

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

November 2019

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A Journey Times to Key Services

1 Introduction

Purpose of the Long Term Transport Strategy

The Long Term Transport Strategy (LTTS) is part of Barnet Council's wider strategy to create a prosperous, inclusive and healthy future for the borough. It sets out a vision for transport in Barnet and a roadmap for achieving this vision, supporting other council policies such as the Draft Growth Strategy, the Joint Health and Wellbeing Strategy and the Local Plan.

The LTTS will:

- Articulates the vision for transport in Barnet to 2041;
- Proposes possible proposals to achieve the vision; and
- Provides an evidence base for this strategy.

It sets strategic goals and suggests high level actions, with associated timescales and delivery plans. Further work, such as data collection, detailed design and public consultation, will be required before recommended actions can be implemented.

Policy context

Barnet Council Priorities

The Council's priorities to 2024 are set out in the Council's Corporate Plan. The key priority relating to the LTTS is quoted below.

Keeping the borough moving

It states that delivering this will involve:

- Improving the condition of our roads and pavements
- Encouraging the use of public transport, walking and cycling through the 'healthy streets' approach
- Lobbying for improvements to public transport
- Developing a cycle network to major destinations in the borough without impeding busy and narrow traffic routes
- Promoting and continuing to roll out electric vehicle charging points and car clubs

- Using enforcement to increase compliance and support smooth and safe traffic movement.

The LTTS is aligned with these objectives and seeks to develop them across the longer time frame.

Mayor of London's Transport Strategy

The Mayor of London's Transport Strategy (MTS) (March 2018¹) sets out the Mayor's vision for transport in London from now to 2041. It articulates how transport can help to achieve wider visions for London, such as the London Plan, the Mayor's Air Quality Strategy and Healthy Streets. The MTS, in combination with Transport for London's (TfL) guidance for boroughs' Local Implementation Plan's, sets specific targets for each borough to achieve the London-wide aims. Table 1.1 outlines Barnet's targets.

To make London a fairer, greener, healthier and more prosperous city, the MTS details how we aim to change the transport mix across London, providing viable and attractive alternatives that will allow Londoners to reduce their dependence on cars.

Mayor of London's Transport Strategy

The MTS's key aims for London that Barnet Council can influence are:

- to achieve an 80% public transport, cycling and walking mode share;
- Vision Zero, meaning no one will be killed or seriously injured (KSI) on London's roads;
- to ensure every Londoner has a healthy level of activity each day through travel, measured by 70% of Londoners doing at least 20 minutes of active travel each day; and
- to ensure that 70% of Londoners live within 400m of the strategic cycle network.

Table 1.1: MTS targets for Barnet

Aim	2016 in Barnet	2041 target for Barnet
Public Transport, cycling and walking mode share	55%	72%
Vision Zero	74 KSI	0 KSI
Proportion of residents doing 20 minutes of active travel	28%	70%
Proportion of residents living within 400m of a strategic cycle network	0%	58%

Achieving these four targets will help to realise the MTS's other objectives, which include improving air quality, reducing traffic, improving accessibility and creating better public realm.

Barnet Council's response

The Barnet Local Implementation Plan (LIP) sets out how the borough aims to address the vision and aims of the MTS. Recently submitted and approved, the LIP details both the long-term (to 2041) and short-term (three-year) transport interventions and priorities to deliver the MTS vision for Barnet.

Although agreeing with the overarching aims of the MTS, the current draft of the LIP outlines the Council's view that the MTS is written from an Inner London perspective and does not fully consider the unique challenges that Barnet faces in achieving the aims. The mode share target is challenging because:

- Barnet Council has no control over key routes through the borough, including the A1, M1, A41 and A406, which are administered by TfL and Highways England. Many cars use these roads to travel through the borough neither starting nor finishing in Barnet, and further limiting the Council's influence;
- Barnet is underserved by orbital public transport routes and there are no current proposals for orbital rail links or higher frequency bus routes through the borough, so car use will continue to be necessary. Car ownership and associated parking provision should not be made more difficult than they need to be.

Purpose and structure of the Evidence Base

A firm evidence base is required to formulate a transport strategy for Barnet looking forward to 2041. To be useful, this evidence base needs to assess the current transport situation in Barnet (Barnet to 2018) and expected changes between now and 2041. This document summarises

¹ GLA (2018) Mayor's Transport Strategy

where and how people travel, as well as who is travelling, before investigating how these are likely to change.

- Who
 - Age, ability, health, gender, level of education, ethnicity and socio-economic characteristics all affect how people use transport networks. Understanding who is using the transport network, both now and in the future, is important to ensure this transport strategy is inclusive and that the borough is accessible to all.
- When, where and why
 - Journey time and journey purpose are key aspects of planning a transport network. Whereas the tube may be very busy during the AM Peak, it can easily handle more trips during the early afternoon. Similarly, although trains travelling to London may be at capacity during the morning peak, those heading out of London are likely to have spare capacity. It is vital to understand where, when and why people travel so that the transport network can be designed to accommodate the trips that people want to make.
- How
 - The mode of transport that people use affects their impact on the transport network. For example, the same number of people cycling requires less space than the same number of people driving. The range of available modes will change between now and 2041, which needs to be considered.

People's travel choices impact the environment, e.g. the impact on air quality and therefore levels of deprivation experienced by residents. This transport strategy therefore considers the impacts within Barnet of travel choices.

2 Barnet to 2019

Who

Summary

The people of Barnet are:

- Numerous, Barnet is the most populous London borough.
- Socio-economically diverse, the borough, although generally wealthy has pockets of deprivation.
- Highly skilled, 50% of Barnet’s residents have level 3 or higher qualifications.
- Inactive, Barnet is one of the 10 least active London boroughs, rates of coronary heart disease are 25% higher in Barnet than in London as a whole (2.5% compared to 2%) and just over one in five children in the borough is obese (21%), again higher than the national average (19.8%).

Implications for the LTTS

- Barnet’s transport network needs to accommodate significant commuter traffic to employment centres (such as the City of London) and the needs of those whose activities take place substantially within the borough.
- The transport network must be accessible for all people. Good public transport accessibility is critical for ensuring social inclusion and equality of opportunity.
- The strategy should consider how it can improve the health and wellbeing of its residents by encouraging people to travel actively.

Population size

The larger the population, the greater the strain on the transport network. Barnet’s population is 394,400, the largest of all the London boroughs.²

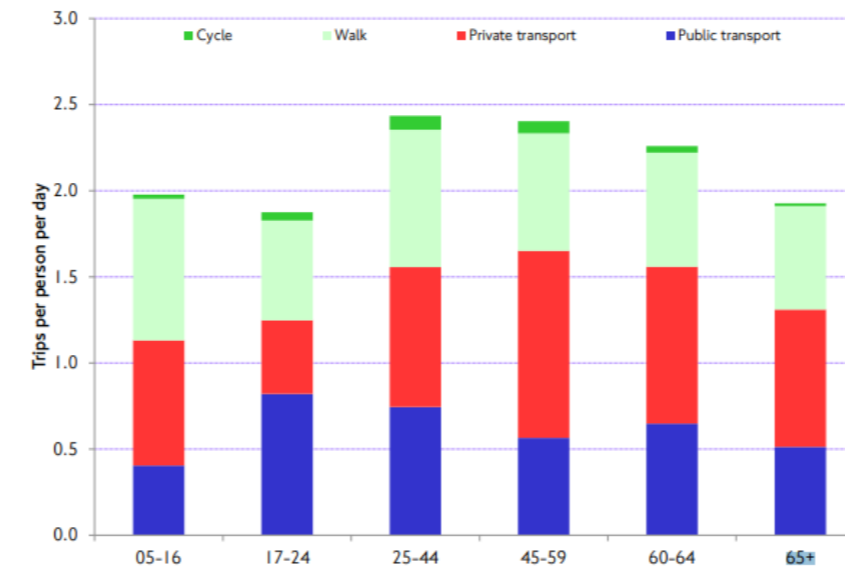
² Barnet Council (undated), Joint Strategic Needs Assessment, Demography. <https://www.barnet.gov.uk/jsna-home/demography.html> [Accessed 08.11.2018]

³ Transport for London (2018) London Travel Demand Survey. <https://tfl.gov.uk/corporate/about-tfl/how-we-work/planning-for-the->

Age

People of different ages tend to travel for different purposes and by different modes, as shown in Figure 2.1 (taken from TfL’s London Travel Demand Survey summary report). This is corroborated by the Department for Transport’s National Travel Survey.

Figure 2.1: Trips by mode and age group, LTDS³ 2016/2017



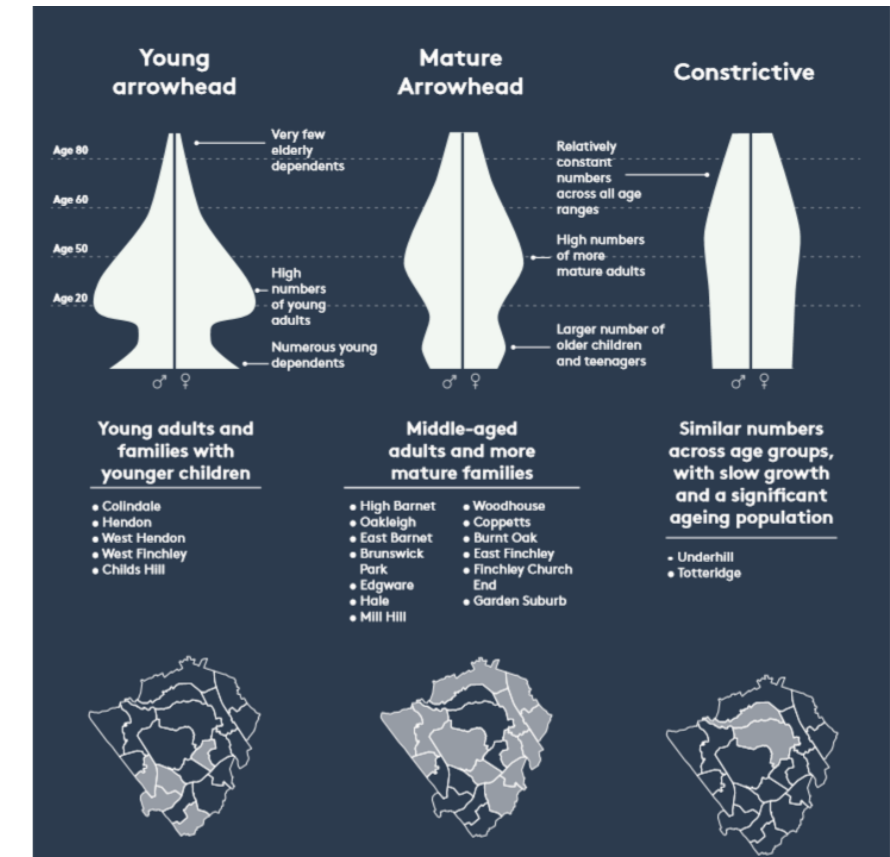
Source: Strategic Analysis, TfL City Planning.

Barnet has a higher proportion of residents under 16 (21%) and over 65 (14%) than the London average, meaning more dependants requiring a higher number of escorted trips and having greater accessibility needs⁴. These groups also typically make fewer trips per day than those of working age.

[future/consultations-and-surveys/london-travel-demand-survey](https://data.london.gov.uk/demography/) [Accessed 10.01.2019]

⁴ Greater London Authority (undated) <http://data.london.gov.uk/demography/> [Accessed 08.11.2018]

Figure 2.2: Ward population pyramids by age



As shown in Figure 2.2, the wards to the south and west of the borough have younger population profiles, with higher numbers of young adults and young children. Underhill and Totteridge to the north of the borough have a significant ageing population, whilst the remaining (and the majority of) wards are largely made up of middle-aged adults and more mature families.

Health

Transport can significantly impact physical and mental health⁵. It plays a critical role in the accessibility of services and amenities which promote health, the air people breathe, exposure to noise pollution and participation in physical activity.

⁵ Public Health England (2017). Spatial Planning for Health: An Evidence Review https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729727/spatial_planning_for_health.pdf

Incorporating exercise into daily travel patterns is the most effective way to ensure people achieve 150 minutes of physical activity a week. In the Active Lives Survey (May 2019), Barnet residents were significantly more active than statistical neighbours (Croydon, Ealing, Harrow, Enfield, Hillingdon, Redbridge), with 3 in 4 adults participating in at least 30 minutes of physical activity a week.⁶ However, the Chief Medical Officer (CMO) recommends at least 150 minutes of physical activity per week to maximise positive health outcomes and prevent chronic conditions.⁷ Just under half of Barnet's residents are failing to achieve this level of physical activity participation⁶.

Physical inactivity disproportionately affects specific age cohorts. Although 65 -74 year olds have the lowest levels of participation out of any age group, levels are similar to London and England. Comparatively, the residents aged 35-44 years report the second lowest levels of physical activity participation compared to other age groups. Unlike the older age cohort, this was found to be significantly lower than the national average⁶. In the Healthy Weight survey conducted by Barnet Public Health⁸, this age group was most likely to self-report not having enough time as the reason for being inactive. When asked to select what would help them maintain a healthy lifestyle, *more opportunities to walk and cycle as part of my daily routine* was the second most common response after *cheaper healthy food and drink*.

Just as physical inactivity disproportionately impacts particular cohorts of the population, associated health issues are not spread evenly across the population. Life expectancy in the most deprived areas is on average 7.8 years less for women and 7.4 years less for men than those in the least deprived areas, with more deprived areas reporting lower life satisfaction rates too. The average Borough's life expectancy is 85.5 years for women and 82.2 years for men, placing Barnet 6th amongst London boroughs.⁹

⁶ Sport England (May 2019). Active Lives Survey. Sport England data is now live and can be found here: <https://fingertips.phe.org.uk/profile/physical-activity/data#page/0/qid/1938132899/pat/6/par/E12000007/ati/102/are/E09000003>

⁷ Department of Health and Social Care (2011). UK Physical Activity Guidelines. Retrieved from, <https://www.gov.uk/government/publications/uk-physical-activity-guidelines>

⁸ Barnet Council (2018). Healthy Weight Survey. Retrieved from, <https://engage.barnet.gov.uk/healthy-weight-public-views>

⁹ Barnet Council (2018) Joint Strategic Needs Assessment, Health <https://jsna.barnet.gov.uk/4-health> [Accessed on 11.12.2019]

Although the direct impacts of different transport modes on mental health are not fully understood, the indirect impacts of physical amenity (caused by traffic, poor street scene, pavement quality), noise pollution (resulting from high volumes of motorised transport and residential areas close to trainlines) and physical activity (as a result of active travel) have all been found to affect mental wellbeing¹⁰. In addition, transport is a tool which enables people to access the services they need and to connect with the community around them. Therefore, it plays a wider role in neighbourhood cohesion and social capital, further impacting mental wellbeing. In Barnet, the prevalence of depression, intentional self-harm and mental health problems are significantly lower than the London average. Out of 33 London boroughs, Barnet is ranked 16th of 'life satisfaction' and 14th for 'well-being', although both indicators' performance has been declining since 2011.

Older adults are at particular risk of social isolation caused by poor transport infrastructure. Heavy traffic, poor road conditions and poorly positioned signage and lighting are major barriers to city driving for older people. In areas where public transport is insufficient, these barriers can increase the risk of social isolation amongst older adults. While it is important to recognise that driving is sometimes an essential transportation option for older people, older adults should feel safe walking in their neighbourhoods and comfortable navigating the public transport system with ease and in a timely manner¹¹.

Gender and ethnicity

Gender and ethnicity both have significant impacts on transport habits. Compared to the average male, the average female Londoner makes more trips, is more likely to use a bus or tram and is less likely to use a car¹², and the average Black person in London is almost twice as likely as their white counterpart to use the bus¹³.

¹⁰ The Centre for Urban Design and Mental Health. (2018). Retrieved from, <https://www.urbandesignmentalhealth.com/how-urban-design-can-impact-mental-health.html>

¹¹ World Health Organisation (2017). Age-Friendly Cities Framework. Retrieved, <https://extranet.who.int/agefriendlyworld/age-friendly-practices/transportation/>

¹² Transport for London (2017) London Travel Demand Survey, Steer analysis

¹³ Transport for London, Bus Users Survey. <http://content.tfl.gov.uk/tfl-bus-users-survey.pdf>

In 2018, 50.5% of Barnet's population was female, and 49.5% was male.¹⁴ In the 2011 Census, the "White British" population made up the largest ethnic category in Barnet, accounting for 40% of the population. Four wards on the western side of the borough (Burnt Oak, Colindale, Hale and West Hendon) had a higher Black, Asian or Minority Ethnic (BAME) proportion of residents than the London average.¹⁵

According to the 2011 Census data, 23.4% of the population in Barnet have a main language which is not English. The wards with the highest proportion of people whose main language is not English are in the south and west of the borough (Childs Hill, Colindale, Hendon and West Hendon).

Disability

Having a disability can change a person's transport requirements. The MTS has ambitious targets for mode shift amongst disabled transport users; to facilitate this, TfL is aiming to reduce journey times on the step-free network compared to the full network journey times with the time reduction targets of 50% London-wide, and 64% in Barnet.¹⁶ The LTTS will need to address this issue.

Active travel such as cycling and walking is also important for disabled people: disabled adults are half as likely as non-disabled adults to be physically active, contributing to shorter life expectancies.¹⁷ The LTTS should support active travel for disabled people as much as possible.

The proportion of people who cycle is approximately the same for disabled and non-disabled people (15% compared to 18%) and

¹⁴ Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html> [Accessed 08.11.2018]

¹⁵ Greater London Authority (GLA, 2014). Ward Profiles and Atlas based on Census data for % BAME from the Office for National Statistics (2011). <https://data.london.gov.uk/dataset/ward-profiles-and-atlas>

¹⁶ TfL LIP Information to Boroughs, 2018

¹⁷ Sports England (2014) Active People Survey 8 (2013/14), quoted in Public Health England (2014), Everybody Active, Every day https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/374914/Framework_13.pdf

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infrastructure is the most commonly cited barrier to cycling amongst disabled people.¹⁸

There are many different types of cycles out there these days. Hand cycles, recumbent cycles, trikes, side by side bikes and tandems, so most people can get out there on two (or three or four) wheels.

Transport for All¹⁹

As of 2018, there were an estimated 23,735 adults in Barnet with either a moderate or serious physical disability²⁰ (6% of the population) and 7,276 with a learning disability (2% of the population). 21% of London's adult population currently have a Disability Discrimination Act (DDA)-classified disability²¹. The definition of DDA disability includes both physical and mental impairment. The LTTS must ensure that transport is accessible and easy to navigate to support independent travel as much as possible.

Dementia

In Barnet, there are 4,266 people (aged 65+) living with dementia. As the population ages, this is set to increase to 7,407 by 2035, a 74% increase from current rates²². In the Mayor's Dementia Action Plan (*due to be published Summer 2019*) there are two objectives which pertain to transport:

- People affected by dementia will travel to where they want to go safely
- People affected by dementia will be able to feel confident to visit local high streets and town centres

In order to achieve this, the World Health Organisation recommends the following infrastructure elements for transport²³:

- Public transportation is reliable and frequent, including at night and on weekends and holidays

- All city areas and services are easily accessible by public transport, with good connections and well-marked routes
- Transport stops and stations are conveniently located, accessible, safe, clean, well-lit and well-marked, with adequate seating and shelter
- Pedestrian crossings are sufficient and safe for people with different levels and types of disability, with non-slip markings, visual and audio cues and adequate crossing times
- Cycle paths are separate from pavements and other pedestrian walkways
- Drivers give way to pedestrians at intersections and pedestrian crossings
- Parking and drop-off spots for people with special needs are available and respected

¹⁸ Wheels for wellbeing (2017) A Guide to Inclusive Cycling. <https://wheelsforwellbeing.org.uk/wp-content/uploads/2017/11/v2-Nov-2017.pdf>

¹⁹ Transport for All (TfA) <http://www.transportforall.org.uk/personal/cycling/> [accessed 15.01.19]

²⁰ Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html>

²¹ Office for National Statistics (2012) Disability and Mobility Data for London and the Rest of the UK <https://data.london.gov.uk/dataset/disability-and-mobility-london> [Accessed 15.01.19]

²² Barnet Council (2019). Dementia Needs Assessment. Retrieved from, <https://www.barnet.gov.uk/health-and-wellbeing/health-and-wellbeing-key-documents/barnet-dementia-needs-assessment>

²³ World Health Organisation (2007). https://www.who.int/ageing/publications/Age_friendly_cities_checklist.pdf

When, where and why

Summary

- Some areas along the Edgware branch of the Northern Line have similar densities to Inner London; the High Barnet branch is suburban and the centre of the borough semi-rural.
- Barnet is an economically active borough, hosting 10% of all businesses in Outer London and 20% of its road traffic is freight, mostly concentrated on the A406 and A1. Most employees of businesses based in Barnet live within the borough.
- Central London is the most common employment location for Barnet residents.
- Barnet is rich in amenity, with high quality leisure facilities, greenspaces and heritage sites, though access to greenspaces varies across the borough. There are 7 main centres and 8 district centres; Brent Cross is the largest single trip attractor, generating over 12 million trips a year, 4 times higher than the next largest shopping centre in the borough, the Spires.

Implications for the LTTS

- Modal shift measures (encouraging people to use sustainable methods of transport) are more likely to be successful in the denser areas of the borough where good public transport exists. 2.1
- The transport network within the borough is vital for Barnet's employees, customers and residents. Radial links to central London are also vital for Barnet's residents.
- Transport should be sensitive to the region's amenity environment. It should enable residents and visitors to reach leisure facilities, greenspaces and historic sites of interest, whilst ensuring transport infrastructure does not damage or diminish them through noise or pollution.

