



Active Travel Strategy: The Opportunity

Identifying cross-boundary opportunities to improve active travel



England's Economic Heartland Active Travel Strategy Phase 2: The Opportunity

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Executive Summary

In February 2022, the EEH Active Travel Ambition¹ was published as Phase 1 of the EEH Active Travel Strategy. Following on from Phase 1, the next step (Phase 2) was to develop the Active Travel Strategy, defining in detail what the region should be aiming towards in terms of achieving excellence in active travel. This report outlines the work undertaken during Phase 2 and has involved the following stages and work:

Stage 1 - Baselineing and target setting

This stage involved understanding levels of active travel in EEH and setting active travel ambitions for the EEH region. The tasks involved:

- Gathering and analysing data and identifying gaps;
- Undertaking a workshop with stakeholders to get their feedback; and
- Setting targets in terms of percentage of journeys undertaken by active travel while recognising different places/persona across EEH.

Stage 1 culminated with active travel targets for the EEH region in Figure 1.1.

Figure 1.1 - EEH Mode Share Active Travel Strategy Targets



¹ https://eeh-prod-media.s3.amazonaws.com/documents/Active_Travel_Strategy_-_The_Ambition.pdf

Stage 2 - Understanding the regional active travel network and future ambitions

This stage involved:

- Mapping the current active travel network, future ambitions and Stage 1 data;
- Developing a long list of potential cross-boundary active travel links based on the mapping to identify gaps, demand and propensity for mode shift, plus input from stakeholders at a workshop;
- Developing a bespoke high-level Multi-Criteria Assessment Framework (MCAF) to score and prioritise the long list of cross-boundary active travel links; and
- Developing a short-list of the top cross-boundary active travel links to prioritise from the scoring outputs of the MCAF.

Stage 2 culminated with the short-list of cross-boundary active travel links to prioritise as presented in Table 1-1 and Figure 1.2 below.

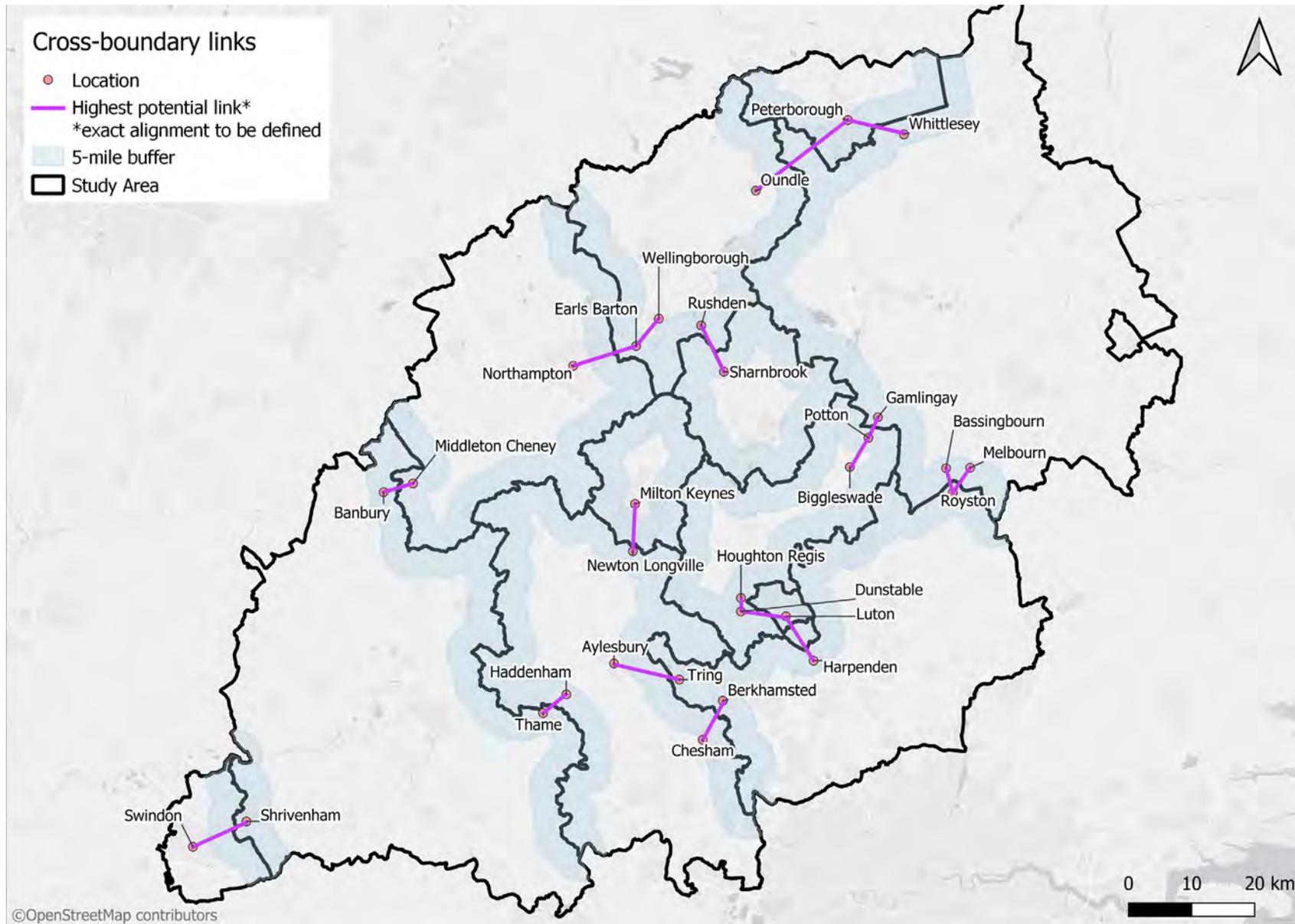
Image: National Cycle Network signage in Willen



Table 1-1 - Top 15 cross boundary links with highest mode shift potential

Corridor
Banbury - Middleton Cheney
Chesham - Berkhamsted
Gamlingay - Pottton - Biggleswade
Luton - Dunstable - Houghton Regis
Luton - Harpenden
Newton Longville - Milton Keynes
Northampton - Earls Barton - Wellingborough
Peterborough - Oundle
Peterborough - Whittlesey
Royston - Bassingbourn
Royston - Melbourn
Sharnbrook - Rushden
Shrivenham - Swindon
Thame to Haddenham
Tring - Aylesbury

Figure 1.2 - Top-15 cross-boundary links with highest potential for modal shift to active travel



Stage 3 - Challenges to achieving EEH's ambitions

This stage involved:

- Using the data collected and analysed in Stage 1 and Stage 2 to analyse the challenges and issues identified in Phase 1 (The Ambition) further. Data from Stage 1 was available for the following Phase 1 challenges, which were explored in more detail;
 - Settlement patterns;
 - Topography;
 - Mode share;
 - Journey Purpose;
 - Social and economic inequality and deprivation;
 - Housing/employment growth; and
 - Existing Transport Network.
- Asking stakeholders to identify challenges experienced in terms of active travel as part of a workshop, with the findings summarised accordingly.

It is clear that there are and will be challenges to active travel uptake in the EEH region and thus it will be important for EEH to work with the local authorities in the region to deliver the EEH Active Travel Strategy.

² https://eeh-prod-media.s3.amazonaws.com/documents/EEH_Regional_Bus_Strategy.pdf

³ https://eeh-prod-media.s3.amazonaws.com/documents/First_Last_Mile_International_Best_Practice_Review.pdf

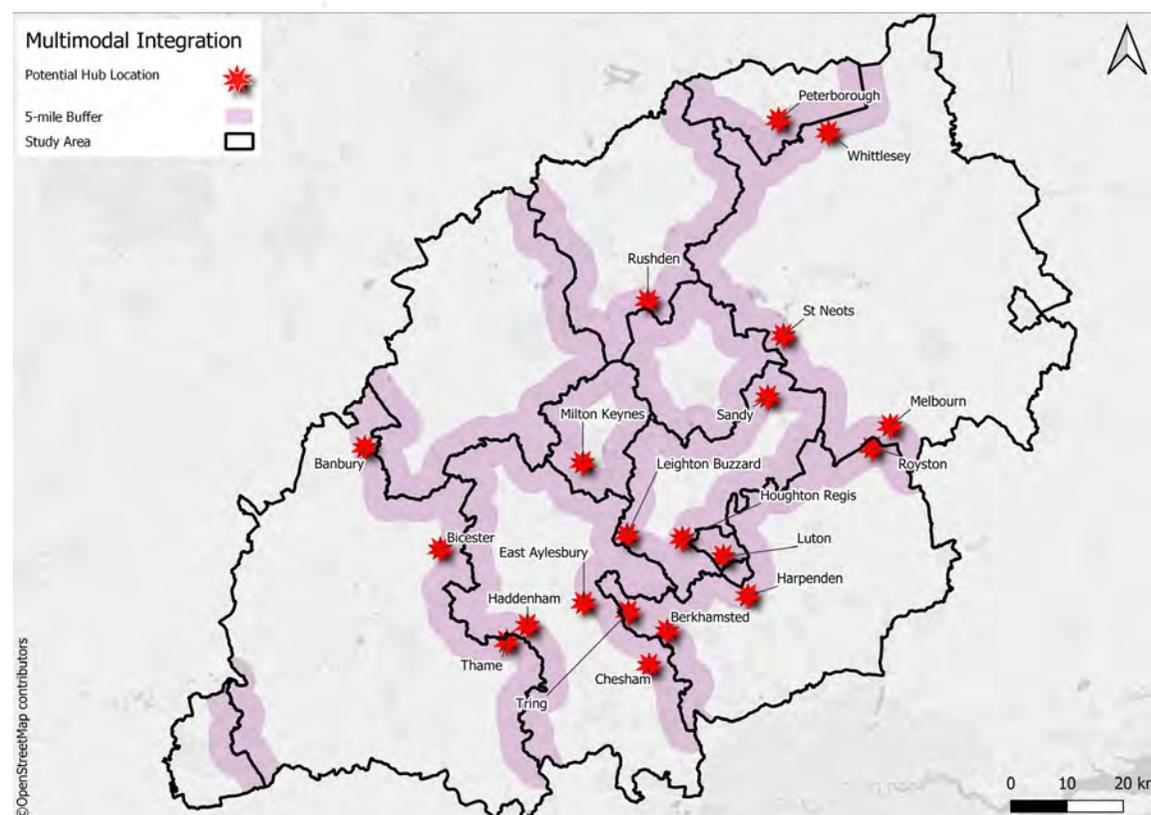
Stage 4 – Multi-modal Integration

This stage involved:

- Reviewing current multi-modal integration work/opportunities in the EEH region, the Regional Bus Study² and integration opportunities and the mobility hub guidance project³;
- Reviewing other examples of best practice and guidance as case studies; and
- Identifying locations in the EEH region with the highest potential of multi-modal integration in the active travel buffer zones, by reviewing the findings from the workshop and data analysis from Stages 1 and 2.

Stage 4 culminated with a list of locations for multimodal integration within the EEH region as presented in Figure 1.3.

Figure 1.3 - Multimodal integration: high potential for integration



Stage 5 – Delivery Plan

This stage involved:

- Developing a plan for delivery of the recommendations within the EEH Active Travel Strategy, including consideration of funding, governance and next steps. A delivery plan is outlined in Table 6-1.



1. Introduction

England's Economic Heartland (EEH) is an ideal place for growing active travel journeys for all purposes.

The region varies from towns and cities with dense populations such as Oxford, Cambridge and Milton Keynes, to rural landscapes such as the Chilterns and the Fens. There are opportunities for integrating active travel with the public transport network in the form of first mile / last mile (FMLM) trips as well as journeys that are wholly made by active travel. This will become increasingly important as planned housing and employment sites develop, with sustainable travel behaviours key to supporting this planned growth in the region.

The benefits of active travel are clear, and we need to encourage increased uptake in the EEH region. As people become more aware of the health and wellbeing benefits of regular exercise, walking and cycling are becoming more popular for short journey trips. Shifting to active modes of travel also supports reducing car usage, which reduces congestion and emissions and helps tackle poor air quality. This will ultimately play a significant role in delivering net zero and ensuring our pathway to decarbonisation is consistent and deliverable.

Furthermore, there are strong economic benefits of active travel in helping to create liveable places where people can shop, work, and spend leisure time in their local area. The benefits of active travel to the EEH region will be explored further throughout this document and will be closely linked to the recommendations.

1.1 Background (Phase 1)

In February 2022, Phase 1 of the EEH Active Travel Strategy was published⁴. The purpose was to develop a high-level ambition for active travel as the first phase in developing a full active travel strategy for the region. Phase 1 delivered the following:

- It set out an active travel ambition for EEH based on a literature review of European, national, regional and local policies and ambitions, as well as the views of stakeholders. A number of case studies were summarised for three place types: large town/city, market town and rural.
- It explored challenges and opportunities regarding active travel in the region. This included topic areas such as existing travel patterns, cultural constraints,

infrastructure constraints and outcomes, linking to EEH's Transport Strategy⁵.

- It identified the drivers for change as part of a high-level logic mapping process to set the context and basis on which the ambition was developed.
- The ambition for EEH's Active Travel Strategy was developed as follows: 'To create an exemplar active travel network and culture that encourages mode shift for both shorter journeys and for the first and last mile of longer journeys'.
- The level of aspiration, timescales and services required were all detailed, including how to make the ambition relevant to the different place types in the EEH region.
- Monitoring and evaluation of an active travel strategy against each outcome was also detailed at a high-level.

Following on from Phase 1, the next step has been to develop the EEH Active Travel Strategy, defining in detail what the region should be aiming towards to achieve excellence in active travel. This report outlines the work undertaken during Phase 2.

⁴ <https://www.EnglandSEconomicHeartland.com/publications-and-responses/>

⁵ https://eeh-prod-media.s3.amazonaws.com/documents/Connecting_People_Transforming_Journeys_av.pdf

1.2. Growing active travel in the EEH region (Phase 2)

Phase 2 builds on the work undertaken during Phase 1 to set an ambitious yet achievable active travel strategy. The combined phases of work set a framework for active travel investment at a regional and cross boundary level, supporting EEH as a sub-national transport body to 'join the dots' between different policy objectives to achieve a clear policy direction for active travel in the region. In addition, Phase 2 also identifies missing links in the active travel network across local authority boundaries in the EEH region and identifies them into a short-list of those with the highest potential for mode shift.

Local Authorities across the region have been developing LCWIPs, which EEH remain highly supportive of. Local Authorities are responsible for development and delivery of active travel schemes. EEH can provide support to LAs to work together to develop cross boundary links and a strategic narrative. It will be beneficial for local authorities to be able to say that these routes are supported by the regional active travel strategy work.

In developing this Strategy, reference to active travel includes trips made by walking and wheeling, cycling and scooting (both self-powered and electric). The strategy is built around supporting trips made wholly by these modes from origin to destination and also combined with other modes, where walking and wheeling, cycling and scooting represent the first/and or the last 'mile' of a journey.

Throughout this study, a number of workshops have been held with stakeholders to provide updates and collate input and feedback (invitations were sent to active travel officers from the local authorities within the EEH region, Sustrans, National Highways and East West Rail). These workshops are summarised below with further details of each of the workshops provided in the relevant sections of this document:

- Workshop #1 (13th September 2022)
 - Stage 1 - approach, data required & target setting discussion
- Workshop #2 (4th November 2022)
 - Stage 1 - data received & target setting
 - Stage 2 - methodology, initial ideas & discussion
- Workshop #3 (14th December 2022)
 - Stage 1 & 2 - update on work undertaken
 - Stage 3 - initial findings & discussion
 - Stage 4 - initial ideas & discussion
- Workshop #4 (28th February 2023)
 - All stages - reporting on outcomes

Image: Cyclists in Cambridge



1.3. This Report

This report contains the following five key sections with associated key tasks:

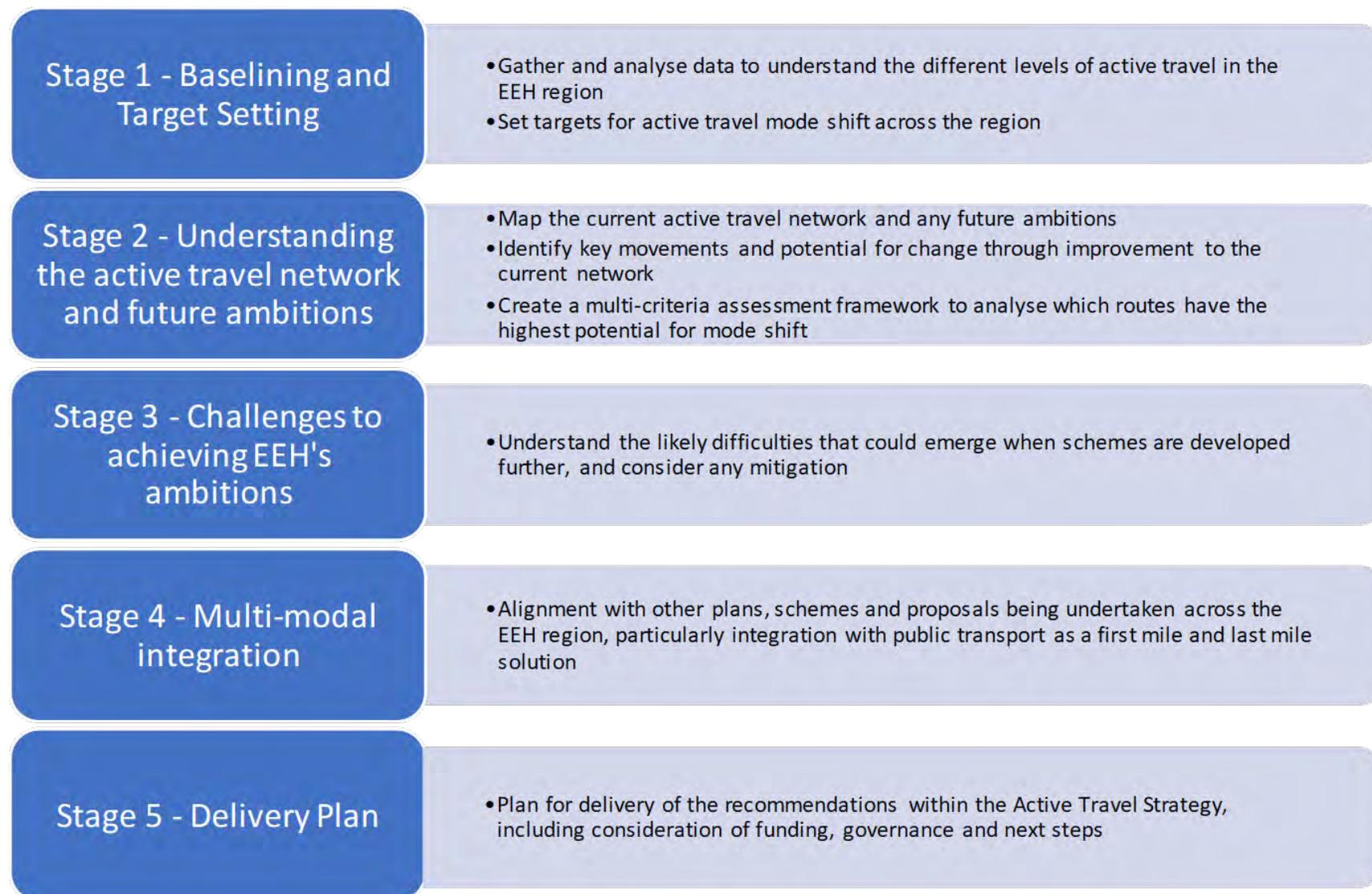




Image: Bourge Walk Bridge, Aylesbury

2. Stage 1 - Baselineing and Target Setting

2.1. Policy Drivers and Logic Mapping

It was important to set out the policy context from the outset. As part of Phase 1, the following ambition was established for the EEH Active Travel Strategy:

'To create an exemplar active travel network and culture that encourages mode shift for both shorter journeys and for the first and last mile of longer journeys'.

This was further articulated as follows:

'This will help to reduce our carbon emissions; improve air quality; support our residents' physical and mental health; improve safety for users; reduce inequalities; decrease congestion; enhance the built environment and support sustainable growth across the region'.

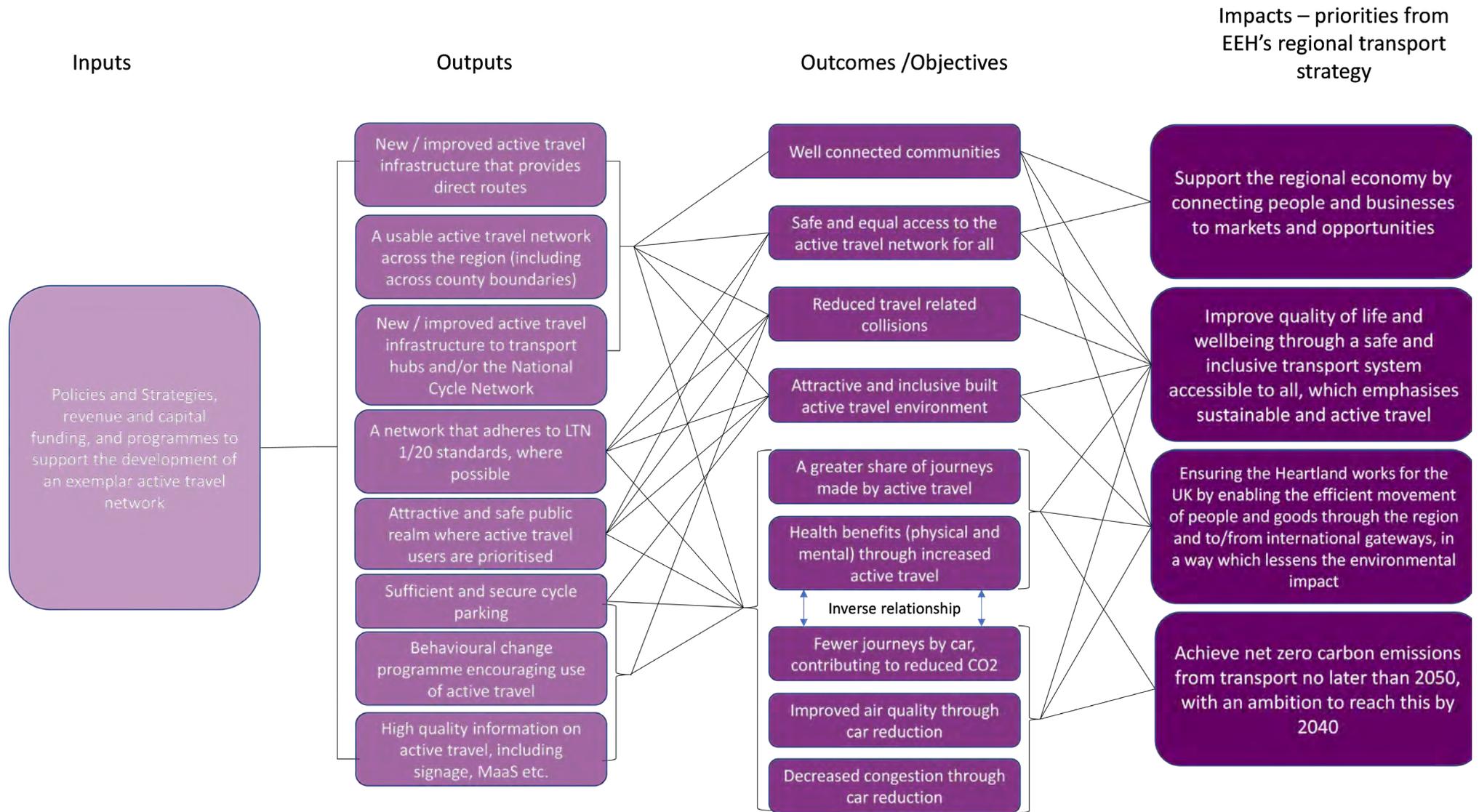
Phase 2 will set an ambitious yet achievable active travel strategy drawing on the Phase 1 report and existing active travel documents, including 'Gear Change: a bold vision for walking and cycling', 'Cycling and Walking Investment Strategy', and 'EEH's Transport Strategy – Connecting People, Transforming Journeys'.

Improved active travel will play a key role in supporting the objectives of the EEH Transport Strategy as follows:

- Achieving net zero carbon emissions from transport no later than 2050, with an ambition to reach this by 2040;
- Improving quality of life and wellbeing through a safe and inclusive transport system accessible to all, and which emphasises sustainable and active travel;
- Supporting the regional economy by connecting people and businesses to markets and opportunities; and
- Ensuring the EEH region works for the UK by enabling the efficient movement of people and goods through the region and to/from international gateways in a way that lessens its environmental impact.

Logic mapping has been used to explain how the EEH priorities will be achieved and/or supported through active travel. Logic mapping is a systemic approach to identifying the linkages between scheme inputs, outputs and outcomes. The inputs, outputs, outcomes and impacts all link together to show the logical relationships between investing in active travel, benefits to people, society and the economy, and ultimately how priorities will be achieved. This is shown in Figure 2.1.

Figure 2.1 - Phase 2 Logic Mapping



(Source: Department for Transport National Travel Survey 2019 data)

2.2. Stage 1 - Methodology

2.2.1. Data Collection

Stage 1 was primarily focused on baselining and target setting. As part of this task, data was gathered and analysed in relation to current active travel trips. These trips were considered in the context of car usage so that levels of change can later be established.

The datasets highlighted in Table 2-1 were sought, with the status shown as to whether each dataset was available or not, along with the stage they were used in.

The primary datasets required to understand baseline active travel were the Census 2011 Journey to Work (JTW) and National Travel Survey (NTS) datasets. The Census JTW dataset provides origin-destination commuter data by mode of transport from the 2011 Census, which was completed by the entire population of England. The NTS dataset is developed by a random sample of the population in England (1,000 people per month) completing travel diaries for one month. In these travel diaries, details recorded include trip purpose, trip origin and destination, and trip mode for years 2011-2020 inclusive. Therefore, an understanding of baseline active travel patterns in the EEH region can be derived from these two datasets.

