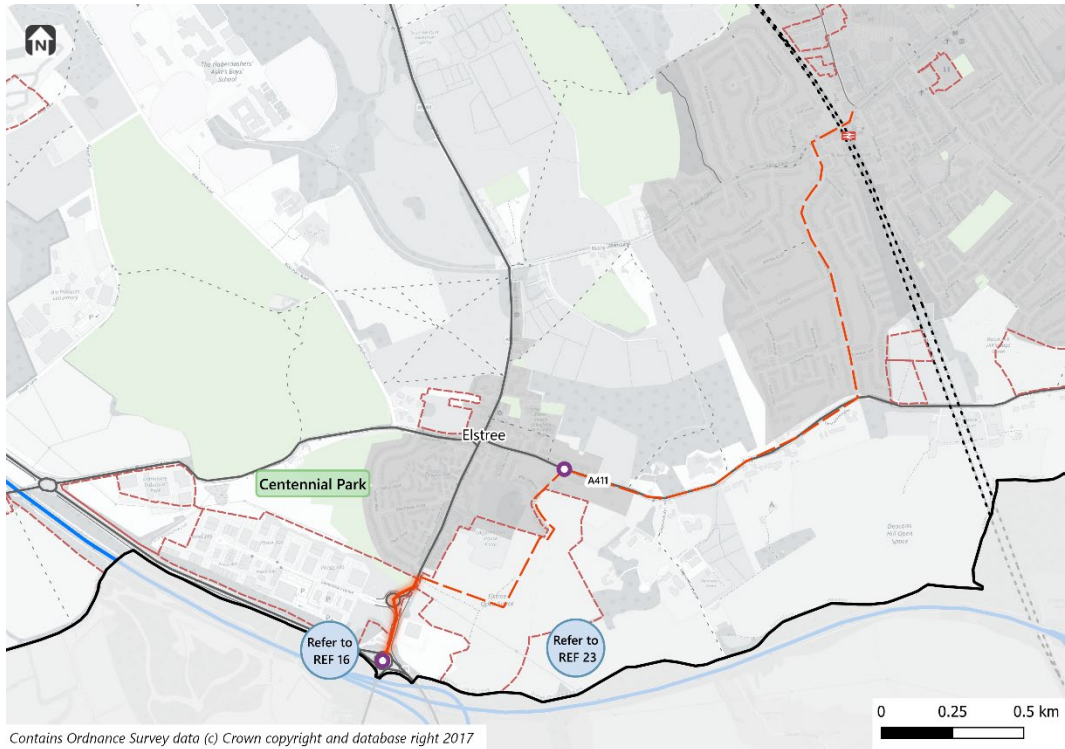
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| A41 Sustainable Travel Corridor |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                 |            |           |        |   |  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|-----------|--------|---|--|
| REF 16 & REF 17                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A41 bus priority and active travel measures with associated junction enhancements               |            |           |        |   |  |
| Overview                        | Priority bus route with additional bus lane for services between Bushey and Elstree. Provided by means of dualling the A41 between Brockley Hill and Hartspring Roundabout. Active travel route upgraded to facilitate improved cycling and walking movements.                                                                                                                                                                                   |                                                                                                 |            |           |        |   |  |
| Intervention                    |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                 |            |           |        |   |  |
| Additional Details              | <ul style="list-style-type: none"><li>A41 widening provides width for additional bus lane to accommodate new service routing – co-ordination with bus operators to unlock service between local employment centres and residential developments</li><li>Complements junction improvements along the A41, including Sandy Lane</li><li>Co-ordinates with measures set out in the South-Central GTP e.g., cycle links to Centennial Park</li></ul> |                                                                                                 |            |           |        |   |  |
|                                 | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                  | Very High                                                                                       |            |           |        |   |  |
|                                 | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5 - 10 years                                                                                    |            |           |        |   |  |
|                                 | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                       | Bushey and Elstree                                                                              |            |           |        |   |  |
|                                 | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                    | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 26</td><td>-</td></tr></table> | 'Requires' | 'Enables' | REF 26 | - |  |
| 'Requires'                      | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                 |            |           |        |   |  |
| REF 26                          | -                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                 |            |           |        |   |  |

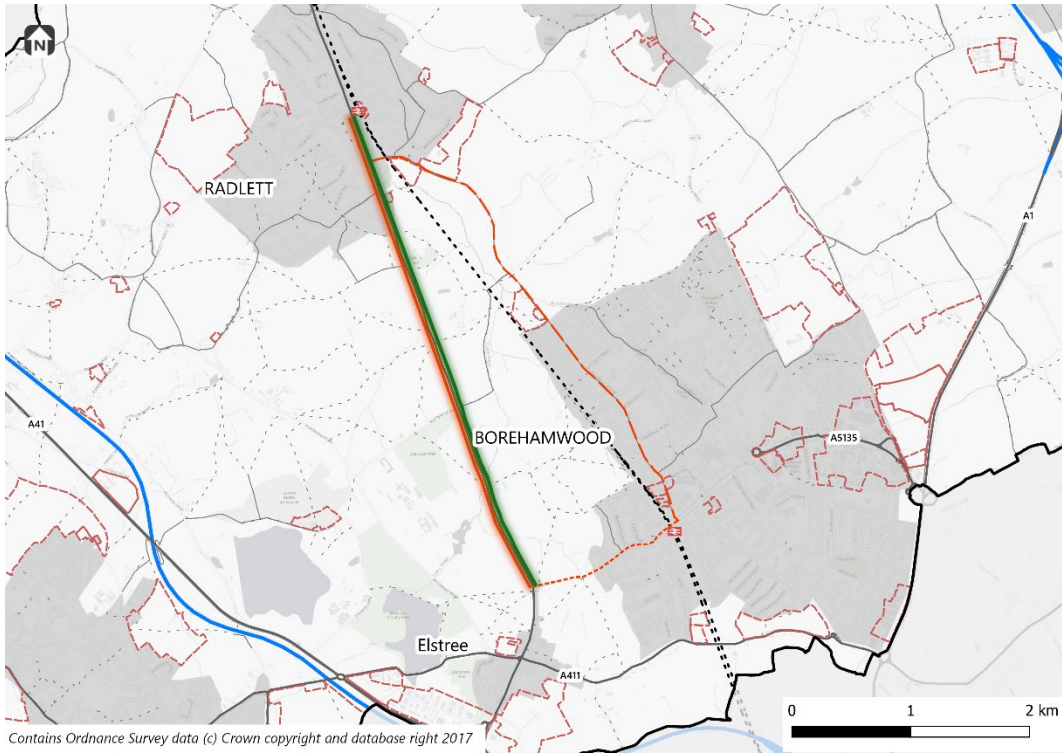
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| Little Bushey Lane bus routing and priority |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                         |            |           |                |   |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|-----------|----------------|---|
| REF<br>18                                   | New bus route with priority measures along Little Bushey Lane                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                         |            |           |                |   |
| Overview                                    | New bus route to connect Little Bushey Lane towards Bushey and Elstree.                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                         |            |           |                |   |
| Intervention                                | <div></div> <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                                                                                                                     |                                                                                                         |            |           |                |   |
| Additional Details                          | <ul style="list-style-type: none"><li>• New bus route along Little Bushey Lane facilitated by dedicated bus lane through road widening</li><li>• Integrate into existing high frequency services – ‘triangular’ service along key A-roads (e.g, A411) – option to complement with REF 16</li><li>• Bus service for extended connections to Radlett, Bushey, Watford Junction and Stanmore</li><li>• Allows integration with any future Multi-Modal Interchange Hub at Bushey rail station</li></ul> |                                                                                                         |            |           |                |   |
|                                             | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | High                                                                                                    |            |           |                |   |
|                                             | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Interdependency with site allocation delivery                                                           |            |           |                |   |
|                                             | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bushey                                                                                                  |            |           |                |   |
|                                             | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <table><tr><th>‘Requires’</th><th>‘Enables’</th></tr><tr><td>REF 26, REF 40</td><td>-</td></tr></table> | ‘Requires’ | ‘Enables’ | REF 26, REF 40 | - |
| ‘Requires’                                  | ‘Enables’                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                         |            |           |                |   |
| REF 26, REF 40                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                         |            |           |                |   |