Housing

Density

Housing and population density are key for transport planning: the denser an area, the more viable mass transit becomes. The average population density for Outer London is 4,291 people per square kilometre; for Inner London, this is 11,352 people per square kilometre. As shown in Figure 2.3, wards such as Colindale and Burnt Oak have

²⁴ Office for National Statistics (2019) Median house prices for administrative geographies
<https://www.ons.gov.uk/peoplepopulationandcommunity/housing/datasets/medianhousepriceforationalandsubnationalgeographiesquarterlyrollingyearhpsdataset09>

similar population densities to the Inner London average, whereas wards such as Totteridge and High Barnet have low population densities, even in comparison to the Outer London average. This indicates that Inner London transport solutions, with far lower reliance on private transport, may be appropriate in many of Barnet's wards.

Figure 2.3: Cartogram of population density in Barnet by ward²⁴

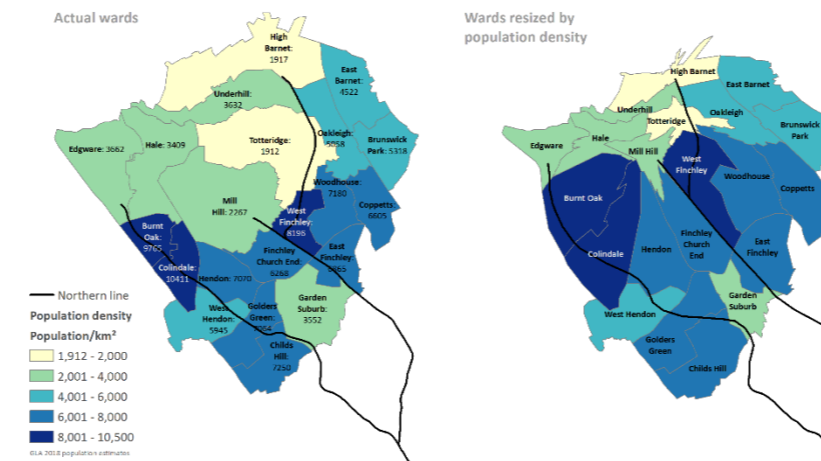
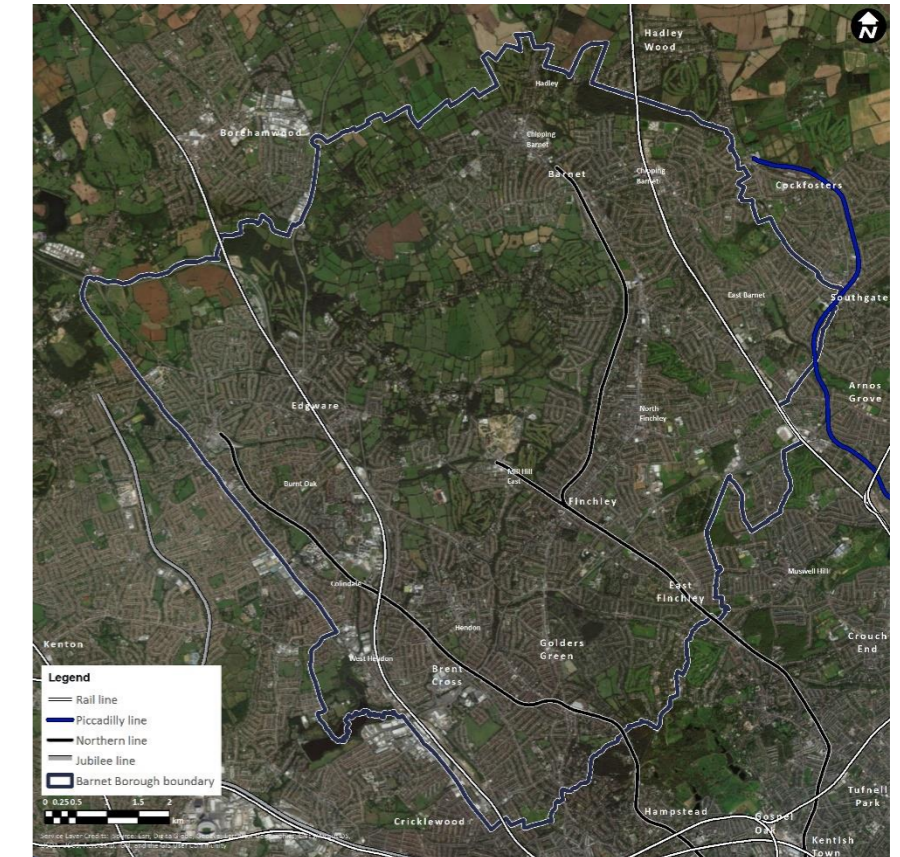


Figure 2.3 also demonstrates the importance of transport in attracting residents and unlocking land for development: the most populous wards are those with direct access to the Northern Line. Cockfosters, Arnos Grove and Southgate on the Piccadilly line also impact development in the east of the borough.

Figure 2.4 shows the green space in the centre of the borough, compared to the dense development along the Edgware branch and medium-dense development along the High Barnet branch of the Northern Line.

²⁵ Office for National Statistics (2018) Ratio of house price to workplace-based earning (lower quartile and median), 1997 to 2017
<https://www.ons.gov.uk/peoplepopulationandcommunity/housing/datasets/ratioofhousepricetoworkplacebasedearningslowerquartileandmedian>

Figure 2.4: Aerial view of Barnet



Affordability

Good transport links enable denser development, increasing the housing supply. Figure 2.5 shows the ratio of house price to the median wage in Barnet and neighbouring North London boroughs. The ratio has been steadily increasing, indicating house prices rising faster than wages are: the median house price in Barnet rose 8% in the year ending March 2018 and has risen 79% in the last decade²⁵. Although we recognise that this may now be moderating with the median house prices in Barnet decreasing since March 2018.²⁶

Of the comparable boroughs, Barnet is approximately level with Brent and Harrow, however it is far higher than London as a whole. The planning system permits denser levels of development, and therefore

²⁶ Office for National Statistics (2019) Median house prices for administrative geographies
<https://www.ons.gov.uk/peoplepopulationandcommunity/housing/datasets/medianhousepriceforationalandsubnationalgeographiesquarterlyrollingyearhpsdataset09>

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more housing supply, if development sites have higher public transport accessibility. This means improving transport links and therefore improving Public Transport Accessibility Levels (PTAL) are a key method of unlocking viable development sites, and potentially providing new, affordable homes.

Figure 2.6 shows median house prices in the borough by ward, with Garden Suburb having the highest median price and Burnt Oak the lowest.

Figure 2.5: House price to median wage ratio in Barnet and neighbouring boroughs

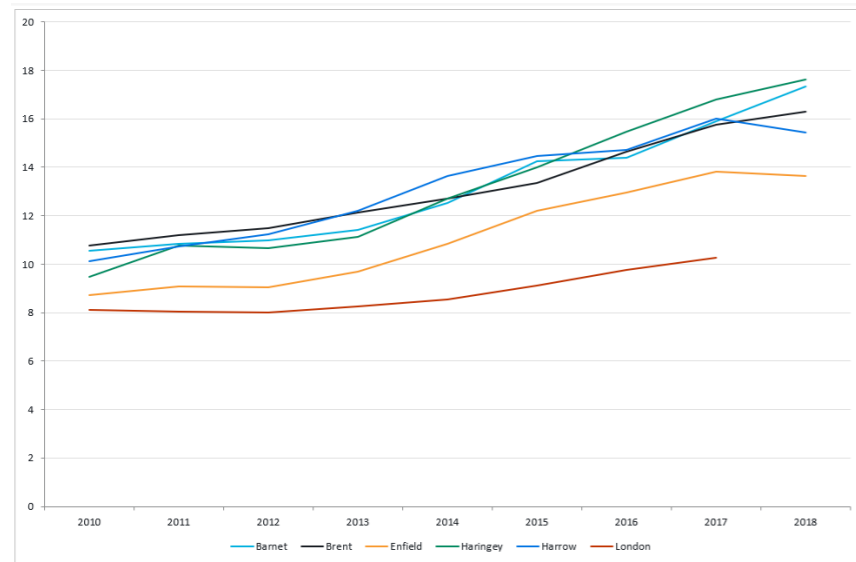
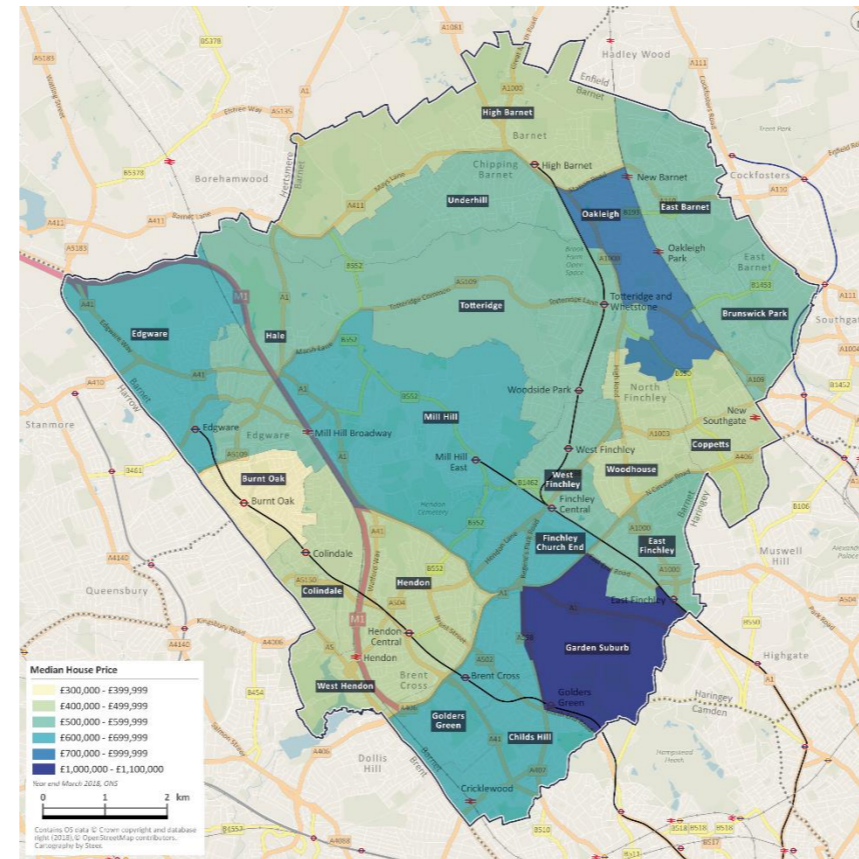


Figure 2.6: Median house prices in Barnet by ward (2018)



Economy and commuting

Sectors

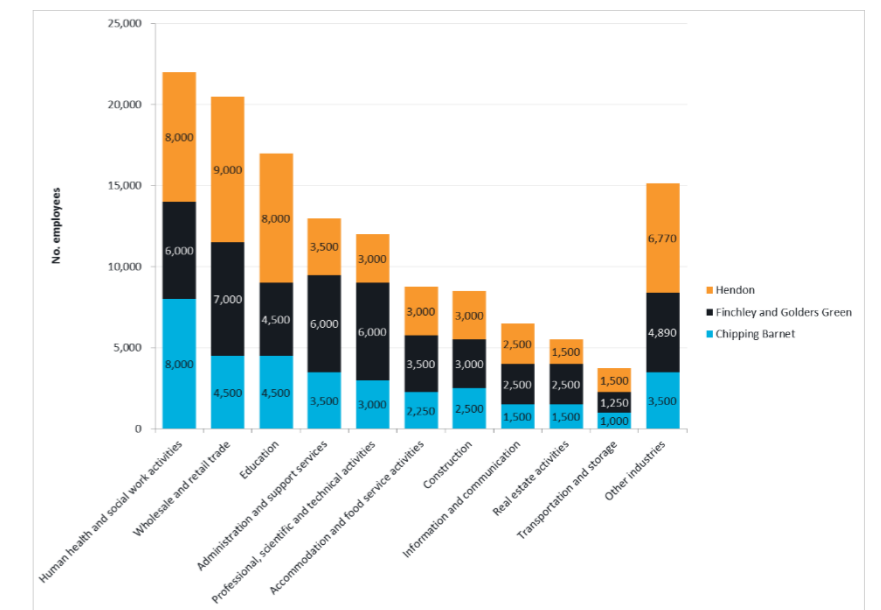
Transport plays a key role in the success of local businesses, providing access to employees, goods and markets. As of 2015, there were 26,190 active businesses operating in Barnet, 10% of all active businesses in Outer London and 5% across London as a whole.²⁷ Table 2.1 compares Barnet to its neighbours, showing more businesses per capita in Barnet.

Table 2.1: Comparison of active businesses with neighbouring boroughs

Borough	% of the population of London	% of active businesses of London
Barnet	4.4	4.8
Brent	3.8	2.9
Harrow	2.9	2.8
Haringey	3.1	2.3

The types of employment and businesses affect the transport requirements and strain placed on the network. As shown in Figure 2.7, health and social work, wholesale and retail trade and education are the largest employers across Barnet's three parliamentary constituencies, accounting for 45% of all jobs in the borough. None of these are transport intensive sectors, such as construction and transportation and storage.

Figure 2.7: Number of employees in each constituency by industry²⁸



Education and skills

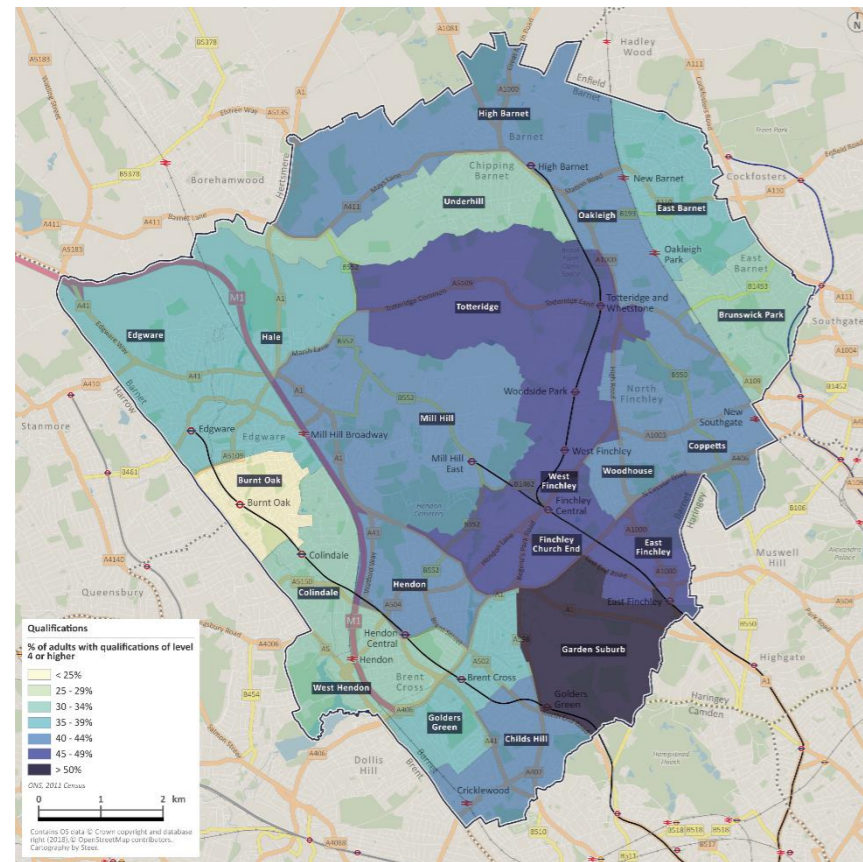
Education and skills indicate the types of jobs that people are qualified for. Where there is a discrepancy in the skill levels of the population and jobs available, people often commute to find jobs more suited to their level of education.

²⁷ Greater London Authority (2018) Borough Profiles <https://data.london.gov.uk/dataset/london-borough-profiles>

²⁸ Office for National Statistics (2017) Business Register and Employment Survey, Steer Analysis

Figure 2.8 shows the qualifications and skills in the different wards of Barnet, whilst Figure 2.9 shows the qualifications and skills for the Northern London boroughs.

Figure 2.8: Qualification level by ward²⁹



As shown in Figure 2.8 the qualification levels throughout the borough are varied, with Burnt Oak having the lowest percentage of adults with qualifications of Level 4 or higher, and Garden Suburb having the highest.

²⁹ Office for National Statistics (2011) Census, Steer Analysis

³⁰ Office for National Statistics (2011) Census, Steer Analysis

Figure 2.9: Qualifications by borough³⁰

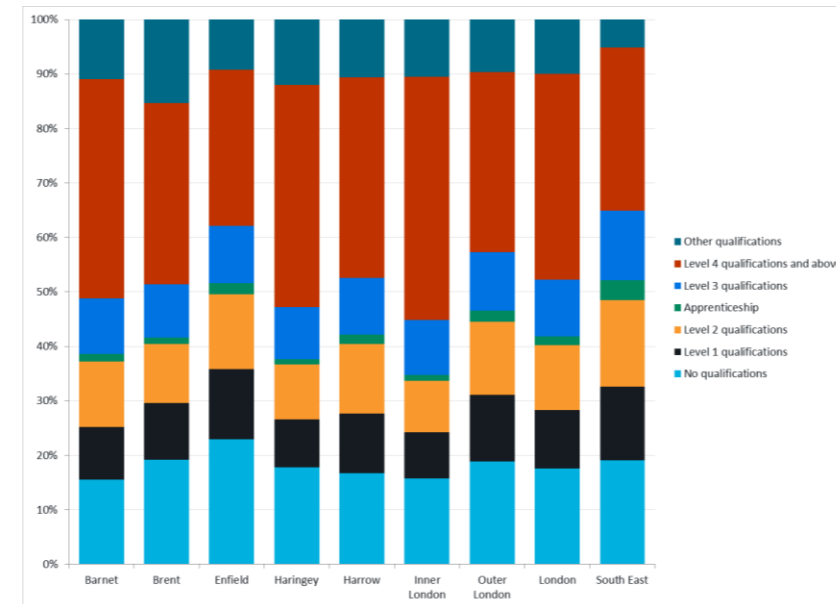


Figure 2.9 shows that Barnet is one of the most educationally qualified borough of its immediate outer London neighbours. 40% of Barnet residents have Level 4 qualifications or higher, compared to 33% in Brent, 29% in Enfield, 41% in Haringey and 37% in Harrow. Barnet also has the lowest proportion of people without any qualifications in all of London at 16%. This compares to 19%, 23%, 19% and 17% in Brent, Enfield, Haringey and Harrow respectively.

In 2018, 95.5% of pupils in Barnet attended a ‘good’ or ‘outstanding’ school according to Ofsted ratings³¹ and 67% of children received 5 or more A*-C grades at GCSE.³²

Commuting

40% of jobs in Barnet are performed by Barnet residents. The surrounding local authorities of Harrow, Brent, Enfield, Hertsmere and Haringey account for 4-8% of Barnet’s employees each; no other local authority provides over 2.5%³³. These figures highlight that orbital, local transport links within Barnet and to its neighbouring local authorities are vital for Barnet’s workforce and therefore its economy, as shown in Figure 2.10. More information on travel time catchments is included in the appendix.