It should be noted that Census 2021 data was not yet available at the time of this study, while the Census 2011 JTW data is not representative of 2023 travel patterns and only captures commuting trips (it should also be noted that this dataset would require caveating if analysed due to the Covid-19 pandemic). Therefore, the NTS was determined to be more relevant for understanding the baseline and setting modeshare targets as it provides a view from 2011 to 2020 across all

Table 2-1 - Data sought

Dataset	Source	Available	Stage Used
Propensity to Cycle data	Open source	Y	1 & 2
ProjectView tool data	EEH	Y	1
First Mile / Last Mile tool data	EEH	Y	1
EEH personas analysis	EEH	Y	1
Census 2011	Open source	Y	1 & 2
National Travel Survey (NTS)	DfT	Y	1 & 2
Existing active travel infrastructure	EEH & local authorities	Y	1 & 2
Collision data	DfT	Y	1 & 2
DfT count site cycle data	DfT	Y	1
ATC cycle count data	Local authorities	N ⁶	1
E-bike & e-scooter data	EEH	N	1
Data from LCWIPs / other active travel strategies	EEH & local authorities	Y	1 & 2
Access rights	Local authorities	Y	2
Public transport facilities	Local authorities	Y	2
Employment data and employment sites	EEH	Y	2
Proposed / Future housing sites	EEH	Y	2
Index of multiple deprivation	Open source	Y	2
Topography	Open source	Y	2

purposes despite the smaller sample size (as only a proportion of the population responds versus the Census 2011). Table 2-1 shows that the majority of data sought was available, which has provided insights on:

- Existing average length of active travel trips;
- Frequency of these trips;
- Existing mode shares for walking and cycling in different types of place; and
- Extent of existing active travel infrastructure.

There were some gaps in the data that was available as follows:

- E-bike and e-scooter data - it was not possible to source this data as part of the project and therefore

⁶ Note data unavailable due to gaps and inconsistencies in the EEH region

understanding the baseline for e-bike and e-scooter usage in the EEH region was not possible.

- Cycle and walk count data for existing active travel infrastructure varied across the region and therefore was not included in the data. This gap meant it was not possible to baseline how the existing infrastructure is used, and to understand how different features of the infrastructure may impact on usage.
- EEH personas analysis – it was not possible to fully integrate the raw data into the analysis as part of this study, hence the influence of the EEH personas analysis on the baselining and target setting has been used for qualitative context only.

2.2.2. Place Type Classification

2.2.2.1. Overview

In addition to collating data, a key part of the Stage 1 methodology was to categorise the EEH region into these place types for the purpose of this study. This was to ensure that the analysis could account for different place types across the region, as each district and place type within the district has different travel characteristics.

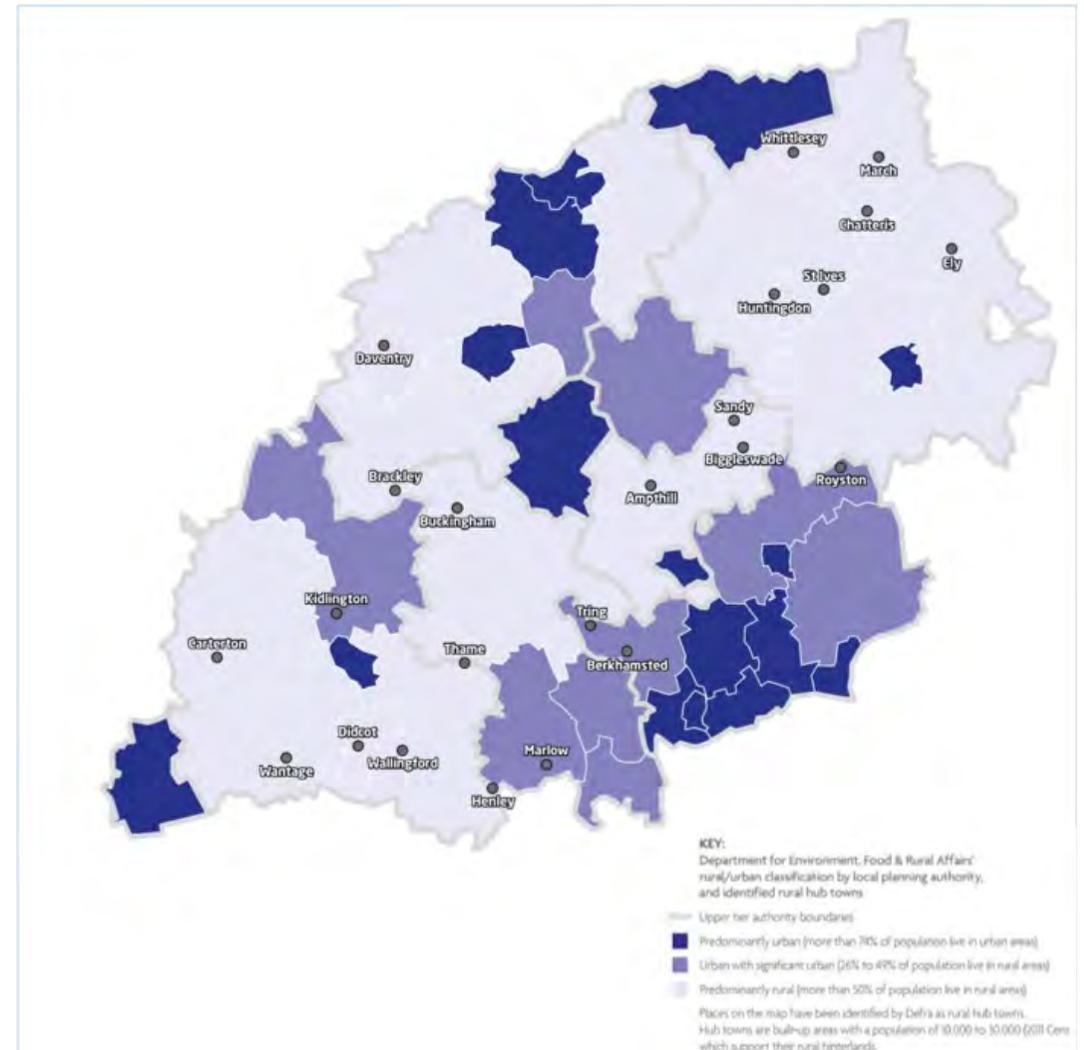
2.2.2.2 Methodology

Phase 1 of the EEH Active Travel Strategy considered the EEH "Heartland in Context" report⁷, which shows the Department for Environment, Food and Rural Affairs' (DEFRA) rural vs. urban classifications for local authorities in the EEH region as shown in Figure 2.2.

Expanding on these classifications, the following methodology has been used to categorise place types in the Heartland:

1. Urban: All "predominantly urban" areas as per DEFRA classification.

Figure 2.2 - DEFRA Rural vs. Urban Classification of EEH region



Note: this map shows former Districts and Boroughs in the Northamptonshire and Buckinghamshire areas, prior to the creation of the West Northamptonshire, East Northamptonshire, North Northamptonshire, and Buckinghamshire unitary authorities

⁷https://eeh-prod-media.s3.amazonaws.com/documents/Heartland_in_Context.pdf

2. Market town: Settlement areas within the “urban” areas as per DEFRA classification where population is greater than 10,000 people, and hub towns from the DEFRA-classified “predominantly rural” areas where population is greater than 10,000 people.
3. Rural: The remainder of DEFRA-classified “urban” and “predominantly rural” areas.

It should be noted that, while areas have been classified according to the predominant DEFRA categorisation outlined above, there can still be a mix of place types within these areas (including within urban areas). Local authorities are well placed to understand the place type mix of their local areas and therefore apply local knowledge in the use of these findings.

Consideration has also been given to alignment of the above classifications in relation to the area types used in the Department for Transport (DfT) / Active Travel England (ATE) Active Mode Appraisal Toolkit (AMAT). It is considered that the EEH Place types match reasonably well with the ATE/AMAT area types, and thus if one of the cross boundary active travel links identified in Stage 2 requires processing through the AMAT tool it will be possible to cross reference them as outlined in Table 2-2 below.

Table 2-2 - Comparison of EEH Active Travel Strategy Place Type and AMAT Area Type

EEH Active Travel Strategy Place Type	AMAT Area Type
Urban	Either 'Inner/Outer Conurbation' or 'Urban' depending on location
Market town	Urban
Rural	Rural

Following the methodology outlined above, the following areas (at district level) are categorised as the EEH “urban” place type category:

- Broxbourne;
- Cambridge;
- Corby;
- Hertsmere;
- Kettering;
- Luton;
- Milton Keynes;
- Northampton;
- Oxford;
- Peterborough;
- St Albans;
- Stevenage;
- Swindon;
- Three Rivers;
- Watford; and
- Welwyn Hatfield.

To identify the market towns, settlement areas within the DEFRA-classified “urban” and “predominantly rural” areas were captured using GIS software and the relevant Middle Layer Super Output Areas (MSOAs) identified. The ONS (Office for National Statistics) 2020 population figures were then analysed to understand the populations for each of the identified settlements. Table 2-3 presents the settlements and populations output from the analysis. As noted above, there can still be a mix of place types within these districts.

Table 2-3 - Settlement with ONS 2020 total resident population figures

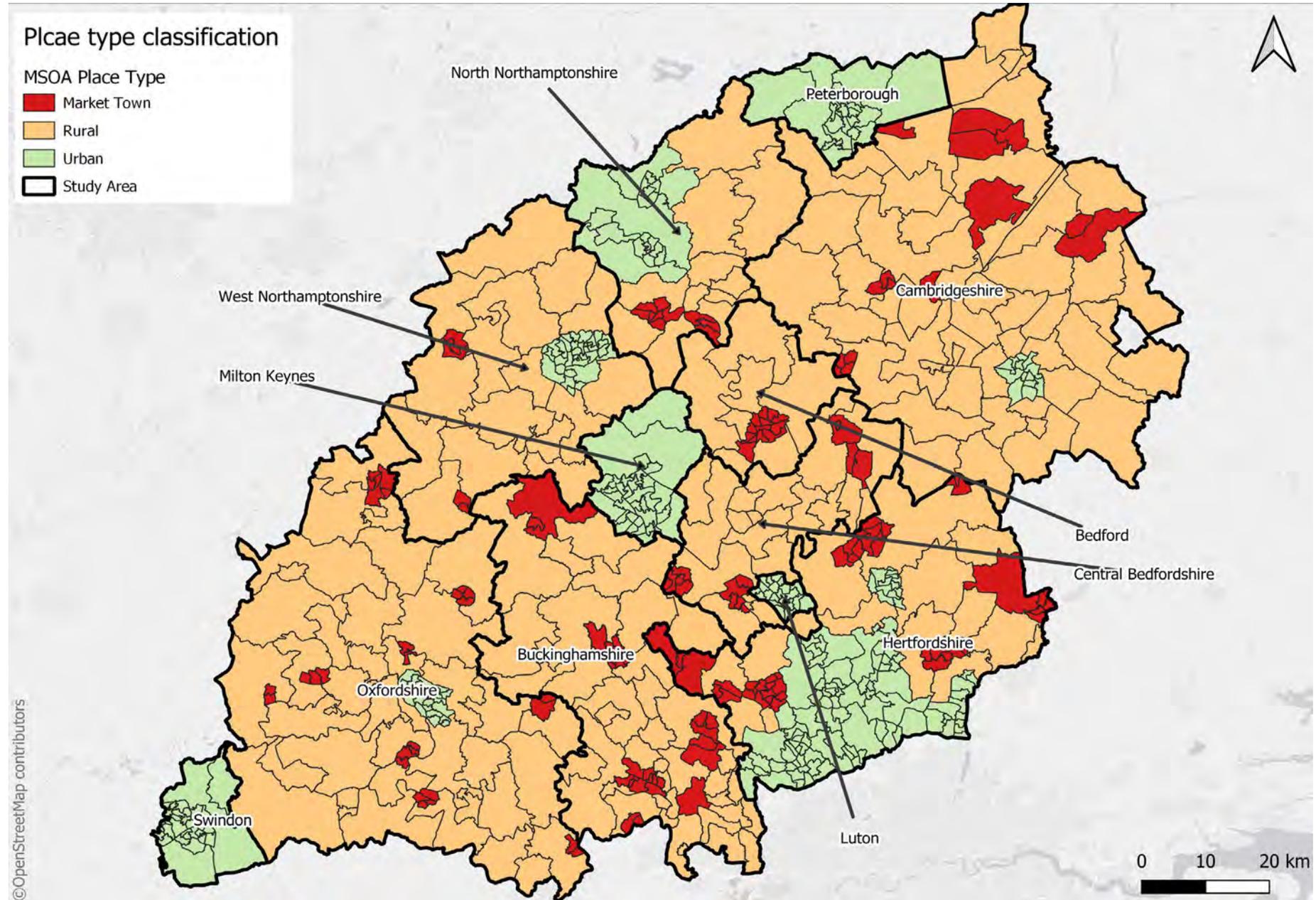
Local Authority District	Town	Total Resident Population	Population > 10,000
Bedford	Bedford	106,941	Yes
Buckinghamshire	Amersham	18,421	Yes
	Aylesbury	87,360	Yes
	Beaconsfield	12,742	Yes
	Buckingham	18,229	Yes
	Chesham	23,056	Yes
	High Wycombe	77,534	Yes
	Marlow	14,380	Yes
Central Bedfordshire	Amphill	8,935	No
	Biggleswade	22,148	Yes
	Dunstable	28,118	Yes
	Houghton Regis	19,773	Yes
	Leighton Buzzard	43,203	Yes
Cherwell	Sandy	12,604	Yes
	Banbury	48,101	Yes
	Bicester	30,876	Yes
Dacorum	Kidlington	12,285	Yes
	Berkhamsted	19,033	Yes
	Hemel Hempstead	94,174	Yes
East Cambridgeshire	Tring	16,429	Yes
	Ely	21,659	Yes
East Hertfordshire	Bishops Stortford	45,468	Yes
	Hertford	29,729	Yes
	Ware	20,218	Yes
Fenland	Chatteris	11,083	Yes
	March	22,878	Yes
	Whittlesey	12,060	Yes

Local Authority District	Town	Total Resident Population	Population > 10,000
Huntingdonshire	Godmanchester	7,442	Yes
	Huntingdon	25,988	Yes
	St Ives	17,022	Yes
	St Neots	29,749	Yes
North Hertfordshire	Hitchin	35,994	Yes
	Letchworth	44,851	Yes
	Royston	17,113	Yes
North Northamptonshire	Irthlingborough	9,349	No
	Rushden	32,148	Yes
	Wellingborough	53,163	Yes
South Oxfordshire	Didcot	28,278	Yes
	Henley	11,927	Yes
	Thame	12,747	Yes
	Wallingford	9,538	No
Vale of White Horse	Abingdon	34,569	Yes
	Wantage	9,946	No
West Northamptonshire	Brackley	15,775	Yes
	Daventry	27,586	Yes
	Towcester	8,834	No
West Oxfordshire	Carterton	16,958	Yes
	Chipping Norton	6,961	No
	Witney	29,263	Yes

Only those settlements where the population is > 10,000 were categorised in the "market town" EEH place type category. The remainder of the DEFRA-classified "urban" and "predominantly rural" areas were categorised in the "rural" EEH place type category.

The resulting classification of place types within the EEH region is shown in Figure 2.3.

Figure 2.3 - EEH Place type classification



2.3. Stakeholder Workshop #1 - Findings

The 1st stakeholder workshop was held on 13th September 2022, with the objective being to discuss the approach to Stage 1 with stakeholders and to request datasets. The meeting was also used to provide an overview of the project with a focus on data collection, analysis and a discussion on target setting.

The outcomes of the workshop included the following:

- Targets based on infrastructure improvements such as “increasing the length of network built per year” were considered, but while infrastructure was considered important, it was agreed that mode share targets that reflected behavioural change would be a better measure.
- There was agreement that targets should be set for all users and not just “confident cyclists”, and therefore greater importance should be placed on the NTS data during baselining as there is a known skew towards “confident cyclists” in the Census JTW dataset.
- Stakeholders agreed that targets should complement existing national targets, such as the Gear Change 2030 target⁸.
- It was noted that the active travel priorities currently focus on urban journeys to facilitate the Gear Change 2030 target but that targets should also mirror the diverse nature of the EEH region or rural, market towns and urban areas.
- There was an agreement to include e-bikes in the target setting. Due to a lack of e-bike data, these targets are considered provisional and will be reviewed as more data on e-bikes becomes available.

2.4. Stage 1 Baseline - Findings

The baselining was undertaken to inform target setting and help to build a strong understanding of the underlying travel patterns within the EEH region. As outlined above, the two main datasets used to understand the baseline are the Census 2011 JTW and the NTS.

2.4.1. Census Journey to Work (JTW)

The Census 2011 provides high quality, reliable data on the 2011 commuting habits for those living in the study area. Mode shares for commuting trips can be calculated for the EEH region, showing the main mode of choice for both trips originating and trips ending in the EEH region. (It should be noted that this does mean that if a commuter walks or cycles to a train station and uses the train for the majority of their commute, they will show as using rail rather than an active travel mode. Therefore, a known limitation of this dataset is that the mode shares can be under-reported, particularly for active travel modes).

These mode shares are visually represented at the district level in Figure 2.4 to Figure 2.9.

⁸ Half of all journeys in towns and cities are cycled or walked by 2030.

Figure 2.4 - Census JTW Origins % Car

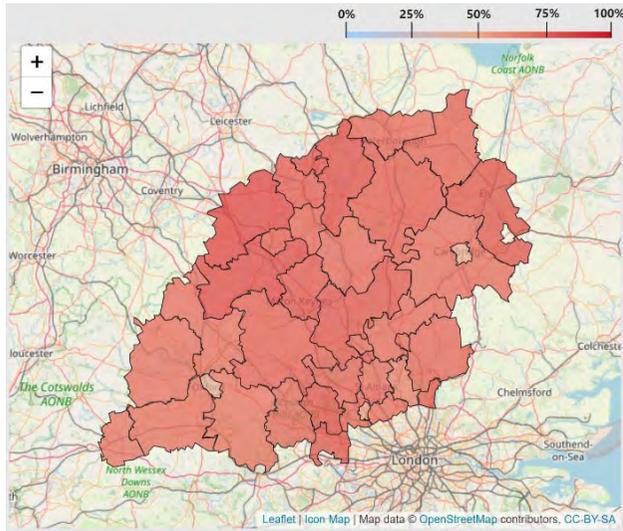


Figure 2.6 - Census JTW Origins % Cycle

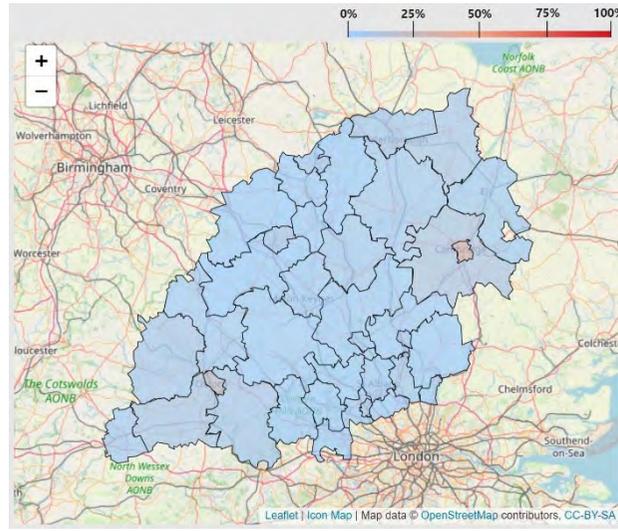


Figure 2.8 - Census JTW Origins % Walk

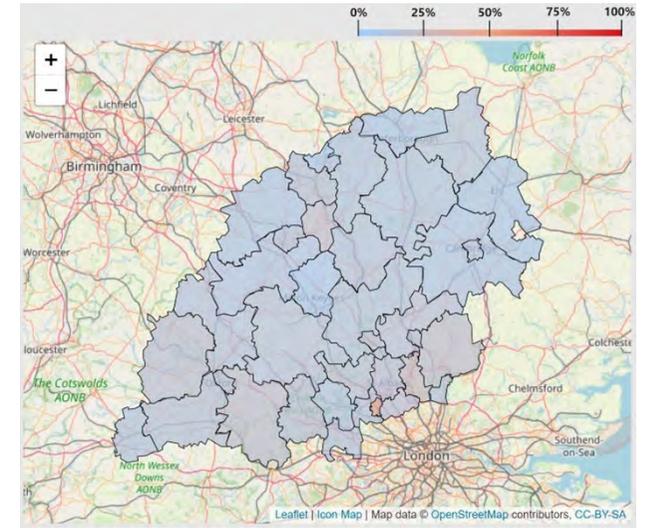


Figure 2.5 - Census JTW Destinations % Car

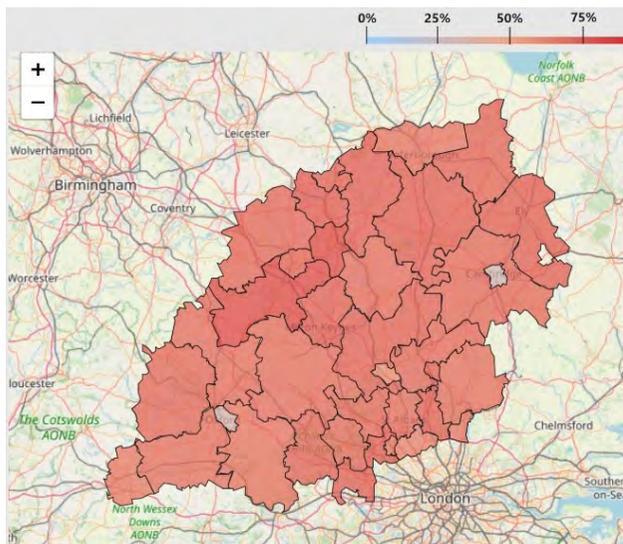


Figure 2.7 - Census JTW Destinations % Cycle

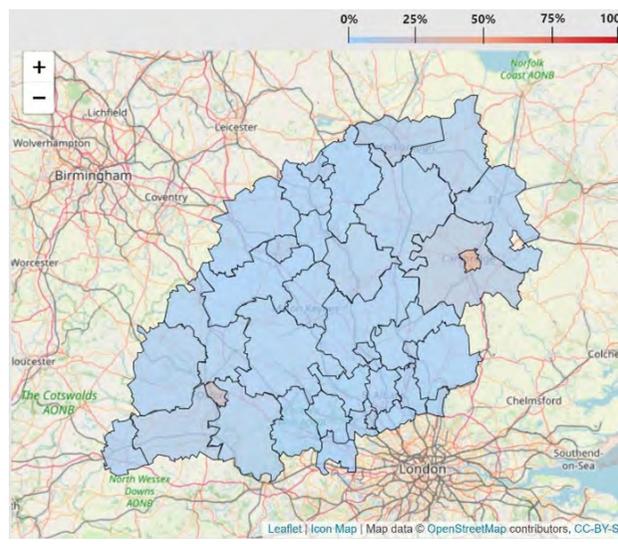
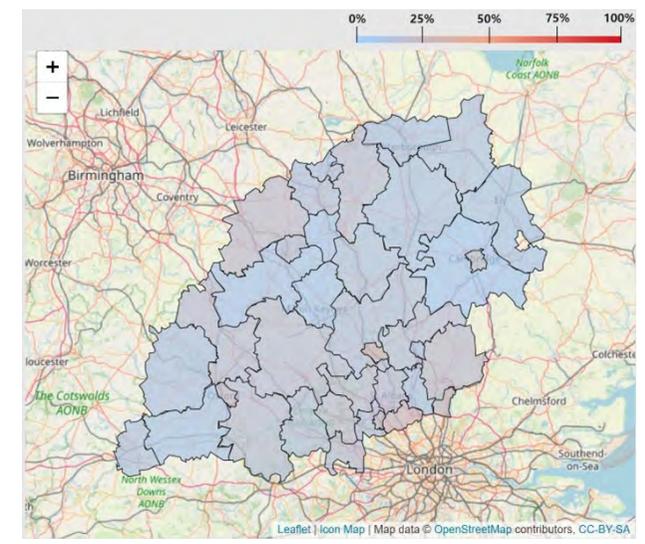


Figure 2.9 - Census JTW Destinations % Walk



The Census 2011 data highlights that the predominant mode for commuting in the EEH region is travel by car. This accounts for >70% of commuting trips for all districts other than Oxford and Cambridge. Cycle mode shares are typically <5% for most of the region, with a maximum of 37% of commuting trips ending in Cambridge. The walk mode share is higher, with 10-15% typical mode share across the region and a maximum of 36% for trips originating from Watford.

However, as the Census 2011 is over ten years old, this should be interpreted with caution as the commuting and travel patterns within the region are likely to have changed over time.

2.4.2. National Travel Survey (NTS)

The NTS provides highly detailed data on how individuals undertake all trips, from commuting trips to trips for leisure and recreational purposes. There is a sufficient sample size coverage across the EEH region, with ~62,000 surveyed trips completed by car, bus, cycle or walking between the years 2017 – 2020.

Using this data, it is possible to calculate mode shares for trips originating and arriving in the region. These mode shares are visually represented at the district level in Figure 2.10 to Figure 2.15 for all purposes, for weekdays, and for the survey years 2017 – 2020 inclusive (it should be noted that there was no data for the areas shaded in white).