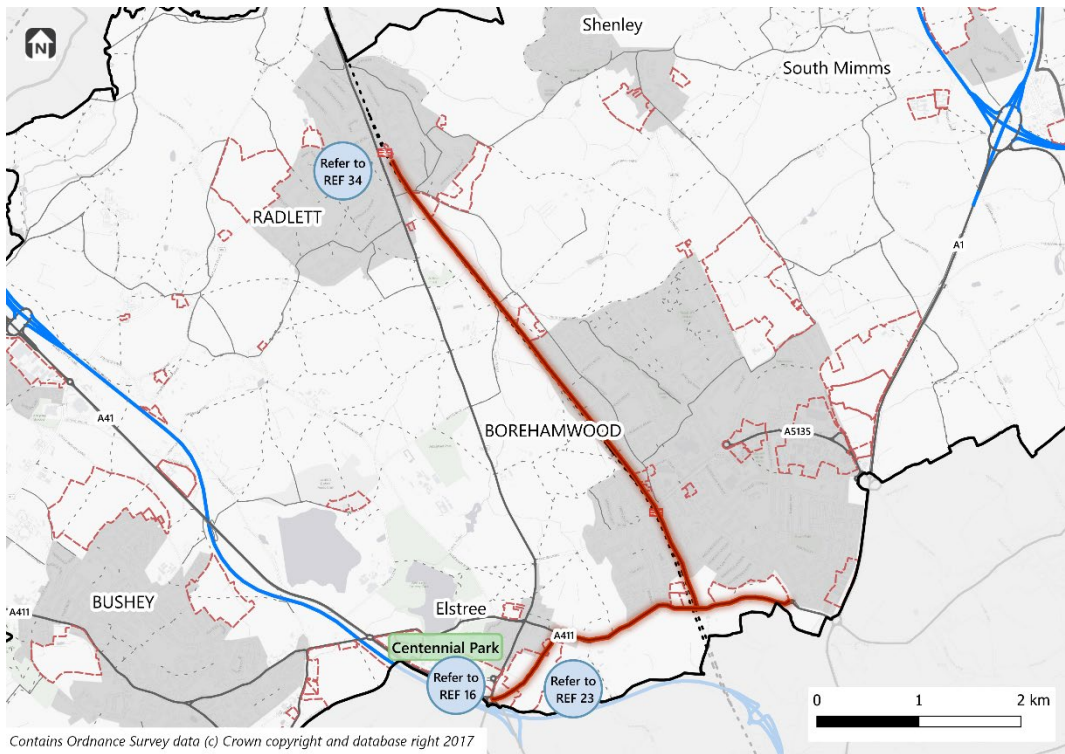
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| Centennial Park / Elstree and Borehamwood bus priority |                                                                                                                                                                                                                                                      |                                                                                                         |            |           |                |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|-----------|----------------|
| REF 19                                                 | Bus priority measures at junctions in proximity to strategic growth sites                                                                                                                                                                            |                                                                                                         |            |           |                |
| Overview                                               | Route widening between A41/Elstree Hill South and Centennial Avenue to accommodate additional priority bus lane with associated alterations to Brockley Hill roundabout and Centennial Avenue roundabout.                                            |                                                                                                         |            |           |                |
| Intervention                                           | <div></div>                                                                                                                                                       |                                                                                                         |            |           |                |
| Additional Details                                     | <ul style="list-style-type: none"><li>Dedicated bus link between Centennial Park and Borehamwood</li><li>Complements REF 23</li><li>Allows integration with any future Multi-Modal Interchange Hub at Elstree and Borehamwood rail station</li></ul> |                                                                                                         |            |           |                |
|                                                        | Indicative Cost                                                                                                                                                                                                                                      | High                                                                                                    |            |           |                |
|                                                        | Timescale                                                                                                                                                                                                                                            | Interdependency with site allocation delivery                                                           |            |           |                |
|                                                        | Settlement                                                                                                                                                                                                                                           | Elstree and Borehamwood                                                                                 |            |           |                |
|                                                        | Relationships                                                                                                                                                                                                                                        | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 46, REF 49</td><td>-</td></tr></table> | 'Requires' | 'Enables' | REF 46, REF 49 |
| 'Requires'                                             | 'Enables'                                                                                                                                                                                                                                            |                                                                                                         |            |           |                |
| REF 46, REF 49                                         | -                                                                                                                                                                                                                                                    |                                                                                                         |            |           |                |

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| Watling Street (A5183) Sustainable Travel Corridor |                                                                                                                                                                                                                                                                                                                              |                                     |           |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------|
| REF 20<br>& REF 21                                 | Alternative bus routing and junction enhancements with upgraded active travel route along Watling Street                                                                                                                                                                                                                     |                                     |           |
| Overview                                           | Provide alternative bus routing for an additional PT link between Radlett and Elstree and Borehamwood. Includes carriageway narrowing in favour of wider footway and cycleway                                                                                                                                                |                                     |           |
| Intervention                                       |                                                                                                                                                                                                                                           |                                     |           |
| Additional Details                                 | <ul style="list-style-type: none"> <li>Connects into existing PT Network – provide ‘express route’ along Watling Street</li> <li>Watling Street/Butterfly Lane uncontrolled T-Junction to be signalised.</li> <li>Watling Street/Allum Lane uncontrolled T-Junction to be signalised with bus gate/cycle priority</li> </ul> |                                     |           |
|                                                    | Indicative Cost                                                                                                                                                                                                                                                                                                              | High                                |           |
|                                                    | Timescale                                                                                                                                                                                                                                                                                                                    | 5 – 10 years                        |           |
|                                                    | Settlement                                                                                                                                                                                                                                                                                                                   | Elstree and Borehamwood and Radlett |           |
|                                                    | Relationships                                                                                                                                                                                                                                                                                                                | ‘Requires’                          | ‘Enables’ |
|                                                    |                                                                                                                                                                                                                                                                                                                              | REF 13, REF 40                      | -         |

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| Guided Busway's    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------|
| REF 22 & REF 23    | Guided Busway's adjacent to Midland Mainline (North to South) and adjacent to the A411 / Elstree Hill South                                                                                                                                                                                                                                                                                                                                      |                                     |                        |
| Overview           | Two guided busways aligned with the Midland Mainline and the A411 - Provides significant priority for PT to employment centres with Borehamwood and Centennial Park                                                                                                                                                                                                                                                                              |                                     |                        |
| Intervention       |                                                                                                                                                                                                                                                                                                                                                               |                                     |                        |
| Additional Details | <ul style="list-style-type: none"><li>• Potential for extension into North London to connect national rail with the TfL Underground network and bus re-routing to the south of Borehamwood to improve journey time reliability and strengthen the east-west travel options.</li><li>• Complements REF 19</li><li>• Allows integration with any future Multi-Modal Interchange Hub at Elstree and Borehamwood and Radlett rail stations</li></ul> |                                     |                        |
|                    | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                  | Very High                           |                        |
|                    | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10 - 15 years                       |                        |
|                    | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                       | Elstree and Borehamwood and Radlett |                        |
|                    | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div>'Requires'</div> REF 24        | <div>'Enables'</div> - |