³¹ Barnet Council (undated) <https://www.barnet.gov.uk/citizen-home/schools-and-education.html>

Figure 2.10: Place of residence of people who work in Barnet

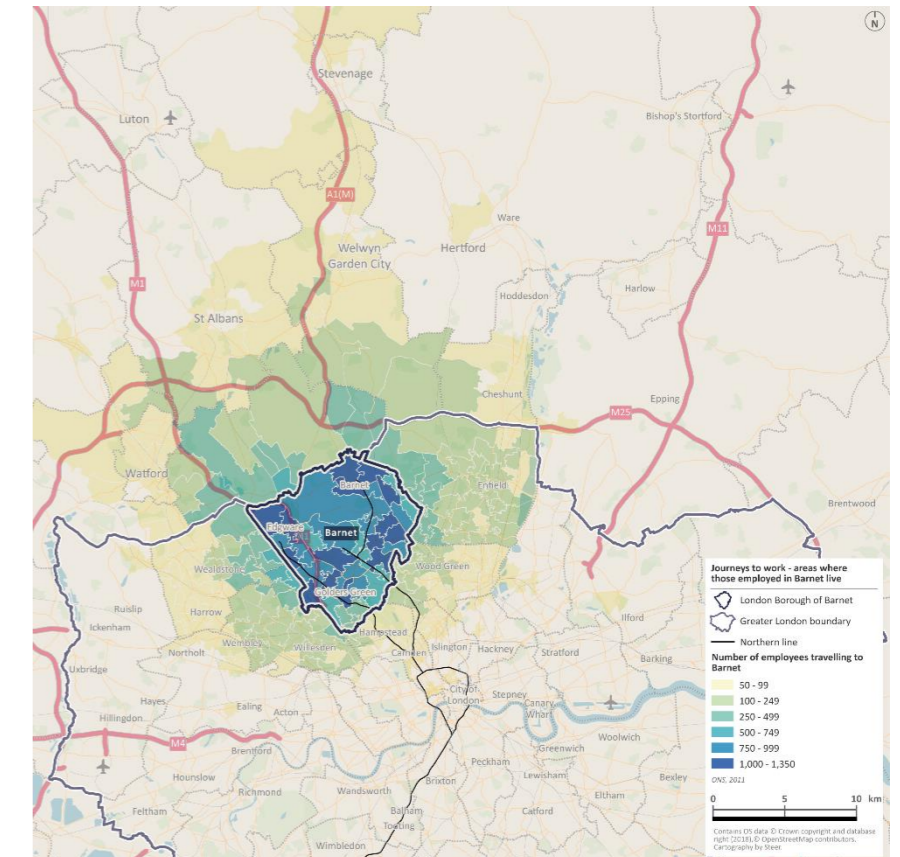
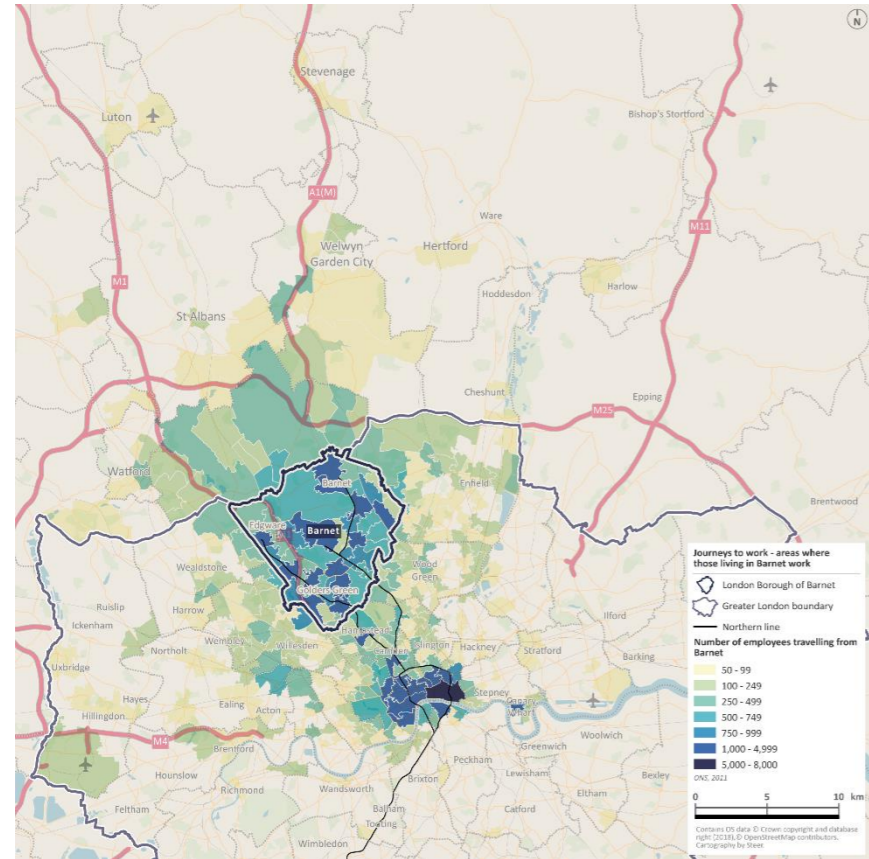


Figure 2.11 shows that radial connections into London are vital for Barnet’s residents, as their centres of employment are largely in Central London: the 2011 Census showed more Barnet residents worked in Westminster, the City and Camden than in Barnet. The Northern Line, which runs through each of these three local authorities, is therefore extremely important for commuters, as well as the Thameslink and Great Northern services and the Piccadilly Line which runs close to the borough boundary.

³² Greater London Authority (2019) <https://data.london.gov.uk/dataset/gcse-results-by-borough>, Steer Analysis

³³ Office for National Statistics (2011) Census, Steer Analysis

Figure 2.11: Place of work of Barnet residents



Education

Over 92% of primary school children resident in Barnet attend schools within the borough, with only 8% of children travelling outside of the borough to attend primary school.³⁴ 76.6% of secondary school children in Barnet attend a school within the borough, and 21.7% of children attend schools within Barnet are resident in another London borough.³⁵ Travel to school, particularly for secondary school children is more dependent on orbital routes, rather than radial, to travel between neighbouring boroughs.

The Council promotes sustainable methods of travelling to school and encourages schools to develop a School Travel Plan (STP). The TfL Sustainable Travel: Active, Responsible, Safe (STARS) accreditation scheme aims to inspire school children and parents to travel

³⁴ Greater London Authority (2013) Cross Border mobility of primary school age children <https://data.london.gov.uk/dataset/cross-border-mobility-primary-school-age-children-london>

³⁵ Ibid.

sustainably. Of the 173 schools in Barnet, 63 are not engaged with the TfL STARS initiative in any way.³⁶

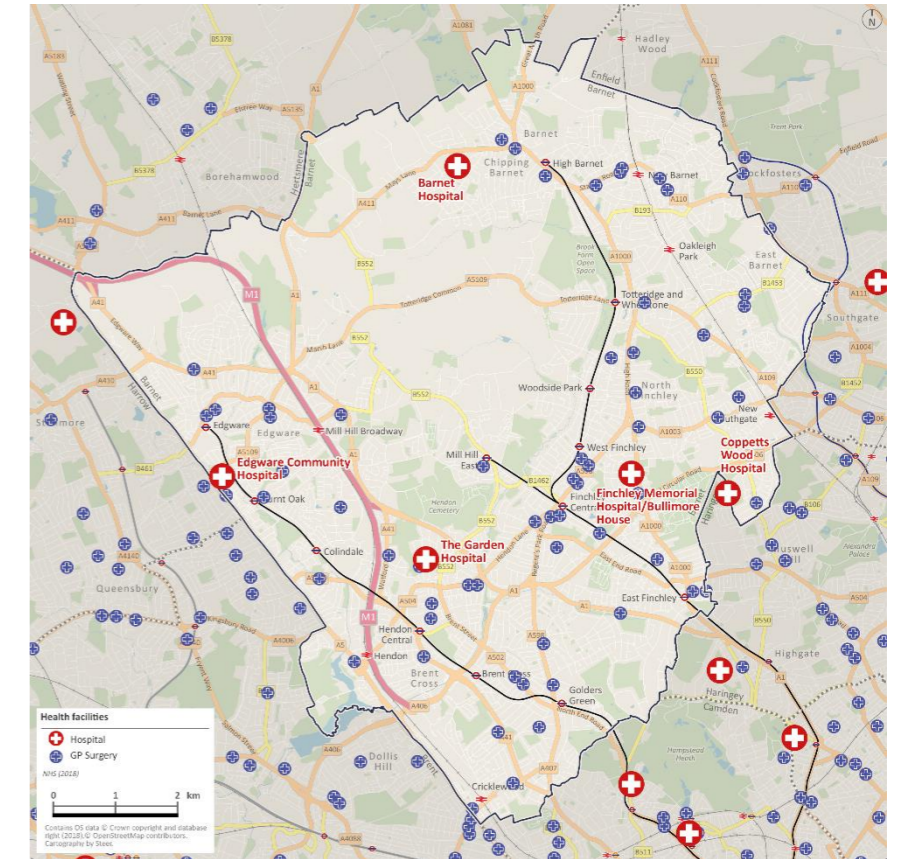
Barnet has two colleges for pupils aged 16-19, Woodhouse College in North Finchley and Barnet and Southgate College, one of the largest colleges in North London. Barnet and Southgate College has five campuses and over 13,000 students, with three campuses located in Barnet.

Middlesex University, with 18,000 students and close to 2,000 staff, is headquartered in Hendon.

Health

Figure 2.12 displays key health centres within Barnet and close to the borough’s boundary. Barnet Hospital is the only district general hospital; the Garden Hospital is a private hospital and Edgware Community Hospital and Finchley Memorial Hospital are both Community hospitals, without Accident and Emergency Departments. The Royal Free Hospital located the London Borough of Camden, just beyond its border with Barnet is frequently used by Barnet’s residents. There are limited parking facilities and staff, patients and visitors are recommended to use public transport instead of cars.

Figure 2.12: Key health centres in Barnet



2.5

2.6

Barnet Hospital is part of the Royal Free London trust, which in 2015/16 received more than 1.6 million patients per year and employs 10,000 staff across three sites³⁷.

Journey Time Comparison

Table 2.2 compares maximum journey times from homes (the centre of Lower Super Output Areas³⁸) to their nearest key services by the modes listed (at average speed). Public transport journey time includes walking. Maps are presented in Appendix A. The LTTs should seek to improve public transport journey times without unduly prejudicing car journey times. The short cycle journey times show that it is possible to cycle many of the journeys in Barnet and that it is not the distance or journey time that is preventing Barnet residents’ cycling.

³⁸ Lower layer Super Output Areas (LSOAs) are geographical areas designated by the Office for National Statistics. They contain between 1,000 and 3,000 inhabitants and between 400 and 1200 households. Barnet is divided into 211 LSOAs.

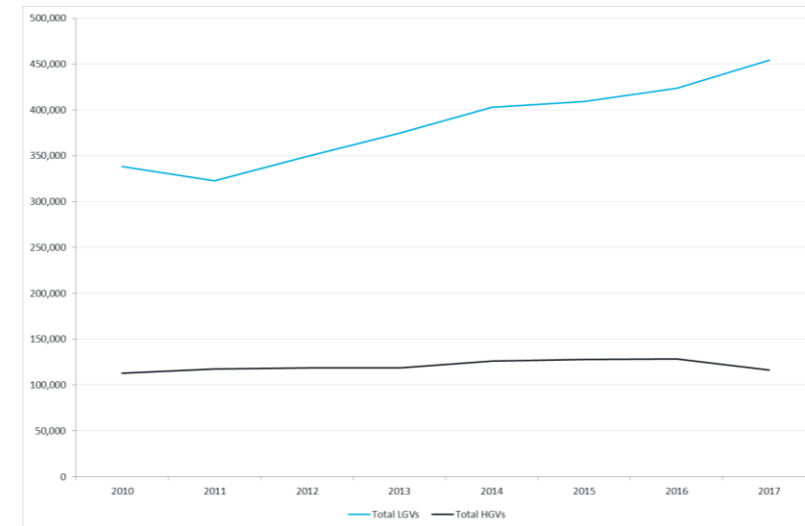
Table 2.2: Journey time comparison to key services³⁹

Key destinations	Max. Public Transport Journey (mins)	Max. Cycle Journey (mins)	Max. Car Journey (mins)
Employment centre with over 100 jobs	21	12	10
Food store	20	13	11
GP surgery	19	14	13
Hospitals	42	34	25
Primary schools	20	12	10
Secondary schools	25	17	13
Town Centres	21	15	14

Freight

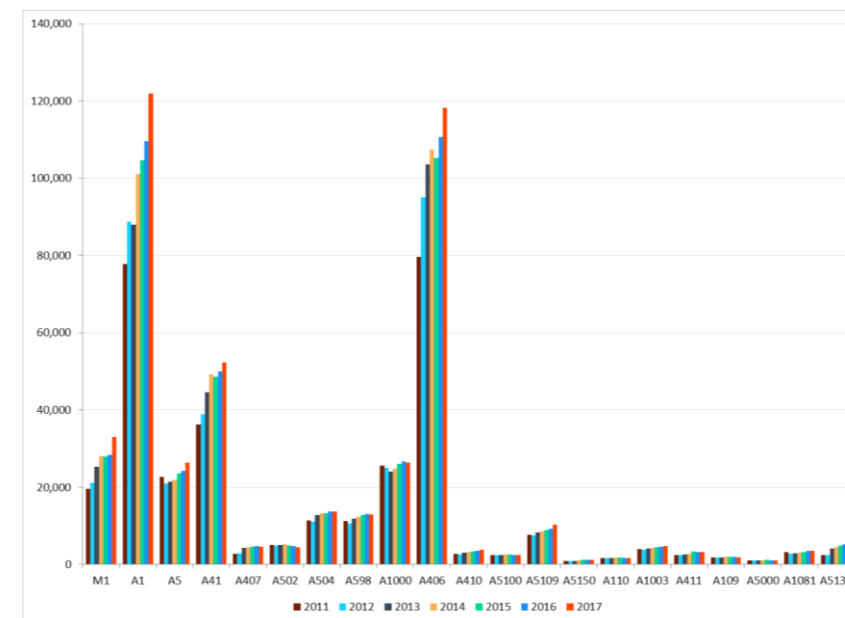
Freight accounts for a large proportion of traffic on London’s roads; light goods vehicles (LGVs) and heavy goods vehicles (HGVs) account for approximately 20% of traffic on London’s roads and 19% of traffic on Barnet’s roads.⁴⁰ The number of freight trips has been growing since the 1970s and whilst HGV trips have stayed relatively constant, LGV trips have increased since 2011 with the advent of home deliveries. (As shown in Figure 2.13).

Figure 2.13: Average annual daily flow counts on Barnet’s roads of HGVs and LGVs⁴¹



The vast majority of freight trips on Barnet’s roads use the A406 and the A1, as shown on Figure 2.14.

Figure 2.14: Average annual daily flows of LGVs and HGVs on Barnet’s roads⁴²



³⁹ Department for Transport (2016) Table JTS0501-0508 <https://www.gov.uk/government/statistical-data-sets/journey-time-statistics-data-tables-jts#journey-times-to-key-services-by-local-authority-jts05>

⁴⁰ Transport for London (2018) Mayor’s Transport Strategy p79; Department for Transport (2018) Average Annual Daily Flow, Steer Analysis

⁴¹ Department for Transport (2018) Average Annual Daily Flow

⁴² Department for Transport (2018) Barnet Traffic Profile for 2000 to 2017

⁴³ Hammerson (undated) Brent Cross profile <https://www.hammerson.com/property/shopping-centres/brent-cross/>

⁴⁴ Brent Cross Cricklewood (2014) Transport Matrix and Transport Report Schedule

Leisure

By far the largest leisure trip attraction in Barnet is the Brent Cross Shopping Centre. 12.5⁴³ million people a year visit its 120 shops. Built in 1976, the Centre has 8,000 free car parking spaces. The 2014 planning permitted application, which sought an extension of Brent Cross, planned for a shift in mode shares, stating that during phase one of the extension car mode shares would be 65% of all trips, but by the final phase, car mode shares would drop to 34% of all trips⁴⁴. In this scenario bus and rail mode shares were expected to increase to compensate for the reduction in vehicle trips. The current Public Transport Accessibility Level (PTAL) for Brent Cross Shopping Centre and Brent Cross Station is 5/6a, indicating it is easy to access by public transport.⁴⁵

In contrast, the Spires shopping centre in Chipping Barnet has a PTAL rating of 3. Despite being less accessible by public transport than Brent Cross, customers have to pay for parking: the vehicle trip rate is

⁴⁵ Public Transport Accessibility Level (PTAL) is a Transport for London metric which rates locations by their distance from frequent public transport services. Scores range from 0 to 6b, with 0 indicating very poor access to public transport, and 6b indicating excellent access to public transport. It is accessed via <https://tfl.gov.uk/info-for/urban-planning-and-construction/planning-with-webcat/webcat>

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

estimated at approximately 8% of the visitor trip rate, meaning the centre’s 3.2 million annual visitors generate 25,000 car trips a year.^{46 47}

The borough has seven main town centres and eight district centres.⁴⁸ The majority of these retail centres align with the branches of the Northern Line or Thameslink. Eleven of the centres have a PTAL of 4 or above.

Transport in these locations are important. For example, in 2018, the Council published a supplementary planning document (SPD) focussed on the revitalisation of North Finchley town centre, one of the aims of which is to create a plan that maximises existing and future movement opportunities, including links to nearby stations, the bus network and pedestrian and cycle connections.

Table 2.3 shows the public transport stations and stops that are located within a 400m radius of the retail centres.

Table 2.3: Total number of stops/stations located within 400m from the retail centre

Retail Centre	Bus stops	Underground Stations	National Rail Stations	Public Transport Accessibility Level (PTAL)
Edgware	31	1	0	6a
Brent Street	19	0	0	3
Chipping Barnet	29	1	0	5
Church End, Finchley	26	2	0	4
East Finchley	20	1	0	4
Golders Green	30	1	0	6a
Hendon central	21	1	0	5
Mill Hill	25	0	1	4
New Barnet	12	0	1	4
North Finchley	27	0	0	4
Temple Fortune	16	0	0	2
Whetstone	22	1	0	4
Colindale/The Hyde	15	0	0	2
Cricklewood	37	0	1	5
Burnt Oak	33	1	0	4

According to the 2017 report on Town Centres Floorspace Needs, Barnet’s town districts have an average vacancy rate of 6.8%⁴⁹, slightly higher than the Outer London average of 6%.⁵⁰ Ensuring customers can reach shops easily, reliably and conveniently can boost sales and improve the retail vacancy rate.

Saracens Rugby Club plays its home matches at Cophall Park in Barnet. Opened with a capacity of 10,000 following renovation in 2013, it was expanded in 2017 to 15,000. However, marquee home games are played outside the borough at Twickenham in south west London.

During home matches, a wide controlled parking zone is in operation and the club provides free shuttle buses from Mill Hill East and Edgware underground stations, as well as club coach services. Off-street parking is provided at a number of local schools. These measures, and the proximity of Cophall Park to the M1 and A1 mean the impact on the local area is minimised.

The Royal Air Force (RAF) Museum is located east of the M1 near the Colindale police station and receives 345,000 visitors a year.

Greenspaces

Defining features of Barnet are the semi-rural centre and prevalence of parks. Barnet has a great collection of parks and open spaces and these are an important part of what makes Barnet a green and family friendly borough. People who live and work in Barnet enjoy access to formal parks and gardens, wild landscapes, extensive areas of greenbelt and leafy river valleys. Barnet’s parks are places where people can take part in formal sport, visit a park café, take the kids to the playground or just walk the dog.⁵¹

However, greenspaces are not evenly distributed and the LTTs should examine how access to these areas can be improved for all residents. Although almost 10% of the borough is public open space⁵², only 34% of households in the borough are within a 400m walk of open space.

Policy 8 of the MTS aims to protect and enhance the natural environment, stating that any transport schemes should protect green infrastructure where possible, and re-create it if not possible. The Barnet Parks and Open Spaces Strategy⁵³ acknowledges the economic, social and environmental benefits of greenspaces, and states that a number of new policies will be developed, including:

- Establishing new green links to connect parks together
- Using parks to limit the impact of climate change
- Using parks to promote healthy lifestyles and wellbeing
- Making parks more accessible for schools

⁵² “Greenspace” includes parks, playgrounds, sports sites, natural and semi-natural greenspaces and other miscellaneous sites but not schools, private sports clubs and cemeteries, SLOAP (sites left over after planning), verges, private gardens and private areas of Green Belt and Metropolitan Open Land.

⁵³ Barnet Council (undated) Parks and Open Spaces, Our Strategy for Barnet 2016-2026.

⁴⁶ The Spires (undated) About the Spires <https://www.thespiresbarnet.co.uk/about-us/>

⁴⁷ Campbell Reith (2016) The Spires Shopping Centre, Barnet: Proposed MSU and Restaurants

⁴⁹ London Borough of Barnet (2017) Town Centres Floorspace Needs Assessment https://www.barnet.gov.uk/sites/default/files/tcfna_report_dec_17.pdf

⁵⁰ Greater London Authority (2018) 2017 London Town Centre Health Check <https://data.london.gov.uk/dataset/2013-london-town-centre-health-check-analysis-report>

⁵¹ Barnet Council (2016) Parks and Open Spaces: Our Strategy for Barnet 2016-2026

2.7 Figure 2.15 shows the location of the greenspaces in the borough.

Figure 2.15: Greenspaces in the borough



How

Summary

- Approximately a third of Barnet residents do not have access to a car; this figure is much higher in the West of the borough, peaking at over 40% in Childs Hill and Burnt Oak. Car ownership levels have fallen consistently since 2008. Despite this, of all London boroughs Barnet has the second highest car ownership levels per household and 42% of journeys to work made by Barnet residents use car as the main mode. In the northern and more rural wards over 50% of journeys to work are made by car. A quarter of peak hour trips on Barnet's roads are made by through traffic, contributing to the A406 from Finchley Road to Colney Hatch Lane being the fifth worst road in the UK for traffic congestion.
- Although decreasing, Barnet's roads still see more road traffic casualties than neighbouring boroughs. 20% of these casualties within the borough occur on roads not under the Council's authority, such as the M1, A1 and A406.
- Air quality is particularly bad in the densely populated west of the borough and along the North Circular. Modelled data relating to 2016 (released by TfL in July 2019) shows that twelve schools in Barnet breached legal air quality limits.⁵⁴ Barnet also has one of the largest carbon footprints per head of population in London.
- Of the 13 Underground stations in Barnet, 5 have step-free access from street to train and 2 from street to platform. The ten most popular destinations for Underground trips originating in Barnet are all in Central London, reflecting the Underground's primary function for Barnet residents as a method of commuting.
- Despite excellent Thameslink and Great Northern train services to central London, only in four wards do 10% residents use the rail network to get to work, with the highest uptake of rail travel around Mill Hill Broadway (Thameslink), New Southgate, Oakleigh Park and New Barnet (Great Northern).
- 62% of Barnet residents live within a 1200m (approx. 15 minute) walk of a rail or underground station.
- 97% of Barnet residents live within a five-minute walk of a bus stop and 91% of bus stops are accessible. Despite bus patronage falling across London, routes that serve Barnet have seen a 9% increase since 2010. Route 13, 112, 113 and 186 have seen patronage increase by over 40%. Buses average 10.7 miles an hour in the

Borough, higher than the Outer London average of 10.4 and the Inner London average of 8.1 mph.⁵⁵

- Although 66% of all journeys are less than five miles, cycling accounts for under 1% of all trips. Every resident of Barnet lives within a 20-minute cycle of a train or underground station.