Image: Dog walkers in Willen



Image: Cyclist in Swindon



Figure 2.10 - NTS Origins % Car

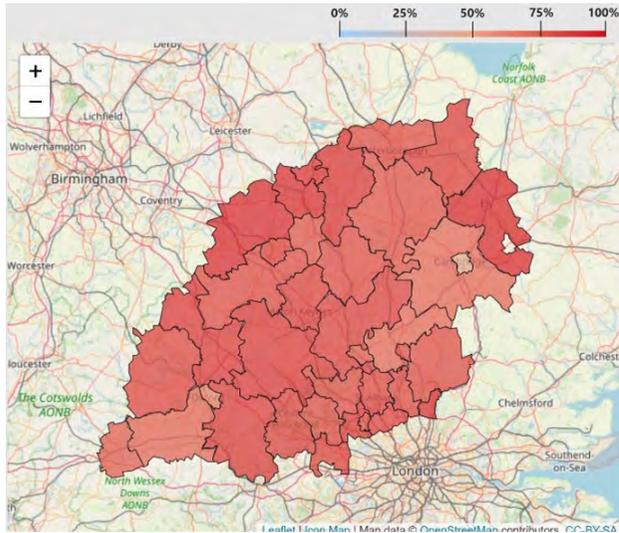


Figure 2.12 - NTS Origins % Cycle

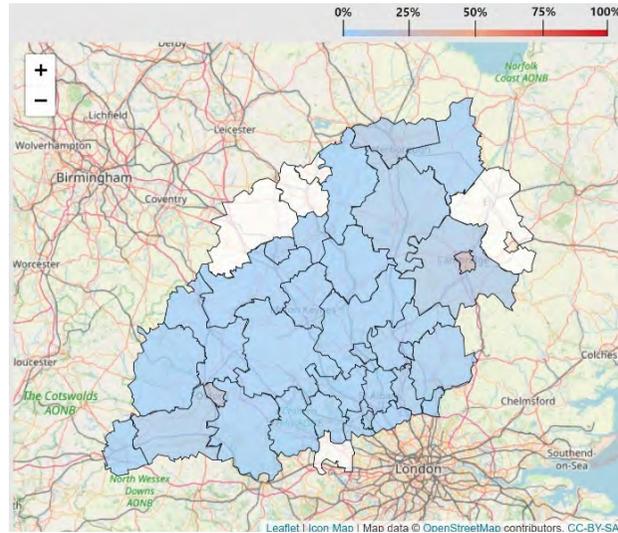


Figure 2.14 - NTS Origins % Walk

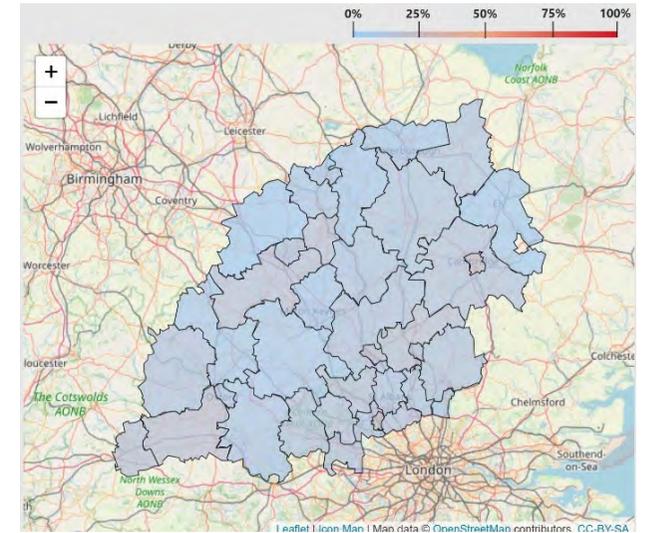


Figure 2.11 - NTS Destinations % Car

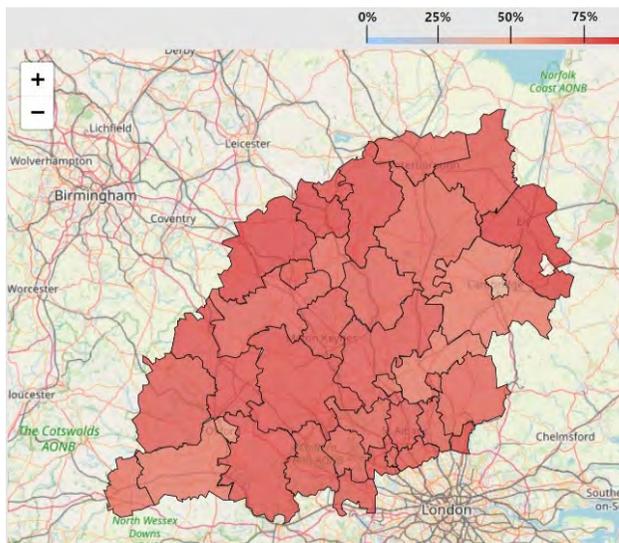


Figure 2.13 - NTS Destinations % Cycle

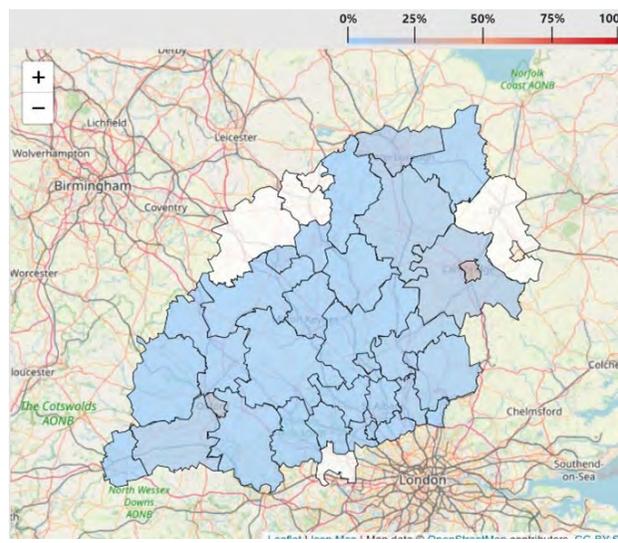
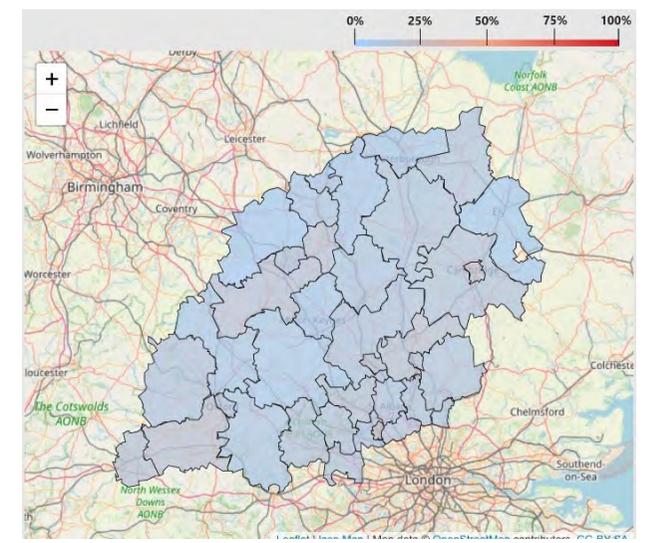


Figure 2.15 - NTS Destinations % Walk



Figures 2.10 to 2.15 again demonstrate that travel by car is the dominant mode across the region. Cambridge is the only district with a total car mode share below 50%, with 45% of trips both originating from and ending in Cambridge being completed by active travel modes. As seen in the Census 2011 data, cycling mode share across the region is low with most districts showing a < 5% cycle mode share. Walk mode shares are higher, with an average walk mode share of 10-15% for most districts. Using the place type classifications as detailed in section 2.2.2, the NTS data can be further analysed to provide greater insight into how mode share varies across the EEH region. The NTS data presented in Figure 2.16 and Figure 2.17 is for all purposes, for weekdays, and for the years 2017 – 2020 inclusive.

The charts in Figure 2.16 show the mode share by place type and trip length band for the NTS data, with the absolute number of trips surveyed for each place type and trip length band shown as a line on the right-hand axis.

When considering the intra-place type trips (i.e. Market Town to Market Town, Rural to Rural, and Urban to Urban) cycle and walk modes account for ~40-50% of trips less than 2 miles in length. However, when considering trips greater than 2 miles in length, car is the dominant mode and accounts for greater than 80% of trips. Of the remaining 50-60% mode share available for trips less than 2 miles in length, this is also accounted for by car usage in all instances.

Bus trips are typically seen in trips of 3-8 miles in length, particularly for inter-place type movements, but still never account for more than 10% of the mode share in any given trip length band.

Figure 2.16 - NTS % Mode Share by Origin & Destination Place Type, Trip Length Band



Figure 2.17 shows percentile trip lengths by place type and mode, with the percentiles included being median, 75th percentile and 90th percentile. For example, the 75th percentile for car mode for Market Town to Market Town trips is four miles. This means 75% of Market Town to Market Town trips completed by car in the EEH region are less than four miles in length. Overall, the chart demonstrates the high proportion of shorter trips, particularly for intra-place type trips.

75% of walk trips are less than 1.3 miles in length and 75% of cycle trips are less than three miles in length, while 50% of car trips are less than 3.7 miles in length.

Figure 2.17 - NTS Percentile Trip Length (in miles) by Origin and Destination Place Type, Mode

Origin	Mode	Car			Cycle			Walk			Total		
		Median	75 %ile	90 %ile	Median	75 %ile	90 %ile	Median	75 %ile	90 %ile	Median	75 %ile	90 %ile
Market Town	Market Town	2.0	4.0	10.0	1.5	3.0	5.0	1.0	1.3	2.0	2.0	3.1	7.6
	Rural	5.5	9.3	14.0	3.0	5.5	7.2	1.5	2.3	2.5	5.5	9.0	14.0
	Urban	14.0	20.0	29.0	15.5	15.5		2.0	7.0		14.0	20.0	29.0
	Total	3.2	7.6	14.9	2.0	3.5	6.1	1.0	1.4	2.0	2.7	6.5	13.0
Rural	Market Town	5.6	9.6	14.8	3.0	5.0	8.3	1.5	2.3	2.9	5.5	9.1	14.0
	Rural	3.0	7.0	12.0	1.0	1.5	4.5	1.0	1.3	1.5	2.0	5.4	10.0
	Urban	10.0	16.0	23.1	7.0	7.8	14.9	1.2			10.0	15.9	22.0
	Total	5.0	9.2	15.0	1.0	2.5	7.0	1.0	1.3	1.5	4.0	8.0	14.0
Urban	Market Town	13.6	20.0	29.1	14.0	15.5		2.4	5.9		13.5	20.0	29.0
	Rural	10.0	16.0	25.0	6.0	7.8	13.4				10.0	16.0	24.5
	Urban	2.9	4.7	8.0	1.5	2.5	4.0	1.0	1.3	1.6	2.0	4.0	7.0
	Total	3.0	6.0	14.0	1.5	2.8	5.0	1.0	1.3	1.7	2.6	5.0	11.5
Total		3.7	8.0	14.7	1.5	3.0	5.0	1.0	1.3	1.7	3.0	6.4	13.0

2.4.3. Summary

The Census 2011 and NTS data show that car is the prevalent mode in the EEH region, with an average car mode share of > 85% across all trip purposes. Cycling accounts for typically < 5% of trips, with the exceptions being Cambridge and Oxford, where cycling accounts for up to 45% of trips. Walking accounts for typically 10-15% of trips across the region, which is in line with averages for the wider UK.

The median trip lengths for car, cycling and walking across the region are 3.7 miles, 1.5 miles and one mile respectively, indicating that based on distance alone, a significant number of existing trips are within a reasonable distance for enabling a switch to active modes.

2.5. Future Monitoring and Evaluation

The NTS data is collected yearly and is made available by the UK Data Service. The data is provided in a standardised format, and it would be possible to use either the processes developed through this project or develop new automated processes to generate insights into how travel patterns evolve for the EEH region, and how these changes compare to targets. Licensing would be required to access the data, with suggested monitoring every 3-5 years.

The Census is run once every ten years, with the latest Census 2021 still being processed and unavailable for analysis at the time of writing this report (and therefore will not be used in relation to this study). For ongoing monitoring, the Census 2031 and Census 2041 would be available to validate how commuting travel patterns in the EEH region have progressed each decade and to validate against any set targets.

2.6. Target Setting

Target setting has been based on enabling realistic outcomes for the EEH region, with the four key desired outcomes being:

- Achieving net zero carbon emissions from transport no later than 2050, with an ambition to reach this by 2040;
- Improving quality of life and wellbeing through a safe and inclusive transport system accessible to all which emphasises sustainable and active travel;
- Supporting the regional economy by connecting people and businesses to markets and opportunities; and
- Ensuring the EEH region works for the UK by enabling the efficient movement of people and goods through the region and to/from international gateways, in a way which lessens its environmental impact.

Combining these high-level outcomes with the baselining and analysis detailed in sections 2.2 to 2.5, it is possible to develop data-driven targets that are based on place types and journey lengths.

When target setting, existing targets already in place have been considered, such as the national Gear Change 2030 target, which states that 50% of all urban trips in the UK should include active travel by 2030. Additionally, high level modelling previously completed for EEH has been considered as a proxy, which stated the maximum likely car trip reduction for the region when multi modal packages of interventions were deployed was 30%.

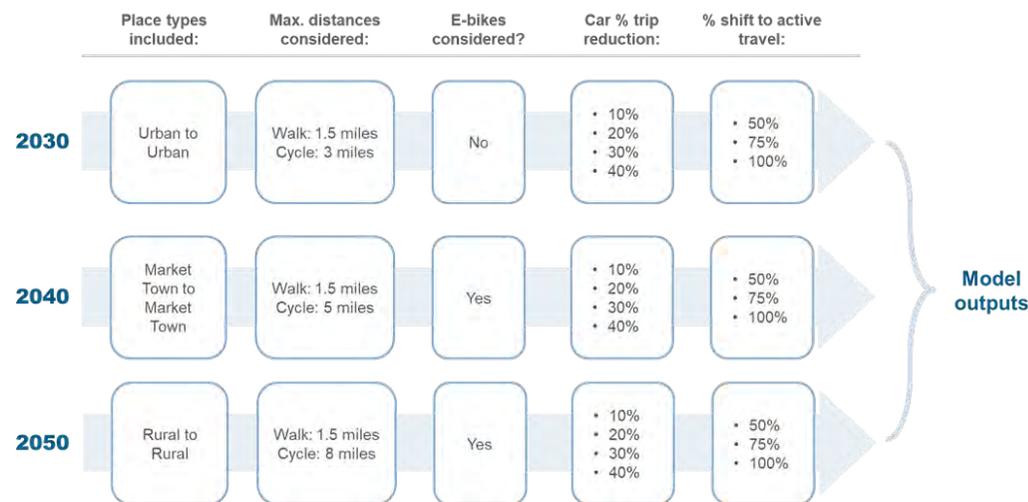
The targets take a phased approach to 2050, with targets set for each decade using the place types defined and classified in Section 2.2.2 as follows:

- 2030: Urban trips.
- 2040: Market town trips.
- 2050: Rural trips.

A mode shift model has been developed to understand how car trips shifting to active travel and/or public transport could affect the overall active travel mode share. This model uses the NTS data for 2017 – 2020 inclusive across all purposes.

The model inputs for each of the years is stated in Figure 2.18.

Figure 2.18 - Scenario modelling inputs



Regarding the scenario model inputs, it is important to note:

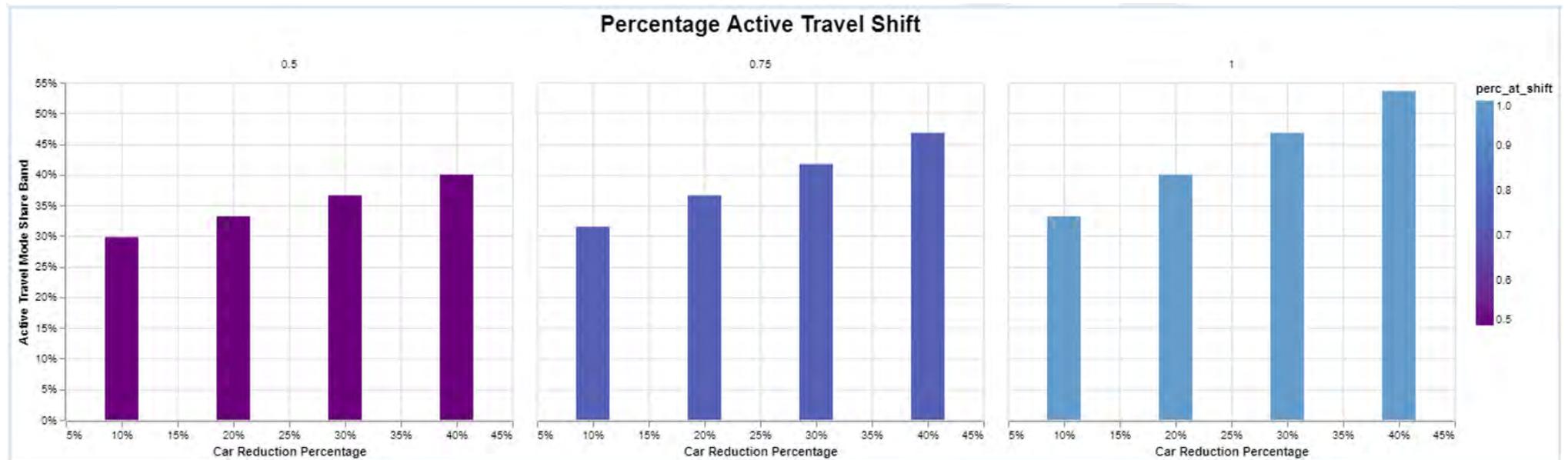
- The maximum walk and cycle distances are based on the 75th percentile trip lengths identified in Figure 2.17 for each place type.
- The maximum cycle distance for the 2030 scenario does not consider e-bikes as there was no e-bike data available to understand the current e-bike penetration and uptake within the EEH region, and therefore it was not appropriate to include e-bikes when calculating the 2030 targets. However, e-bikes have been considered when setting the maximum cycle distance for 2040 and 2050 as it is likely that e-bikes will continue to grow in the market over the next 20-30 years.
- The distance constraints for maximum walk and cycle distances define what trips are considered in-scope for each scenario. For 2030, the maximum distance considered is three miles meaning all in-scope trips start and end in the same urban area. For 2040, the maximum distance considered is five miles, which indicates most in-scope trips will start and end in the same market town but some trips between different market towns are also included. For 2050, the maximum distance considered is eight miles which means all rural area trips less than eight miles in distance are included.
- For scenarios where <100% shift to active travel, it is assumed the remainder would shift to using public transport.

The modelled potential active travel mode share for trips up to the maximum cycle distance length for each scenario stated in Figure 2.18 is shown in Figure 2.19 to Figure 2.21. Each figure represents outputs for a scenario and consists of three separate bar charts (from left to right) as follows:

- Left bar chart: The active travel mode share that could be achieved (y-axis) by car trip % reduction (x-axis) when 50% of the car trips shift to using active travel instead.
- Centre bar chart: The active travel mode share that could be achieved (y-axis) by car trip % reduction (x-axis) when 75% of the car trips shift to using active travel instead.
- Right bar chart: The active travel mode share that could be achieved (y-axis) by car trip % reduction (x-axis) when 100% of the car trips shift to using active travel instead.

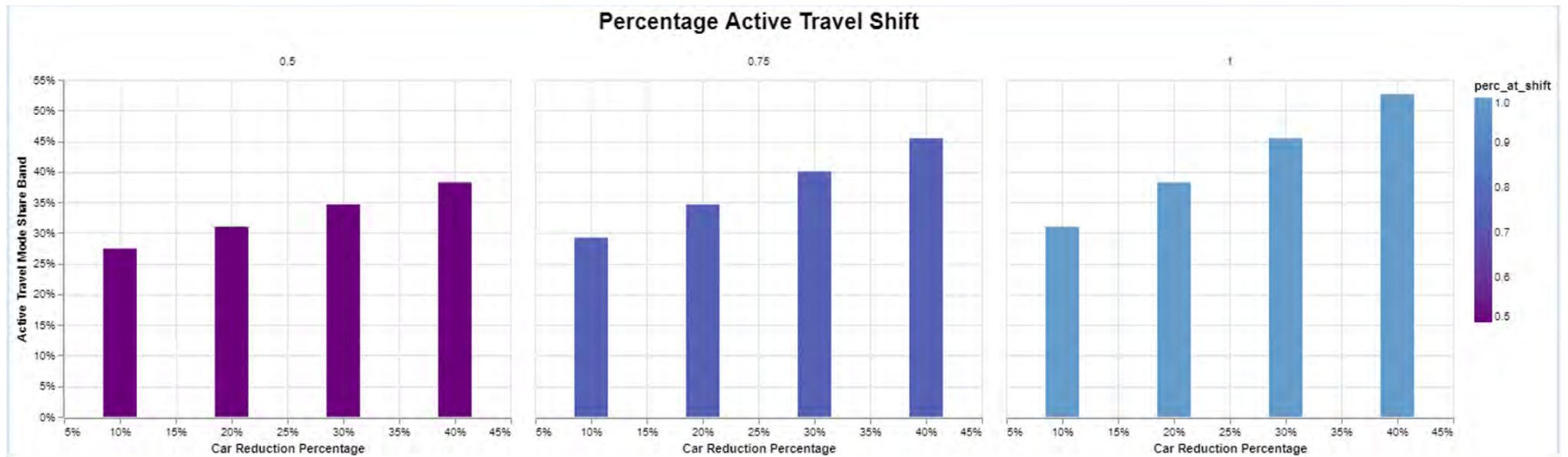
Figure 2.19 shows the scenario model outputs for the active travel mode share that could be achieved if there were a reduction in urban to urban car trips <3 miles. The scenario allows car trips < 1.5 miles to be shifted to walking, and car trips <3 miles to be shifted to cycling. For example, the third bar in the chart in the centre of the figure shows that if there was a 30% reduction in car trips < 3 miles and 75% of these shifted to active travel, the potential active travel mode share for trips < 3 miles is ~42%.

Figure 2.19 - Scenario modelling: Urban to Urban, All Purposes



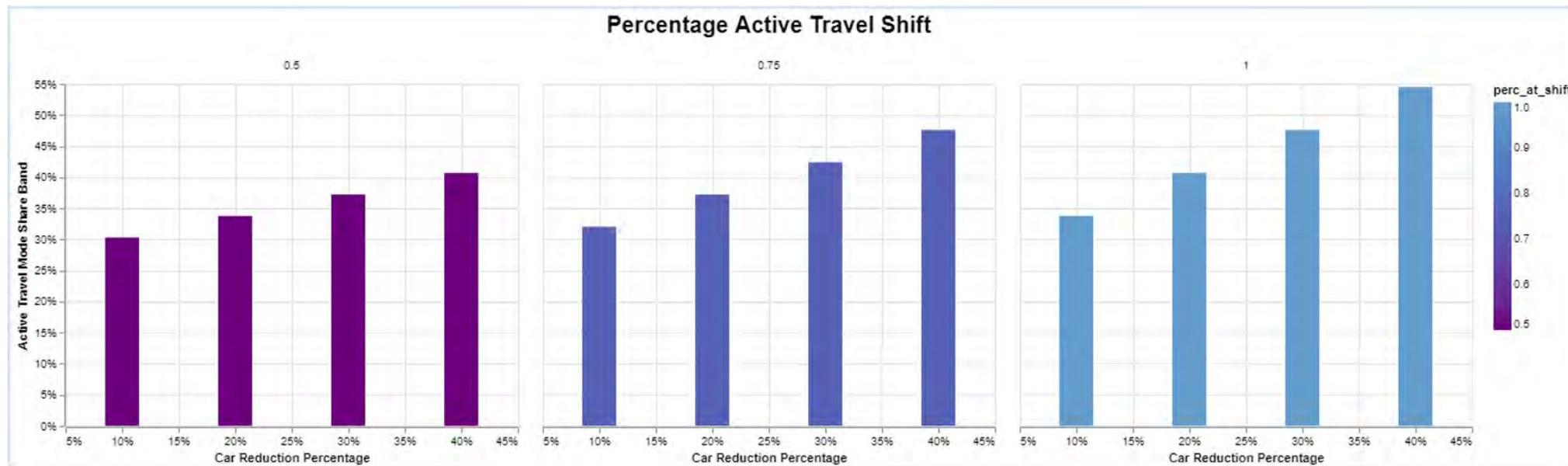
The graph in Figure 2.20 presents the modelled active travel mode share for market town to market town trips < 5 miles, where it is assumed a reduction in car trips could be shifted to walking for trips < 1.5 miles, and to cycling for trips < 5 miles. For example, the chart to the left of the figure shows that if there were a 30% reduction in car trips < 5 miles and 50% of these shifted to active travel, the potential active travel mode share for trips < 5 miles is 35%.

Figure 2.20 - Scenario modelling: Market Town to Market Town, All Purposes, 2040



The graph in Figure 2.21 presents the modelled active travel mode share for rural to rural trips < 8 miles, where it is assumed a reduction in car trips could be shifted to walking for trips < 1.5 miles, and to cycling for trips < 8 miles. For example, the chart in the middle of the figures shows that if there were a 30% reduction in car trips < 8 miles and 75% of these shifted to active travel, the potential active travel mode share for trips < 8 miles is 42%.

Figure 2.21. - Scenario modelling: Rural to Rural, All Purposes, 2050



Therefore, targets can be set based on the logic mapping, research, conversations with stakeholders, and analysis summarised in this section. In this respect, it should be noted that, as part of workshop #2, stakeholders were asked to reflect on the methodology for target setting, the format and the numbers via an online whiteboard (Mural).

As a sample target calculation, for urban trips < 3 miles in length, the car mode share for these trips is ~65%, as seen in Figure 2.16. The scenario modelling in Figure 2.19 highlights that if there were a 30% reduction in car trips < 3 miles in length, and 100% of these shifted to active travel, then active travel mode share would increase from ~25% to ~45%. Therefore, the target set for urban trips is to achieve 40% pure active travel mode share (where the entire trip is completed via active travel), with a stretch target of 50% active travel mode share including first mile / last mile trips.