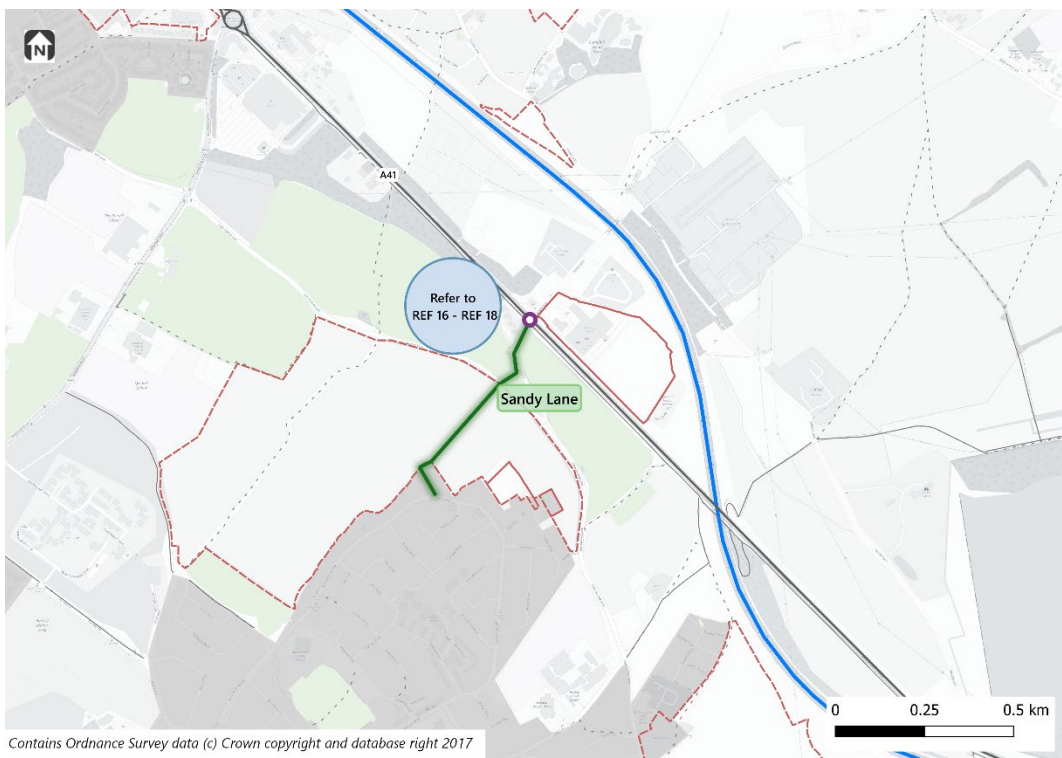
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| Bus Stop Improvement Programme and Multi-operator Ticketing |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
|-------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------|-----|--|-----------|-------------|--|------------|--------------|--|---------------|------------|-----------|---|----------------|
| REF 24 & REF 25                                             |              | Infrastructure interventions at bus stops and shelters, and improvements to bus service ticketing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Overview                                                    |              | Programme to bring all bus stops to the same standard in the Borough and improve multi-operator ticketing across the Borough.<br>Includes bus borders, real-time information, and accessibility considerations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Intervention                                                |              | <ul style="list-style-type: none"><li>Electronic real-time information</li></ul> <div></div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Additional Details                                          |              | <ul style="list-style-type: none"><li>Additional multi-ticket options to Intalink Explorer</li><li>Electronic wayfinding at bus interchanges (Potters Bar/Bushey/Elstree and Borehamwood). Bus stop locations include those at Centennial Park, and/or along Studio Way, Church Road, B462, and B556 where real-time information is limited</li><li>Bus Stops to be consistent throughout Hertsmere, aligned with national accessibility guidance</li><li>Co-ordination and alignment with the Bus Service Improvement Plan for Hertfordshire</li></ul> <table><tr><td>Indicative Cost</td><td colspan="2">Low</td></tr><tr><td>Timescale</td><td colspan="2">0 – 2 years</td></tr><tr><td>Settlement</td><td colspan="2">Borough-wide</td></tr><tr><td rowspan="2">Relationships</td><td>'Requires'</td><td>'Enables'</td></tr><tr><td>-</td><td>REF 19, REF 34</td></tr></table> |  | Indicative Cost | Low |  | Timescale | 0 – 2 years |  | Settlement | Borough-wide |  | Relationships | 'Requires' | 'Enables' | - | REF 19, REF 34 |
| Indicative Cost                                             | Low          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Timescale                                                   | 0 – 2 years  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Settlement                                                  | Borough-wide |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
| Relationships                                               | 'Requires'   | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |
|                                                             | -            | REF 19, REF 34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                 |     |  |           |             |  |            |              |  |               |            |           |   |                |