Implications for the LTTS

- Road casualty figures, air quality and congestion in the borough can all benefit from modal shift.
- Northern Line access to central London is vital for commuting purposes. Barnet also has excellent yet used by few of Barnet's residents Great Northern and Thameslink services.
- Barriers to walking and cycling, which are not distance-related, need to be addressed.

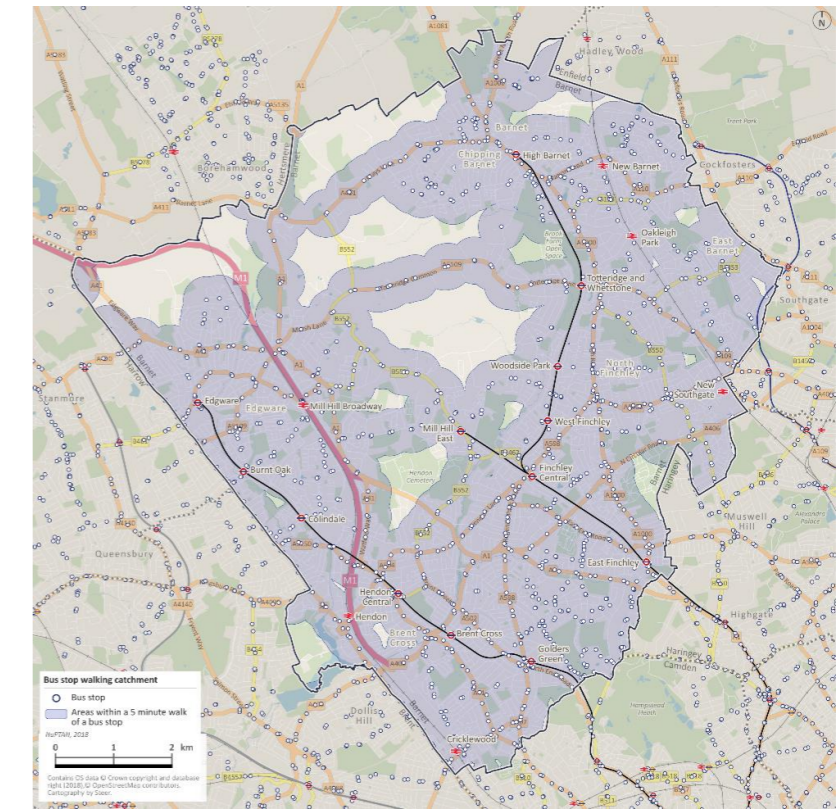
Multi-modal

Multi-modal travel refers to using two or more methods of transport for one trip, such as walking or cycling to a train station. Figure 2.16, Figure 2.17 and Figure 2.18 all convey information on the current opportunities for multi-modal transport in Barnet.

Figure 2.16 shows the areas in the borough which are within a 5-minute walk of a bus stop. This figure shows that the majority of areas in the borough (excluding greenspaces) are located within a five-minute walk of a bus stop, including 97% of residents' homes. However, this masks variation in the quality of the bus service at each bus stop, such as frequency, reliability and destinations served.

Figure 2.17 indicates the areas in the borough which are within walking distance of train and underground stations. Although covering far less of the geographic area of Barnet, 62% of Barnet's residents live within 1200m of a rail or underground station, which is approximately a 15-minute walk.

Figure 2.16: Areas within 5-minute walk of bus stops



⁵⁴ Greater London Authority (2019) 2016 London Atmospheric Emissions Inventory (supplied by the GLA)

⁵⁵ Transport for London (2019) Bus speeds reports <https://tfl.gov.uk/cdn/static/cms/documents/borough-all-bus-speeds-to-p05-2019.xlsx>

Figure 2.17: Areas within walking distance of train and underground stations

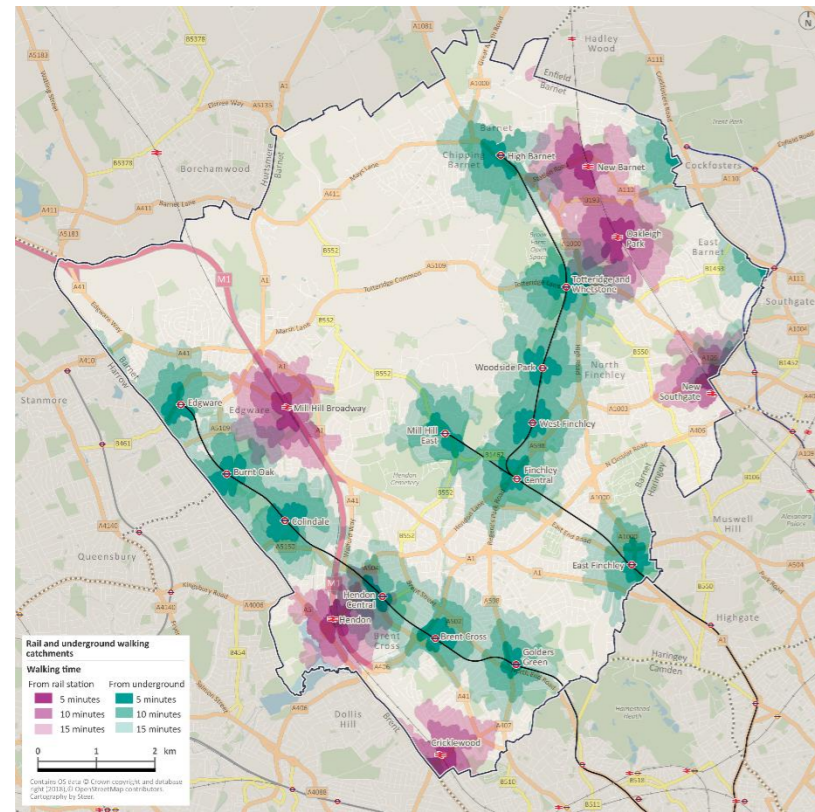


Figure 2.18: Areas within cycle catchments of underground and rail stations

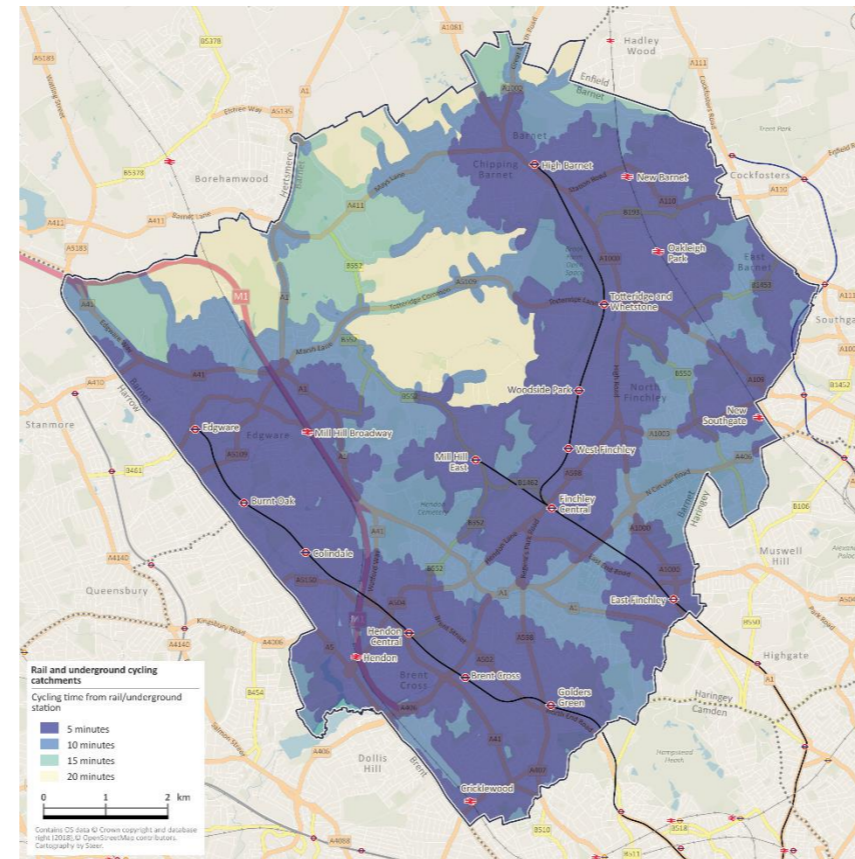
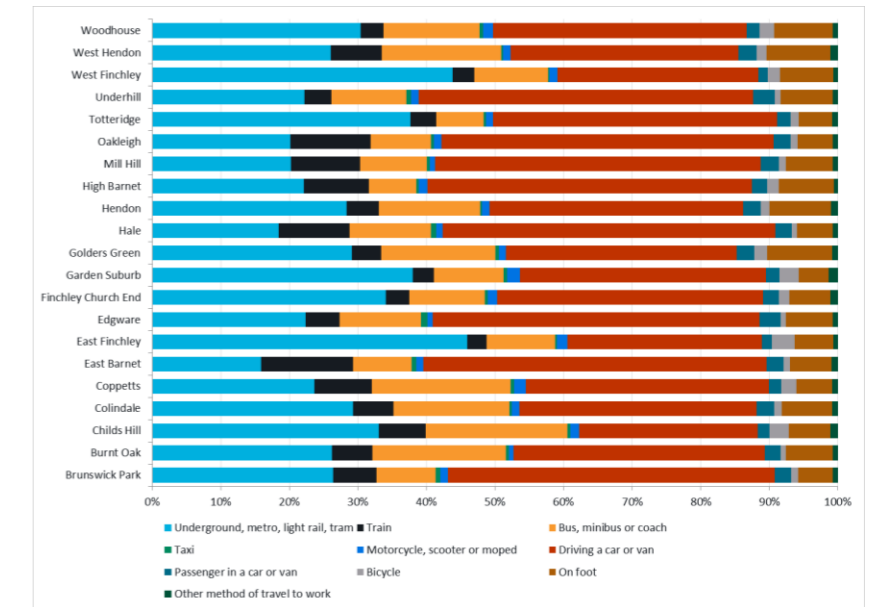


Figure 2.19: Travel to work mode share in Barnet wards (2011 Census)



The private vehicle mode share for all journeys in Barnet is 42%. This places Barnet in the middle of its neighbouring boroughs, as shown in Table 2.4.

Table 2.4: Vehicle mode share by borough⁵⁷

Borough	Private vehicle Mode Share
Harrow	47%
Enfield	47%
Barnet	42%
Brent	31%
Haringey	21%

Bus mode shares are higher in Haringey and Brent when compared to Barnet, and cycle mode share is considerably higher in Haringey (8%) when compared with Barnet (2%)⁵⁸.

Walking

Sport England figures from 2014/15 indicate that only 16% of the population in Barnet walk for at least 30 minutes once a week, figure that has decreased since 2012/13. Boroughs such as Harrow and Brent have similar levels of walking activity⁵⁹.

- 2.8 The cycle catchments to underground and rail stations are shown in Figure 2.18. This shows that that every part of the borough is within a 20-minute cycle catchment of an underground and rail station. This provides an excellent opportunity for multi-modal transport via bicycle, but would be dependent on both cycle infrastructure on the roads and cycle facilities (such as secure parking) at the stations. More information on cycling in the borough is below.
- 2.9 As shown in Figure 2.19, the largest mode share for travel to work in Barnet is driving a car or van. In some wards, such as West Finchley and East Finchley, travel by underground, metro, light rail or tram is the most common method of travel to work.⁵⁶ There is also variation amongst the wards. For example, travel by bus in Child's Hill makes up approximately 20.7% of all travel to work journeys, and in High Barnet it only makes up 6.9%. The proportion of people cycling as a mode of travelling to work in Barnet is generally very low.

⁵⁶ Underground, metro, light rail or tram is the Census classification. In this context, it means Underground.

⁵⁷ Office for National Statistics (2018) QS701EW - Method of travel to work <https://www.nomisweb.co.uk/census/2011/qs701ew>

⁵⁸ Ibid.

⁵⁹ Sport England (2018) Department for Transport Statistics, Walking and cycling Statistics. <http://www.dft.gov.uk/statistics/series/walking-and-cycling/>

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

TfL Walking Action Plan (2018) found that 21% of Londoners believed that too much vehicle traffic is a barrier to walking and 14% reported that the streets are not pedestrian-friendly because of the speed of traffic. 24% of respondents said they did not have time to walk. These barriers to walking can be addressed through urban planning: mixed-use developments ensure amenities are a short walk away, and improve the pedestrian environment through curbing the amount, speed and proximity of traffic.

Crime levels and the perception of safety can impact the number of people choosing to walk. In Barnet, 96% residents feel safe during day, 76% at night. These high percentages mean perceptions of safety are unlikely to be the reason for low walking rates amongst Barnet residents.⁶⁰

Barnet provides 'Active trails' which are pre-plotted routes of 1k, 2.5k or 5k which can be walked, run or cycled at your own pace - all for free. Active trails supports the Mayor of Barnet's Golden Kilometre initiative which was launched in 2015. The Golden Kilometre aims to encourage primary school children to exercise and inspire young people to lead healthier and more active lifestyles⁶¹. An example of Oakhill Park walking route is shown in Figure 2.20.⁶² Barnet currently offers daily instructor-led health walks, for a nominal fee of £2.80⁶³.

In the north of the Borough, the residents can enjoy the London Loop – a signposted walk encircling London. Section 16 of the walk, which mostly runs through the Barnet, linking Elstree and Cockfosters, is the longest part of the walk at over 16 kilometres long.⁶⁴

Figure 2.20: Oak Hill Park, an example of Council information on walking routes



2.10 In addition, the Dollis Valley Greenwalk offers a 10 mile walk through the heart of the borough, providing a quiet environment and connecting to key greenspaces throughout Barnet.

Cycling

2.11 66% of all journeys in Barnet are less than five miles, but the cycle mode share in Barnet makes up only 1% of all trips.⁶⁵ This is significantly lower than London average of 2.7% journeys.⁶⁶ Cycling together with walking and public transport should comprise 70% of all

Barnet's trips to meet MTS target of 70%. For journeys to work, 37.9% of journeys to work that are under 2km are driven and only 3.5% of journeys to work under 5km are cycled.⁶⁷ These distances indicate that there are a large proportion of trips that could be cycled that are currently driven. This is explored further in Chapter 3.

Within London, the most frequently cited deterrents to cycling include fear of collisions, not feeling confident as a cyclist, not identifying as a cyclist and a lack of cycling infrastructure.⁶⁸ These factors can be addressed through the LTTs, through a mix of behaviour change and infrastructure measures. Other factors, such as Barnet's topography, are harder to change but the advent of electric cycles may help to overcome this.

Traffic counts in the borough indicate that the number of cycles on the road is increasing gradually, albeit from a low base. Cycle infrastructure in Barnet is limited. Although there are some shared spaces for pedestrians and cyclists, and signage for cycle routes via quieter residential roads in a few areas and some cycle parking, there are no Cycleway routes that run through the borough.

There is some evidence that these Cycleway routes not only increase the number of cycle trips, but also improve general traffic. Only two weeks after opening, 5% more people per hour across all modes were moving along the Cycleway North-South (Elephant & Castle to Holborn) and East-West (Parliament Square to Tower Hill) corridors. In terms of boosting cycle numbers, as of May 2018 CS North South had seen a 30% increase in cycle trips. Cycleway East-West and former Quietway 1, running from Waterloo to Greenwich, had seen increases over 50%, a distance similar to a trip between Finchley Central and King's Cross.⁶⁹

⁶⁰ Barnet Council (2012) The Local Plan (Core Strategy). p. 23. <https://www.barnet.gov.uk/citizen-home/planning-conservation-and-building-control/planning-policies-and-further-information/Adopted-Local-Plan---Core-Strategy-DPD.html>

⁶¹ Ibid.

⁶² Ibid.

⁶³ Barnet Council (undated) Activity on the Move. Available from: <https://www.barnet.gov.uk/citizen-home/parks-sport-and-leisure/parks->

[and-open-spaces/sport-and-fitness-in-barnet-parks/activity-on-the-move.html](#)

⁶⁴ Transport for London (Undated) London LOOP section 16

⁶⁵ Barnet Council (2016) Cycling in Barnet https://barnet.moderngov.co.uk/documents/s46550/Appendix%20Five_Cycling%20in%20Barnet.pdf

⁶⁶ Department for Transport (2018) Analyses from the National Travel Survey https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674568/analysis-from-the-national-travel-survey.pdf

⁶⁷ Office for National Statistics (2018) QS701EW - Method of travel to work <https://www.nomisweb.co.uk/census/2011/qs701ew>

⁶⁸ Transport for London (2018) Cycling Action Plan. <http://content.tfl.gov.uk/cycling-action-plan.pdf>

⁶⁹ London Assembly (2018) London's Cycling Infrastructure. https://www.london.gov.uk/sites/default/files/londons_cycling_infrastructure.pdf

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

Waltham Forest is an example of an outer London borough that achieved a 28% increase in cycling following the provision of joined up, safe cycle infrastructure.⁷⁰

Despite the lack of cycle infrastructure, Barnet has its own branch of the London Cycling Campaign (BLCC) which offer a variety of leisure cycle rides, as well as allowing members to join the cycling campaign.

The Council has several cycle initiatives:

- Bikeability – Between 2014 – 2019, 11,740 pupils and 2940 adults received cycle training.
- Bike It Plus – This scheme involves intensive work with schools for one to two years by a Sustrans Bike It officer. In 2015/16 this scheme was held in 29 schools, where cycling uptake increased by 12% to around 20% in some cases. Demand for training increased over 50% in 17/18 compared to 14/15.⁷¹
- In the borough, there are 301 cycle stands at 79 locations, most of which are located at transport hubs.

The Council is currently seeking a partner to trial a dockless bike hire scheme in the borough.

Bus

Figure 2.21: Map of bus routes

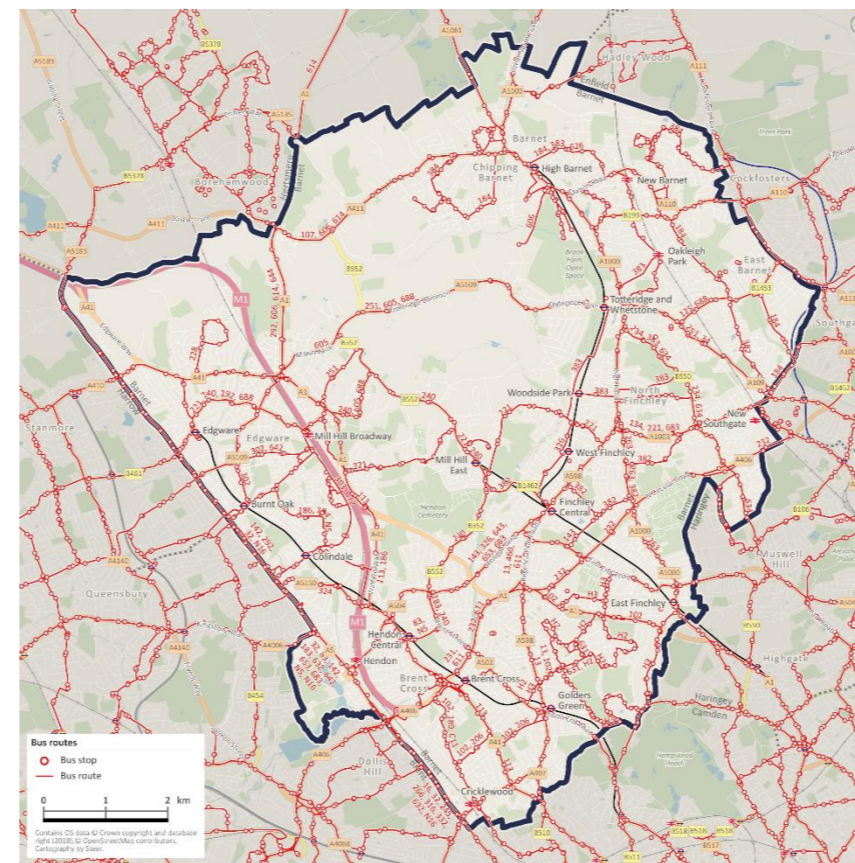


Figure 2.21 depicts the bus connections in Barnet. There are a high number of routes and connections in the south of the borough, whilst the northern half of the borough has fewer bus routes. There are many bus routes connecting to National Rail and Underground stations, representing opportunities for public transport interchange. According to the Council's LIP response, 91% of the bus stops in Barnet are accessible.

Passenger numbers on buses are falling across London, with traffic congestion being a major contributor to this trend.⁷² However for routes that pass through Barnet, patronage has increased 9% since

2010. In particular, routes 13, 112, 113 and 186 have seen an increase in passenger levels of over 40%. Routes 13 and 113 run through the borough and into Central London via Finchley Road; routes 112 and 186 are orbital routes which run from Brent Cross, 112 west to Ealing Broadway via Hangar Lane and 186 to Harrow via Hendon and Edgware. TfL has recognised Outer London's bus usage, stating that more bus capacity is needed in outer London.⁷³

TfL has reported the observed bus speeds in Barnet to be 10.8 miles per hour, this is roughly average for bus speeds in an Outer London borough, and above average for London as a whole (9.6mph). The highest bus speeds in Outer London were observed in Hillingdon (13mph) and the lowest in Brent (9mph). These low speeds in part explain why 9% of the bus routes that serve Barnet are between 5 to 15 minutes late on average, with passengers waiting approximately 20% longer than intended for high frequency routes.⁷⁴

Buses are also the only form of public transport available at night, except at the weekend when the Night Tube is operational. This means the night bus network is particularly important for shift workers. However, there are very few night bus journeys made in outer London; even fewer since the introduction of the night tube.⁷⁵

Currently, as buses are the only major mode for orbital journeys across the borough, the LTTS must consider how bus speeds, reliability and routes can be improved.