The targets set for the EEH region are summarised in Table 2-4 and are displayed visually in Figure 2.22. Two percentages are suggested with the reason being as follows:

- Pure active travel mode share: % of trips completed using just active travel.
- Active travel mode share including first mile / last mile trips: The % of trips completed using active travel alongside another form of non-car transport e.g. bus, train, tram.

In setting these targets, it should be noted that working towards them will be undertaken via a number of avenues such as LCWIP development and scheme implementation, not just the cross-border routes that this document focuses on.

The targets are not obligatory but can be used to form a long-term vision for active travel.

We recognise that Local authorities are best placed to understand the place type mix of their local areas and therefore we welcome applying local knowledge in the use of these findings.

Figure 2.22 - EEH Mode Share Active Travel Strategy Targets

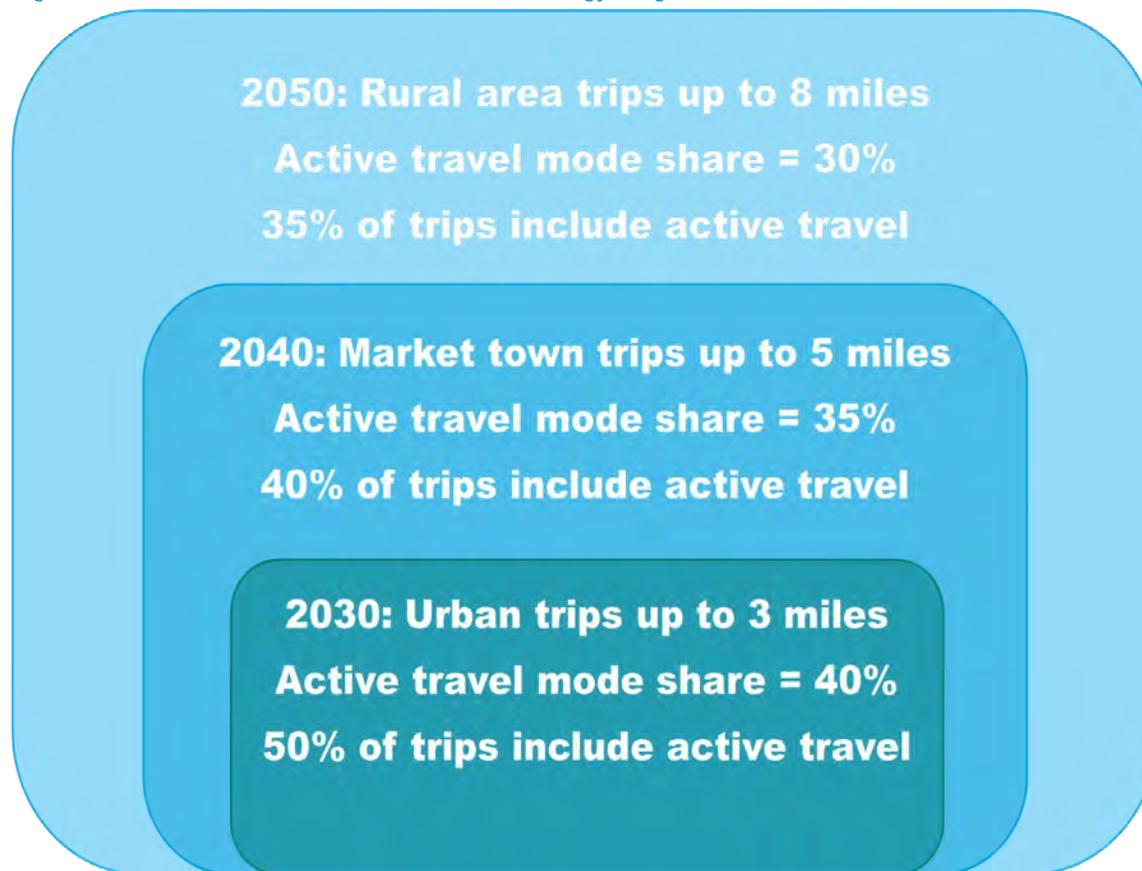


Table 2-4 - EEH Mode Share Active Travel Strategy Targets

Year	Area	Max. Walk Distance	Max. Cycle Distance	Pure AT Mode Share	AT Mode Share incl. first mile / last mile
2030	Urban	1.5 miles	3 miles	40%	50%
2040	Market Town	1.5 miles	5 miles	35%	40%
2050	Rural	1.5 miles	8 miles	30%	35%



Image: Pedestrians in Milton Keynes

3. Stage 2 - Regional Active Travel Network and Future Ambitions

3.1. Methodology / Overview

EEH can facilitate active travel discussion and liaison between the local authorities within the region as the regional Sub-national Transport Body (STB). EEH is supportive of the work already undertaken by local authorities on Local Cycling and Walking Infrastructure Plans (LCWIPs) within local authority boundaries and planning for Greenway routes within and across local authority borders.

This study is intended to complement this work by focusing on the cross-boundary areas. Building upon the Stage 1 analysis, Stage 2 aimed to understand the existing regional network to develop a list of high potential cross-boundary active travel links within the EEH region.

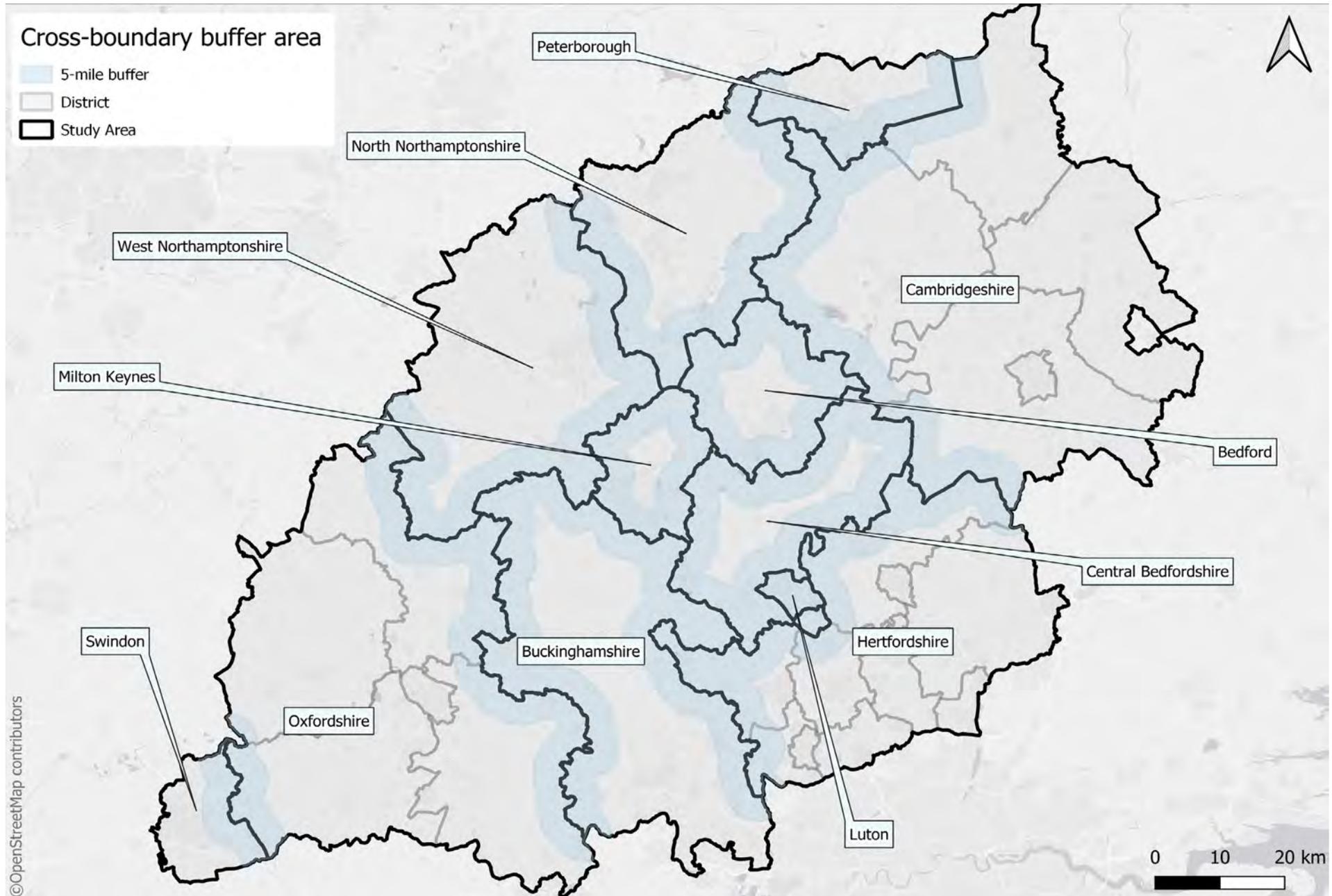
The objective has been to identify the corridors with the highest potential to contribute towards closing the gaps in the active travel network, while supporting modal shift and the ambitions set in Stage 1. The Stage 2 analysis was based on the datasets presented in Table 2-1. This information was used to identify potential active travel corridors and a long list of cross-boundary links. It was also used to inform the metrics in the multi-criteria assessment of the long list to identify a short list of priority links for inclusion in the Delivery Plan.

Stage 2 has therefore involved the following:

- Mapping the current active travel network, future ambitions, and Stage 1 data;
- Developing a long list of potential cross-boundary active travel links based on the mapping to identify gaps, demand, and propensity for mode shift, plus input from stakeholders at workshop #2;
- Developing a high-level Multi-Criteria Assessment Framework (MCAF) to score and prioritise the long list of cross-boundary active travel links; and
- Developing a short-list of the top cross-boundary active travel links to prioritise from the scoring outputs of the MCAF.

The identification of cross-boundary active links focussed on a 5-mile buffer zone either side of the local authority boundaries within the EEH region, effectively comprising a 10-mile-wide corridor along each boundary (Figure 3.1). This 5-mile buffer zone was defined to cover the vast majority of cross-boundary active travel trips and formed a suitable focus for identifying potential in-scope trips. The only active travel trips that could potentially extend beyond this area would be e-bike trips between 5-8 miles, but they would need to start/finish near the boundary to reach beyond the buffer zone. Furthermore, corridors with an origin or destination outside the EEH region were considered for the initial long list. However, those have not been included in the analysis due to a lack of data outside the EEH region.

Figure 3.1 - Cross Boundary buffer area



3.2. Mapping & data collection

Following the sourcing of data (Table 2-1), its analysis allowed the identification of those variables relevant to active travel and which could have an influence over its uptake in the region. Complemented by Stage 1 inputs, Table 3-1 presents a list of the key data outputs mapped within this document that will support the development a long list of missing links (it should be noted that Air Quality Management Areas or AQMAs were also considered but none were relevant to the buffer zones).

The following sections use this information to inform the identification of gaps in the existing active travel network, scoping of potential schemes, and the multi-criteria assessment and prioritisation of schemes.

Table 3-1 - Stage 2 Mapped Data

Figure Number	Figure Title	Dataset	AMAT Area Type
Figure 2.3	EEH Place type classification	Place Type	EEH / Stage 1
Figure 3.2	Existing and proposed cycle networks	Existing and proposed active travel infrastructure*	EEH & local authorities
Figure 3.3	Public Rights of Way (PROW)	Existing active travel infrastructure*	EEH & local authorities
Figure 3.4	Population density	Lower Layer Super Output Area (LSOA) population density	Open Source
Figure 3.5	Propensity to Cycle Tool - Dutch Scenario	Propensity to Cycle Tool	Open source
Figure 3.6	Propensity to Cycle Tool - E-bike Scenario	Propensity to Cycle Tool	Open source
Figure 3.7	Educational Establishments	Propensity to Cycle Tool	Open source
Figure 3.8	Proposed Housing and Employment Sites in buffer area	Proposed Housing & Employment Sites	EEH / Stage 1
Figure 3.9	Public Transport Hubs and Rail Network	Public Transport Hubs & Rail Network	Local authorities & Open Source
Figure 3.10	Overlaying of data to identify potential demand	Multiple	Multiple
Figure 3.11	Desire Lines: Number of inter-district trips	Desire Lines - National Travel Survey (NTS)	DfT / Stage 1
Figure 3.12	Index of Multiple Deprivation	Index of Multiple Deprivation (IMD)	Open source
Figure 3.13	Collisions in buffer area	Collision data	DfT
Figure 4.1	Terrain Elevation in the Study Area	OS Terrain – Height contours	Open Source
*The range of received datasets and the extent of those vary. Data for some locations is missing due to a lack of provision. Where possible, items available in non-digital format were manually digitalised.			

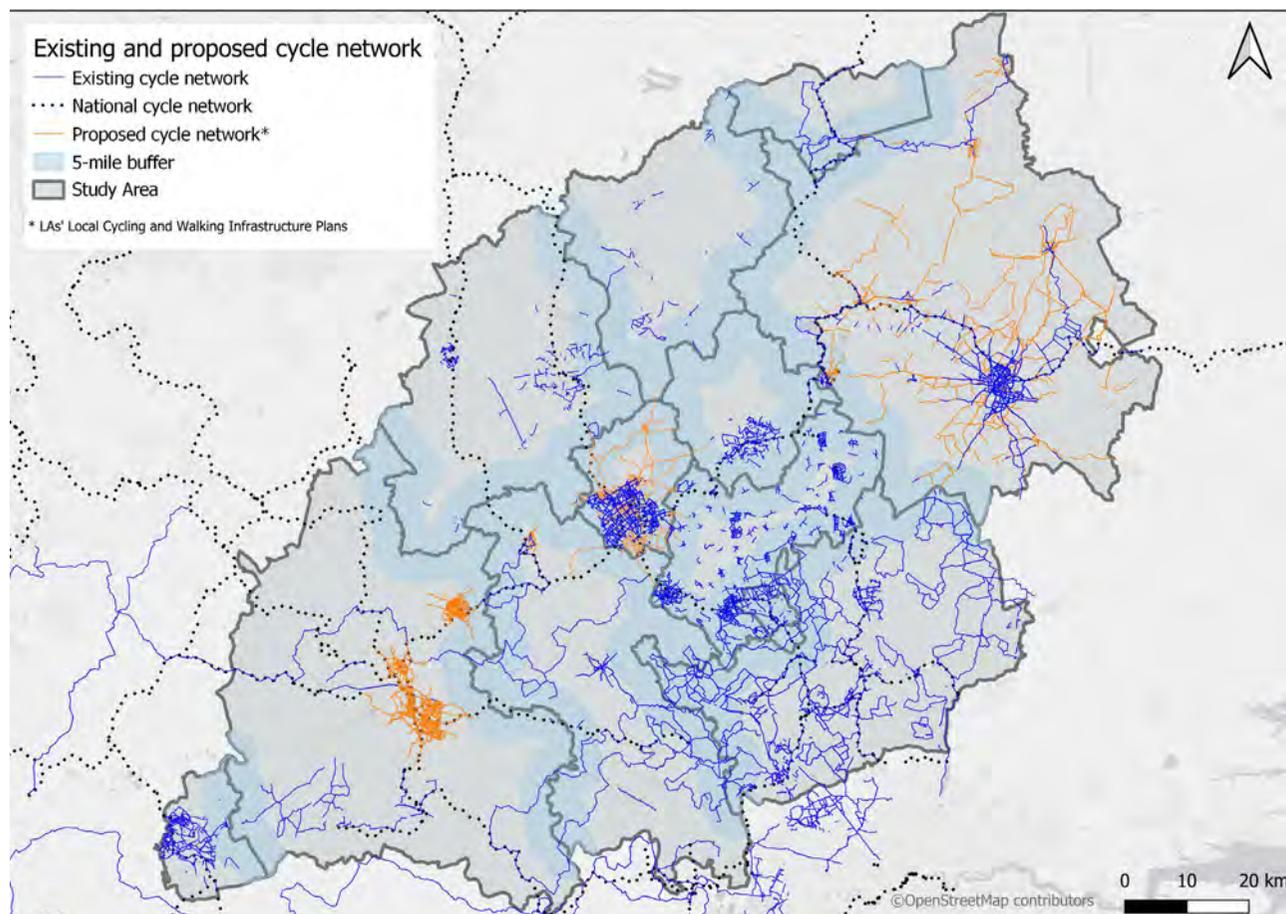
3.2.1. Existing and proposed cycle networks

Figure 3.2 presents the existing and proposed cycle networks in the EEH area, where 'existing network' refers to those links categorised as such by the local authority without any discrimination of the type and quality of infrastructure provided. The 'existing network' also comprises Sustrans' National Cycle Network (NCN), while the proposed cycle network relates to those corridors planned and/or proposed by local authorities within their LCWIPs (Local Cycling and Walking Infrastructure Plans), as well as from other strategies. It should be noted that it was only possible to source information from a small number of LCWIPs that are already adopted⁹, with most local authorities' plans currently being developed or going through the consultation phase.

It should also be noted that networks available in a non-digital format were manually digitalised where possible (Swindon, Northamptonshire and Peterborough), although there are some locations where information is missing.

Figure 3.2 shows that there are significant variations in network coverage across the region, although it is based on the information that was available. Within the urban areas there is comprehensive existing or planned coverage in Cambridge, Oxford, Swindon and Milton Keynes, but much less coverage in places such as Peterborough and Northampton.

Figure 3.2 - Existing and proposed cycle networks

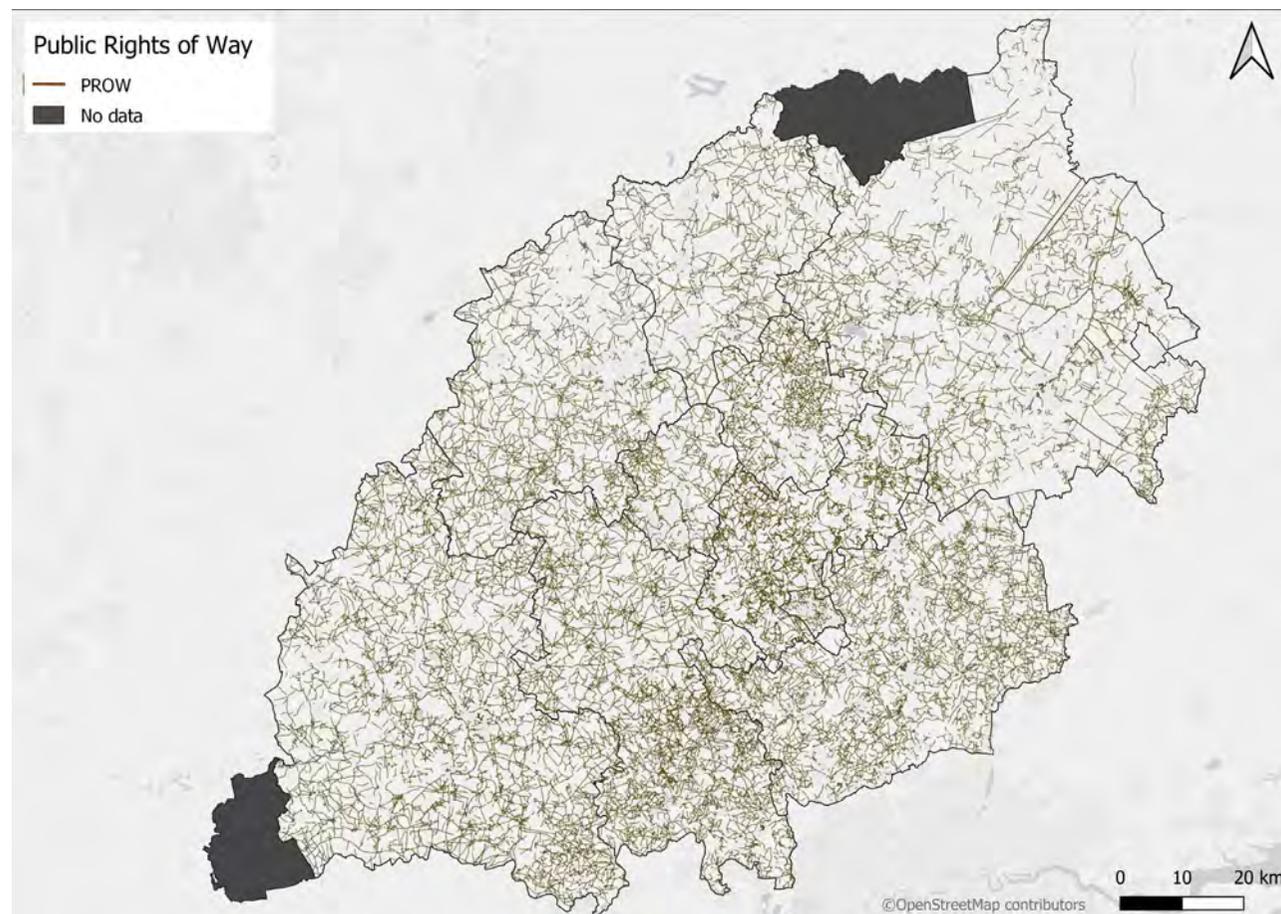


⁹ As per information received from local authorities as of September 2022

3.2.2. Public Rights of Way (PROW)

Figure 3-3 shows Public Rights of Way (PROW) across the region, demonstrating that there is a comprehensive network. However, in the case of many parts of Cambridgeshire, the waterways covering much of The Fens create significant barriers to movement, albeit these are in less populated rural areas. Similar to the cycle network, the map shows two areas (Swindon and Peterborough) where data was not available or was not possible to source.

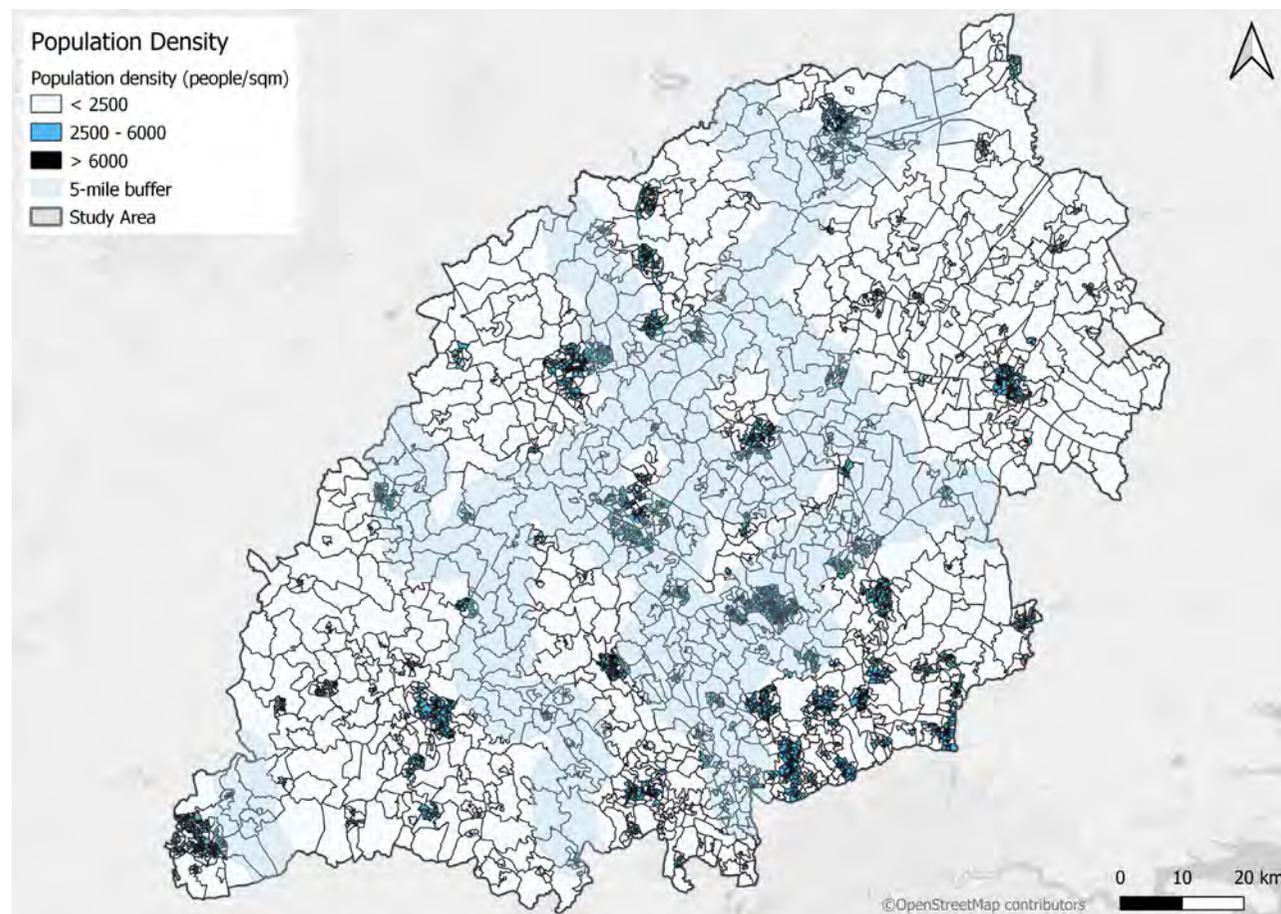
Figure 3.3 - Public Rights of Way (PROW)



3.2.3. Population density

Figure 3.4 illustrates the variation in population density across the region. Higher population density correlates strongly with propensity for walking and cycling because jobs, shops and services are closer to where people live, and it is easier to walk or cycle to meet daily needs. Population densities are highest in the inner areas of the larger towns and cities, and lowest in rural areas. However, many smaller towns also have higher population densities in some areas, and the suburban areas of many larger towns have lower population densities, particularly in the new and expanded towns - for example Milton Keynes and Peterborough.