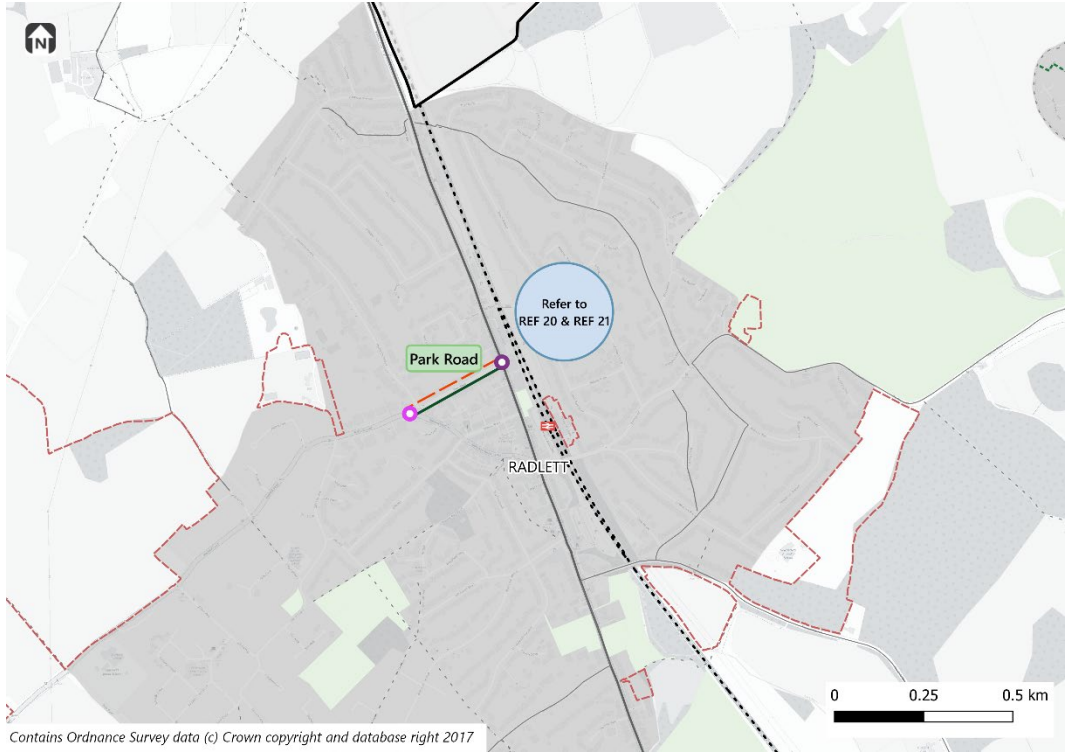
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| Multi-modal Interventions |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                  |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| REF 26<br>- REF<br>30     | Multi-modal intervention at various junctions and links throughout Hertsmere                                                                                                                                                                                                                                                                                      |                                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                  |
| Overview                  | Multi-modal intervention at various junctions within Bushey, Potters Bar and Radlett, including: Sandy Lane; Park Road; The Avenue; Darkes Lane; The Walk                                                                                                                                                                                                         |                                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                  |
| Intervention              | <ul style="list-style-type: none"> <li>Segregated Cycle contra-flow (Strathleaven Road, London)</li> <li>'Dutch-style' roundabout with segregated orbital cycleway</li> </ul> <div>   </div> |                                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                  |
| Additional Details        | REF 26 Sandy Lane                                                                                                                                                                                                                                                                                                                                                 | Ref 27 Park Road                                                                                                                                                      | REF 28 The Avenue                                                                                                                          | REF 29 & REF 30 Darkes Lane & The Walk                                                                                                           |
|                           | <ul style="list-style-type: none"> <li>One-way vehicle access</li> <li>New bus routing with priority</li> <li>Cycle contraflow</li> </ul>                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Park Road one-way eastbound &amp; a right hand bus lane</li> <li>Contraflow cycle lane</li> <li>Signalised junction</li> </ul> | <ul style="list-style-type: none"> <li>Segregated roundabout with the introduction of signals at junction with Bushey Hall Road</li> </ul> | <ul style="list-style-type: none"> <li>Dutch-style segregated junction (Mutton Lane)</li> <li>T-Junction signalised with bus priority</li> </ul> |
|                           | Indicative Cost                                                                                                                                                                                                                                                                                                                                                   | High                                                                                                                                                                  |                                                                                                                                            |                                                                                                                                                  |
|                           | Timescale                                                                                                                                                                                                                                                                                                                                                         | 0 – 5 years                                                                                                                                                           |                                                                                                                                            |                                                                                                                                                  |
|                           | Settlement                                                                                                                                                                                                                                                                                                                                                        | Bushey, Potters Bar, Radlett                                                                                                                                          |                                                                                                                                            |                                                                                                                                                  |
|                           | Relationships                                                                                                                                                                                                                                                                                                                                                     | 'Requires'                                                                                                                                                            | 'Enables'                                                                                                                                  |                                                                                                                                                  |
|                           |                                                                                                                                                                                                                                                                                                                                                                   | -                                                                                                                                                                     | -                                                                                                                                          |                                                                                                                                                  |

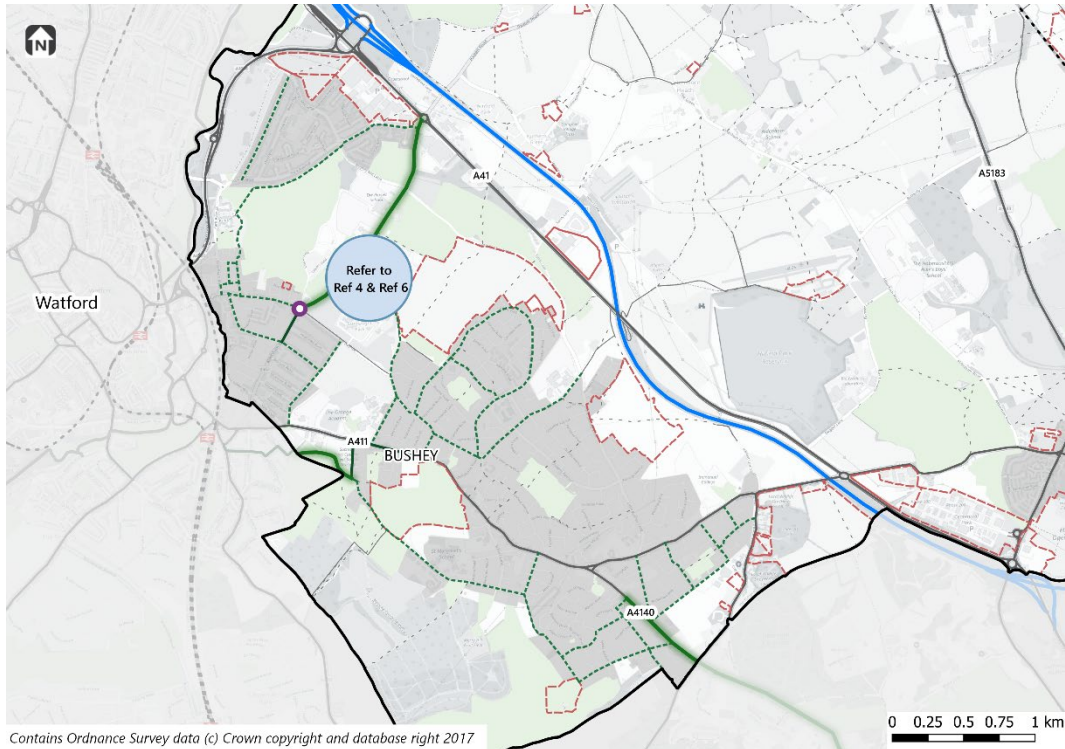
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| Multi-modal Interventions |                                                                                                                                                                                                                                                                                                                                              |                                                                                                                      |            |           |        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------|-----------|--------|
| REF<br>26                 | Multi-modal intervention at Sandy Lane, Bushey                                                                                                                                                                                                                                                                                               |                                                                                                                      |            |           |        |
| Overview                  | Cycle and Public Transport Intervention at Sandy Lane to encourage greater movement for these modes of travel over the private car.                                                                                                                                                                                                          |                                                                                                                      |            |           |        |
| Intervention              |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                         |                                                                                                                      |            |           |        |
| Additional Details        | <ul style="list-style-type: none"><li>One-way vehicle access at the junction with the A41</li><li>New bus routing with priority to tie into REF 16 – REF 18</li><li>Cycle contraflow lane accommodated by means of road space made available through one-way vehicle operation. Physical segregation to be provided between modes.</li></ul> |                                                                                                                      |            |           |        |
|                           | Indicative Cost                                                                                                                                                                                                                                                                                                                              | Medium                                                                                                               |            |           |        |
|                           | Timescale                                                                                                                                                                                                                                                                                                                                    | 2 – 5 years                                                                                                          |            |           |        |
|                           | Settlement                                                                                                                                                                                                                                                                                                                                   | Bushey                                                                                                               |            |           |        |
|                           | Relationships                                                                                                                                                                                                                                                                                                                                | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 37</td><td>REF 16, REF 17, REF 18</td></tr></table> | 'Requires' | 'Enables' | REF 37 |
| 'Requires'                | 'Enables'                                                                                                                                                                                                                                                                                                                                    |                                                                                                                      |            |           |        |
| REF 37                    | REF 16, REF 17, REF 18                                                                                                                                                                                                                                                                                                                       |                                                                                                                      |            |           |        |