Underground

The key piece of transport infrastructure that shapes Barnet is the Northern Line. It determines the key settlement areas, places of work of Barnet residents and access to key services and runs 24 hours on Friday and Saturday nights. The Northern Line is under the authority of TfL, meaning the Council have little control over it. However, the LTTS must consider links to and from the Northern Line stations, and be aware of any planned changes to services, as these changes would affect Barnet residents significantly.

There are 13 London Underground stations in Barnet spread across the Edgware, Mill Hill East and High Barnet branches. Of the 13 stations in

⁷⁰ Waltham Forest Council (undated) Walthamstow Village Review <https://www.enjoywalthamforest.co.uk/wp-content/uploads/2016/09/2017-08-23-WV-report-FINAL.pdf>

⁷¹ Barnet Council (2016) Cycling in Barnet https://barnet.moderngov.co.uk/documents/s46550/Appendix%20Five_Cycling%20in%20Barnet.pdf

⁷² Transport for London (2017) Bus Network Report. https://www.london.gov.uk/sites/default/files/bus_network_report_final.pdf

⁷³ Ibid.

⁷⁴ Transport for London (undated) Bus Service Usage <https://tfl.gov.uk/cdn/static/cms/documents/bus-service-usage.xlsx>

⁷⁵ TfL (2018) Travel in London Report 11 <http://content.tfl.gov.uk/travel-in-london-report-11.pdf>

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

Barnet, five are step-free access from street to train, and two are step-free access from street to platform. Cockfosters and Southgate stations, on the Piccadilly line, also include small areas of Barnet within their catchments and the Jubilee Line is close to the West of the Borough. However, the number of Barnet residents in these catchments is small, so the LTTS will focus on the Northern Line.

As shown in Figure 2.22 and Figure 2.23 the majority of tube journeys are taken for commuting into and out of Central London, with the most popular destinations being the City of London and the West End. Leisure and tourist trips make up the remainder of tube journeys from the borough.

As shown in Figure 2.22 Golders Green and Hendon Central have the highest number of entries and exits, whilst Mill Hill East and West Finchley have the lowest.

Figure 2.22: Number of entries (blue) and exits (red) from Barnet underground stations per day

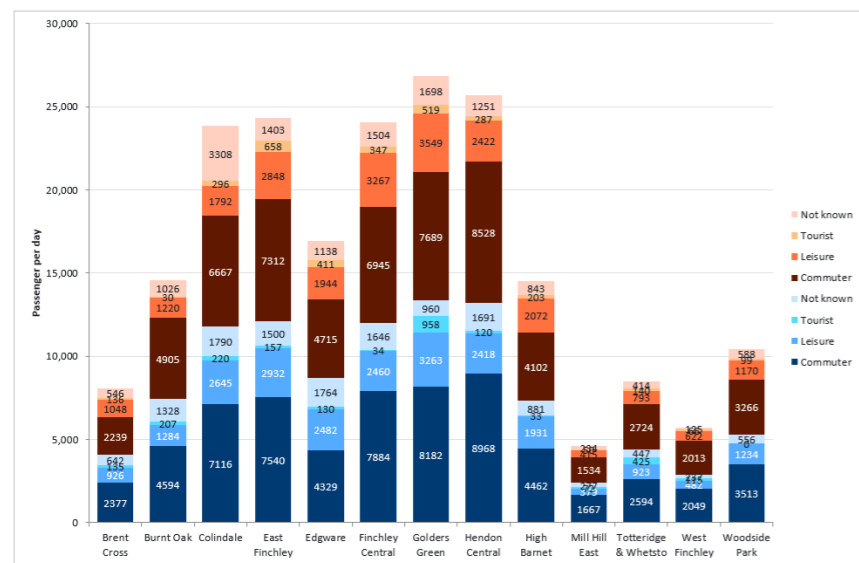
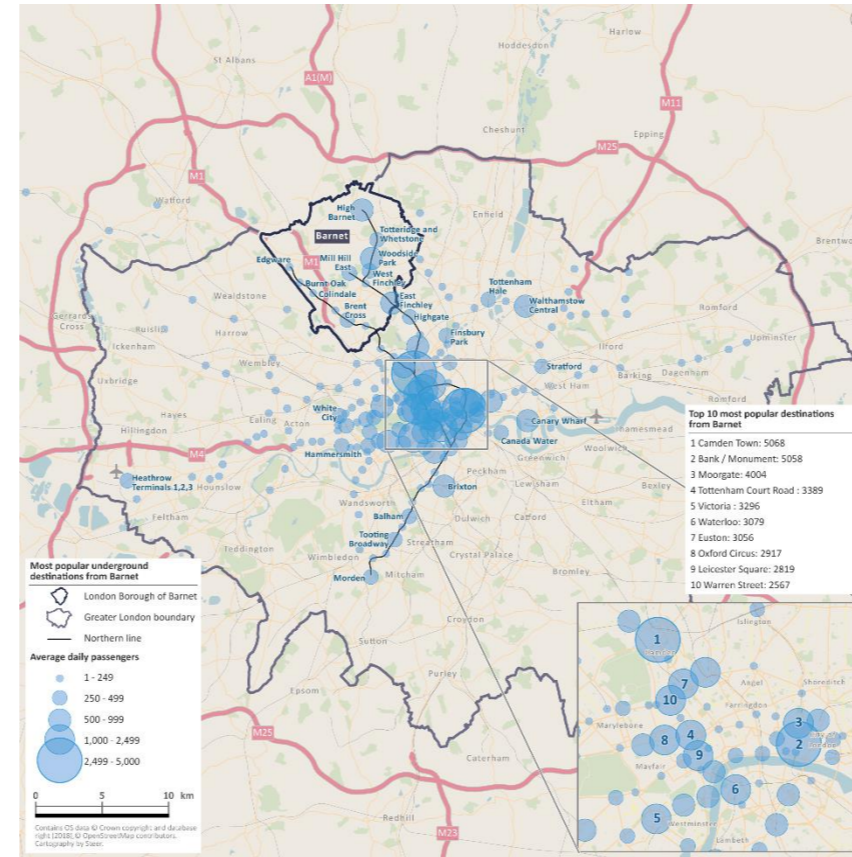


Figure 2.23: Destination of tube journeys originating in Barnet



Rail

Barnet has exceptional radial rail links into London, including the Thameslink and Great Northern services. Despite this, only in four wards do 10% residents use the rail network to get to work. Given these stations provide fast services to the areas of London where many Barnet residents work, their lack of use may indicate that access to these rail stations can be improved. Although the Council have no authority over the services or stations themselves, through the LTTS we can discuss issues and influence rail providers.

2.16 There are three Thameslink stations in Barnet: Cricklewood, Hendon and Mill Hill Broadway. Great Northern and Thameslink run services through New Southgate, New Barnet and Oakleigh Park. None of these stations provide step-free access. All these stations are shown in Figure 2.24.

2.17 As shown in Figure 2.25, passenger entries and exits are considerably higher at Mill Hill Broadway than other rail stations in the borough. In keeping with rail trends across the country, passenger numbers have been steadily increasing over the last five years. The exception to this is Mill Hill Broadway and Cricklewood, both of which saw large peaks in

2014/15 followed by sharp troughs during Thameslink timetable changes.

Figure 2.24: Rail and Underground connections in Barnet

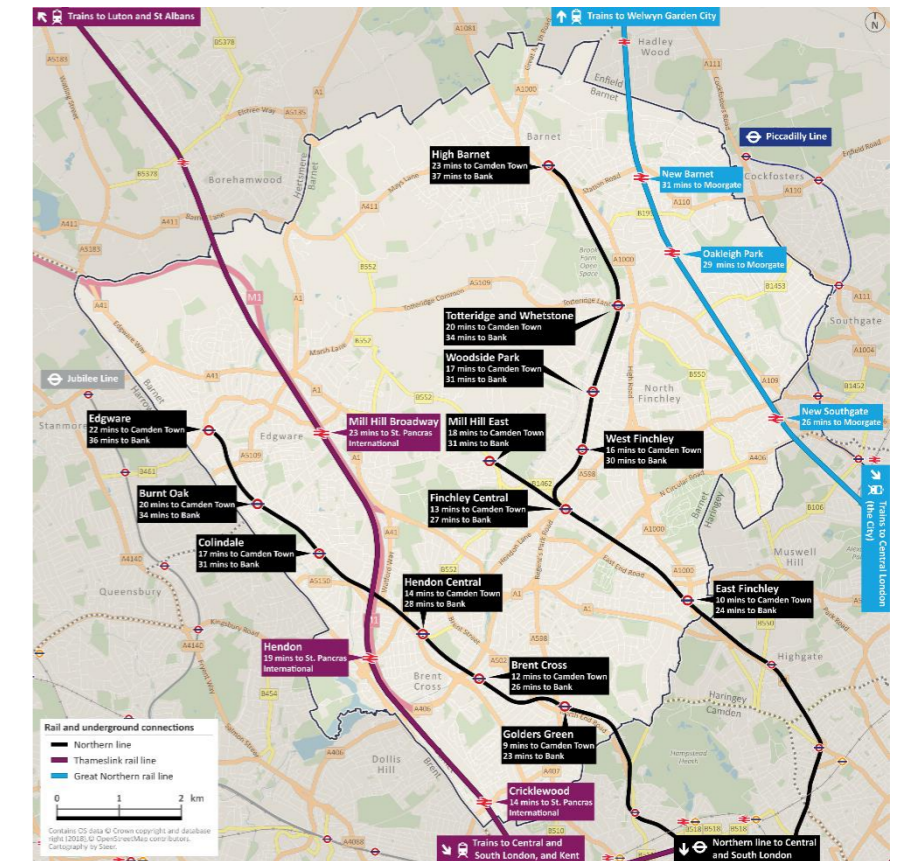
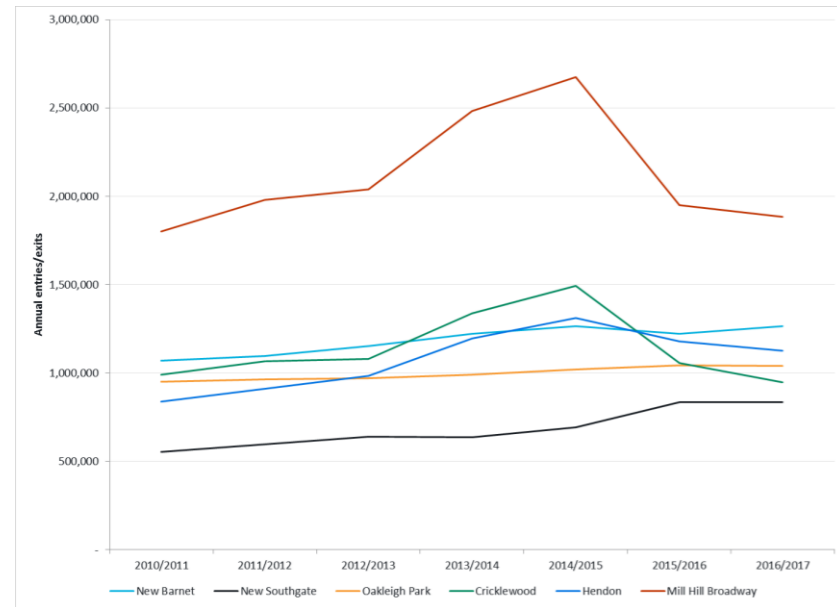


Figure 2.25: Annual entries and exits from Barnet mainline rail stations



Car

Access to cars

The most popular mode of transport in Barnet is the car. As of 2017, there were 142,300 licensed cars in Barnet⁷⁶, equating to 0.45 vehicles per capita⁷⁷, or 0.94 cars per household⁷⁸. However, 32% of households in Barnet do not have access to a car, meaning households who do own cars own approximately 1.5 per household.⁷⁹

⁷⁶ Department for Transport (2018) VEH0105: Licensed vehicles by body type and local authority, United Kingdom <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>

⁷⁷ Excluding population aged 16 or under

⁷⁸ Greater London Authority (2017) GLA Household Estimate, GLA Intelligence Borough Profiles <https://data.london.gov.uk/dataset/london-borough-profiles>

⁷⁹ Transport for London (2018) London Travel Demand Survey

Figure 2.26: Number of cars per household by borough

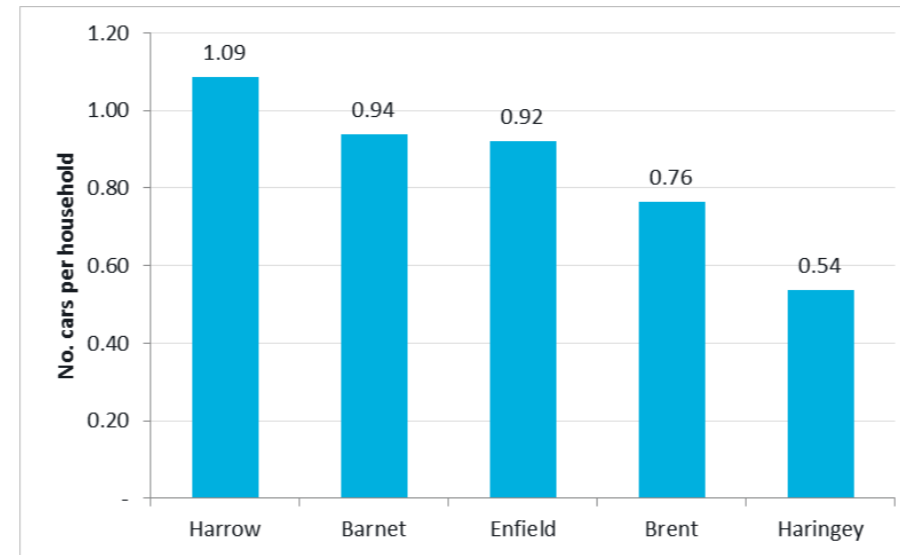


Figure 2.26 compares the level of car ownership in Barnet to other Outer North London boroughs. Barnet has the second highest ownership levels per household at 0.94, far higher than 0.54 cars per household in Haringey and 0.76 cars per household in Brent. Almost all of these vehicles are powered by diesel or petrol: in 2019 there were 2,125 electric cars in Barnet, or 1.5% of all licensed cars.⁸⁰ This has increased from 145 electric cars in 2011. Barnet is second only to Westminster amongst London boroughs for the number of registered electric cars.

Figure 2.27 shows that per capita car ownership trends in Barnet have fallen since 2008⁸². Car club providers⁸³, who have researched why people choose not to own cars, frequently cite the capital outlay and operating costs of cars as the principal reasons, as well as availability of local services, parking, public transport and online shopping. This accords with this graph, with the drop in car ownership starting in 2008, the year of the financial crash. The black line in the graph shows

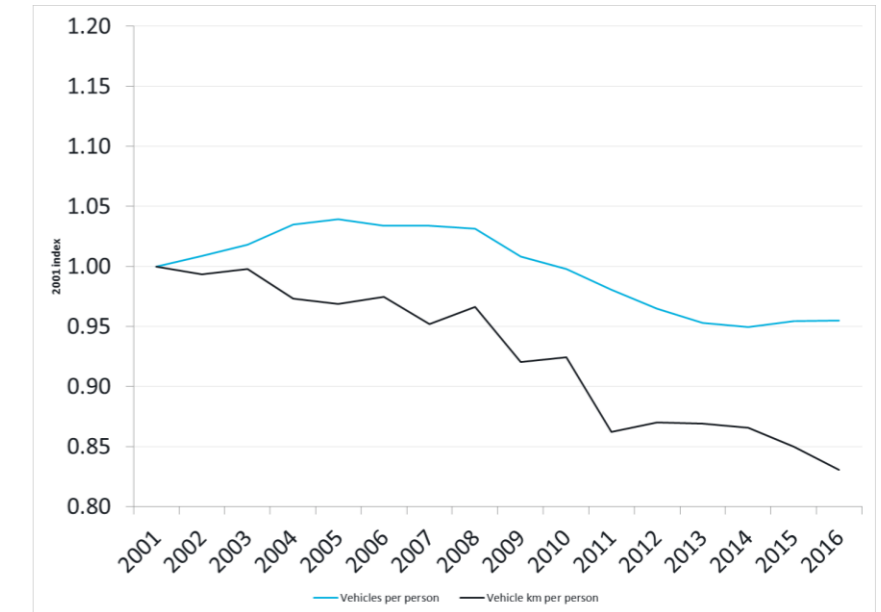
⁸⁰ Department for Transport (2019) VEH0132 Ultra low emission vehicles (ULEVs) licensed by local authority, United Kingdom <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh0132>

⁸¹ Department for Transport (2019) VEH0105: Licensed vehicles by body type and local authority: United Kingdom <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh0104>

⁸² Office for National Statistics (2018) QS416EW - Car or van availability <https://www.nomisweb.co.uk/census/2011/qs416ew>

that those of the cars that are owned, they are being used less frequently than before.⁸⁴

Figure 2.27: Car ownership and usage in Barnet indexed to 2001



Although the number of cars is high, only 6% of households have 3 or more cars. 32% of Barnet’s households do not have access to a car or van at all. For each ward along the Edgware branch of the Northern Line except Edgware, this figure is over 33% and above 40% in Burnt Oak and Childs Hill.⁸⁵ As such, the LTTS should consider the needs of those without access to a car.

The Council launched an e-car club in 2016 which allowed residents to hire an electric car by the hour; two cars are available. There are nine car club vehicles available in the borough from Zipcar and five available from Enterprise Car Club. A car sharing company, Drive Now, also operates in Barnet. Drive Now allows you to pick up and drop off your

⁸³ Co-Wheels Car Club (undated) How it Works. <http://www.co-wheels.org.uk/faq>

⁸⁴ Another cause may be the rise of Uber in the borough, meaning people use their own cars less frequently. Unfortunately, we have not been able to obtain usage data from Uber.

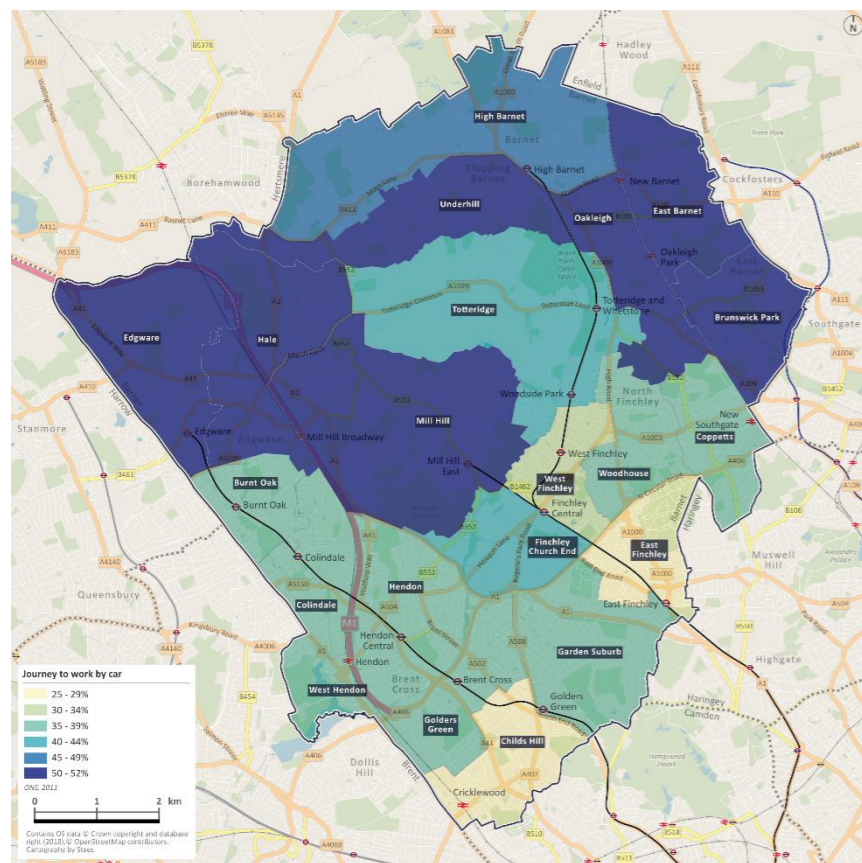
⁸⁵ Office for National Statistics (2018) QS416EW - Car or van availability <https://www.nomisweb.co.uk/census/2011/qs416ew>

car from any location within the Drive Now parking zone, which spans nine boroughs⁸⁶.

Use of cars

Cars are a popular mode of transport for travel to work. Figure 2.28 shows that this is particularly prevalent in the north of the borough, though high throughout. Even in the wards with the lowest percentage of travel to work by car, over a quarter of residents still drive to work as their main mode. The Barnet average, 42%, is the same as the Outer London average. It is higher than the London average of 32%.