Figure 3.4 - Population density¹⁰



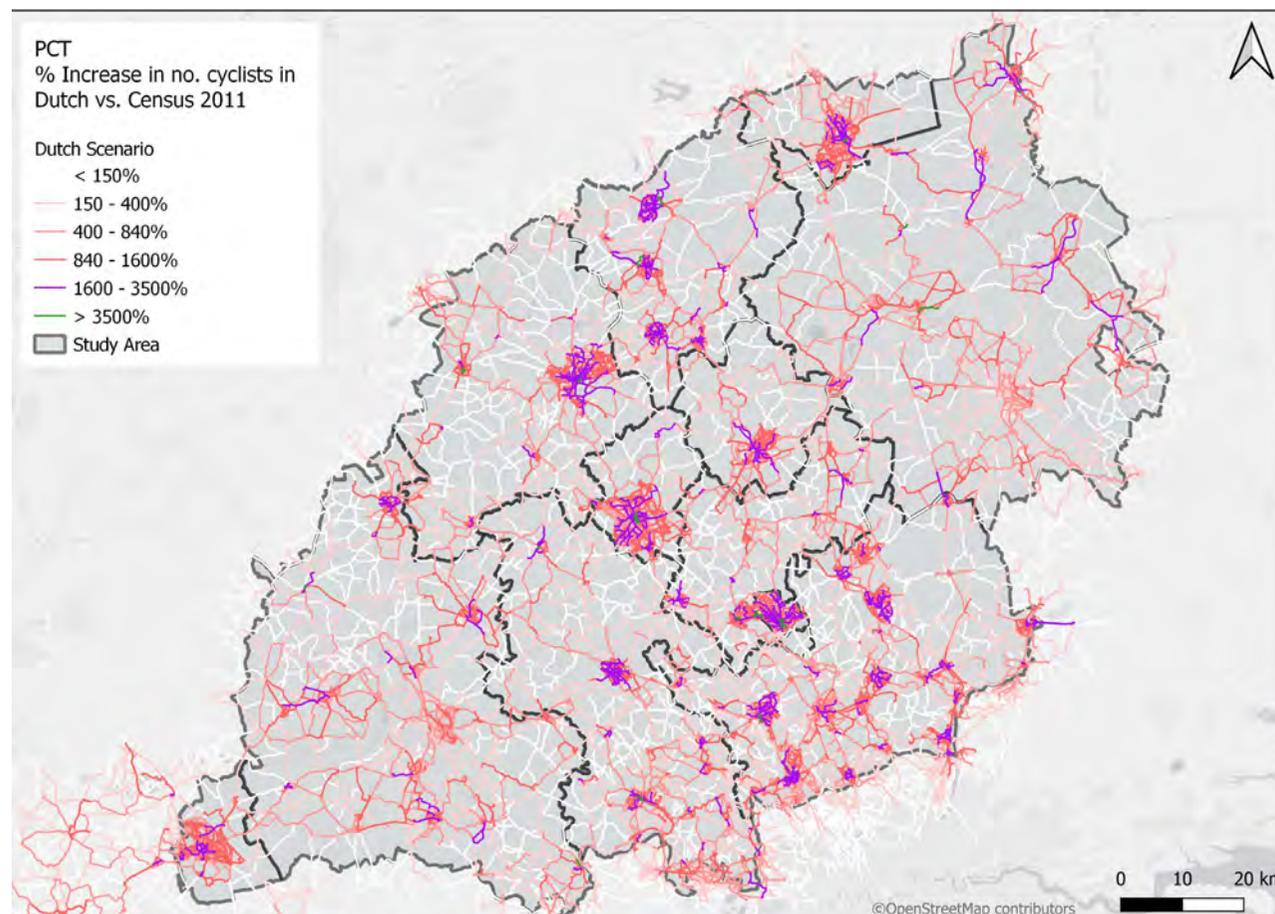
¹⁰ ONS Population estimates mid-year 2020 at LSOA level

3.2.4. Propensity to Cycle Tool - Dutch scenario

Figure 3.5 illustrates potential cycling demand under the Go-Dutch scenario in the Propensity to Cycle Tool. This shows the potential increases in demand compared with the baseline scenario (Census 2011), in a future scenario where people's propensity to cycle is equivalent to that seen in The Netherlands.

The largest potential increases are, in many cases, shown in the larger towns and cities in the region, for example Peterborough, Northampton and Luton. It is interesting to note that smaller increases are shown in Oxford and Cambridge, where the propensity to cycle is already closer to that seen in the Netherlands. The map also shows significant increases in cycling on key corridors connecting towns and urban areas, including several links crossing local authority boundaries in the buffer areas.

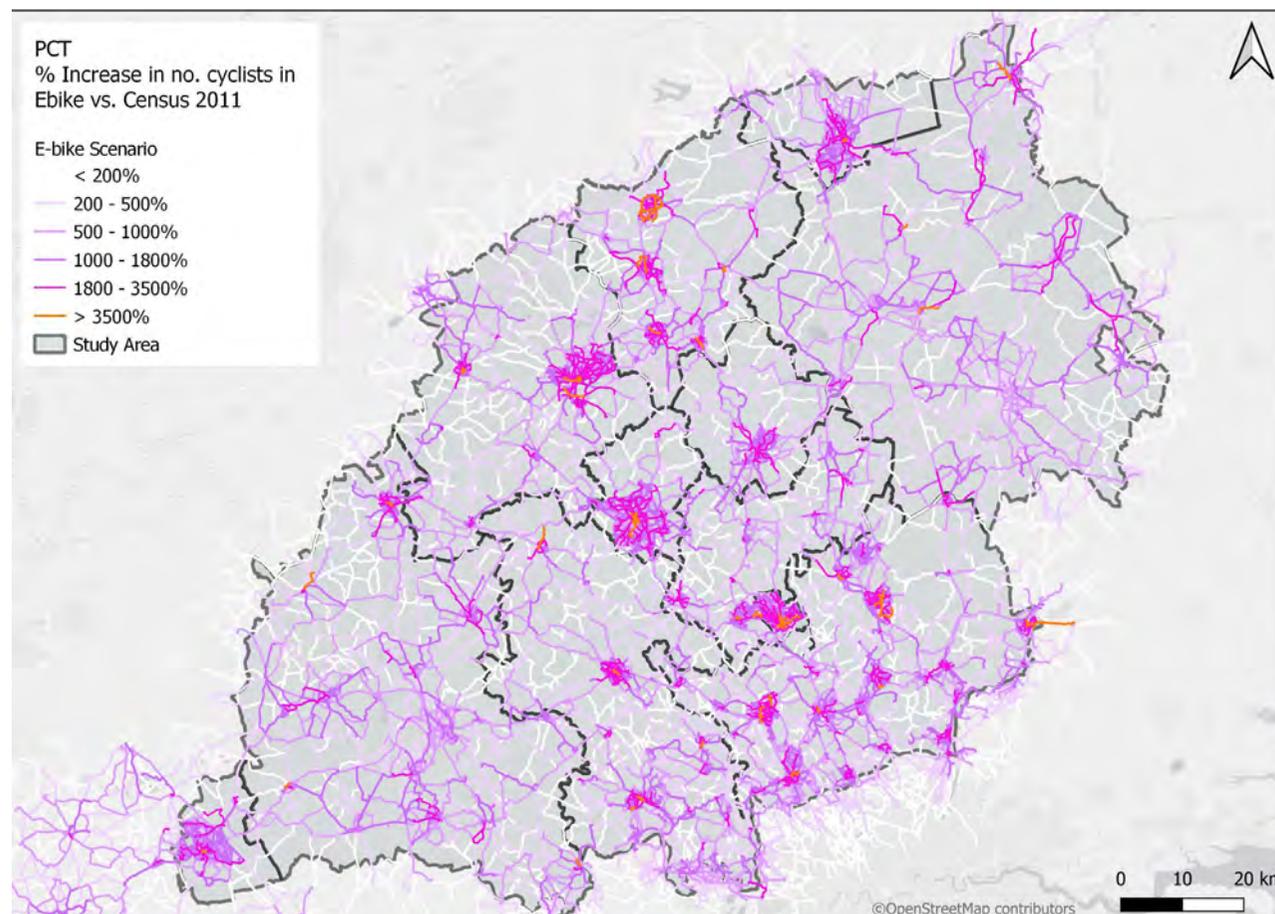
Figure 3.5 - Propensity to Cycle Tool - Dutch Scenario



3.2.5. Propensity to Cycle Tool - E-bike scenario

Figure 3.6 shows the potential cycling demand under the e-bike scenario. This shows further increases in cycling demand, which are driven by the much greater ease of cycling longer distances / the increase in distances that are within range using e-bikes. This shows further increases, over and above the Go-Dutch scenario, across the region, within urban areas and on corridors connecting towns and villages. The increases in cyclable distances in the e-bike scenario would result in increased demand for cross-boundary travel across the region.

Figure 3.6 - Propensity to Cycle Tool - E-bike Scenario



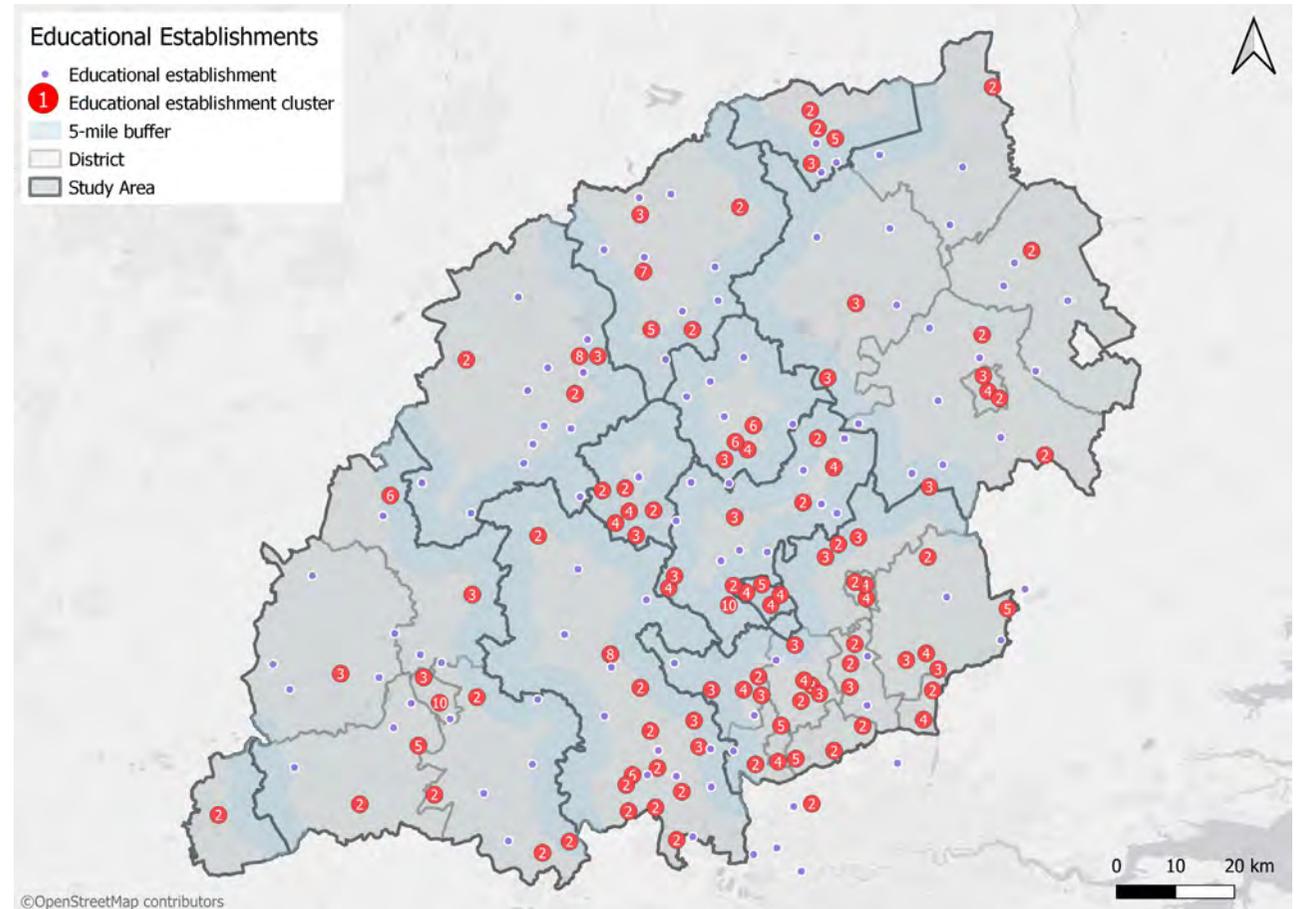
3.2.6. Educational Establishments

Figure 3.7 shows the locations of educational establishments (secondary schools, colleges and universities) across the region (primary schools have been excluded from the analysis given that those tend to have smaller catchment areas and are more likely to attract trips within the local area).

The analysis of educational establishments is limited to those within the buffer zones. However, it can be seen that many of these establishments are located within or near to the local authority buffer zones, with significant potential for cross-boundary travel (for both staff and students).

If provided with safe active travel infrastructure and a cohesive network, schools and universities are likely to play a key role in modal shift given that younger people are more likely to take up active travel due to changing attitudes towards car travel, climate change and affordability. For those in secondary school, the provision of infrastructure could unlock independent travel, while for primary and special education schools, it will facilitate escorted trips by active modes of transport for parents and carers.

Figure 3.7 - Educational Establishments



3.2.7. Planned Housing and Employment Sites in buffer area

Figure 3.8 shows planned housing and employment allocations from EEH's database (March 2022), focusing on sites within the buffer areas on the boundaries between local authorities. This shows significant clusters of planned growth on the edges of Peterborough, Milton Keynes, North Hertfordshire, Luton, Bicester, Swindon, as well as other locations. Providing safe active travel infrastructure at these locations will be paramount to influencing the travel behaviour of new residents and workers, allowing for diversification of modes and choices.

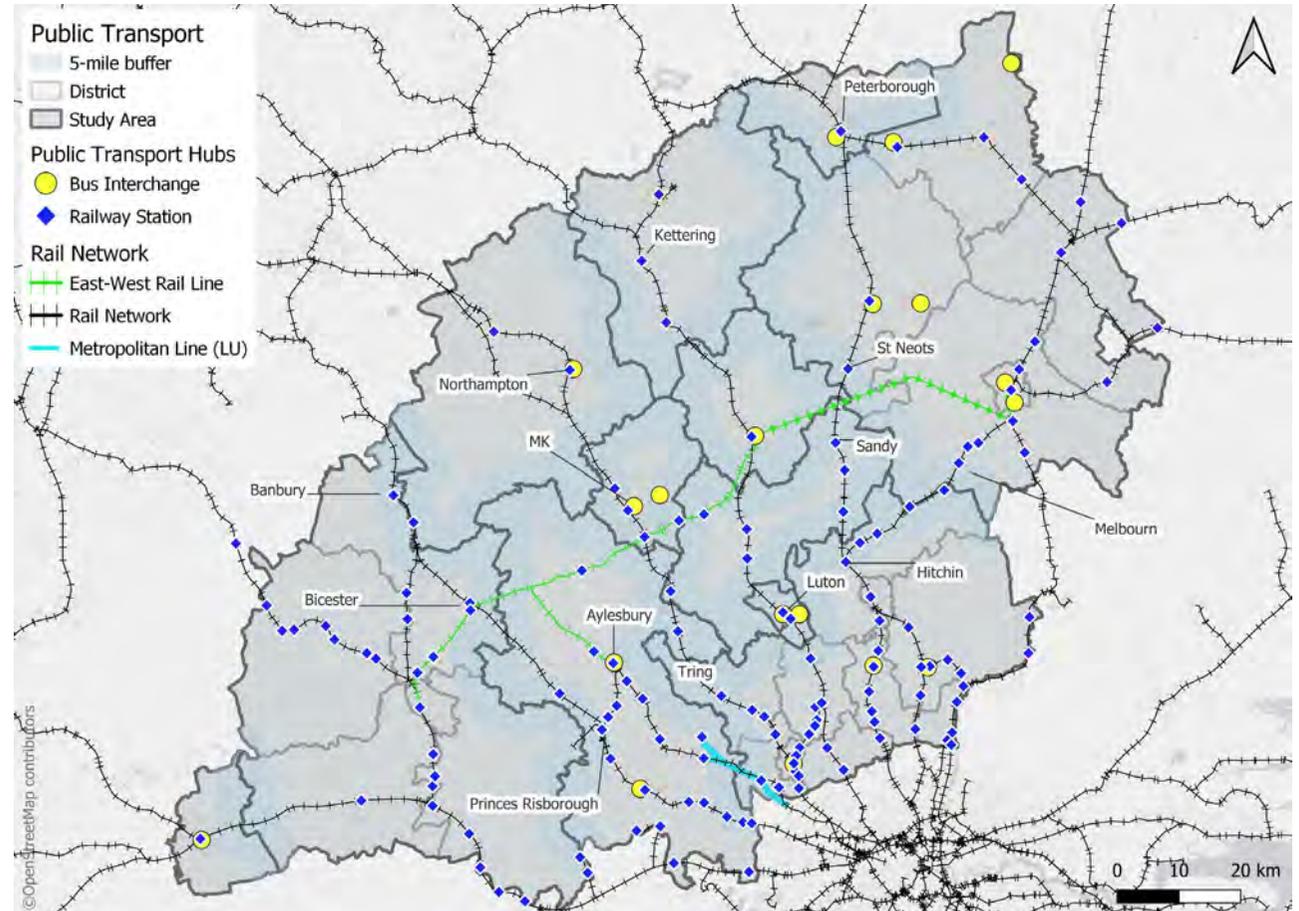
Figure 3.8 - Proposed Housing and Employment Sites in buffer area



3.2.8. Public transport hubs and rail network

Figure 3.9 shows the major public transport hubs and rail network across the region¹¹. Active travel can play a key role in the first mile / last mile components of journeys, to both bus interchanges and rail stations. Many of these interchanges are close to the local authority boundaries, and thus there could be scope for improving cross-boundary active travel connections to these public transport hubs. It should be noted that bus stops on the public highway (in the form of bus poles and bus shelters) are not shown in Figure 3.9 and only major bus interchanges were included, as per the information sourced from local authorities.

Figure 3.9 - Public Transport Hubs and Rail Network



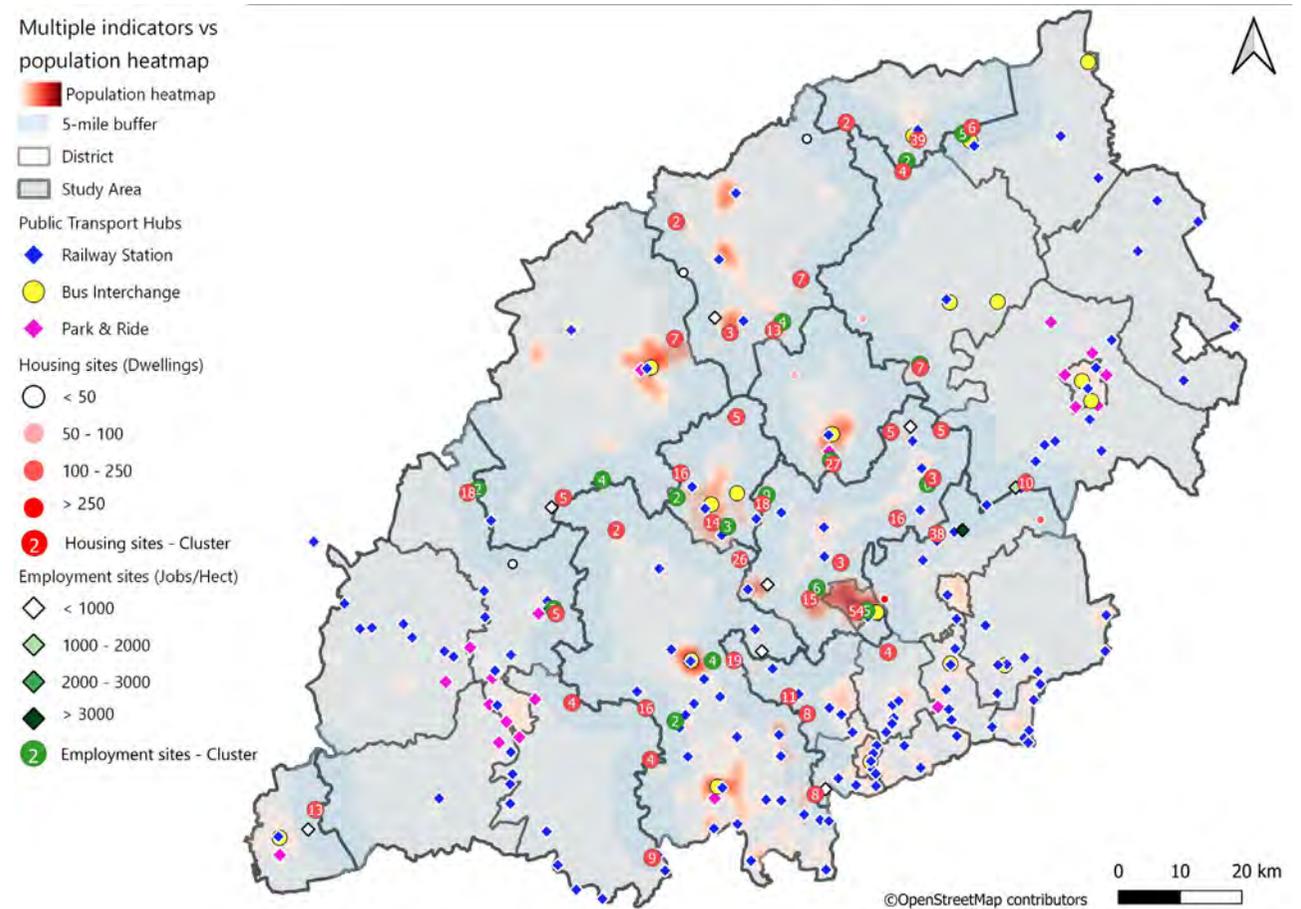
¹¹ East West Rail between Oxford and Milton Keynes is due to open by early 2025. Funding streams have been secured for building East West Rail up to Cambridge while EEH continues to make the case for the link to Aylesbury, an original part of the East West Rail proposals. At the time of writing, the route between Bletchley and Cambridge had not been announced.

3.2.9. Overlaying of data to identify potential demand

Figure 3.10 uses the different datasets to identify potential sources of demand in the buffer zones around local authority boundaries. This includes identification of areas with higher population densities, strategic public transport hubs, and major clusters of planned housing and employment development. It should be noted that only employment and housing sites in the buffer area, updated as of March 2022¹², have been considered for the analysis.

Combined with both the existing and proposed network, these datasets allow us to pinpoint the locations within the buffer areas where activity hotspots exist, and where suppressed or future demand is likely to arise. Over the following sections, this information alongside stakeholder input will help form the basis of developing a long list of potential cross-boundary links.

Figure 3.10 - Overlaying of data to identify potential demand



¹² England's Economic Heartland Regional Evidence Base Databank. Version 4.0. March 2022.

3.2.10. Desire lines: number of inter-district trips

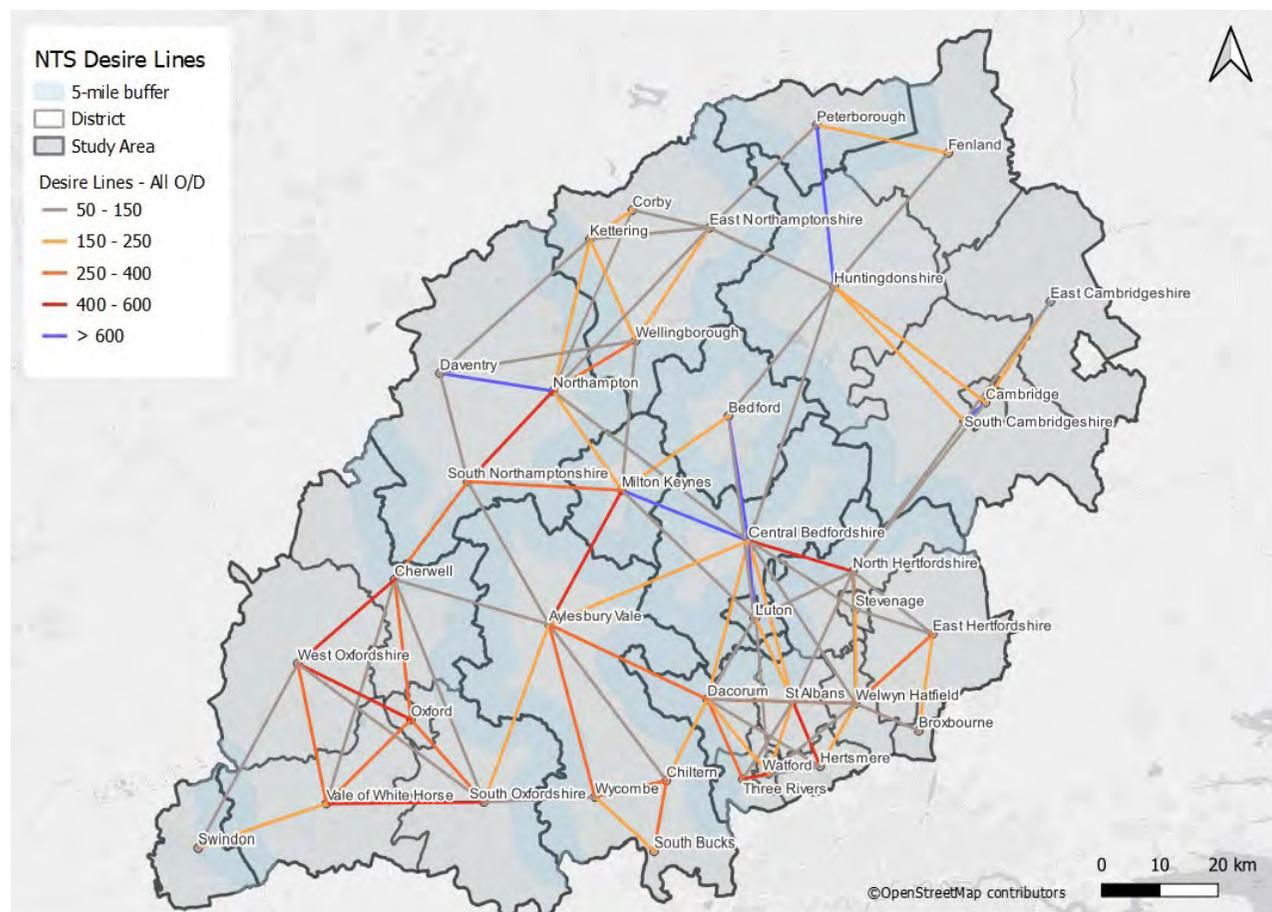
Figure 3.11 shows the number of weekday commuting trips between local authority districts recorded in the National Travel Survey (NTS) in 2011, allowing the identification of travel patterns and relative demand in the EEH area.