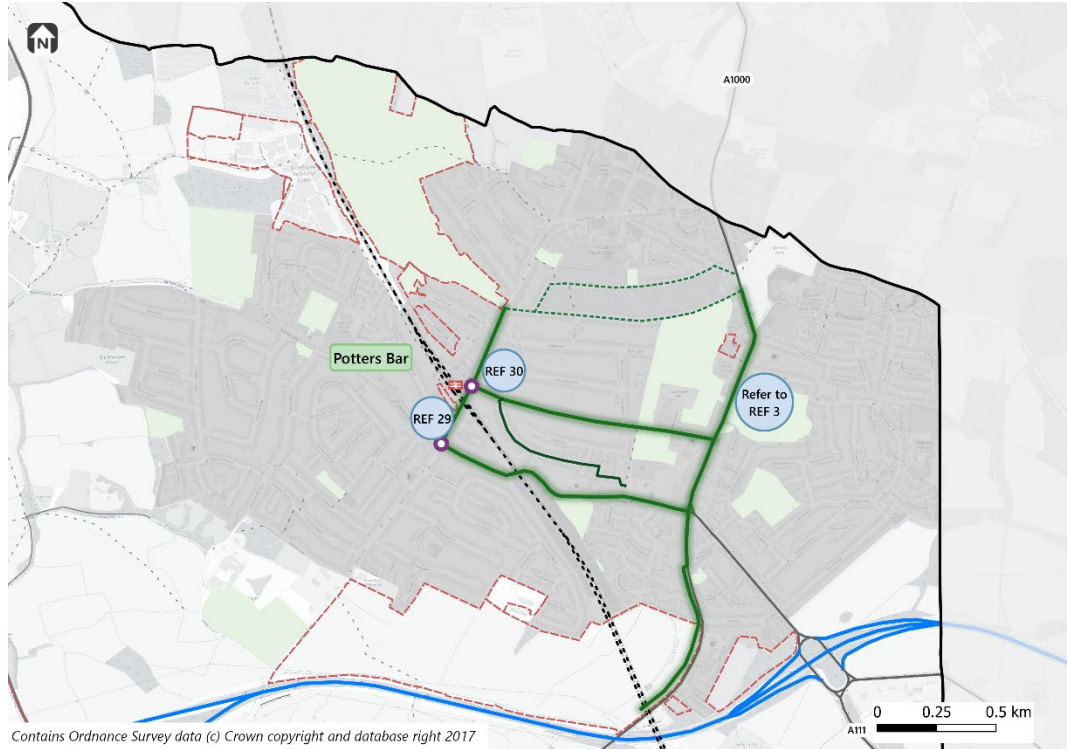
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| Multi-modal Interventions |                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                 |            |           |        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|-----------|--------|
| REF 27                    | Multi-modal intervention at Park Road, Radlett                                                                                                                                                                                                                                                                                                                                               |                                                                                                 |            |           |        |
| Overview                  | Cycle and Public Transport Intervention at Park Road to encourage greater movement for these modes of travel over the private car.                                                                                                                                                                                                                                                           |                                                                                                 |            |           |        |
| Intervention              |                                                                                                                                                                                                                                                                                                           |                                                                                                 |            |           |        |
| Additional Details        | <ul style="list-style-type: none"><li>• Park Road to operate in a one-way arrangement eastbound</li><li>• Cycle contraflow lane accommodated by means of road space made available through one-way vehicle operation. Physical segregation to be provided between modes.</li><li>• Signalised junction to replace the existing mini roundabout at the junction with Watling Street</li></ul> |                                                                                                 |            |           |        |
|                           | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                              | Medium                                                                                          |            |           |        |
|                           | Timescale                                                                                                                                                                                                                                                                                                                                                                                    | 2 – 5 years                                                                                     |            |           |        |
|                           | Settlement                                                                                                                                                                                                                                                                                                                                                                                   | Radlett                                                                                         |            |           |        |
|                           | Relationships                                                                                                                                                                                                                                                                                                                                                                                | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 37</td><td>-</td></tr></table> | 'Requires' | 'Enables' | REF 37 |
| 'Requires'                | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                 |            |           |        |
| REF 37                    | -                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                 |            |           |        |

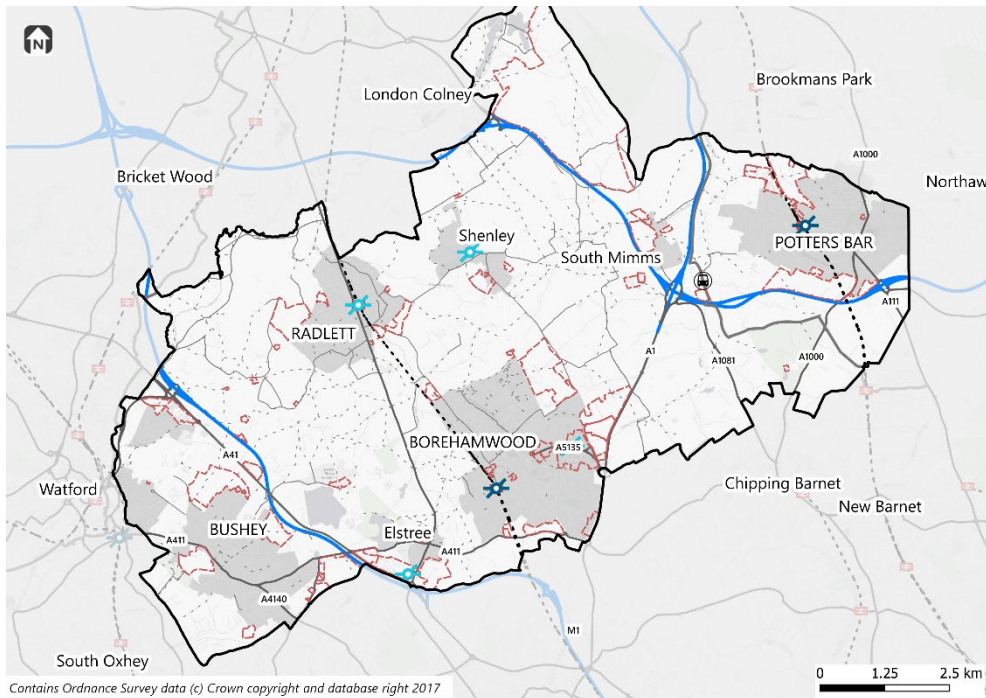
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| Multi-modal Interventions |                                                                                                                                                                      |                                                                                                       |            |           |   |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------|-----------|---|
| REF<br>28                 | Multi-modal intervention at The Avenue                                                                                                                               |                                                                                                       |            |           |   |
| Overview                  | Cycle Intervention at The Avenue to encourage greater movement for this mode of travel over the private car.                                                         |                                                                                                       |            |           |   |
| Intervention              |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p> |                                                                                                       |            |           |   |
| Additional Details        | <ul style="list-style-type: none"><li>Segregated roundabout with the introduction of signals at junction with Bushey Hall Road</li></ul>                             |                                                                                                       |            |           |   |
|                           | Indicative Cost                                                                                                                                                      | High                                                                                                  |            |           |   |
|                           | Timescale                                                                                                                                                            | 2 – 5 years                                                                                           |            |           |   |
|                           | Settlement                                                                                                                                                           | Bushey                                                                                                |            |           |   |
|                           | Relationships                                                                                                                                                        | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>-</td><td>REF 4, REF 6</td></tr></table> | 'Requires' | 'Enables' | - |
| 'Requires'                | 'Enables'                                                                                                                                                            |                                                                                                       |            |           |   |
| -                         | REF 4, REF 6                                                                                                                                                         |                                                                                                       |            |           |   |