Figure 2.28: Journeys to work by car

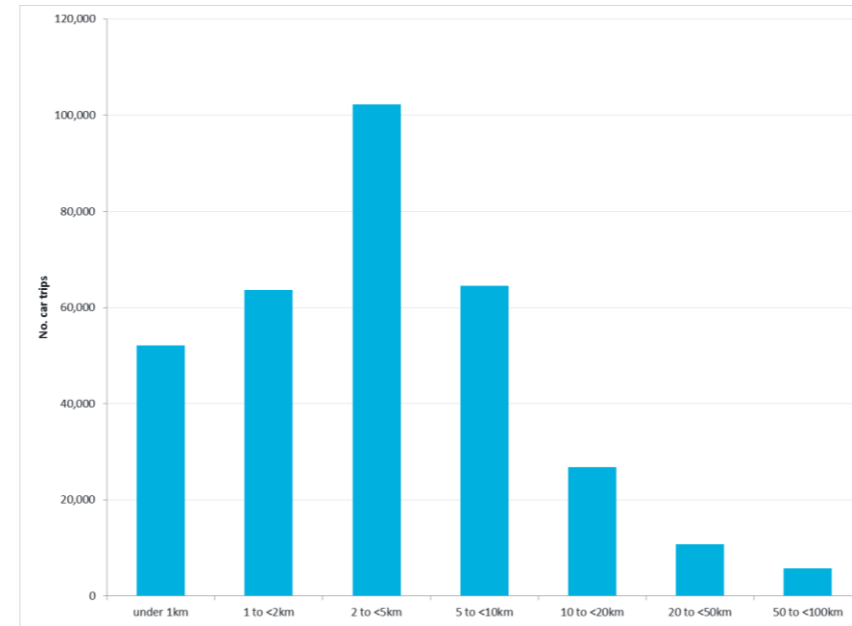


However, when this data is investigated further, it shows that 30% of journeys to work that are driven are under 5km, distances that are frequently cycled in other areas of London. Of all journeys to work that are under 2km, 40% are undertaken as a driver or passenger in a car. These patterns of high car use for short distances, derived from the 2011 Census, are corroborated by the London Travel Demand Survey,

⁸⁶ Drive Now (undated) Guide to Barnet. <https://www.drive-now.com/gb/en/blog/tripguides/guide-to-barnet>

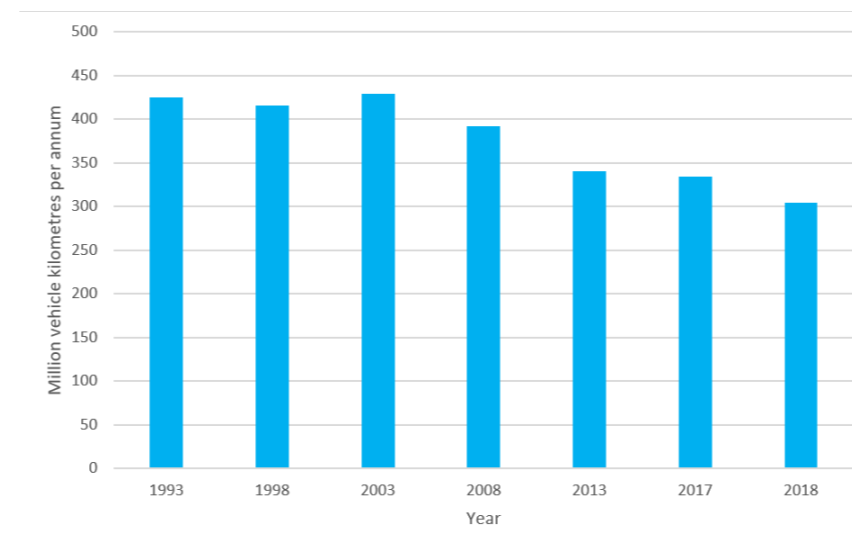
according to which two thirds of car journeys by Barnet residents in 2016/17 were under 5km, shown in Figure 2.29.

Figure 2.29: Barnet residents' car trips by distance



The number of vehicle kilometres travelled per annum in the borough reached a peak in the early 2000s and has been in decline since 2010 as shown in Figure 2.30.⁸⁷

Figure 2.30: Car vehicle kilometres travelled in Barnet



⁸⁷ Department for Transport (undated) Road Traffic <https://roadtraffic.dft.gov.uk/local-authorities/57>

Of the cars travelling in Barnet in the AM peak, there is almost an even split between trips within the borough's boundaries, trips originating in Barnet and finishing outside the borough, trips originating outside the borough and finishing in Barnet and trips that simply go through the borough. These figures are shown in Table 2.5.

Table 2.5: AM Peak car trips in Barnet by origin and destination

	2011	2041	% increase
Barnet internal	16,677 (27%)	15,920 (25%)	-5% (-2%)
Barnet to external (London)	12,962 (21%)	12,423 (19%)	-4% (-2%)
Barnet to Herts	3,317 (5%)	5,572 (9%)	68% (3%)
External (London) to Barnet	11,015 (18%)	10,470 (16%)	-5% (-2%)
Herts to Barnet	4,448 (7%)	4,325 (7%)	-3% (0%)
Through trips (not Herts)	7,858 (13%)	5,099 (8%)	-35% (-5%)
Through trips (Herts)	5,503 (9%)	10,471 (16%)	90% (7%)

Road safety

Compared to neighbouring boroughs, Barnet has the highest number of road traffic casualty figures, as shown in Figure 2.31. However, once

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the length of network is taken into account, Barnet has fewer accidents per km than most boroughs.⁸⁸

Figure 2.31: Annual road traffic casualties in Barnet and comparable boroughs⁸⁹

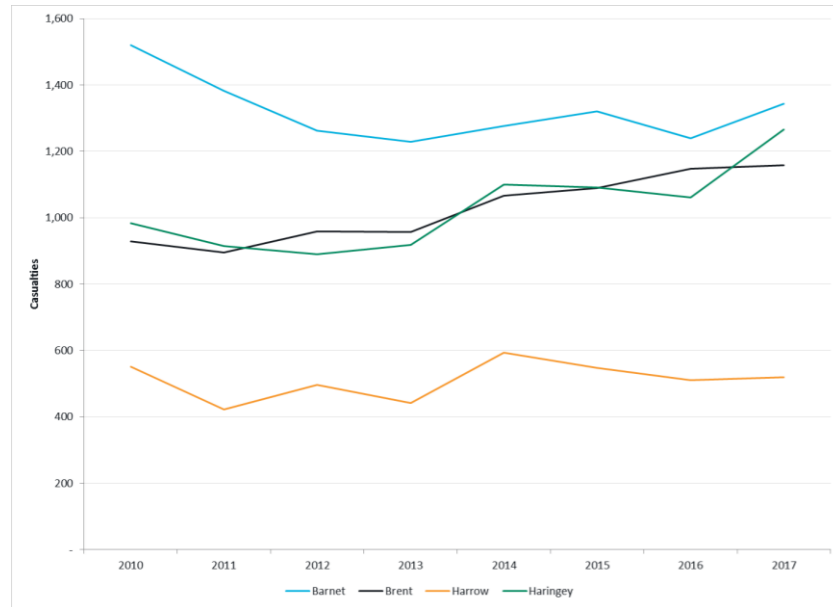


Figure 2.32: Road traffic casualties in Barnet and comparable boroughs indexed to 2010⁹⁰

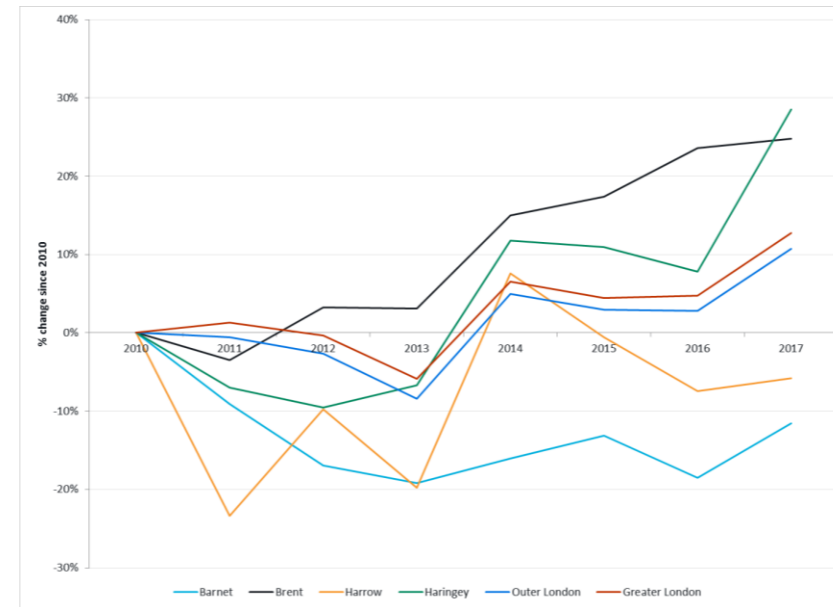
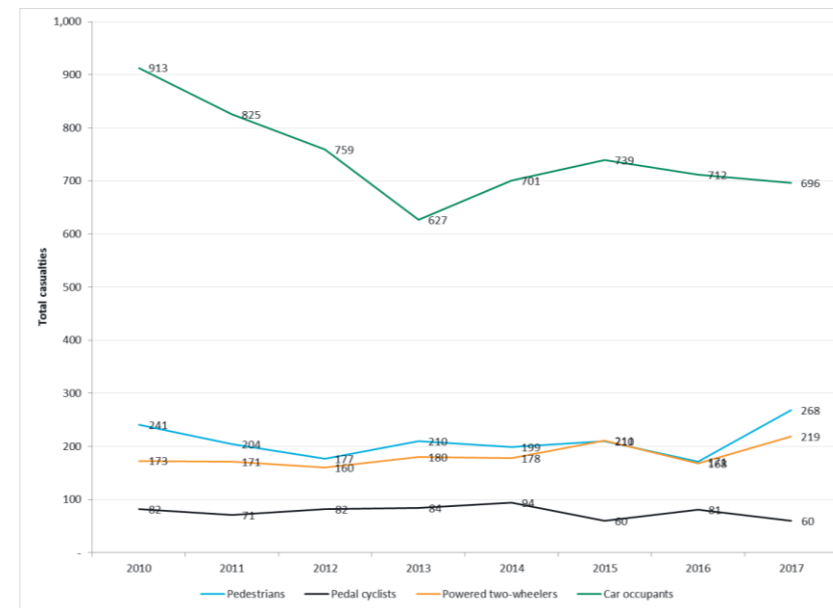


Figure 2.33: Barnet road casualties by mode⁹¹

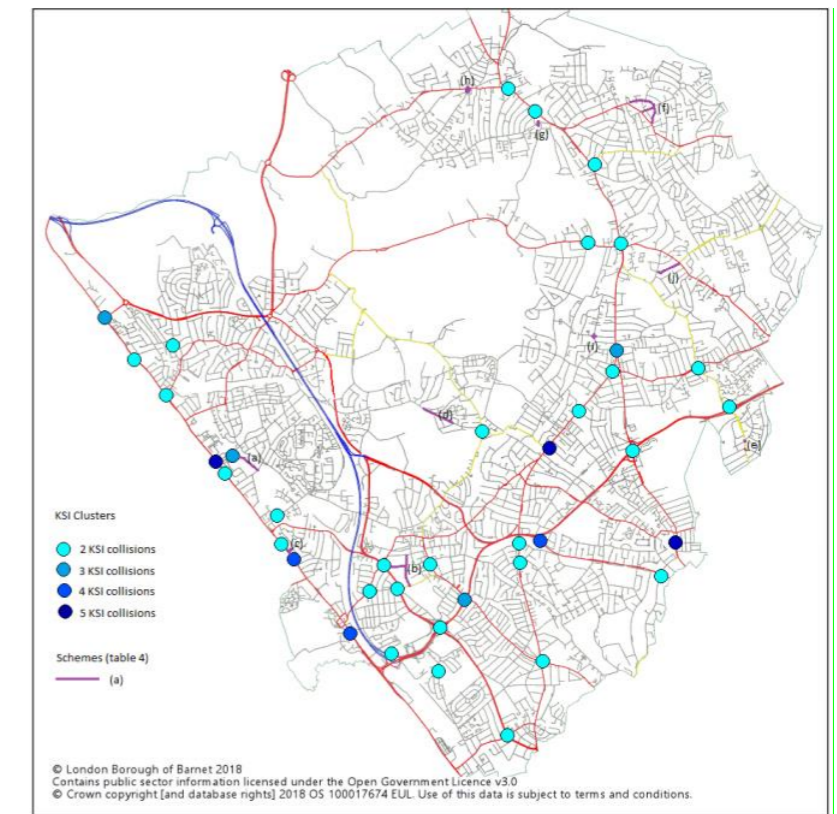


Barnet’s jurisdiction over the number of casualties is limited by location. Roads in Barnet are either controlled by the Council, TfL (A1,

A41, A406) or by Highways England (M1). 20% of all Casualties Killed or Seriously Injured (KSIs) are injured on the A1, A41, A406 or M1. In particular, injury collisions and KSIs tend to occur where A roads pass through town centres. This pattern is clearly seen in Figure 2.34, which shows the locations in the borough where two or more KSI collisions occurred within a radius of 100m in three years from 2014-2016⁹².

Where the Council does have authority, and therefore responsibility, over road safety, the LTTS must consider schemes to achieve 0 people killed and seriously injured on London’s roads by 2041. One method currently used is 20mph limits. Evidence⁹³ shows that in areas with 20mph limits, children are more likely to play outdoors and there are health and wellbeing benefits associated with the increased uptake in active travel modes.

Figure 2.34: Location of KSI clusters 2014-2016



2.18

Although the number of road traffic casualties has been decreasing since 2010, as shown in Figure 2.32, this is driven by a reduction in car occupants as casualties. There has been a slight increase in the total number of casualties from vulnerable road users such as pedestrians, cyclists and powered two-wheelers, shown in Figure 2.33.

⁸⁸ Barnet Council (2018) Road Safety in Barnet <https://barnet.moderngov.co.uk/documents/s45531/Road%20Safety%20in%20Barnet.pdf>

⁸⁹ Transport for London (undated) Road Safety <https://tfl.gov.uk/corporate/publications-and-reports/road-safety>

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Barnet Council (2018) Road Safety in Barnet <https://barnet.moderngov.co.uk/documents/s45531/Road%20Safety%20in%20Barnet.pdf>

⁹³ Atkins, AECOM, Maher (2018) 20mph Research study

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Some studies suggest that 20mph zones are effective in reducing accidents and injuries: a study of 20mph zones across London demonstrated a 42% reduction in all casualties.⁹⁴ It is noteworthy, however, that enforcing 20mph zones is difficult. Introducing physical traffic calming measures such as speed bumps or road tables, can help with enforcement of the zones however it will not deter all.

Additionally, analysis of 20mph zones throughout England suggests that they may increase walking and cycling by 5% and 2% respectively⁹⁵. 20mph zones could therefore increase road safety by discouraging car use in general, with a potential resultant uplift in more sustainable, safer modes.

On-street parking

As of 2017, 16,472 Blue Badge permits were registered in Barnet, with 5,966 issued in 2016/17.⁹⁶ There are designated disabled parking bays in the borough; these are bays directly outside a resident's home where only the specified resident can park.

In 2016/17, 16,571 resident permits were issued for CPZs in the borough. Of the 24 car parks in Barnet, 15 are pay and display; three are permit holder only and six offer free parking.

Accessible Transport

There are a variety of accessible transport providers in the borough. Below are two examples.

Community Transport

Barnet Community Transport has a small fleet of fully accessible minibuses and cars which are available 'at cost' to voluntary organisations, self-help groups and families whose members have difficulties using public transport or standard vehicles.

Dial-a-Ride

Dial-a-Ride is a door-to-door multi-occupancy vehicle for disabled people and older people who cannot use buses, trains and tubes. North London Dial-a-Ride operates in Barnet, serving those with a permanent or long-term disability or health problem who are unable to use public transport.

⁹⁴ Transport for London (2012) Towards a Road Safety Action Plan for London: 2020

⁹⁵ British Academy (2014) If You Could Do One Thing: Nine Actions to Reduce Health Inequalities

⁹⁶ Barnet Council (2017) Parking Services: Annual Account Report 2016/17 <https://www.barnet.gov.uk/citizen-home/parking-roads-and-pavements/Parking/Parking-data-and-information0.html>

Impacts

Summary:

- Barnet has one of the largest carbon footprints per head of population in London; road transport is the largest emitter of greenhouse gases.
- Air quality is poor in the densely populated south and west of the borough; road transport is the main contributor to NOx, PM10 and PM2.5 emissions in London. Domestic heating and road transport are the largest source of CO₂ emissions in the borough.

Implications for the LTTS:

- The LTTS should seek to shrink Barnet’s carbon emissions through encouraging modal shift and the use of alternative fuels.
- To improve air quality in the borough, the LTTS must encourage modal shift; ‘clean’ fuelled vehicles still contribute to poor air quality through wear and tear on brake pads.
- The LTTS must aim to develop intelligent solutions to congestion. Flexing transport network capacity, reducing travel/ vehicular demand and encouraging more active travel modes would help to ensure that the road system, a highly constrained space, is used in a more efficient manner.
- The impact of new and existing transport infrastructure on flood risk must be carefully considered. Building resilience into new infrastructure will be important and will ensure that if flooding occurs the transport network is still able to function effectively. Ensuring that the system is flexible and adaptable will allow future changes in flood risk to be effectively managed.

Environment

Energy consumption and greenhouse gases

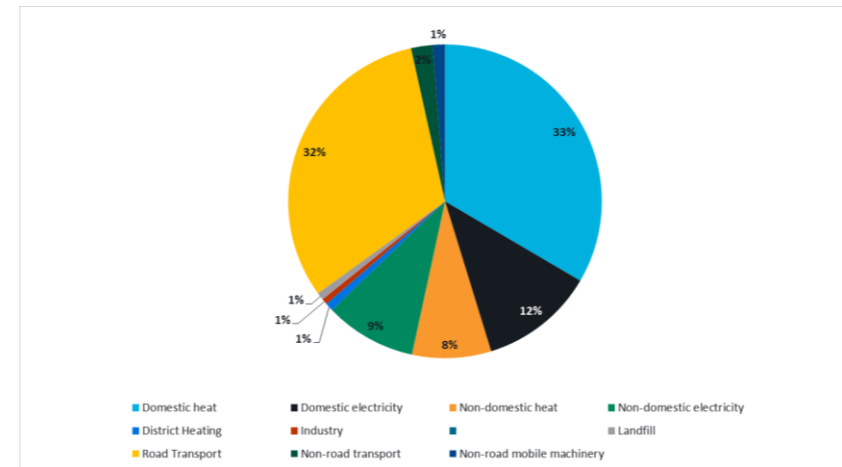
- 2.19 Barnet has one of the largest carbon footprints per head of population in London, so the LTTS needs to look at methods of reduction.⁹⁷ 24% of greenhouse gas emissions in London come from transport – 19% road, 3% rail.⁹⁸ As shown in Figure 2.35 the main sources of CO₂ emissions in Barnet are domestic heating and road transport.

⁹⁷ Barnet Council (2010) One Barnet, a Sustainable Community Strategy for Barnet 2010-2020

⁹⁸ Mayor’s Environment Strategy (May 2018) p.206, generated from GLA (2017) LEGGI. <https://data.london.gov.uk/dataset/leggi>

⁹⁹ Greater London Authority (undated) Zero Carbon Model

Figure 2.35: Emissions Sources in Barnet by levels of ktCO₂⁹⁹



Air quality

Three types of harmful pollutant are associated with poor air quality: nitrous oxides (NOx), coarse particulate matter (PM10) and fine particulate matter (PM2.5). All three types are invisible to the naked eye and contribute to coronary heart disease, lung cancer, strokes, childhood asthma and respiratory problems such as bronchitis, lung infections, shortness of breath and coughing. The Department of Health ranks air quality as a major public health risk alongside cancer, disease and obesity. As shown below in **Error! Reference source not found.**, road transport consistently forms the highest proportion of emissions sources in London.

Table 2.6: Current emissions sources in London¹⁰⁰

NOx	
Road transport	51%
Non-road transport	11%
Built environment	37%
Other	1%
PM10	
Road transport	50%
Non-road transport	3%
Built environment and industry	19%
Resuspension	23%
Other	4%
PM2.5	
Road transport	54%
Non-road transport	6%
Built environment and industry	30%
Resuspension	2%
Other	8%

In London, poor air quality disproportionately affects people in more deprived areas. 51 per cent of Lower Layer Super Output Areas (LSOAs) within the most deprived 10 per cent of London have concentrations above the NO₂ EU limit value. This contrasts with 1 per cent above the NO₂ EU limit value in the 10 per cent least deprived areas.¹⁰¹ All of Barnet is an Air Quality Management Area (AQMA) for nitrogen dioxide, PM10 particulate and nitrogen dioxide. This means the Council is required to produce an Air Quality Action Plan describing how it intends to reduce these pollutants; transport plays a major role in those plans.¹⁰² Moreover, 14 areas are designated Air Quality Focus Areas, requiring targeted action.