The NTS survey records travel habits and details of daily trips of a random sample of households over a continuous 7-day period, and it includes trips made by any mode of transport. The survey covers travel by people in all age groups, including children.

Due to the nature of the data collected, in order to safeguard the privacy of participants, the NTS anonymises this information and does not provide the exact locations for trip origins and destinations. Therefore, Stage 1 outputs are based on district-to-district trips¹³, where the location of O/Ds shown in Figure 3.11 have no geographical relevance other than to identify the Origin or Destination District. It should be noted that for simplicity purposes, desire lines with less than 50 trips have been excluded from the map.

A relative comparison between the different movements shows there are more inter-district trips along the central region, a trend which starts to dissipate further to the West. Towards the East of the EEH area, although the number of movements subsides, the Peterborough-Huntingdonshire and Cambridge-South Cambridge links stand out, highlighting busy travel corridors.

Figure 3.11 - Desire Lines: Number of inter-district trips



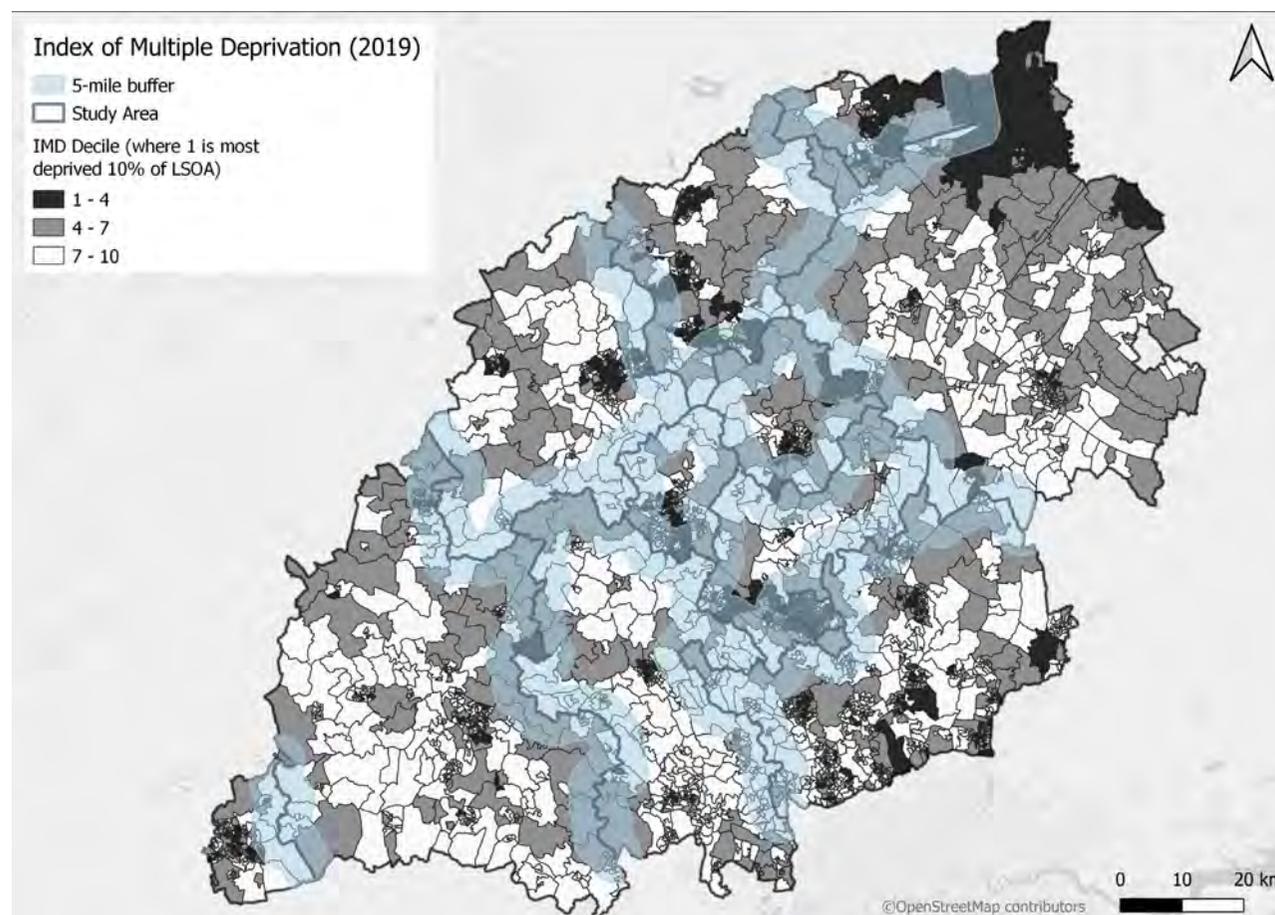
¹³ Northamptonshire (West Northamptonshire and North Northamptonshire) is divided into seven districts (not shown) each with their own district or borough councils. Buckinghamshire is divided into four districts (not shown) each with their own district or borough councils.

3.2.11. Index of Multiple Deprivation

Figure 3.12 shows significant variations in the Index of Multiple Deprivation across the region. The highest levels of deprivation tend to be in urban areas, including Swindon, Oxford, Northampton, Wellingborough, Kettering, Corby, Luton, urban Hertfordshire, and Peterborough. Many rural areas tend to have lower levels of overall deprivation, although there is a notable exception in the northern part of the Cambridgeshire Fens.

Deprivation is caused by a combination of economic and social factors, including income, worklessness, health, and educational achievement, but in some cases, poor accessibility to economic opportunities is an important root cause. Improving access to jobs and services, including enhanced active travel connections, can play an important role in helping to tackle social exclusion for some areas and groups of people.

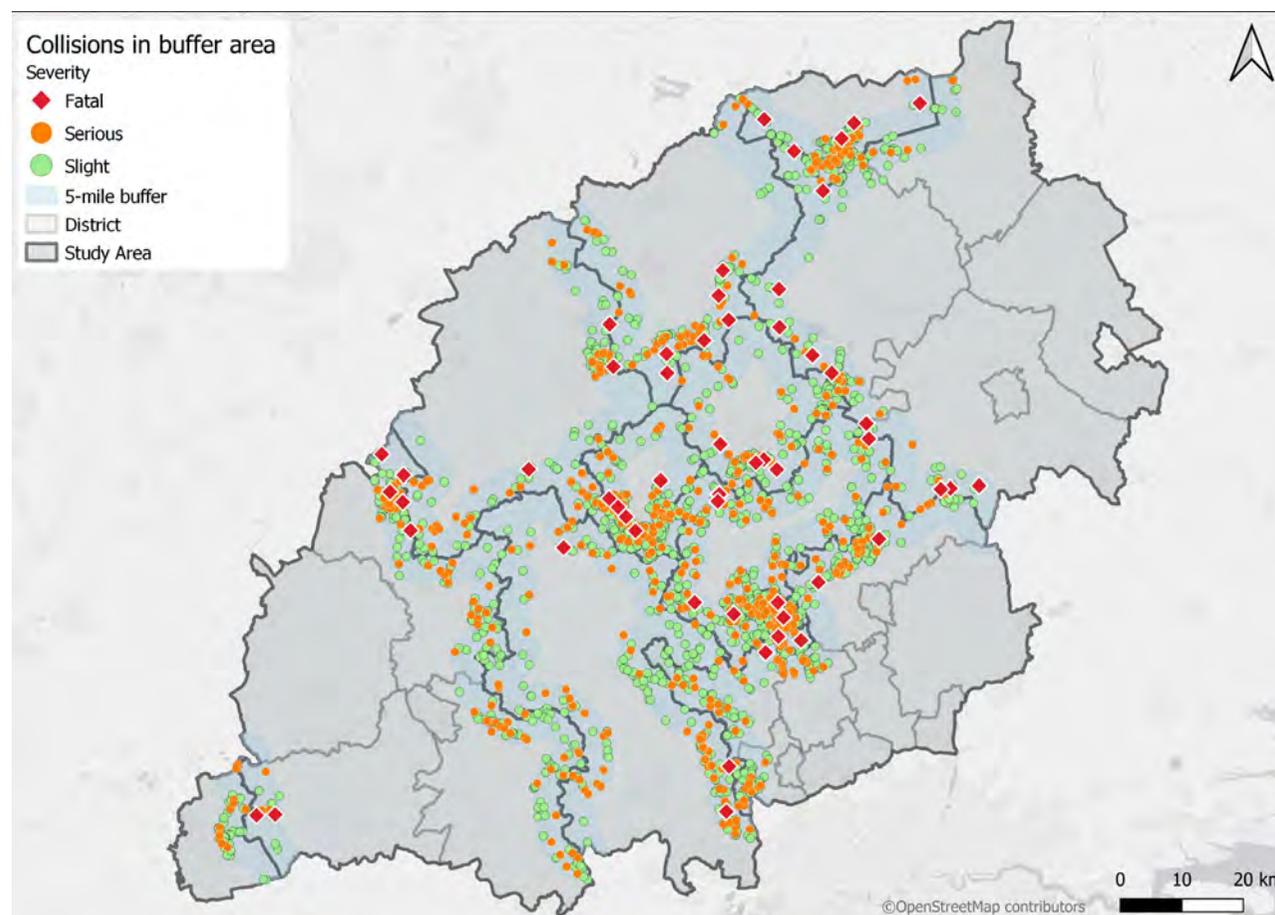
Figure 3.12 - Index of Multiple Deprivation



3.2.12. Collisions in buffer area

Figure 3.13 shows all collisions in the buffer areas, on the edges of local authorities, during the period of 2016 to 2020. Based on the available data, the map presents collisions involving all types of users. It highlights particular road safety challenges in the area to the east of Banbury (Oxfordshire-West Northamptonshire border), the southern edge of Milton Keynes, multiple locations across Luton, multiple locations on the border of Bedford Borough, and the southern edge of Peterborough

Figure 3.13 - Collisions in buffer area



3.3. Development of long list of cross-boundary active travel links

In order to develop a long list of cross-boundary active travel links, stakeholders were asked to identify cross-boundary links in workshop #2. The mapping above was then analysed to identify gaps, demand and propensity for mode shift. In addition, stakeholders were also asked to identify key metrics for assessing and sifting the long list of links into a short list

3.3.1. Workshop #2

Workshop #2 was held on 4th November 2022 and involved:

- Outlining the approach for Stage 2;
- Presenting a draft of the existing and proposed active travel infrastructure in the study area with the information available at that time
- A discussion using an online whiteboard (Mural) where attendees could add text and add key cross-boundary links that they would like to see included in the long list of schemes plus suggestions based on local knowledge, focusing on the following topics:
 - Consider any cross-boundary links that you feel are important for us to consider in a long list for the project; and
 - Consider which metrics are important in prioritising cross boundary or high potential links for multi modal journeys

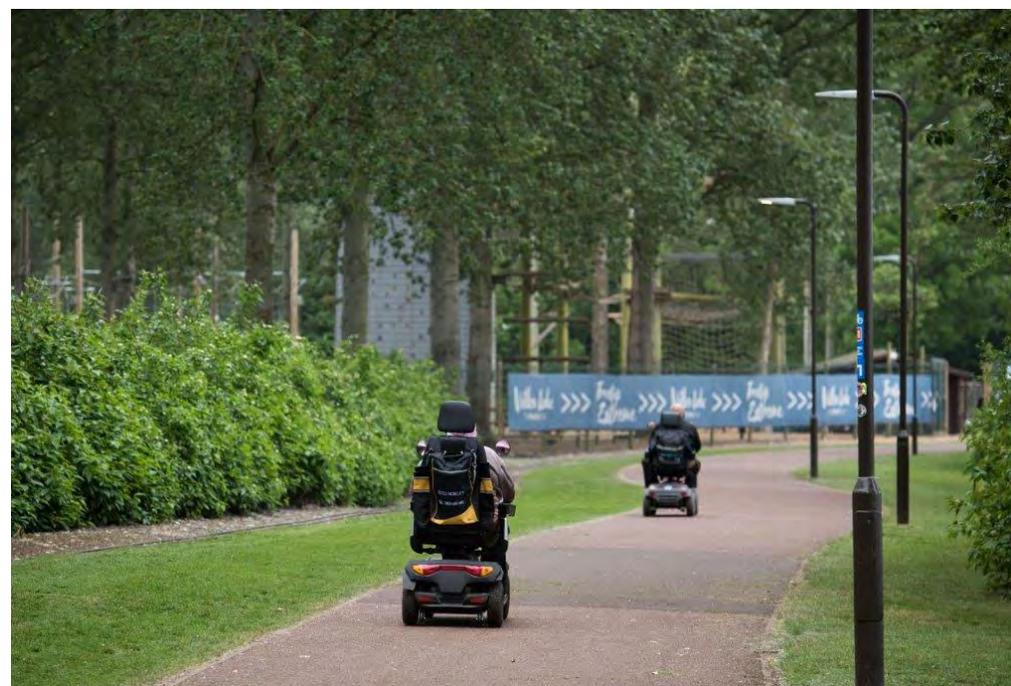
The outputs of the Mural are summarised below.

Findings / key comments

The cross-boundary links suggested by the stakeholders in the workshop, and identified through data analysis, were added to the long list of links. The list below presents a summary of the workshop's collaborative Mural finding. Participants used the Mural to record which metrics they considered of greater importance for the prioritisation of the cross-boundary links (these were subsequently used in the Multi Criteria Assessment Framework):

- Demand/Desire lines;
- Existing infrastructure (if any) vs. alternative (i.e. road network if no dedicated active travel provision exists);
- Cross-boundary corridors to link with rail/bus stations given the potential of these to later expand into mobility hubs;
- Areas with a lack of existing public transport routes between existing sites;
- Cross-boundary routes included in LCWIPs;
- Cross-boundary connections linking people in more deprived areas with jobs and opportunities; and
- Routes to link schools, developments, and transport hubs

Image: Mobility scooter users in Willen



3.3.2. Analysis

Analysis of the data compiled during Stage 1 allowed identification of potential cross-boundary active travel corridors, which along with the stakeholders' inputs from Workshop #2, was used to develop the long list of options based on the following criteria:

- Existing network analysis: gap analysis of the existing and proposed active travel network (Figure 3.2) allowed missing cross-boundary links to be identified;
- Areas of potential and/or suppressed demand: corridors with potential and/or suppressed demand due to agglomeration effects (i.e. routes that could serve multiple trip generators where they exist in close proximity, such as public transport interchanges, employment, educational and housing sites, and densely populated areas – see Figure 3.10);
- Demand: 'Propensity to Cycle Tool' scenarios (Dutch and E-bike) were used to identify where cycling demand could grow the most (see Figure 3.5 and Figure 3.6);
- Inputs from Workshop #2 as outlined above.

Analysis of this information supported the development of a long list of cross-boundary links within the EEH region. As outlined previously, to limit the scope of the proposals and the spatial extent of the analysis, the cross-border area was set to a five-mile buffer zone from neighbouring authorities' shared boundary. Within this 10-mile-wide stretch, using the information above, 76 active travel links were identified.

This long list was sifted further to narrow down the number of links, by consolidating corridors of similar alignment, removing duplicated routes, and making a separate list for those links with an origin or destination outside the EEH region - these are shown in Table 3-2. These corridors have not been assessed via the MCAF and are therefore considered to be ambitions for discussion with other STBs moving forward.

It should be noted that at workshop #2, stakeholders were asked for suggestions for cross-border links. Given that multiple LCWIPs are still in development within the region (both at local and county levels), it has not been possible to assess if the analysis excluded corridors that may be deemed a priority for some local authorities. The EEH, as a sub-national transport body, remains supportive of other links included in LCWIPs.

Additionally, lengthy inter-regional routes were removed, particularly those running through multiple local authorities as well as corridors that fall within a single authority. This process also removed very long routes (over 10 miles) where the propensity to cycle, given by the PCT tool¹⁴, is the lowest for both analysed scenarios. This process reduced the long list from 76 to 46 cross boundary links.

Image: Pedestrian in Flore



¹⁴ <https://www.pct.bike/>

Table 3-2 - Proposed corridors with an origin or destination outside the EEH area (not included in the MCAF)

No.	Corridor	O-D Borough/County
1	Henley - Marlow - Maidenhead	Oxfordshire - Buckinghamshire - RBWM
2	Iver - LHR	Buckinghamshire - Hillingdon
3	Iver - Uxbridge	Buckinghamshire - Hillingdon
4	Iver - Langley Station	Buckinghamshire - Slough
5	Henley - Reading	Oxfordshire - Reading
6	Sonning Common (Oxon) - Reading	Oxfordshire - Reading
7	Bishops' Stortford - Stansted	Hertfordshire - Essex
8	Easton on the Hill - Stamford	North Northamptonshire - Lincolnshire
9	Goring & Streatley - Wallingford	Oxfordshire - West Berkshire
10	Barby - Rugby	West Northamptonshire - Warwickshire
11	Crick - Rugby	West Northamptonshire - Warwickshire
12	Barnack - Stamford	Peterborough - Lincolnshire
13	Peterborough - Market Deeping	Peterborough - Lincolnshire
14	Peterborough - Crowland	Peterborough - Lincolnshire
15	Wisbech - Long Sutton	Cambridgeshire - Lincolnshire
16	Wisbech - Walpole St Peter via Walton Highway	Cambridgeshire - Norfolk
17	Linton - Haverhill	Cambridgeshire - Suffolk

3.4. Long List Scoring (Multi-Criteria Assessment Framework - MCAF)

The potential cross boundary links identified in the previous section have been assessed by making use of a bespoke Multi-Criteria Assessment Framework (MCAF). The MCAF sought to produce a shortlist of those links with the highest potential to achieve modal shift and support the targets set during Stage 1. To undertake this, and building upon the Stage 1 data and mapping analysis, plus feedback from the stakeholder workshop #2, the following metrics and categories were used for the scoring of links:

- Trip length: Shorter trips are more likely to be walked or cycled, hence, the shorter the corridor the higher its potential to support modal shift from private vehicles;
- Phase: Project prioritisation phases relate to the types of places the corridor will serve, reflecting the findings of Stage 1 in terms of place type (see Figure 2.3 and Figure 2.22), with areas classified as urban being Phase 1, market town Phase 2, and rural Phase 3;
- Population: Higher population densities have a higher potential for mode shift and will influence the demand for infrastructure (Figure 3.4);
- Contribution to Network Coherence: A lack of a cohesive network discourages people from walking and cycling. Active travel journeys are maximised where trips are catered from end to end (this

is shown by the mapped existing and proposed cycle network in the study area in Figure 3.2);

- Public Transport Hubs: Distance to the closest public transport hub, indicating the potential to unlock first/last-mile and multi-modal travel by providing active travel corridors to serve as public transport feeders (Figure 3.9);
- Future Employment Sites in buffer area (number of jobs per hectare): Number of accessible jobs within a mile of the proposed link. A higher number of jobs translates into more people commuting into the area, and a higher potential for modal shift (Figure 3.8);
- Future planned housing sites in buffer area (number of dwellings): Number of accessible housing sites within a mile of the proposed link. A higher number of dwellings translates into higher numbers of local trips that can be targeted for modal shift (Figure 3.8);
- Educational establishments in buffer area: Number of secondary schools and colleges within a mile of the proposed corridor. Younger people are more likely to walk and cycle due to attitudes towards sustainable travel, lack of transport independence and costs, therefore having higher potential for modal shift (Figure 3.7);
- Areas of Deprivation: Multiple deprivation index along proposed corridor. Deprived areas are more likely to suffer from transport poverty due to a

lack of affordable public transport choices and/or no access to a car. Although this is likely to have less influence on modal shift, it is paramount from a social and equity perspective (Figure 3.12);

- Propensity to Cycle Tool: Forecasted demand given by the increase in the number of people cycling in the chosen scenario along the link when compared against 2011 Census cycling levels (Figure 3.5 and Figure 3.6);
- NTS existing trips (commuting/weekday): Number of inter-district trips recorded by the NTS survey in 2011. As noted above, desire lines' O/Ds are at a district level, therefore, this metric works as a proxy for demand, with associated desire lines informing the relative demand for district to district travel (Figure 3.11);
- Collision data: The severity of collisions recorded along the proposed corridor denotes where provision should be prioritised, because as road safety is one of the main factors that discourages people from walking and cycling (Figure 3.13).

The MCAF scoring rationale was informed by the indicators described above. This enabled objective, quantitative analysis for each of the cross-boundary links, enabling those with the highest potential for active travel mode shift to be highlighted.

The initial MCAF assessment resulted in similar scores for many of the cross-boundary links in the long list. Therefore, weightings were

applied to certain indicators to generate a wider range of scores and to inform shortlisting.

It should be noted that this study has not assessed the deliverability or feasibility of schemes. The proposed corridors are indicative only and exact alignment are yet to be defined, subject to further feasibility.

Table 3-3 - Top 15 cross-boundary links with highest mode shift potential

Corridor
Banbury - Middleton Cheney
Chesham - Berkhamsted
Gamlingay - Potton - Biggleswade
Luton - Dunstable - Houghton Regis
Luton - Harpenden
Newton Longville - Milton Keynes
Northampton - Earls Barton - Wellingborough
Peterborough - Oundle
Peterborough - Whittlesey
Royston - Bassingbourn
Royston - Melbourn
Sharnbrook - Rushden
Shrivenham - Swindon
Thame to Haddenham
Tring - Aylesbury

3.5. Short list of cross-boundary links

Following the weighted MCAF scoring of the long list, the final short list of the top 15 corridors was identified and is presented in Table 3-2 and Figure 3.14. Through data-driven analysis, the 15 cross-boundary links below show the areas for highest potential shift to active travel modes within the EEH region. EEH remains supportive of the development of a comprehensive active travel network, including support for local authorities' priorities, LCWIPs and greenway development within and between local authority boundaries.

Figure 3.14 - Top 15 cross-boundary links

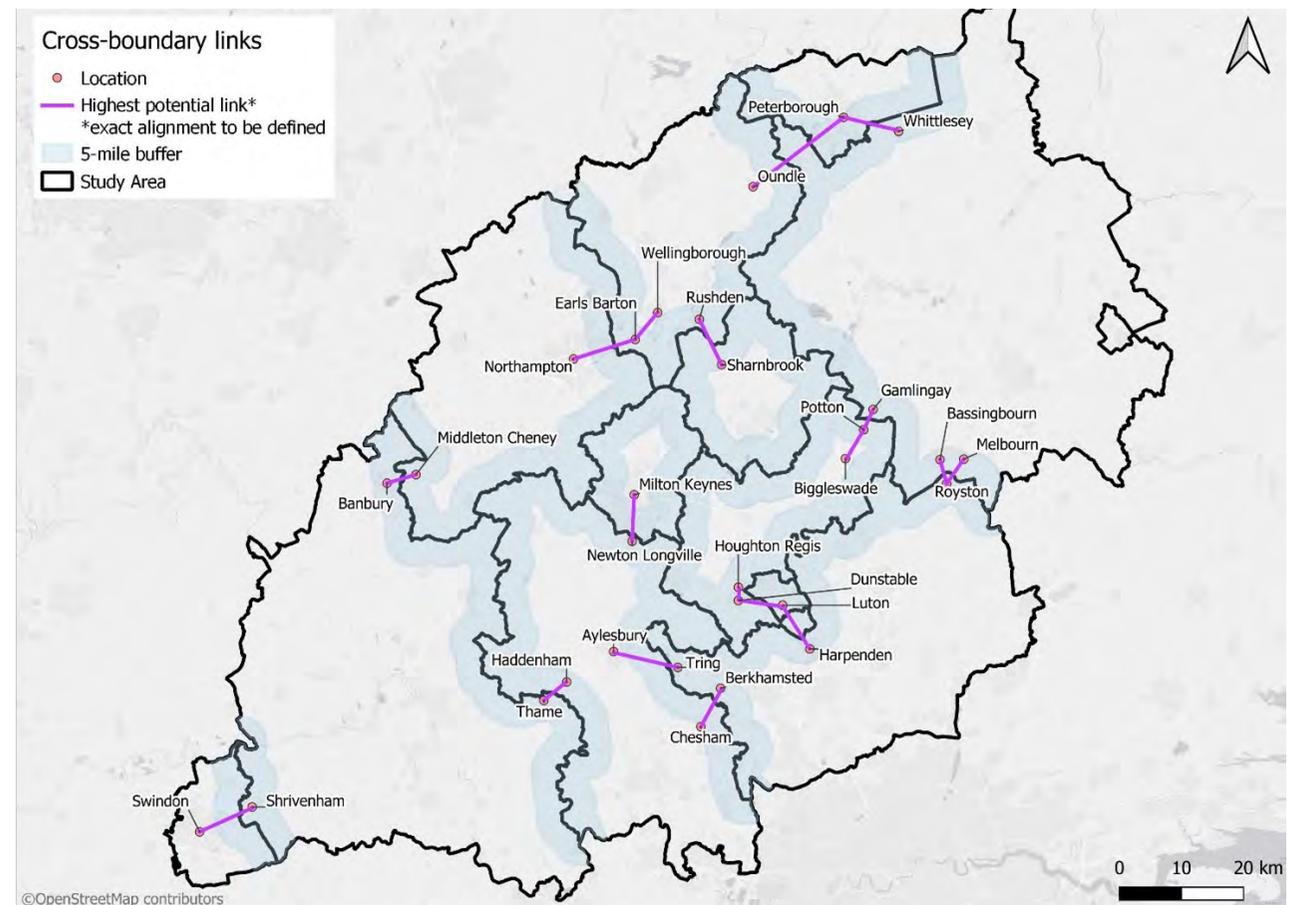




Image: Bus in Cambridge

4. Stage 3 - Challenges to EEH Ambitions

Following the work undertaken during Phase 1, it was considered important to develop understanding of the challenges to EEH ambitions for developing active travel in the EEH region in order to help liaise and find solutions with stakeholders.