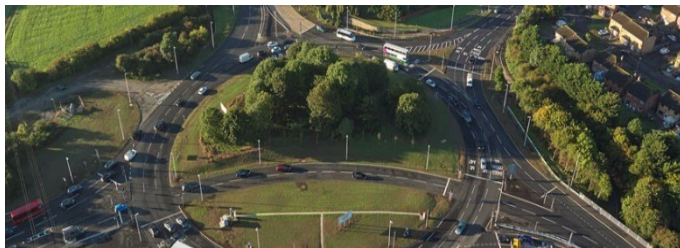
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| Multi-modal Interventions |                                                                                                                                                                                                                         |                                                                                                        |            |           |   |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------|-----------|---|
| REF 29<br>& REF 30        | Multi-modal intervention at Darkes Lane and The Walk                                                                                                                                                                    |                                                                                                        |            |           |   |
| Overview                  | Cycle and Public Transport Intervention at Darkes Lane and The Walk, Potters Bar to encourage greater movement for these modes of travel over the private car.                                                          |                                                                                                        |            |           |   |
| Intervention              |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                    |                                                                                                        |            |           |   |
| Additional Details        | <ul style="list-style-type: none"><li>Dutch-style segregated junction for cyclist priority (Mutton Lane/Darkes Lane)</li><li>T-Junction of Darkes Lane/The Walk to be signalised with priority given to buses</li></ul> |                                                                                                        |            |           |   |
|                           | Indicative Cost                                                                                                                                                                                                         | High                                                                                                   |            |           |   |
|                           | Timescale                                                                                                                                                                                                               | 2 – 5 years                                                                                            |            |           |   |
|                           | Settlement                                                                                                                                                                                                              | Potters Bar                                                                                            |            |           |   |
|                           | Relationships                                                                                                                                                                                                           | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>-</td><td>REF 3, REF 15</td></tr></table> | 'Requires' | 'Enables' | - |
| 'Requires'                | 'Enables'                                                                                                                                                                                                               |                                                                                                        |            |           |   |
| -                         | REF 3, REF 15                                                                                                                                                                                                           |                                                                                                        |            |           |   |

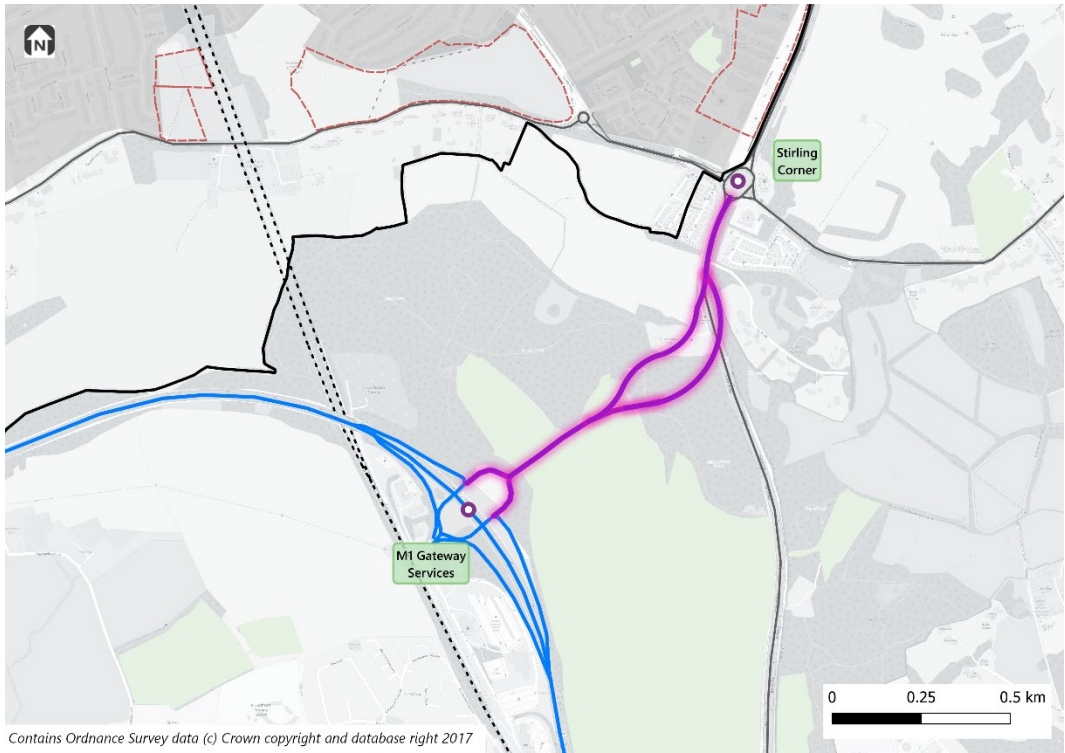
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| Multi-modal Interchanges |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                 |            |           |   |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------|-----------|---|
| REF<br>31-REF<br>34      | Mobility hubs at key rail stations (Bushey, Elstree and Borehamwood and Potters Bar), other transport interchanges and local centres                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                 |            |           |   |
| Overview                 | A multi-modal interchange hub connecting local bus and rail services, bus information, cycle parking and e-bike docking, shared mobility options including car clubs and bike hire. Proposals vary in scale between larger rail stations and local centres                                                                                                                                                                                                                                                             |                                                                                                                 |            |           |   |
| Intervention             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                 |            |           |   |
| Additional Details       | <ul style="list-style-type: none"><li>Interchanges at Bushey, Elstree and Borehamwood and Potters Bar railway stations – PT and active travel modes intersect at these strategic, larger hubs.</li><li>Interchanges at Radlett railway station – PT and active travel combine on a smaller scale and act as a more local interchange point</li><li>Interchanges within local centres and key employment sites – some level of choice for interchange and includes some bus stops and shared mobility options</li></ul> |                                                                                                                 |            |           |   |
|                          | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Medium                                                                                                          |            |           |   |
|                          | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5 - 10 years                                                                                                    |            |           |   |
|                          | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Borough-wide                                                                                                    |            |           |   |
|                          | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>-</td><td>REF 47, REF 48, REF 49</td></tr></table> | 'Requires' | 'Enables' | - |
| 'Requires'               | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                 |            |           |   |
| -                        | REF 47, REF 48, REF 49                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                 |            |           |   |