Air quality in Barnet repeatedly breaches legal limits, particularly at major junctions in the Borough where there is a higher traffic flow and a high number of stationary vehicles. Pollution levels are higher along arterial routes, particularly the North Circular, M1, A1 and A5; PM2.5

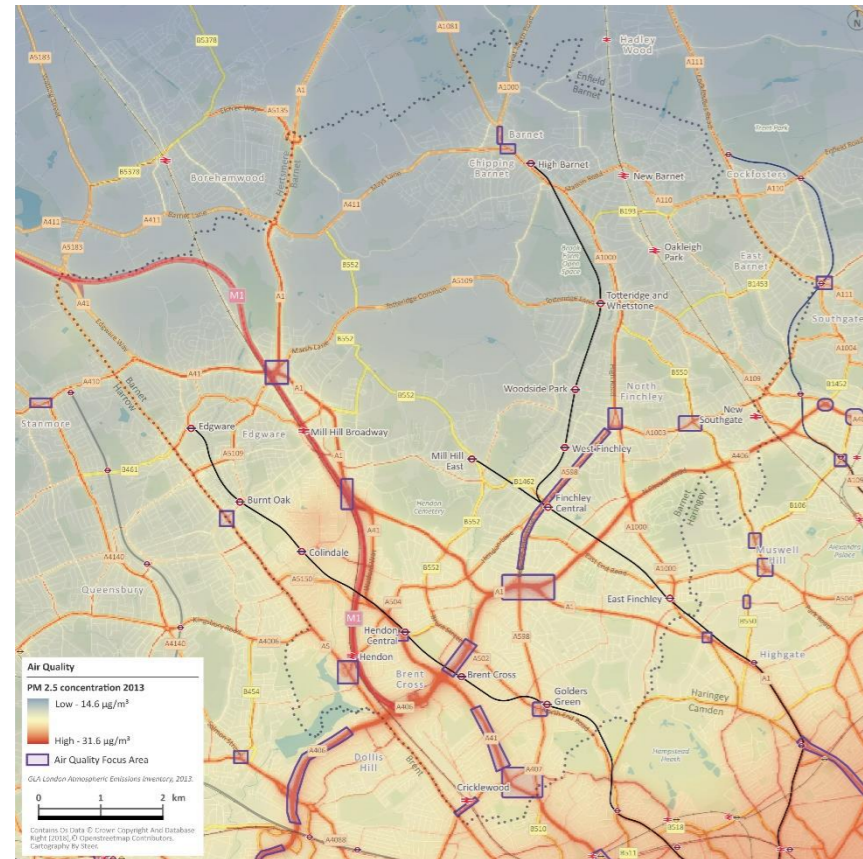
¹⁰⁰ GLA (2017) London Atmospheric Emissions inventory (LAEI) 2013 update https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf

¹⁰¹ King, K. & Healy, S. (2013) Analysing Air Pollution Exposure in London. https://www.london.gov.uk/sites/default/files/analysing_air_pollution_exposure_in_london_-_technical_report_-_2013.pdf

¹⁰² Barnet Council (2017) Air Quality Action Plan (2017-2022) <https://www.barnet.gov.uk/sites/default/files/assets/citizenportal/documents/EnvironmentalHealth/ScientificServices/AirQualityActionPlan2017consultationdocument.pdf>

concentrations are shown in Figure 2.36.¹⁰³ The air around 12 schools in Barnet are polluted above the legal EU limit of 40µg/m³.

Figure 2.36: PM2.5 concentration in Barnet



Economic benefits of walking and cycling

At a local level, both businesses and residents benefit from walking and cycling. Walking and cycling improvements can increase retail spend by up to 30%¹⁰⁴: although spend per visit is lower when the visitor cycles or walks to the retail centre, those that walk and cycle tend to visit more often, resulting in higher spend over time. As seen in Figure 2.37, cycle parking uses existing space efficiently, and can increase the retail spend per square metre by 5% compared to the same area of car parking.

¹⁰³ Ibid.

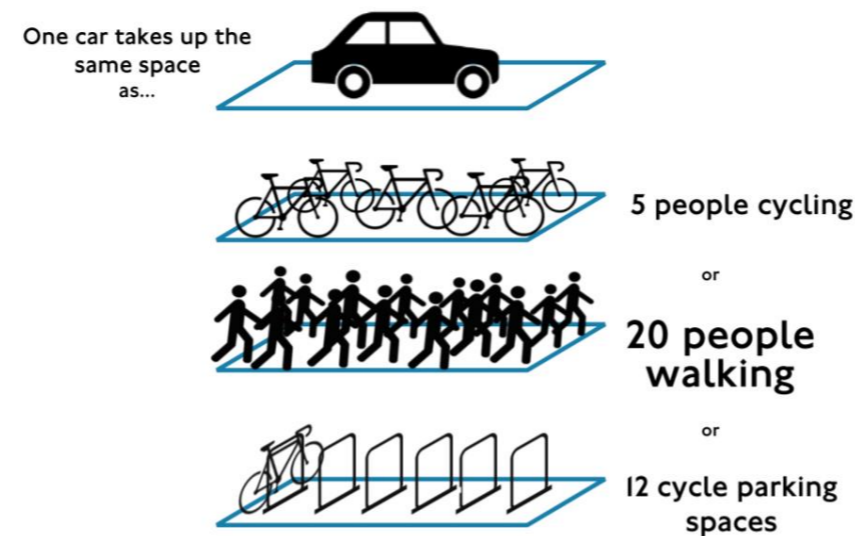
¹⁰⁴ Transport for London (2018) Economic Benefits of Walking and Cycling. <https://tfl.gov.uk/corporate/publications-and-reports/economic-benefits-of-walking-and-cycling>

¹⁰⁵ Ibid.

Beyond benefits to customers, employees who walk or cycle to work report greater job satisfaction, which in turn aids employee retention, and they take fewer sick days, both of which help to reduce business costs. Similarly, facilitating cycle freight deliveries can save businesses between 39 and 64% on delivery costs.

Barnet’s residents would also gain from the affordability of walking and cycling. Running a car in London costs on average £7,300 per annum, whereas cycling provisions can be bought for £250¹⁰⁵. Encouraging cycling and walking instead of using the car would be economically advantageous to low-income residents.

Figure 2.37: Use of space by mode



The average car in London carries 1.56 people. Consequently, as illustrated in Figure 2.37, when switching from driving, cycling and walking trips can significantly help to increase the carrying capacity of London’s roads, providing a mechanism for reducing traffic in Barnet. Congestion costs London’s economy £9.5bn per annum and impacts residents and businesses at a local level. As will be discussed, improving congestion will be important in ensuring the LTTS caters to needs of London and Barnet.¹⁰⁶¹⁰⁷¹⁰⁸

¹⁰⁶ Ibid.

¹⁰⁷ Raje and Saffrey, 2016 cited in Transport for London (2018) Economic Benefits of Walking and Cycling <http://content.tfl.gov.uk/walking-cycling-economic-benefits-summary-pack.pdf>

Congestion

The LTTS needs to consider road congestion, as it is both a barrier to economic growth and causes other negative effects such as diminished air quality and poor public realm. As the car is very space inefficient, the key method to reducing congestion is to reduce car usage or increase car occupancy, for example through car sharing. Enacting this mode shift would leave more road space for essential road vehicles, including residents with no other option, freight and servicing.

However, approximately a quarter of peak hour trips in Barnet have neither their origin nor destination in the borough. Instead, they are using the road network to travel through the borough, often from the North to Central London using the A1 (M) and M1.¹⁰⁹

The section of the A406 road that passes through Barnet (from Finchley Road to Colney Hatch Lane) is the fifth worst road in the UK for traffic congestion. The DfT’s ‘value of time’ calculation, which looks at the economic cost to drivers due to time wasted, values economic cost of the congestion on the A406 road at £255 million.¹¹⁰

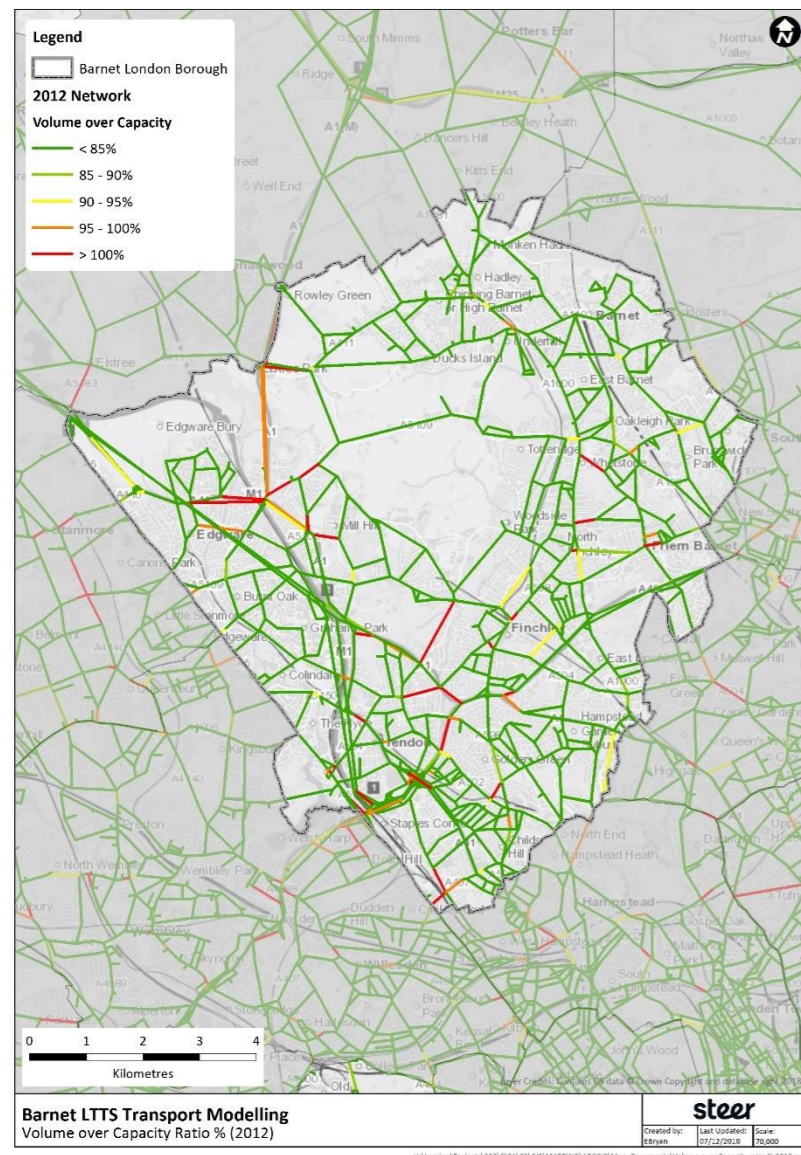
Figure 2.38 shows the key links within Barnet that are over capacity. The junction of the A1, A41 and A5109 is immediately identifiable as a problem area, with five of the six arms operating over 95% capacity.

¹⁰⁸ Transport for London (2018) Economic Benefits of Walking and Cycling <https://tfl.gov.uk/corporate/publications-and-reports/economic-benefits-of-walking-and-cycling>

¹⁰⁹ Steer modelling (2019) based on TfL Strategic Models

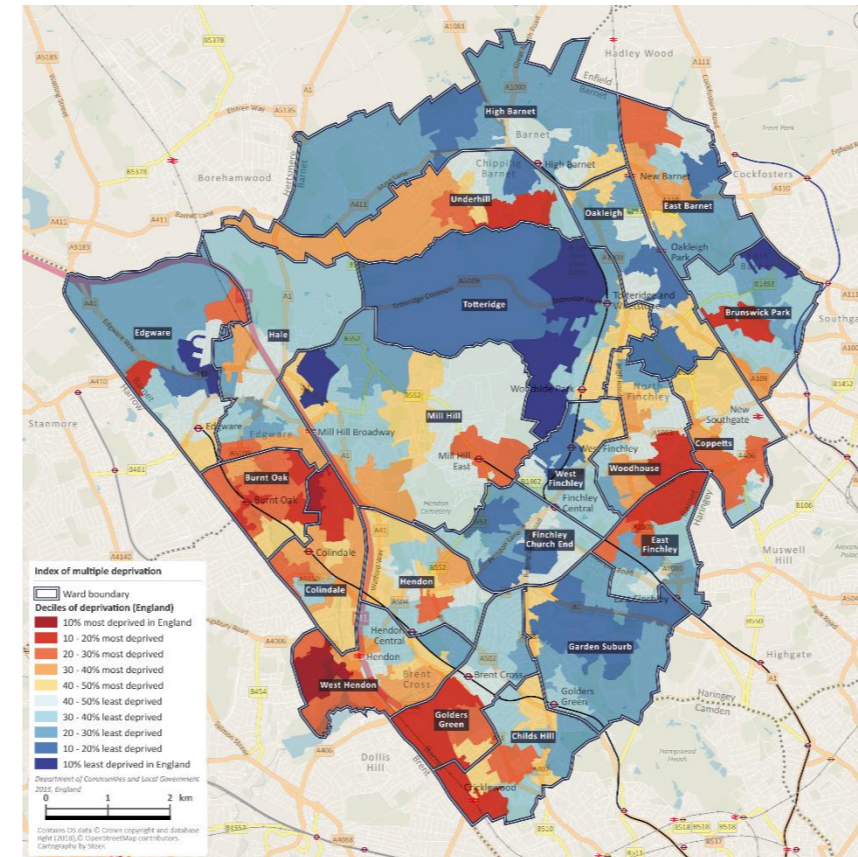
¹¹⁰ INRIX (2016) Europe’s Traffic Hotspots: Measuring the Impact of Congestion in Europe

Figure 2.38: 2012 volume over capacity ratio



Line. The central and eastern areas of the borough experience much less deprivation.

Figure 2.39: Barnet IMD profile



Unemployment and deprivation

The life expectancy of people living in the most deprived areas of the borough is on average 7.4 years less for men and 7.8 years less for women than those in the least deprived areas.¹¹¹ Figure 2.39 shows the Index of Multiple Deprivation profile of Barnet. Index of Multiple Deprivation is a government measure of deprivation in England. As shown in Figure 2.39, the areas of deprivation are focussed mainly in the west of the borough, along the Edgware branch of the Northern

¹¹¹ Barnet Council (undated) Joint Strategic Needs Assessment
<https://www.barnet.gov.uk/jsna-home/demography.html>

3 Barnet to 2041

Who

Summary

- The population is projected to increase by approximately 25%, with the majority of growth in the west of the borough, which are also the least affluent wards.
- The number of children is expected to increase by 3% until 2025, with 2020 seeing Barnet as the Borough with the highest number of children.¹¹²
- Barnet’s population is both ageing and living longer – the increase in population in Barnet will be mostly attributed to the increase in the share of elderly residents.
- The population is projected to become increasingly ethnically diverse.

What this means for LTTS

- The large increase in elderly people needs to be planned for and accommodated within the LTTS, ensuring transport is physically, visually and technologically accessible.
- Building on its foundations as a ‘Family Friendly’ borough, Barnet should seize the opportunity to encourage and educate about active travel early in life to help people sustain good health for longer.
- A larger population may mean more demand for travel in Barnet, which may need to be made in a more efficient way (compared to today) given finite transport capacity, especially on the road network.
- Population growth and regeneration within the borough presents the opportunity to engage with people as they move into their new

¹¹² Barnet Council (2019) Barnet Children and Young People’s Plan 2019-2023 <https://www.barnet.gov.uk/sites/default/files/2019-06/Barnet%20Children%20%26%20Young%20Peoples%20Plan%20Digital.pdf>

¹¹³ Greater London Authority (2018) Population Projection – Custom Age Tables <https://data.london.gov.uk/dataset/gla-population-projections-custom-age-tables>

homes and an opportunity to encourage behaviour change through the design of new buildings and areas.

Population size

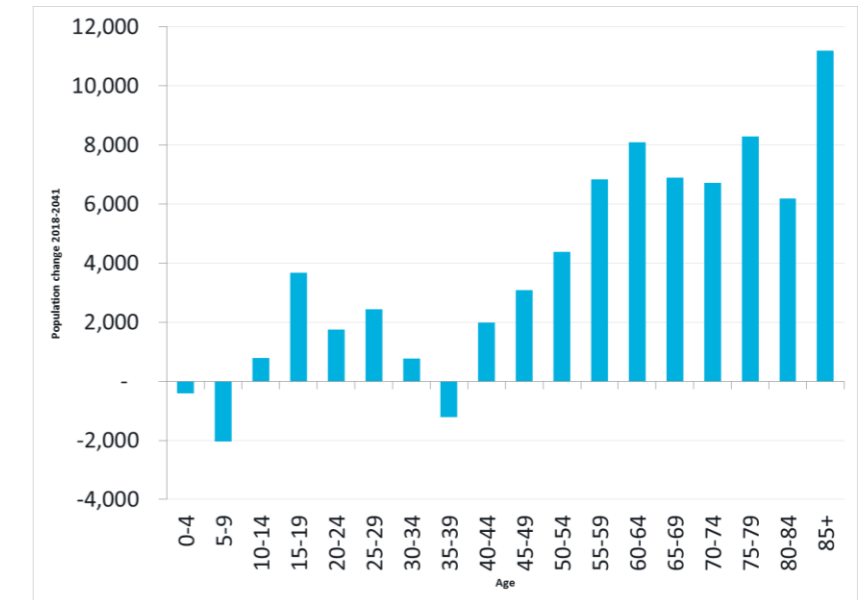
Population predictions are not an exact science: methodologies vary and produce different outcomes so population projections will vary and should be considered as a range of possibilities. Instead, for the purposes of this transport strategy the general pattern should be observed.

GLA data shows that Barnet is expected to accommodate an extra 90,000 residents by 2041, an almost 25% increase¹¹³. Other projections, such as the ward level housing projections and the Office for National Statistics subnational population projections¹¹⁴, estimate 70,000 extra residents. As noted earlier population projections are a range, the LTTS must be fit for a significantly larger population than today’s, accommodating between 450,000 and 500,000 residents.

Age

There will be significantly more elderly people in 2041 compared to today, both in absolute and relative terms. The number of people aged 65 and over is predicted to increase by 33% between 2018 and 2030, compared with a 2% decrease in young people (aged 0-19) and a 4% increase for working age adults (aged 16-64) over the same period.¹¹⁵ Largest population increases will occur in wards in the west of the borough (Colindale 91%; West Hendon 37% and Burnt Oak 33%), which are also amongst the most deprived wards.¹¹⁶ Figure 3.1 shows the projected population increase.

Figure 3.1: Population change 2018-2041 by age group¹¹⁷



Source: GLA (2018) Population Projection – Custom Age Tables

The increase in the elderly population in 2041 will have implications for the transport network. Research¹¹⁸ into travel needs for an elderly population highlights the requirements for transport that is physically easy to navigate (e.g. low-floor buses, dropped kerbs), but also technologically accessible – catering to those that can’t or don’t want to use modern technologies for example booking a cab via phone call instead of a phone app. The studies also highlight the modal shift of those over the age of 65 who tend to walk more, drive less and use more public transport. This research states that the mobility of older people can be strongly dependent on public transport, especially buses. Shopping and leisure are the main motives for travel for those over the age of 60, though ease of access to healthcare facilities remains important.

Health

Although forecasting the health of the population in 2041 to a reasonable degree of accuracy is not possible, it can be assumed that

¹¹⁷ Greater London Authority (2018) Population Projection – Custom Age Tables <https://data.london.gov.uk/dataset/gla-population-projections-custom-age-tables>

¹¹⁸ Hounsell et al (2017) Review of Public Transport Needs of Older People in European Context. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5656732/>

¹¹⁴ Office for National Statistics (2018) Population Projections <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/previousReleases>

¹¹⁵ Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html>

¹¹⁶ Ibid.

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

because residents will on average be much older, their health will be worse. Designing a transport network to ensure active travel is a regular part of everyone’s routine is an effective way to delay the impacts of an aging population on health and social care services; for these reasons the LTTs must consider how active travel can be boosted.

Gender and Ethnicity

The Barnet population is currently and is projected to become more increasingly diverse, with the proportion of Black, Asian and Minority Ethnic (BAME) people in the borough’s population rising from 39.5% in 2018 to 42.3% in 2030.¹¹⁹ Experience in other London boroughs has shown that changing the method of transport used in close-knit, minority communities is difficult to achieve without the championing of the benefits by people within the community.¹²⁰

Disability

As shown in Table 3.1, the number of people with a physical disability in Barnet is expected to increase faster than population, with 22% more people with disabilities than currently. Although corresponding data for people aged 65+ is not available, the number of Barnet residents in this age group with dementia is expected to increase by 47%; with diabetes by 37%; with depression by 36%; with long term conditions associated with stroke by 40% and with long term illnesses affecting daily activity by 41%.

The number of people with a learning disability in Barnet is projected to increase by 20% by 2035.¹²¹ As a result, it becomes more important for the transport network to be as easy to navigate and accessible as possible.

Table 3.1: Projection of people with a physical disability in Barnet¹²².

Age Range	Moderate Physical disability		Serious physical disability	
	2018	2035	2018	2035
18-24	1,259	1,484	246	290
25-34	2,717	2,709	259	258
34-44	3,466	3,730	1,052	1,132
45-54	5,131	6,421	1,428	1,787
55-64	5,885	7,986	2,291	3,109
Total	18,459	22,331	5,276	6,576

¹¹⁹ Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html>

¹²⁰ Transport for London (2011) What are barriers to cycling amongst ethnic minority groups and people from deprived backgrounds?

<http://content.tfl.gov.uk/barriers-to-cycling-for-ethnic-minorities-and-deprived-groups-summary.pdf>

¹²¹ Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html>

¹²² Projecting Adult Needs and Service Information (PANSI), shown in Barnet Council (undated) Joint Strategic Needs Assessment <https://www.barnet.gov.uk/jsna-home/demography.html>

When, where and why

Summary

- The already dense areas around the Edgware branch of the Northern Line will become far denser, well surpassing current inner London average densities, as major new developments are built in Colindale and Brent Cross.
- There will be far more jobs within Barnet, which historically have employed residents of the borough.
- People’s working and shopping will increasingly take place from their homes.
- Retail floorspace is predicted to decline.
- The Council plans to improve and enhance access to green space.