4.1. Methodology

This stage involved reviewing the challenges and issues identified in Phase 1 and using the data collected and analysed in Stages 1 and 2 of Phase 2 to further analyse the Phase 1 challenges. It also involved asking stakeholders to identify active travel challenges as part of Workshop #3. The findings are explored in more detail below.

4.2. Development of Phase 1 findings

In Phase 1, a number of challenges were identified as follows:

- **Existing travel and spatial / land use patterns** and the implications in terms of low mode shares for walking and cycling in some areas of the EEH region. Relatively few utility walking trips exceed 1km (0.6 miles), and relatively few cycle trips

exceed 5km (3.1 miles), although there is potential for trip lengths to extend beyond this for e-bikes.

- **Infrastructure constraints** and how relatively low levels of infrastructure in some locations and poor provision for active travel constrains the number of trips by cycling and on foot. This includes poor cross-boundary infrastructure in some locations.
- **Cultural constraints** and how this acts as a brake on increasing numbers of people walking and cycling in some areas. For example, cycling is still seen as a niche activity by many rather than a normal way to get around.
- **Other challenges** - these included dominance of private cars and resultant congestion in some areas, the ability to win hearts and minds with the health benefits of active travel, and current relatively low (but growing) levels of investment in active travel. The Phase 1 work also identified that, at a national level, NTS data between 2002 and 2019 showed that there was a 5% decrease in the number of walking trips per person and a 10% decrease in the number of cycling trips per person (Phase 1 document, page 10).

4.2.1. Data availability

Table 4-1 below lists the challenges identified in Phase 1 (please refer to Table 4 in the Phase 1 report for more detail). Consideration was then given as to whether

data for each challenge was available to explore the challenges in more detail. The quality of data relating to each challenge varies. In some cases, the challenge is difficult to measure (e.g. logistical complexities), whilst in other cases, local data is not easily accessible.

[Image: Cyclist in Cambridge](#)

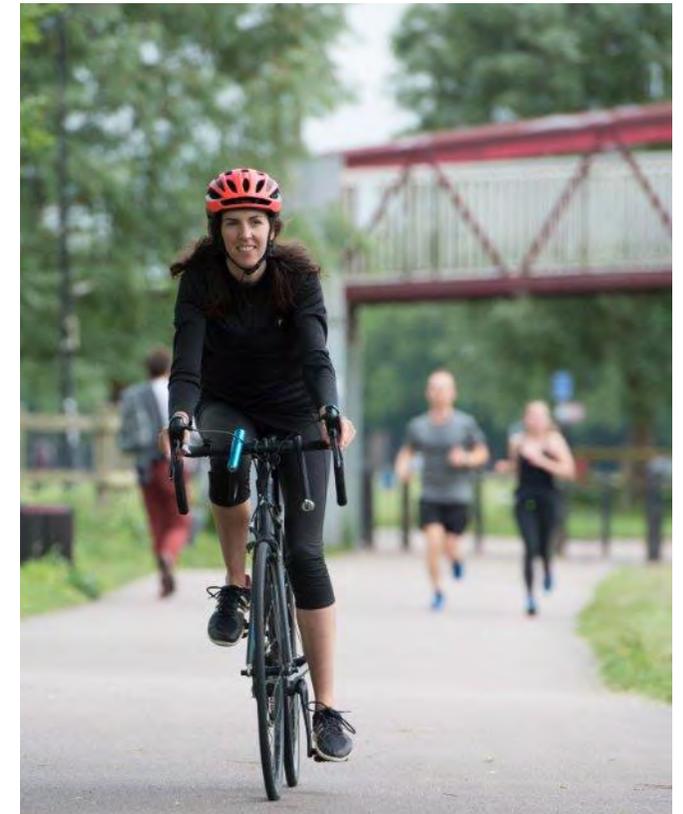


Table 4-1 - Phase 1 Challenges and issues associated data availability

Topic	Issue	Availability of Data for Phase 2
Existing travel patterns	Settlement patterns	Yes
	Topography	Yes
	Mode share	Yes
	Journey purpose	Yes
	Logistical complexities (e.g. time constraints and/or the need to escort others can constrain mode choice)	N/A
Cultural constraints	Social and economic inequality and deprivation	Yes
	Active travel culture/behavioural change	N/A
Infrastructure constraints	Housing/employment growth	Yes
	Existing Transport Network	Yes
	Safety	Yes
	LTN1/20 (i.e. the requirements of LTN 1/20 can be challenging to accommodate in some environments)	N/A
	Cycle parking	N/A
Outcomes	Road congestion	*
	Health	*
	Air Quality / environment / emissions / net zero target	*
	Economy	*
<p>* = while some data is available for these topics, it was not analysed as part of this study for various reasons. Either: it overlapped with other topics (e.g. economy is considered to be covered by Social and Economic Inequality and Deprivation); it was not relevant to the cross-boundary area (e.g. there are no Air Quality Management Areas in the buffer zones); it was limited in nature (health); or it was not possible to fully integrate it into the study (Road congestion)</p>		

4.2.2. Further analysis of Phase 1 findings

Where data was available from Stage 1 and Stage 2, it was used to further analyse the Phase 1 findings as outlined below.

4.2.2.1. Settlement patterns

As outlined in Chapter 2, place types within the EEH region have been categorised as urban, market town or rural for the purpose of this report. These definitions enabled a map of the EEH place type classification to be generated in Figure 2.3, which clearly depicts the settlement types within the EEH region used for this project. Luton, Peterborough, Milton Keynes, Swindon and Hertfordshire are the main local authorities where there are significant urban settlements, with all other local authorities being predominantly rural interspersed with market towns. Encouraging active travel in these rural areas may be more difficult but still necessary to meet EEH's strategic transport priorities, such as reaching net zero and improving quality of life. It should also be noted that even in areas classified as urban there may be long distances between settlements.

4.2.2.2. Topography

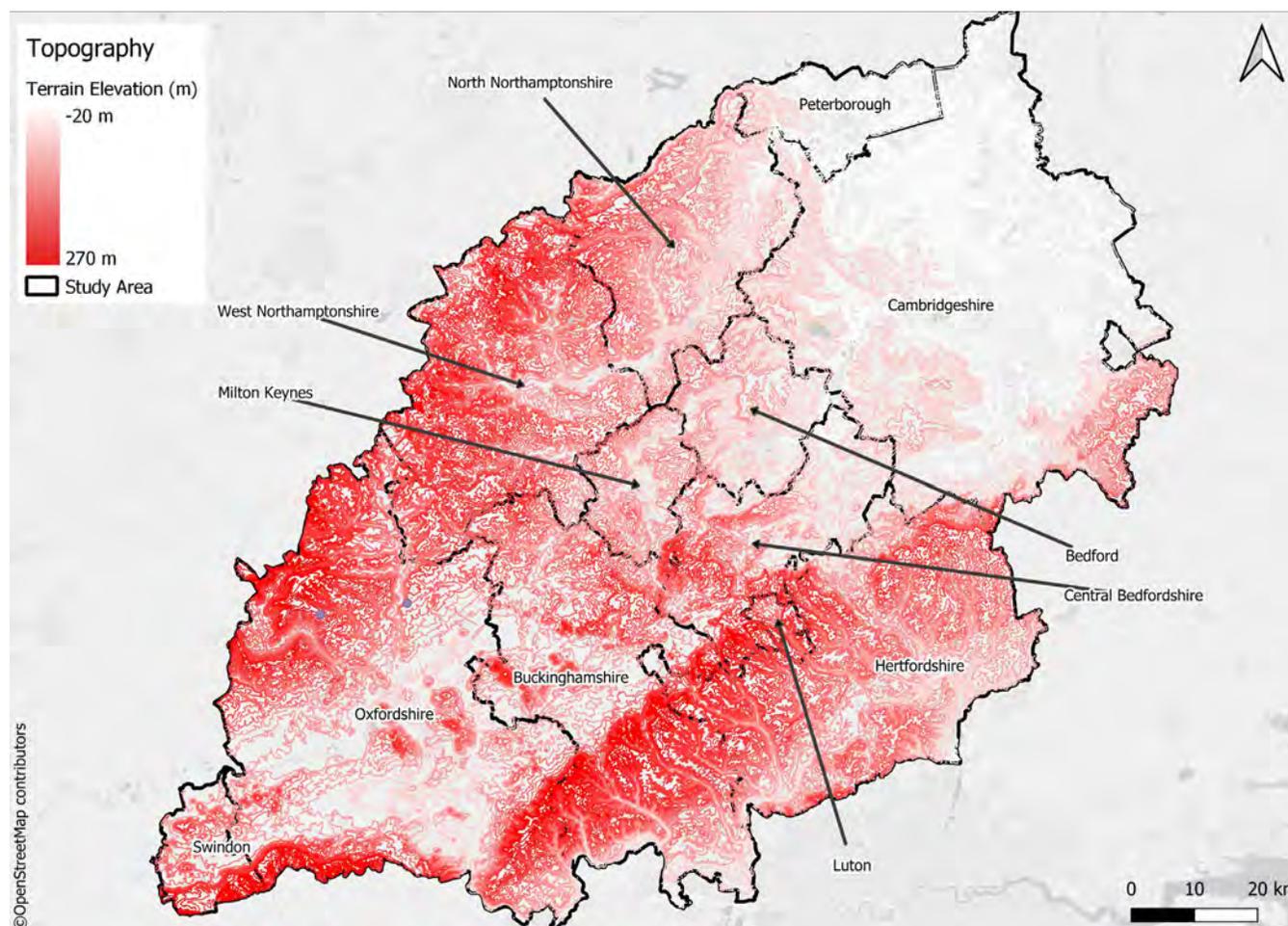
Figure 4.1 below shows the topography of the EEH area using terrain elevation above sea level.

The terrain characteristics within the study area are varied, presenting a mixture of plains and hills. Local authorities

towards the east benefit from flat landscapes while to the northwest and south of the EEH region, the terrain elevation increases across The Cotswolds, North Wessex Downs and Chilterns.

Hilly terrain presents a challenge for people walking and cycling in the EEH region, particularly for those with reduced mobility, such as disabled users, older residents, parents escorting children, etc. The advent of e-bikes has the potential to help overcome those issues, although initial costs are likely to represent a barrier until e-bikes become more affordable.

Figure 4.1 - Terrain Elevation in the Study Area



4.2.2.3. Mode Share

As detailed in section 2.4.1 of this report, the existing mode shares observed from the Census 2011 JTW and NTS 2017 – 2020 data highlight the existing dependence on cars for travel within the EEH region. Car mode accounts for ~85% of all trips in the region, with the only exceptions being Oxford and Cambridge. Car dependence is particularly pronounced in rural areas. The key challenge is therefore to enable all areas within the EEH region to transition to active travel in an equitable manner, as entrenched behaviour in terms of use of private cars is difficult, but not insurmountable, to overcome.

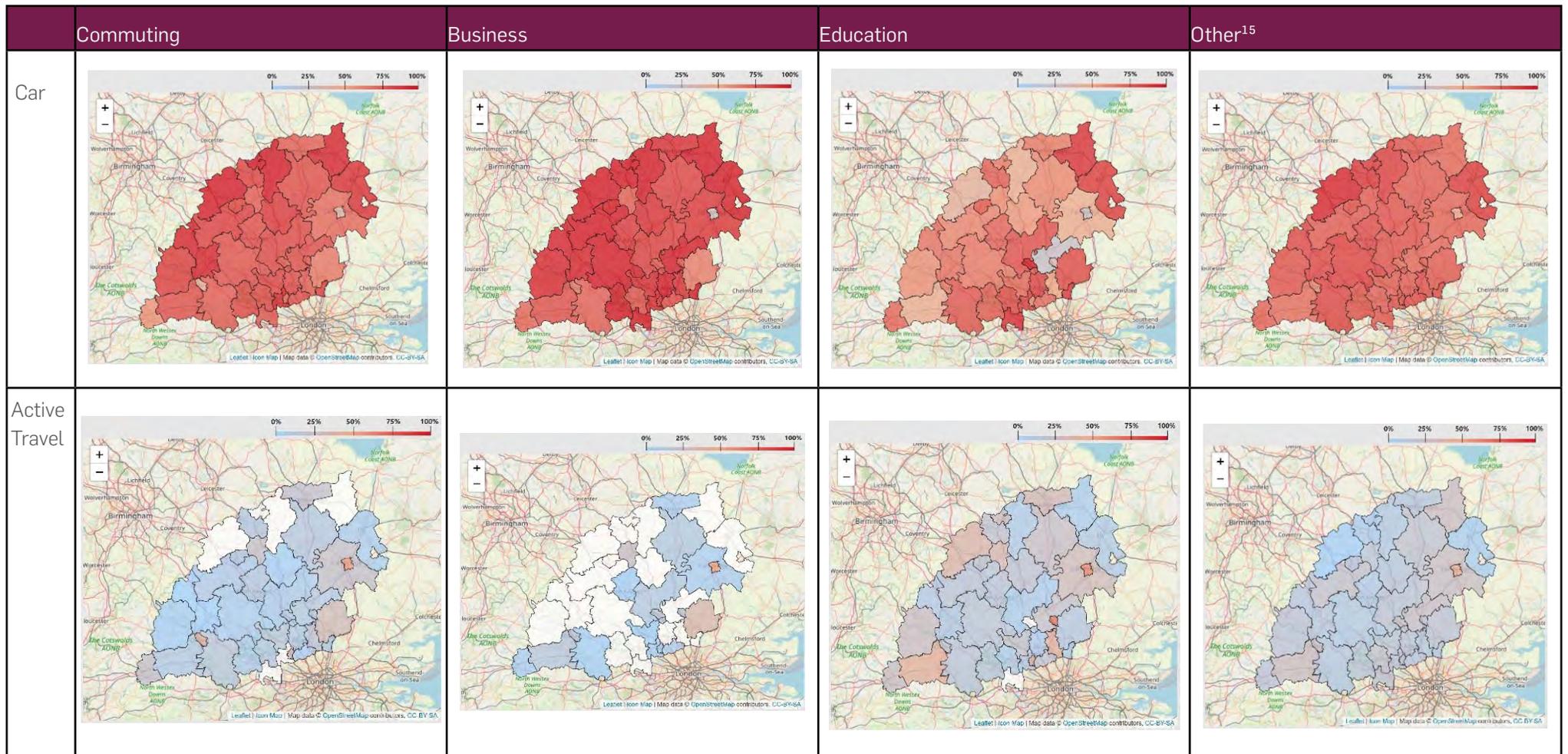
4.2.2.4. Journey Purpose

Figure 4.2 shows the NTS car versus active travel mode share by district for 2017 – 2020 inclusive, on weekdays, and by purpose. Car mode share is higher for commuting and business purposes, with active travel being so low for business travel that there is no data available for some districts (as demonstrated by the white-shaded districts). Car mode share is also moderate for the other purposes, while travel for education has the highest levels of active travel. Despite the challenge of high car usage, there is an opportunity for higher potential for mode shift. Although business travel has low levels of active travel, journeys tend to be longer, so it is considered that there is limited potential for journeys to be made fully by active travel, and thus first mile / last mile journeys could be targeted for this journey purpose. Commuting also has low levels of active travel and thus significant potential. As such, measures could be a mixture of full active travel and first mile / last mile depending on distance.

Image: Bicycle parked in Oxford



Figure 4.2 - NTS % Mode Shares by District, Purpose (2017-2020)



¹⁵ Recreation, visiting friends and family, shopping, personal business

4.2.2.5. Social and Economic inequality and deprivation

While there are lower levels of deprivation than other regions overall, there are still significant pockets of deprivation as outlined in chapter 3 and shown in Figure 3.12. Deprivation represents a challenge/barrier to mobility uptake due to financial and cultural considerations.

4.2.2.6. Planned Housing and Employment growth

Figure 3.8 displays housing and employment growth in the area within the 5-mile cross boundary buffer zone. The graphic shows clusters of planned housing and employment growth on the boundaries between several local authorities.

Encouraging modal shift to active travel between destinations that have low levels of future planned housing and employment growth may be a challenge as the opportunity for short trips may be less with lower density development while travel behaviours may be entrenched. As expected, housing and employment growth in the region is linked to the population and settlement patterns, with more urban and market town areas expecting higher planned growth than rural regions. As such, the approach to encouraging active travel in areas where there is less planned housing and employment growth will need to be different to areas where there is such development.

There is a real opportunity for local authorities to encourage high quality walking and cycling infrastructure within new developments and between the developments and key destinations.

4.2.2.7. Existing Transport Network

Figure 3.9 showed the existing public transport network hubs and rail network. Connectivity across the region will improve with the delivery of East West Rail (EWR). EWR will significantly improve east-west connections between Oxford, Milton Keynes and Cambridge. Once delivered, active travel should continue to play a key role via first mile / last mile journeys.

The region also has a number of bus interchanges across the region. A number of these bus interchanges are also located near railway stations, which will support multi-modal transport use.

4.2.2.8. Safety

Actual and perceived road danger is a critical barrier to the uptake of sustainable modes, and if not addressed, a significant modal shift is unlikely to be achieved. For example, The National Travel Attitudes Study (NTAS): Wave 5 centred around attitudes towards cycling, and found that off-road and segregated cycle paths, safer roads and well-maintained road surfaces for cycling were chosen most often when respondents were asked about things that would encourage them to

cycle more. Nearly two-thirds of the sample support the creation of dedicated cycle lanes in their local area, even if this means less road space for cars.

As such, the severity of collisions provides insight into where infrastructure needs prioritisation.

Figure 3.13 showed all collisions in the buffer areas, on the edges of local authorities, during the period of 2016 to 2020. It highlights particular road safety challenges in the area to the east of Banbury (Oxfordshire-West Northamptonshire border), the southern edge of Milton Keynes, multiple locations across Luton, multiple locations on the border of Bedford Borough, and the southern edge of Peterborough.

Speed of traffic on otherwise quieter rural roads is also considered an issue.

Image: Corby Station



4.3. Findings on challenges from Workshop #3

Workshop #3 presented initial findings on challenges identified from the work undertaken in Stages 1 and 2 and discussion with stakeholders on the challenges faced in delivering active travel. A summary of the additional challenges that participants identified is outlined below:

- Design standards - some stakeholders had difficulty applying LTN 1/20 to market towns, while others found it was not being reflected in new developments where planning applications were determined a long time ago. Similarly, existing infrastructure is often not fit for purpose. It was also noted that there is a lack of rural design guidance, although it is acknowledged that ATE is working on this.
- Funding and resources - many stakeholders noted significant funding and resource constraints, including in terms of network coherence and ongoing maintenance.
- Cultural issues - stakeholders explored the cultural challenges within the area – for example it was highlighted that women are often discouraged from walking and cycling. In addition, the traditional approach within organisations has been to focus on predict and provide for vehicle trips and not active travel in policy or transport

delivery. As such, culture shift is also needed within organisations to encourage active travel.

- Land use patterns - it was frequently noted that there is a challenge of providing active travel in rural areas where the demand is lower, and Active Travel England have an urban focus due to these areas having a higher propensity to cycle. This also relates to the need to plan development so that origins and destinations are located in close proximity so that short journeys are more likely to be undertaken via active travel
- Land ownership - reliance on third party / private land (particularly for rural off-road routes meaning that opposition can prevent a scheme from progressing).
- Cycle ownership and secure parking – low levels of cycle ownership and the need to provide secure and monitored cycle parking as cycle theft is becoming a major issue – for example, how to provide safe cycle parking at bus stops.

4.4. Next step

The challenges noted will be used in discussion with ATE as common challenges faced by the region. This is included in the Stage 5 Delivery Plan in Chapter 6.

Image: Active travel wayfinding in Cambridge



5. Stage 4 - Multi-modal Integration

5.1. Methodology

Improving multi-modal integration involves better integration of the active travel and public transport networks to facilitate first mile / last mile trips, in which active travel is used in the first and/ or last mile of a journey to/from public transport, which is used for the longer leg of the journey.

EEH recognises the opportunities and importance of integration of active travel with public transport to provide effective end-to-end journeys and the opportunities provided by existing, and future public transport networks.

There is already work taking place within the EEH region being delivered by Train Operating Companies, Network Rail, DfT, local authorities and other organisations. The outcomes of this section will feed into the wider work on mobility hubs currently being undertaken by EEH, which seeks to develop a tool to help LAs identify where those could be located in a data-led approach.

Practical measures that would support active travel within a multi modal journey context could include secure cycle parking, mobility hubs with bike and e-scooter hire schemes, a repair station, plus integrated journey planning tools such as real time information displays and others.

The Phase 1 Active Travel Ambition work identified that the following features will play an important role in the emerging ambition:

- For larger towns and cities: high-quality cycle parking and other infrastructure (including mobility hubs) close to rail and bus interchanges to support first mile / last mile trips.
- For market towns: smaller mobility hubs and high-quality cycle parking at stations and other interchanges to promote both first mile / last mile trips made wholly by active modes, including bike/e-bike hire and travel information

Accordingly, Stage 4 of Phase 2 built on this through the following tasks:

- A literature/project review of current multi-modal integration opportunities in the EEH region, including the EEH Regional Bus Study, mobility hubs guidance and integration opportunities.
- Reviewing other examples of best practice and guidance as case studies;

- Identifying locations in the EEH region with a high potential for multi-modal integration within the cross-boundary buffer zone (i.e. five miles either side of local authority borders). This has been done by reviewing the findings from Workshop #3 and data analysis from Stages 1 and 2. EEH is developing a tool to support local authorities in identifying areas that can identify locations for mobility hubs in a data driven way and the work undertaken as part of this project will be taken into account in the technical work accompanying that project.

Image: Cycle parking facilities at Milton Keynes Central Station



5.2. Literature / Project Review

5.2.1. East West Rail (EWR)¹⁶

The East West Rail project will provide a strategic east-west public transport connection between Oxford and Cambridge. Whilst the section between Oxford and Bicester has been completed, the other sections to the east are currently in the planning and construction stages.

East West Rail recognises that investment in the Oxford-Cambridge region is an opportunity to join up existing public transport, cycle ways and footways so that people can choose to be physically active on their way to and from stations. Furthermore, it acknowledges active travel as a vital element of a good passenger experience, which will also result in environmental and health benefits for local people.

The construction and operation of the line will be phased, with Stage 1 starting in the West, and working eastwards towards Cambridge (shown in figure 5.1):

- Stage 1 – Oxford-Bletchley/Milton Keynes: Construction of this stage is currently underway;
- Stage 2 – Bletchley/Milton Keynes–Bedford: unlocking direct travel between Oxford and Bedford;
- Stage 3 – Full route: Oxford to Cambridge, via Bedford and Bletchley.

Figure 5.1 - East West Rail route map



¹⁶ <https://eastwestrail.co.uk/>

5.2.2. EEH First Mile / Last Mile Study and Tool¹⁷

The primary purpose of the EEH First Mile / Last Mile (FMLM) study and tool is to improve accessibility and connectivity for short trip stages to and from transport interchanges and/or from trip origins/destinations. FMLM requires the integration of multiple modes and mass transit such as bus, coach, rail, etc.

A successful FMLM scheme should ensure a frictionless interchange between different transport modes, where mobility networks are strengthened by the aggregation of multiple modes into single locations.

By using information held in commercially available datasets, the study helped to develop a detailed picture of the personas of the Heartland's population and to better understand the specific propensity for sustainable and public transport choices in different places.

The resulting toolkit provides an evidence-led approach to identification of potential solutions for specific areas and the targeting of investment in support of active travel. Furthermore, it factors in human behaviour around transport choice, particularly in respect of FMLM travel.

The toolkit is available to all EEH partners and has been used over the course of 2020 to plan interventions and in support of funding bids to Government.

5.2.3. EEH Regional Bus Strategy¹⁸

Buses should play a fundamental role in achieving the guiding principles of the EEH transport strategy - improving quality of life and wellbeing through a sustainable, safe, and inclusive transport system that is accessible to all. Buses are especially important in the EEH region due to the large rural population scattered amongst many small and medium-sized towns.

The strategy identified that over 250,000 trips are made each day within the region, most of them by private car. EEH considers that this large proportion of private car journeys provides a great opportunity to shift trips to other modes of travel, with buses being able to close the gaps in the rail network at a fraction of the infrastructure cost.

The key ambitions of the study include reducing journey times, improving the coverage of the network, enhancing service quality, simplifying ticketing systems, increasing public awareness of bus travel, and decarbonising the bus fleet.

The strategy recognises that improved modal integration, with reduced barriers to interchange such as simplified ticketing, enhanced interchange facilities and the implementation of mobility hubs to cater for all potential access and onward travel modes, will support improved journey opportunities across the region for all users. The hubs will provide an opportunity for integrated planning of modes, combining public transport, future mobility solutions, and a comprehensive network of pedestrian and cycling routes. This onward connectivity from the hubs into the local communities will create opportunities to encourage active travel to/from local public transport services.

¹⁷ <https://www.englandseconomicheartland.com/our-work/local-connectivity/>

¹⁸ https://eeh-prod-media.s3.amazonaws.com/documents/EEH_Regional_Bus_Strategy.pdf

5.2.4. Cycle Rail Toolkit 2 (Cycle-Rail Working Group, 2016)¹⁹

The Cycle Rail Toolkit 2 is a comprehensive national guidance developed by the Cycle Rail Working Group offering guidance for railway managers and local authorities to help facilitate the integration of cycling with rail travel. The document also provides planning guidance on recommended locations for cycle parking and secure storage facilities, access for non-standard bikes, as well as support on the purchase, installation, and management of cycle parking. The guideline applies to public cycle parking procurement within the UK, including at rail stations and other public transport interchanges.