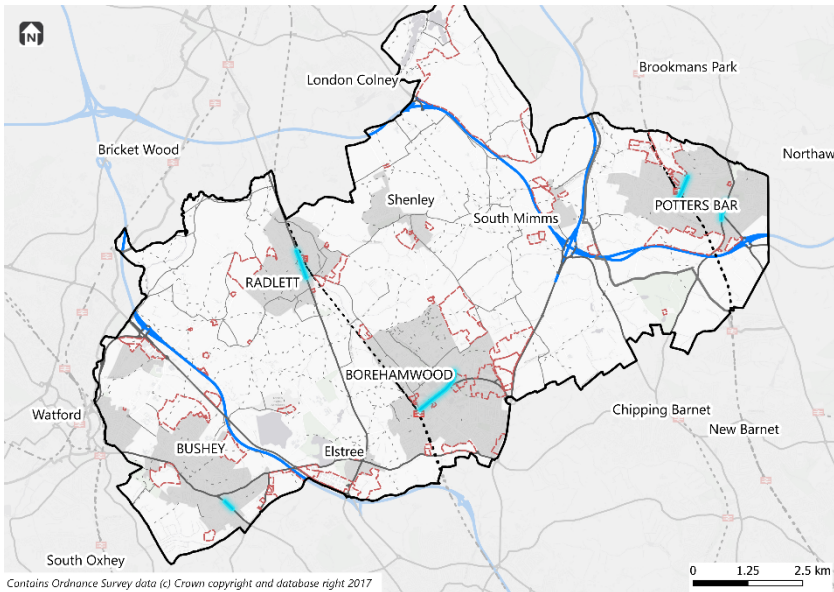
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| The Bell Roundabout |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| REF 35              | 'Through-about' at The Bell Roundabout                                                                                                                                                                                                                                                                                                                                             |                                                                                   |
| Overview            | Alteration to the existing Bell Roundabout to provide priority to bus services – sustainable connection to Bowmans Cross ( <b><i>scheme to be considered in co-ordination with Bowman's Cross Mobility Vision Statement</i></b> )                                                                                                                                                  |                                                                                   |
| Intervention        | <div><div><ul style="list-style-type: none"><li><u>Gloucestershire 'through-about' as precedent</u></li></ul></div><div></div></div>                                                                          |                                                                                   |
| Additional Details  | <div><ul style="list-style-type: none"><li>Through about for bus services to 'cut-through' the junction giving bus priority for services to connect to the Bowman's Cross site.</li><li>Improve access for pedestrians and cyclists with new signalised crossings across 'arms' of the roundabout. All crossing points to be designed for users with disabilities.</li></ul></div> |                                                                                   |
|                     | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                    | Very High                                                                         |
|                     | Timescale                                                                                                                                                                                                                                                                                                                                                                          | 5-10 years                                                                        |
|                     | Settlement                                                                                                                                                                                                                                                                                                                                                                         | Borough-wide                                                                      |
|                     | Relationships                                                                                                                                                                                                                                                                                                                                                                      | <div><div>'Requires'</div><div>-</div><div>'Enables'</div><div>REF 15</div></div> |

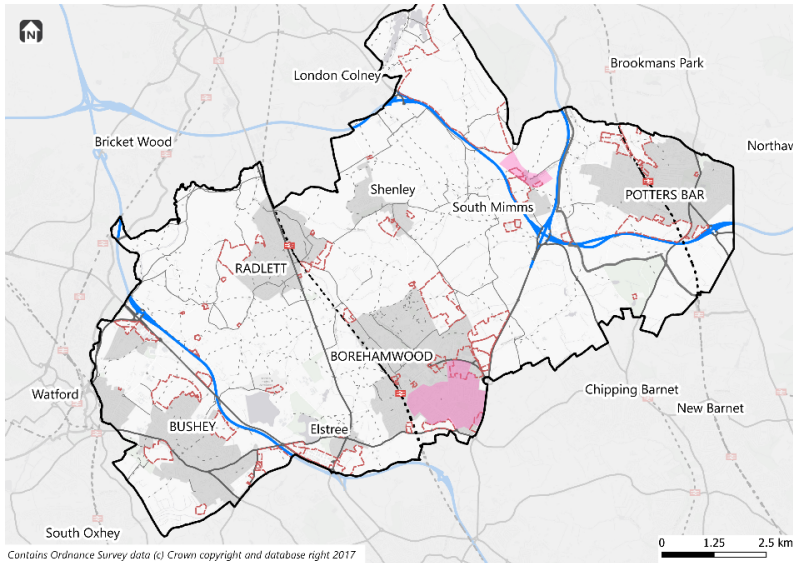
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| "Scratchwood Link" |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                         |                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------|
| REF<br>36          | M1 London Gateway Services - Additional slip towards Borehamwood                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                         |                                   |
| Overview           | Provide the "Scratchwood Link" at the M1 London Gateway Services (Junction 3) to provide greater access to the strategic road network from Borehamwood                                                                                                                                                                                                                                                                                                                                                                                        |                                         |                                   |
| Intervention       |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |                                   |
| Additional Details | <ul style="list-style-type: none"><li>• Provide the Scratchwood Link at the M1 London Gateway Services (Junction 3) to provide greater access to the SRN from Borehamwood</li><li>• An additional two-way dual slip-road at Junction 3 to connect the M1 to Barnet Way and Stirling Corner. Alignment through Scratchwood Open Space</li><li>• New slip-road on and off the A1 Barnet Way</li><li>• Re-configuration of the existing roundabout at the Gateway Services to accommodate additional and alternative traffic movements</li></ul> |                                         |                                   |
|                    | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Very High                               |                                   |
|                    | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10 - 15 years                           |                                   |
|                    | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (Elstree and Borehamwood)               |                                   |
|                    | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <div>'Requires'</div> <div>REF 39</div> | <div>'Enables'</div> <div>-</div> |

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| Town Centre Parking |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                            |            |           |        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------|
| REF 40 –<br>REF 44  | Various proposals, with focus on town centre parking management tools and parking intervention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                            |            |           |        |
| Overview            | Reduction in on-street standard car parking spaces; Parking consolidation into a smaller number of high-quality off-street facilities; Intelligent Kerbside Management; EV infrastructure roll-out; Parking Strategy                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |            |           |        |
| Intervention        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |            |           |        |
| Additional Details  | <ul style="list-style-type: none"><li>On-street, standard parking spaces at local centres/High Streets within Hertsmere to be reduced, providing additional opportunities for road space reallocation and improvements to walking and cycling</li><li>Dynamic management of the kerbside within settlements of busy high streets - pre-booked virtual loading bays for the management of LGV's/HGV's</li><li>Charging infrastructure located at key destinations/at on and off-street parking locations</li><li>Parking strategy to align with any future policy/planning guidance for new development</li></ul> |                                                                                                                                                                            |            |           |        |
|                     | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Medium                                                                                                                                                                     |            |           |        |
|                     | Timescale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0 – 5 years                                                                                                                                                                |            |           |        |
|                     | Settlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Borough-wide                                                                                                                                                               |            |           |        |
|                     | Relationships                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 39</td><td>REF 3, REF 5, REF 10, REF 14, REF 20, REF 21, REF 45, REF 46, REF 47, REF 48</td></tr></table> | 'Requires' | 'Enables' | REF 39 |
| 'Requires'          | 'Enables'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                            |            |           |        |
| REF 39              | REF 3, REF 5, REF 10, REF 14, REF 20, REF 21, REF 45, REF 46, REF 47, REF 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                            |            |           |        |

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| Modal Filters         |                                                                                                                                                                                                                                                                                                                                                                                             |                                         |           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------|
| REF 45<br>& REF<br>46 | Modal Filters – South Mimms and Elstree and Borehamwood                                                                                                                                                                                                                                                                                                                                     |                                         |           |
| Overview              | Filter points within neighbourhood boundaries to prioritise cyclists and pedestrians over motor vehicles with a more direct route, with motor vehicles having restricted access.                                                                                                                                                                                                            |                                         |           |
| Intervention          |  <p>Contains Ordnance Survey data (c) Crown copyright and database right 2017</p>                                                                                                                                                                                                                        |                                         |           |
| Additional Details    | <ul style="list-style-type: none"> <li>South Mimms - to cover neighbourhood wide changes to speed limits, access and priority. Particularly to restrict HGV movements through the settlement</li> <li>Borehamwood - to cover Shenley Road/Furzehill Road (Traffic on to Barnet by-pass) - reduction in through-traffic along Furzehill Road</li> <li>For example, Waltham Forest</li> </ul> |                                         |           |
|                       |                                                                                                                                                                                                                                                                                                         |                                         |           |
|                       | Indicative Cost                                                                                                                                                                                                                                                                                                                                                                             | Medium                                  |           |
|                       | Timescale                                                                                                                                                                                                                                                                                                                                                                                   | 2 - 5 years                             |           |
|                       | Settlement                                                                                                                                                                                                                                                                                                                                                                                  | Elstree and Borehamwood and South Mimms |           |
|                       | Relationships                                                                                                                                                                                                                                                                                                                                                                               | 'Requires'                              | 'Enables' |
|                       |                                                                                                                                                                                                                                                                                                                                                                                             | REF 10, REF 40                          | REF 19    |

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| Future Mobility                 |                                                                                                                                                                                                                                                                                                                                             |                                                                                                |                                                                                                                               |            |           |                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------|-----------|---------------------------------|
| REF 47<br>– REF<br>49           |                                                                                                                                                                                                                                                                                                                                             | Bike and micro/mobility hire scheme / Car Club Integration / Travel Planning & Smarter Choices |                                                                                                                               |            |           |                                 |
| Overview                        | To include bikes and e-bikes and be flexible to cover new forms of micro-mobility, such as e-scooters and any other future modes with similar characteristics. Includes designation of appropriate parking spaces.                                                                                                                          |                                                                                                |                                                                                                                               |            |           |                                 |
|                                 | Integration of car clubs into Hertsmere's shared mobility offering, with spaces located at key destinations.                                                                                                                                                                                                                                |                                                                                                |                                                                                                                               |            |           |                                 |
|                                 | Incentivise new and existing residents to make smarter travel choices and undertake a campaign of travel planning to encourage mode shift for existing journeys.                                                                                                                                                                            |                                                                                                |                                                                                                                               |            |           |                                 |
| Intervention                    | <ul style="list-style-type: none"><li>City bike hire (Liverpool City)</li><li>Extension of Beryl Bike Cycle Hire currently implemented in Borehamwood and Watford</li><li>Car Clubs (CoMoUk)</li></ul>                                                                                                                                      |                                                                                                |                                                                                                                               |            |           |                                 |
|                                 | <div></div> <div></div>                                                                                                                                              |                                                                                                |                                                                                                                               |            |           |                                 |
| Additional Details              | <ul style="list-style-type: none"><li>Option to extend hire schemes and car clubs borough-wide, with initial focus/trial preferable at key destinations along high streets (particularly Borehamwood and Potters Bar)</li><li>Focus on large industrial areas and large employers such as SKY, Centennial Park and Otterspool Way</li></ul> |                                                                                                |                                                                                                                               |            |           |                                 |
|                                 | Indicative Cost                                                                                                                                                                                                                                                                                                                             |                                                                                                | Medium                                                                                                                        |            |           |                                 |
|                                 | Timescale                                                                                                                                                                                                                                                                                                                                   |                                                                                                | 0 – 5 years                                                                                                                   |            |           |                                 |
|                                 | Settlement                                                                                                                                                                                                                                                                                                                                  |                                                                                                | Borough-wide                                                                                                                  |            |           |                                 |
|                                 | Relationships                                                                                                                                                                                                                                                                                                                               |                                                                                                | <table><tr><th>'Requires'</th><th>'Enables'</th></tr><tr><td>REF 31 - REF 34, REF 40, REF 44</td><td>REF 19</td></tr></table> | 'Requires' | 'Enables' | REF 31 - REF 34, REF 40, REF 44 |
| 'Requires'                      | 'Enables'                                                                                                                                                                                                                                                                                                                                   |                                                                                                |                                                                                                                               |            |           |                                 |
| REF 31 - REF 34, REF 40, REF 44 | REF 19                                                                                                                                                                                                                                                                                                                                      |                                                                                                |                                                                                                                               |            |           |                                 |

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### Potential Packages of Intervention

- 1.3 Schemes can be packaged under a series of themes and location to ensure new networks and infrastructure are delivered coherently. These have been suggested below with reference to the Regulation 18 draft Local Plan policy, as per the descriptors overleaf.

| Intervention Reference No.            |   | Intervention Objective                                                                               |   | Emerging Local Plan Policy                                                       |
|---------------------------------------|---|------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------|
| REF 1, REF 2 and REF 7                | ➡ | To form part of a wider active travel network across Shenley and Radlett                             | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> v, <b>ST3</b> iv; <b>CC1</b> v                    |
| REF 3, REF 29 and REF 30              | ➡ | To form part of a wider multi-modal network across Potters Bar                                       | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> i, ii, <b>ST3</b> iv; <b>ST5</b> : <b>CC1</b> v   |
| REF 4 and REF 6                       | ➡ | To form part of a wider active travel network across Bushey with links to Watford and Stanmore       | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> v, <b>ST3</b> iv; <b>CC1</b> v                    |
| REF 5 and REF 46                      | ➡ | To form part of a wider active travel network across Elstree and Borehamwood                         | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> v, <b>ST3</b> iv; <b>CC1</b> v                    |
| REF 10 and REF 40                     | ➡ | Improvement to public realm and the pedestrian environment                                           | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> i, ii, v <b>ST3</b> iv; <b>ST5</b> ; <b>CC1</b> v |
| REF 20, REF 21 and REF 27             | ➡ | For wider improvement to the Watling Street area (Radlett) across Public Transport and Active Travel | ➡ | <b>ST1</b> iii, iv; <b>ST2</b> i, ii, <b>ST3</b> iv; <b>ST5</b> : <b>CC1</b> v   |
| REF 31 – REF 34 and REF 47 and REF 48 | ➡ | Co-ordinated implementation of future and shared mobilities alongside multi-modal                    | ➡ | <b>ST1</b> iv; <b>ST2</b> i, iii, <b>ST3</b> iv; <b>CC1</b> v                    |

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1.4 The Regulation 18 draft Local Plan Policy includes the following, as agreed with HCC:

- **Policy ST1 - Strategic approach to transport**

- iii. reduce the need for travel and facilitate shorter more regular trips by walking and cycling including through the provision of cycle lanes and routes.

- iv. provide appropriate means of access for all users of the highway network.

- v. be consistent with and contribute to the implementation of the Hertfordshire Local Transport Plan (2018 or amended) and Local Growth and Transport Plans, in securing a modal shift and reflecting the Transport User Hierarchy set out in the Local Transport Plan.

- **Policy ST2 - Hertsmere's transport network and supporting infrastructure**

- ii. new or improved bus services to be subsidised for an initial period as agreed with the local planning authority.

- iii. car clubs and other shared vehicle infrastructure.

- v. pedestrian and cycle priority within and between town and district centres, incorporating public realm and cycle parking improvements

- **Policy ST3 - Reducing emissions and promoting health and wellbeing**

- iv. access to and from the site has been improved for cyclists and pedestrians, including the provision of links to existing footpaths and cycle lanes or new safe provision where none exists.

- **Policy ST4 – The highway network and vehicular parking**

- iii. initiatives to promote sustainable transport modes are implemented at the earliest opportunity.

- iv. proposals are supported by a robust Travel Plan according to the requirements of Hertfordshire's Travel Plan Guidance (as amended)

- **Policy ST5 – Electric vehicles and mobility initiatives**

- **Policy CC1 - Climate change mitigation**

- v. Development is well connected, or has deliverable proposals to connect, to public transport, cycling and walking networks.

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