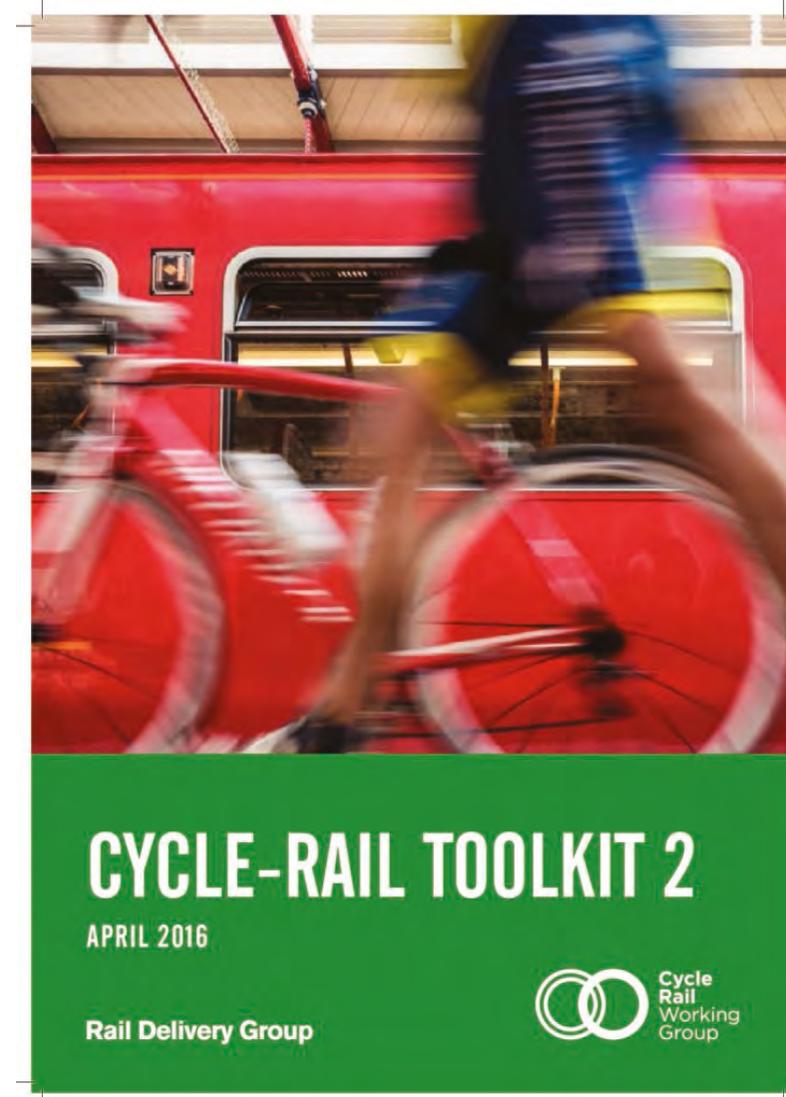
On the topic of how to encourage more people to cycle to and from stations, the document focuses on three themes:

- Routes to stations;
- Access to the station; and
- Within the station.

Regarding the journey to the station, the guidance advises that routes should deliver:

- Direct, convenient, and safe routes with well-signed links to and from residential areas and employment centres within reach;
- Improved journey time, which could be achieved by improving the permeability for active modes of transport (e.g. via exemption of certain traffic regulations such as banned turns, one-way streets, etc);
- Removal of barriers to cycling along the route, including those caused by traffic conditions outside the station; and
- Easy access to the station and cycle parking.

Image - Cycle-Rail Toolkit 2 (Rail Delivery Group)



¹⁹ <https://www.raildeliverygroup.com/media-centre-docman/archive/397-2016-04-cycle-rail-toolkit-2/file.html>

5.2.5. Mobility Hubs National Guidance (CoMoUK, 2019)²⁰

Mobility hubs are the next generation of local transport interchanges, often building on existing and established locations and networks, such as bus and railway stations, supplemented by enhanced and new modes including first mile / last mile options. Hubs are designed to enable multimodal transport at a local level and can be tailored to meet the specific needs of each place. This co-location of different modes of transport at strategic locations can reduce the need for car use and help reduce local vehicle kilometres travelled.

These hubs, with a mixture of mobility and land use, can also provide a catalyst for the reinvention of local areas and communities.

Collaborative Mobility UK (CoMoUK) is a national charity dedicated to the social, economic, and environmental benefits of shared transport. In its "Mobility Hubs Guidance" for developers and local authorities, CoMoUK provides advice on location, context, and typologies of hubs.

The guidance defines three key characteristics of mobility hubs:

- Co-location of public and shared mobility modes;
- The redesign of space to reduce private car space and improve the surrounding public realm; and
- A pillar or sign identifying the space as a mobility hub which is part of a wider network and ideally provides digital travel information.

The physical integration of transport modes is essential to make shared mobility visible, while digital integration with Mobility as a Service (MaaS) helps to integrate shared mobility and gives it a strong appeal.

Given that mobility hubs can be developed in a wide range of contexts from busy city centres to rural areas, they are an ideal tool to enhance housing developments, business parks, hospital sites, transport interchanges or Electric Vehicle (EV) charging

hubs. The document therefore provides a point of reference for different combinations of mobility and non-mobility components based on location and context:

- Large interchanges / city hubs;
- Transport corridor, smaller interchanges / linking hubs;
- Business park / new housing development hubs;
- Suburbs / Mini hubs;
- Small market town, village hubs; and
- Tourism hubs.

Hub components can be classified into mobility and non-mobility elements, where the former can include public transport and shared mobility plus supporting mobility-related components. Non-mobility and urban realm improvements can also be a part, diversifying the services offered while incorporating a placemaking element to the transport network (Figure 5.2).

Given that mobility hubs are not a "one size fits all", the number of modes and combinations can be catered for each location according to demand, place type and other requirements. Table 5-1 lists some examples of elements that can be considered for each category.

²⁰ <https://www.como.org.uk/>

Figure 5.2 - Mobility hub components



Source: CoMoUK

CoMoUK accreditation creates a set of measurable standards for hubs, relating to six areas of design as follows:

- Visibility and accessibility – hubs must be identifiable as part of the transport network, and accessible to all;
- Choice of sustainable modes – including public and shared modes, with consideration of pedestrians;
- Ease of switching between modes – this link should apply in both physical and digital terms;
- Ensuring traveller safety is a key priority;
- The design should include non-transport practical facilities; and
- Visual, social and community appeal to enhance the local area.

The bespoke approach for the development of hubs makes it pertinent to the EEH region due to its diverse urban and rural characteristics. Further guidance and tools relating to design, funding, procurement, and management can be found on CoMoUK's website²².

²¹ Vehicle has to be returned to the point of hire

²² <https://www.como.org.uk/>

Table 5-1 - Mobility hub components

Mobility component	A	1. Public transport	Bus, tram, rail, demand responsive mini-buses, ride hailing, (shared) taxis, etc.
		2. Non-public transport	Car share: back to base ²¹ , one-way, electric; Bike share: back to base ²¹ , one-way, electric; Cargo bike share: cargo bike logistics store; E-scooters; Moped share; Ride sharing; etc.
Mobility-related Component	B		EV car charging; Cycle parking (standard, covered, restricted access, EV charging); Cycle repair / pumps; MaaS / digital pillar (transport information, ticketing, wayfinding, walk distances, local services); Child car seats, bike seats & trailers; Community concierge; Last mile parcel delivery; etc.
Non-mobility & urban realm improvement	C		Improved public realm, safer crossings, step-free access, road repairs, adjustments for disabilities; Waiting area space, covered, seating, planting, artwork, water fountain, coffee kiosks; Wi-Fi, phone charging; etc.

5.2.6. England's Economic Heartland's Mobility Hub Guidance²³

EEH has published guidance on how to develop business cases for mobility hubs – particularly in more rural areas. The aim of the work is to support local authorities in the region as they plan visible, safe, and accessible spaces where public, shared and active travel modes are co-located.

It provides practical advice on developing the strategic, economic and financial cases for mobility hubs, including consideration of optioneering, appraisal and logic mapping. The guidance is framed throughout by three scenarios in which mobility hubs could be created – rural village, rural station and a peri-urban environment.

5.3. Multi-modal location identification

The locations in the EEH region with high potential for multi-modal integration within the cross-boundary buffer zone (i.e. five miles either side of local authority borders) have been identified by reviewing the findings from Workshop #3 and data analysis from Stage 1 and 2. EEH is currently developing a data driven tool that will support local authorities in identifying high potential areas for mobility hubs across the region. The active travel strategy indicates the potential for active travel movements to multi modal opportunities across local authority borders (for example, where a rail station serves a community in another local authority area).

5.3.1. Analysis

For the integration of transport modes to be successful, multi-modal hubs should be planned as part of an integrated network with public transport, maximising the opportunity for interchanges and the attractiveness for new users.

Potential locations that have the potential for integration within the cross boundary active travel buffer zones were selected by the aggregation of data, combining baseline information plus outputs from previous stages. This high-level assessment allowed identification of where the potential for multi-modal integration is strongest, based on the following criteria as set out in Table 5-2. For further details on the metrics sources see Table 2-1 and Table 3-1.

Image: Cycle parking facilities in St Albans City Station



²³ https://eeh-prod-media.s3.amazonaws.com/documents/Item_7_Annex_1_EEH_Mobility_Hubs_Strategic_Transport_Leadership_Board_03_March_2023_.pdf

Table 5-2 - Multimodal Integration: Identification criteria

No.	Metric	Criteria
1	Population Density	- Demand
2	Employment Density	- Demand - Potential to shift car trips to shared / active / public transport
3	Future Housing	- Demand - Avoid built-in car-dependency for new residents
4	NTS Desire Lines - All O/D	- Demand - Potential to shift car trips to shared / active / public transport
5	PCT - Car Journeys < 3miles	- Potential to shift car trips to shared / active / public transport - FMLM
6	MCAF Preferred corridor	- Demand - Integration with public transport and micromobility
7	Bus Stop Cluster	- Integration with active transport and micromobility - FMLM
8	Bus Interchange	- Demand - Integration with active transport and micromobility - FMLM
9	Railway Station	- Integration with active transport and micromobility - FMLM
10	Park & Ride	- Integration with active transport and micromobility - FMLM

Figure 5.3 presents a map of the key metrics considered for multimodal integration.

A “long list” of locations was then initially identified by dividing the cross-boundary area into 1x1 km (0.6 x 0.6 miles) cells and selecting those where the aggregated information shows a potential “hotspot”. It should be noted that this process was limited to the cross-boundary buffer area (up to 5 miles from a local authority boundary).

Visual identification of the cells where the intensity of the data heatmap is higher allowed potential locations within the cross-boundary area to be pinpointed. The numerous sites were then shortlisted based on the criteria established in Table 5-2.

The selected locations for multi-modal integration within the active travel buffer zones are presented in Figure 5.4. They show those that meet at least five out of the ten criteria set above.

Image: Cyclist and pedestrians in Oxford city centre



Figure 5.3 - Key metrics for multimodal integration

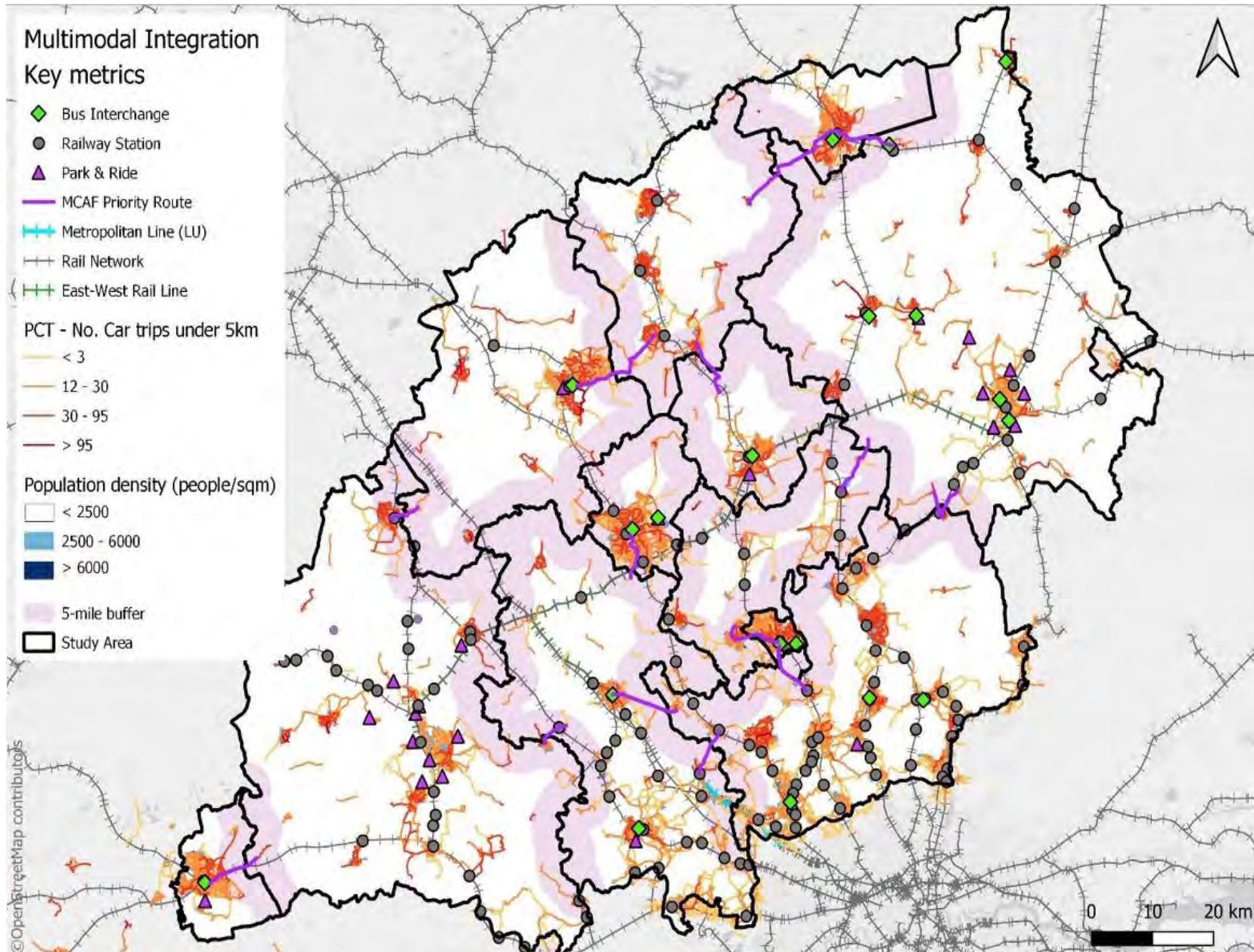
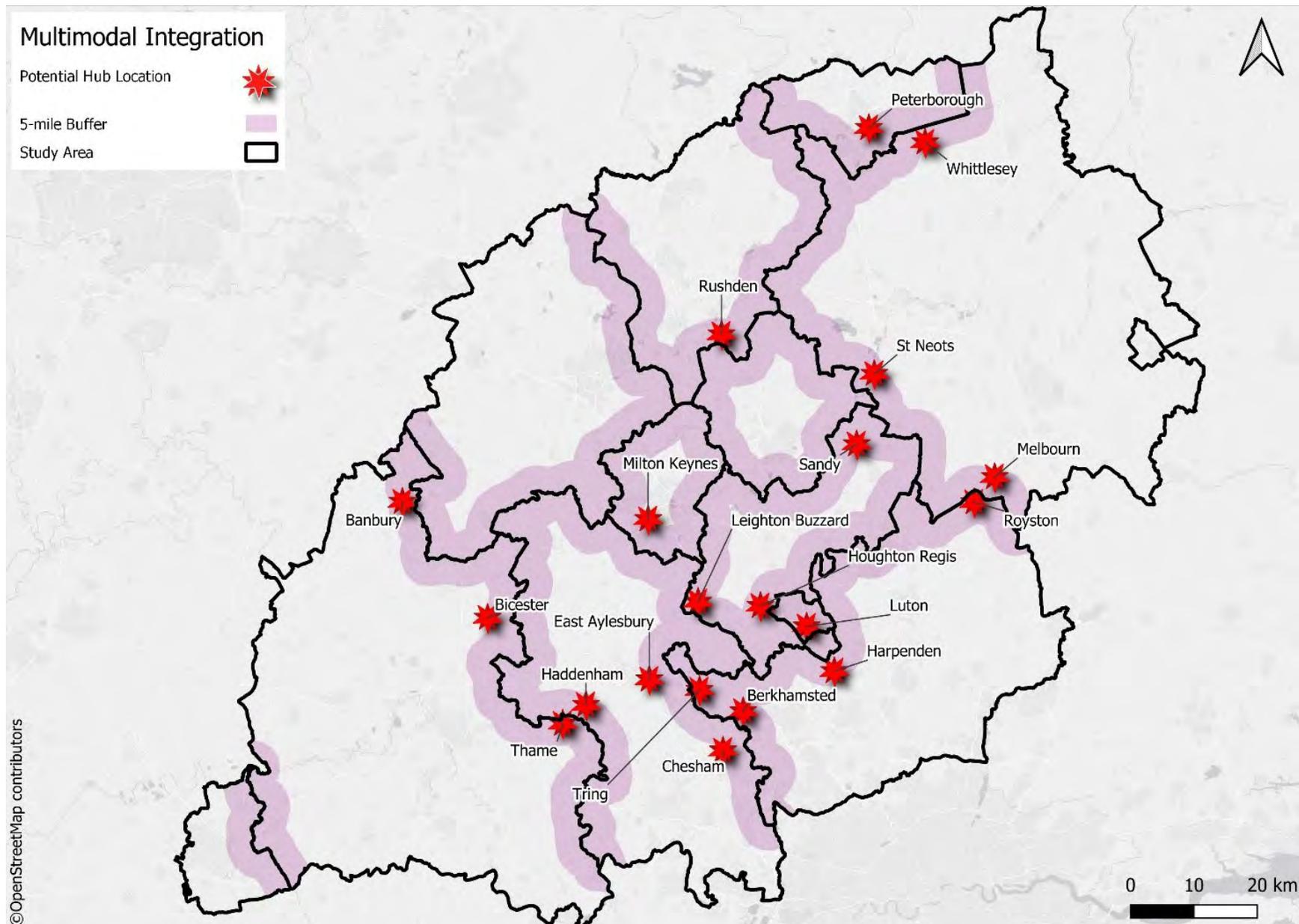


Figure 5.4 - Areas with high potential for multimodal integration within the cross boundary buffer zones



5.3.2. Workshop #3 findings for Stage 4

Workshop #3 was held on 14th December 2022 and presented initial ideas for multi-modal integration, including:

- Feedback on approach and methodology; and
- Locations where participants would like to see cross-boundary active travel links to public transport hubs.

Rather than suggesting specific locations, the workshop's outcome was more strategic, and discussions centred around where the integration could be more beneficial for the region. EEH's mobility hubs tool will help support local authorities in identifying mobility hub locations in a data driven way.

5.4. Next Step

The outcomes of this section will feed into the wider work on mobility hubs currently being undertaken by EEH, which seeks to develop a tool to help local authorities identify where those could be located in a data-led approach.



Image: Cyclists in Bedford

6. Stage 5 - Delivery Plan & Next Steps

The next step of EEH's Active Travel Strategy will involve EEH working with the local authorities and, where relevant, other stakeholders to:

- Work towards the realisation of the aspirational active travel targets set out in Chapter 2 of this report;
- Work with Local Authorities to identify opportunities and issues with the links and build the strategic narrative for cross boundary links. It should be noted that local authorities would be responsible for feasibility, detailed development and delivery;
- Recognise and continue to tackle or seek to alleviate the active travel challenges described in Chapter 4 of this report. EEH will play an advocacy role for active travel funding in the region, and this will include raising common challenges for the region with the likes of DfT, ATE, etc. – for example, it is recognised that there are challenges around local authority funding and resources, and that this will be a factor in achieving the active travel targets within this Strategy; and
- Provide guidance on multi modal integration improvements, through our mobility hubs work.

It should be re-emphasised that these are strategic, cross-boundary interventions and are recommendations for potential links based on a data led cross boundary exercise. They do not seek to replace or compete with other interventions and priorities that local authorities have identified through LCWIPs, LTPs or other active travel action plans and strategies at a more local level. EEH remains strongly supportive of the active travel proposals, targets and aspirations being delivered at a local level. EEH will continue to work in a strategic coordination role to support local authority partners with delivery of all active travel projects and objectives.

It should also be noted that Phase 1 of the overall study, setting out the active travel ambition, included the levels of service required for active travel provision in the region (Table 7). These levels of service were identified under the categories listed below and could be a basis for realising the active travel targets set out in Phase 2:

- Infrastructure, networks and facilities;
- Journey purposes and linked journeys;
- Motivation, encouragement and support;
- Promotion and information provision;
- Directness;
- Inclusivity and accessibility;
- New mobility, innovation and digital;
- Improving public realm and neighbourhoods (e.g. 15-minute neighbourhoods); and
- Safety.

Further detail on the strategic interventions and recommendations is provided in Table 6-1 below.

Table 6-1 - Delivery Plan

Intervention or recommendation type	Timeframe of benefits	Implementation			
		Scheme Promoter	Delivery Partners	Role of EEH	Possible funding sources
Monitoring of active travel targets	2023-2050 (every 3-5 years)	Local transport authorities / EEH	Local transport authorities DfT (provision of national datasets)	Coordination	Active Travel England, Other Government / local funding
Top 15 cross-boundary active travel links	2025 onwards	Local transport authorities	Local transport authorities	Coordination, including with ATE about developing cross boundary links, gaining funding for delivery, and working with Local Authorities to undertake next steps, such as compiling historic information, issues and opportunities associated with the links.	Active Travel England, Other Government / local funding
Tackling and mitigating key challenges	2023 onwards	Local transport authorities / EEH	Local transport authorities/ Others	Coordination; Ensure good practice is being shared; Help set up / coordinate pilots / trials / groups of local authorities to tackle particular issues.	Active Travel England, Other Government / local funding
Multi-modal integration hubs	2023 onwards	Local transport authorities	Local transport authorities / Shared mobility providers / Public Transport operators	Coordination and mobility hub tool development	Active Travel England, Other Government / local funding

Intervention or recommendation type	Timeframe of benefits	Implementation			
		Scheme Promoter	Delivery Partners	Role of EEH	Possible funding sources
Regional active travel forum - share good practice and updates	2023 onwards	EEH	Local transport authorities	Coordination	N/A
Advocacy role (e.g. Discussion with ATE about commonly occurring challenges)	2023 onwards	EEH	EEH	Spokesperson for local transport authorities	N/A
Development of regional investment pipeline	2024 onwards	EEH	Local transport authorities	Work with local authorities and partners such as Sustrans to identify funding opportunities where possible	Various, including Sustrans and developers

6.1. Funding

There are a number of funding sources to potentially support implementation of the EEH Active Travel Strategy, including future rounds of the Active Travel Fund, other dedicated active travel funds (such as the Capability Fund), Levelling Up Fund, The Towns Fund and Future High Streets Fund. Other funding sources may include third party contributions (such as developer contributions through the planning process) and local rates / levies. New funding sources may also become available over time that EEH and its partners will work to being primed to secure.

Investment sought within Phase 1 and 2 of the Active Travel Strategy is additional to funding required to maintain current transport assets.

It is recognised that funding is nationally challenging with a competitive element having been introduced, and therefore a range of funding and financing models will need to be analysed and considered.

As a key function of STBs, EEH will also determine how regional strategic transport investment schemes are prioritised (drawing from recommendations across our technical work from previous years) and develop an iterated pipeline.

6.2. Governance

The Strategic Transport Leadership Board, Transport Officers Group (TOG), the Active Travel Strategy Steering Group and stakeholder groups are part of the EEH governance process and are key to the successful development of the EEH Active Travel Strategy. The steering group for this study has composed of local transport authorities and EEH officers. Stakeholder groups for this study have included Department for Transport (DfT), Sustrans, East West Rail and National Highways. EEH will consider its governance structure for onward delivery of its Active Travel Strategy and associated investment pipeline including engagement with Active Travel England.

6.3. Delivery Plan

Based on stakeholder input and a data led evidence base, the active travel targets were devised for the short, medium and long term. Short term targets were judged to have an implementation date of 2030. Medium term targets were judged to have an implementation date of 2040. Long term targets were judged to have an implementation date of 2050.

Subject to agreement, the assumed scheme promoters include local transport authorities and EEH. Active Travel England will also play a role as a potential funder and scheme assessor. It should also be noted that there is an important role for the private sector, partnerships, and innovative funding and financing tools.

6.4. Wider next steps

As the sub-national transport body for the region, EEH will continue to lead on delivery of the investment pipeline. The EEH Active Travel Strategy, alongside other technical work by EEH, will also inform the development of the investment pipeline. Specifically, EEH will:

- Support Local Authorities in developing strategic narrative in funding applications as required, relevant to the interventions and recommendations in this strategy;
- Work with key stakeholders to promote the development of strategic cross borough active travel projects and programmes.
- Emphasise problems faced by authorities to national government / ATE, and/or support liaison across authorities as this is key for progressing and achieving cross border active travel links.

In order to achieve the active travel targets, it will be necessary for local authorities to continue to develop LCWIPs and use funding opportunities to put new infrastructure / improvements in place, with EEH helping local authorities to work together to develop cross boundary links and hub locations by the boundaries. It will be beneficial for local authorities to be able to say the routes are supported by the regional active travel strategy work. The next steps will include ongoing discussion as part of the regional active travel forum and with national bodies.

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