What this means for the LTTS

- There will be far greater pressure on the Northern Line for journeys to central London as developments close to stations are built.
- The new developments present a key opportunity to embed active travel in their design and enable a shift towards more sustainable modes.
- The LTTS should consider changing travel trends and look at how transport where possible can support local businesses. For example, if current trends of Barnet businesses tending to employ Barnet residents continue, orbital travel linking major residential and employment sites should be improved.
- New ways of attracting people back to the High Street need to be considered.
- Improved links to greenspaces should be included within the LTTS as an opportunity to create green routes for walking and cycling.

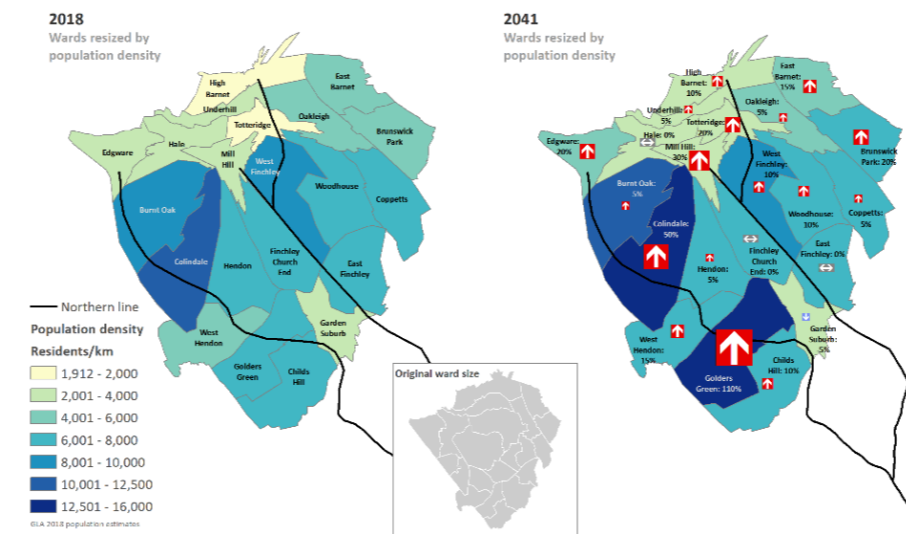
Housing

- 3.1 The Council’s Draft Growth Strategy expects up to 45,000 new homes added before 2030: 10,000 new homes are envisaged to be constructed in Colindale, 7,500 in Brent Cross/Cricklewood and another 10,000 in Mill Hill East and through estate regeneration schemes¹²³. The exact figures will be confirmed within the final Growth Strategy which will be published in 2020.

3.2

The Draft Growth Strategy concentrates growth along the Edgware branch of the Northern Line. To put these in context, the current average inner London density is approximately 11,000 residents per square kilometre: Colindale and Golders Green are expected to exceed 15,250 and 14,750 respectively. The density of Colindale and Golders Green wards will exceed the current Inner London average density by at least 30%: Burnt Oak, West Finchley, Childs Hill, Woodhouse, Hendon and East Finchley will all be at least 50% denser than existing outer London averages. However, areas that are currently semi-rural will largely remain so. Figure 3.2 displays wards resized by population density; the red arrows relate to the absolute growth in population in each ward.

Figure 3.2: Population density changes between 2018 and 2041



3.3

3.4

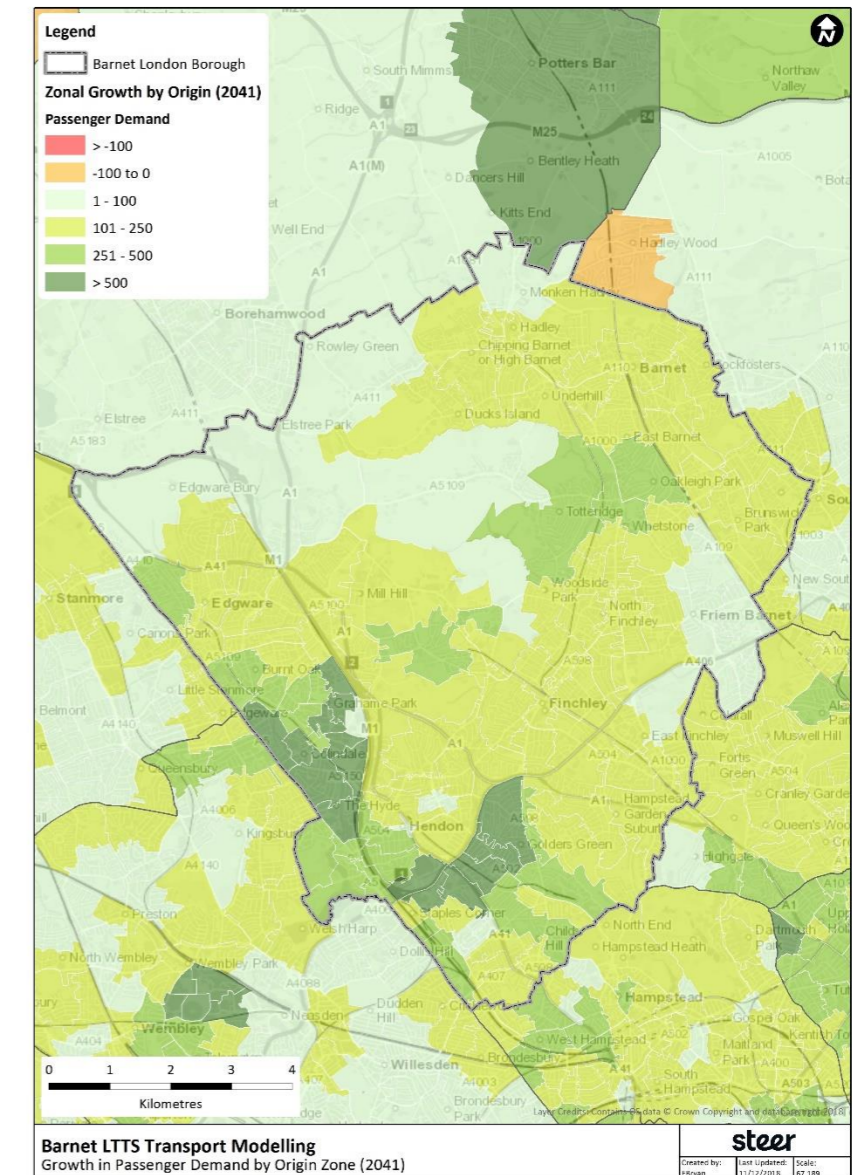
The Draft Growth Strategy proposes that these developments are mixed use and provide local amenities within walking distance for residents, which will help to achieve the MTS mode share target by increasing the number of walking trips. However, these densities mean it is envisaged that there will be severe crowding on the Northern Line without capacity upgrades or mitigation measures.

3.5

The areas with concentrated regeneration schemes will generate far more trips than the network can currently accommodate. Figure 3.3 displays the absolute change between 2011 and 2041 in the number of AM peak trips starting in areas in and bordering the borough. The area

of highest growth are those with the greatest regeneration, mostly along the Edgware branch of the Northern Line.

Figure 3.3: Absolute growth in passenger demand by origin on all modes from 2011 to 2041 (AM Peak)



Economy and commuting

Barnet is expected to see large job increases. There are projected to be 142,000 jobs in Barnet by 2041, a total increase of 14,000 from 2016.¹²⁴ This puts Barnet ahead of inner London boroughs such as Kensington

¹²³ Barnet Council (2019) Draft Growth Strategy.2030 <https://engage.barnet.gov.uk/2349/documents/2590>

¹²⁴ Greater London Authority (2017) 2017 Borough Employees, SE and employed datastore

and Chelsea, Wandsworth and Lewisham in terms of employment numbers. However, this increase in jobs will put pressure on the internal road network, given that the 42% of journeys to work are currently completed by vehicle. To ensure that residents and commuters can reach these new jobs, the internal links between residential and employment areas in the borough must be considered.

The increase in online retailing has had negative impacts for the High Street and mixed impact for transport. There are a falling number of retail trips by bus and tube as fewer people are travelling to High Streets to shop¹²⁵, at the same time, the number of delivery vehicles on the road has increased.¹²⁶ The upward trend of online retailing is expected to continue.

Homeworking has grown significantly in the last decade due to enabling technology such as improved internet speeds and connectivity. According to research by the Urban Transport Group, the shift towards homeworking practices has contributed towards falling journey numbers on public transport networks.¹²⁷

Freight

Whereas total traffic in Barnet is expected to increase by around 8% by 2041 compared to 2012 levels, the make up of this traffic will change markedly. Whereas car and taxi trips are expected to increase by 4% and 3% respectively, light goods vehicles are expected to increase by almost 50%. As a percentage of all vehicles on the road, light goods vehicles will be an increase from 11% to 14%; cars are still expected to be the main type of vehicle on the road, 82% compared to today's 85%.¹²⁸

Leisure

Table 3.2 shows a comparison of the retail floorspace, number of units and retail vacancy rates data between 2008¹²⁹ and 2012¹³⁰ for the borough, showcasing a trend of decreasing retail floorspace and units and an increase in retail vacancy rates.

Table 3.2: Comparison of town centres between 2008 and 2012

Town Centre	Difference in amount of retail floorspace (sqm)	Difference in number of retail units	Difference in vacant Floorspace (sqm)	Difference in vacant floorspace (%)
Edgware	+1,250	+28	+1,1220	+57%
Brent Street	+1,770	0	+1,110	+71%
Chipping Barnet	-660	-7	+3,510	+283%
Church End, Finchley	-3,690	-37	+300	+19%
East Finchley	-2,080	-22	+530	+37%
Golders Green	-2,890	-23	+20	+1%
Hendon Central	-1,430	-30	+2,100	+194%
Mill Hill	-1,800	-13	+360	+93%
New Barnet	+1,250	+10	+300	+32%
North Finchley	-1,260	-14	+1,400	+38%
Temple Fortune	+4,570	+5	+2,600	+590%
Whetstone	-15,680	-3	-320	-21%
Colindale/The Hyde	-5,660	-27	+250	+87%
Cricklewood	-34,740	-59	-2,510	-50%
Burnt Oak	-3,040	-42	1,950	+127%
Total	-64,090	-234	+12,820	-

Table 3.3: Barnet town centres vacancy rates in 2017¹³¹

Town Centre	Units	Floorspace (%)
Edgware	16	5.3
Brent Street	19	8.5
Chipping Barnet	21	4.9
Church End, Finchley	11	2.9
East Finchley	92	2.3
Golders Green	11	3.8
Hendon Central	3	1.9
Mill Hill	3	4.2
New Barnet	6	3.1
North Finchley	16	6.5
Temple Fortune	7	6.2
Whetstone	4	10
Colindale/The Hyde	21	4.9
Cricklewood	2	4
Burnt Oak	6	2.4
	Total	Average
	238	4.73

The borough is experiencing a decrease in retail floorspace and increase in vacant floorspace overall. The data in Table 3.2 shows that Cricklewood and Whetstone have experienced the largest decrease in retail floorspace (34,740sqm and 15,680sqm respectively) and Chipping Barnet has had the highest increase in percentage vacancy rates at 283% increase in vacant floorspace. According to Table 3.3, Whetstone and Chipping Barnet have the highest ratio of vacant floorspace, with East Finchley having by far the highest number of vacant units.

A retail study conducted by the GLA in 2016¹³² projected that retail consumers in London are becoming older and wealthier and more ethnically diverse. The report identifies an upward trend in 'experience retail' where consumers are more likely to make in-person shopping trips if they are provided with an enjoyable experience. Barnet has developed Town Centre Strategies for Edgware, New Barnet, Finchley Church End, North Finchley SPD and Chipping Barnet. The transport

¹²⁵ Greater London Authority (2017) High Streets for All https://www.london.gov.uk/sites/default/files/high_streets_for_all_report_web_final.pdf

¹²⁶ Greater London Authority (2018) Future Transport p37 https://www.london.gov.uk/sites/default/files/future_transport_report_-_final.pdf

¹²⁷ Urban Transport Group (2018) Number Crunch: Transport Trends in the City Regions

¹²⁸ Steer modelling (2019) based on TfL Strategic Models

¹²⁹ Experian GOAD (2008) <https://goad.experian.co.uk/>

¹³⁰ Experian (2012) GOAD <https://goad.experian.co.uk/>

¹³¹ Experian (2017) GOAD <https://goad.experian.co.uk/>

¹³² Greater London Authority (2015) Retail in London https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Retail%20in%20London%20-%20Final%20Version.pdf

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

element of these strategies frequently identifies roads creating a barrier for pedestrians, the need for improved bus connections to the high street and the need to create a pedestrian connection to the train and/or tube station to enhance access to the high street¹³³.

Plans for the expansion of Brent Cross Shopping Centre are being reconsidered due to current market conditions in the retail market.

Greenspaces

- 3.7 New green space provision policies are described in the Parks and Open Spaces Strategy¹³⁴ document for Barnet, including:
- Create new parks to address deficits in provision
 - Establish new green networks to link parks together
 - Create new sports hubs with good quality facilities
- 3.8 Within the Strategy, a £20 million investment into new high-quality greenspaces across the seven regeneration areas is discussed, with the focus of expenditure in the south and west of the borough where population growth will be greatest.
- 3.9 As part of the evidence for the Parks and Open Spaces Strategy, the open spaces and parks in Barnet have been assessed on quality and value. The value aspect of this assessment considered health and deprivation indicators, recognising the relationship between greenspaces and wellbeing. However, the accessibility of the parks, in terms of proximity to cycle paths or public transport nodes, was not assessed. In line with the MTS goals, Barnet's LTTS should consider how transport can connect residents and visitors to greenspaces.

¹³³ Barnet Council (2013), Edgware Town Centre Framework,
Barnet Council (2010) New Barnet Town Centre Framework,
Barnet Council (2012) Finchley Church End Town Centre Strategy,

Barnet Council (2018) North Finchley Town Centre Framework,
Barnet Council (2013) Chipping Barnet Town Centre Strategy

¹³⁴ Barnet Council (undated) An Open Spaces Strategy for Barnet 2016-2026
<https://barnet.moderngov.co.uk/documents/s28481/Appendix%20%20Draft%20Parks%20and%20Open%20Spaces%20Strategy%20Summary.pdf>

How

Summary

- Barnet’s Local Implementation Plan (LIP) sets out Barnet’s goals for transport in the short and medium term.
- There are a range of technology and policy options which can be utilised by the borough to help achieve its long-term goals. Given the importance of cars in Barnet, electrifying existing road transport is likely to be particularly important.
- Barnet has the second highest potential for increase in walking and cycling trips out of all London boroughs.

Implications for the LTTS

- The LTTS should consider the goals and conclusions of the LIP within its own outcomes.
- Technology and policy options will be considered in the LTTS for their appropriateness in helping Barnet to achieve its long-term goals.
- The LTTS must set out how the potential for change can be best realised in Barnet.
- Where possible, the LTTS should seek to future proof the borough, allowing space for emerging clean technology to be incorporated into existing transport infrastructure and encouraging shifts to shared use vehicles.

Summary

Barnet’s Local Implementation Plan (LIP)¹³⁵ sets out how the borough proposes to meet the aims of the MTS, taking into account the overall aim of the MTS for 72% of all trips in Barnet to be made on foot, by cycle or using public transport by 2041.

In order to meet this overall aim, the LIP sets out eight borough transport objectives, each with a number of associated outputs. These objectives all contribute to achieving a reduction in the private vehicle mode share, as well as delivering against MTS outcomes.

Barnet has set out in the LIP the projects needed to achieve its objectives in the short to medium term. The following projects are receiving the highest levels of funding between 2018-2021:

- Road safety (£4.5m)
- Road renewal (£7m) (plus additional council capital funding)

¹³⁵ Barnet Council (2018) Consultation Draft Local Implementation Plan. <https://engage.barnet.gov.uk/1709/documents/1820>

¹³⁶ Transport for London (2018) News: Exploring demand responsive buses <https://tfl.gov.uk/info-for/media/press-releases/2018/march/tfl-exploring->

- Bus priority (£1.5m)
- Borough cycling programme (£1.5m)

This Transport Strategy will look at the long-term actions LBB can take to not only achieve the MTS aims, but also meet the needs of Barnet’s residents. This section sets out the different kinds of technology that could affect transport choices in the borough, as well as the potential for change for each transport mode.

Technology

There are a number of new and emerging technologies and concepts that could be used to achieve the aims of the transport strategy. These technologies include:

- On demand services 3.13
- Mobility as a Service (MaaS)
- Autonomous vehicles
- Intelligent speed adaptation
- Drones for freight
- Workplace parking levy
- Shared mobility (Car clubs, bike sharing, ebike sharing) 3.14
- Electric vehicles/charging point infrastructure

In this section, each technology or concept will be explored, looking at how they may be implemented in Barnet.

On demand services 3.15

Encouraging users away from the private vehicle, but still allowing them a high degree of flexibility should be enhanced by the growth of on demand technology. A version of this is already employed by Uber and Citymapper. TfL is considering a trial of demand responsive buses with services for up to nine passengers.¹³⁶ This trial is being considered for areas of outer London where car dependency is high and fixed route buses are less able to serve patterns of demand.

Mobility as a Service (MaaS)

MaaS is a user-centric intelligent mobility management and distribution system which brings together multiple public and private mobility service providers and allows users to access them digitally, allowing a user to plan and pay for their journey through a single interface. For

[whether-a-new-demand-responsive-tfl-bus-service-could-complement-existing-bus-network](#)

¹³⁷ Department for Transport (2019) Future of Mobility: Urban Strategy <https://www.gov.uk/government/publications/future-of-mobility-urban-strategy>

example, a single app could unlock a dockless bike and give access to the Underground and bus networks.

MaaS would likely be developed regionally for implementation across London as a whole. There is currently no MaaS system in London, though TfL Oyster cards and journey planner can be seen as a prototype of the benefits of MaaS. Namely, these benefits include a single payment system across different forms of transport and access to a single interface which could plan your journey from start to finish. This kind of system would be user-friendly and decrease barriers to accessing public transport.

Autonomous/Connected vehicles

Developing the usage of real-time information generated by and shared across the transport network will help to improve decision-making by individuals and vehicles about the most efficient route for a given journey. Companies such as WAZE provide data on traffic information and in turn take users’ operations data and feed it back into their systems.

Whilst the technology for autonomous vehicles is developed by the private sector, there is current no clear policy or legislative framework that will guide its adoption. National and regional policy is in the early stages of development and will evolve as the technology moves out of the pilot phase and onto the streets¹³⁷.

Connected vehicles could reduce traffic congestion in Barnet by encouraging drivers to take alternative routes. There are also potential negative impacts if autonomous vehicles increase demand for car travel. If deployed, Connected and Autonomous Vehicles (CAVs) are desired not to be able to circulate without passengers on-board and it is expected that they will positively contribute to walking and cycling. CAVs are likely to travel closer together, unlocking road space to be converted for walking and cycling and Public Transport while maintaining the capacity. It is also assumed, that since 90% of accidents are attributable to human error, the introduction of CAVs could make the urban realm safer¹³⁸. However, it is as yet unknown what the exact impact, disadvantages and advantages, of autonomous vehicles might be, as this is highly dependent on how these vehicles are regulated.

¹³⁸ Transport for London (2019) Connected and Autonomous Vehicles. <http://content.tfl.gov.uk/connected-and-autonomous-vehicle-statement.pdf>

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

- 3.16 Another connected vehicle technology is Selective Vehicle Detection (SVD). SVD is a method of bus priority that allows buses to be progressed through traffic signals by prioritising their passage through junctions.
- 3.17 SVD is currently active in London including Barnet and is managed by TfL. By utilising SVD in key junctions around Barnet, and communicating the benefits of SVD to residents, it has the potential to increase bus ridership in the borough.
- Drones for freight*
- 3.18 Airborne and pavement-based drones are two potential methods of freeing up road capacity. Freight traffic in London has increased 11 per cent in the last four years;¹³⁹ it is possible that drone technology will be used for last-mile deliveries, thereby replacing vehicles on the road. It is expected that there will be particular use cases which will adopt this technology first, such as medical supplies.
- Electric vehicles/charging point infrastructure*
- 3.19 The adoption of electric vehicle technology is well underway, with electric and hybrid cars already active on Barnet's roads. The main limiting factors for this technology are currently affordability and limited driving range / battery life with a lack of chargers limiting possible journeys. While the short driving range is the most frequently cited barrier to EV uptake (26%), existing EVs are deemed suitable for short city-based journeys and the advances in technology are expected to address the problem in the future.¹⁴⁰
- 3.20 The policy for providing electric vehicle charging point infrastructure is already available in the London Plan (2016), with new developments providing 20% active and 20% passive provision for electric vehicles. The Council are installing 80 lamp column chargers across the borough this year¹⁴¹.

By encouraging the switch from fossil fuels to electric vehicles, the borough should see a marked improvement in air quality and a

reduction in road noise on slower roads. However, electric vehicles will not tackle the lifestyle-related health issues in the borough, congestion, or have any impact on road traffic incidents. Air quality improvements arising from electric vehicles only reduce the tailpipe-emitted CO₂ and NO_x particles, not PM_{2.5} or PM₁₀, which are largely caused by the weight and tear of vehicles and road surfaces – on average EVs are 24% heavier.¹⁴²

Electricity can power and hydrogen fuel are being looked upon as alternatives to petrol and diesel. By 2040, a national ban is expected on the sale of petrol and diesel vehicles.¹⁴³ Although no practical alternative fuel exists for heavy goods vehicles at the moment, the National Infrastructure Commission estimates that technology advances should enable electric and hydrogen powered HGVs to be commercially available at the beginning of the next decade.¹⁴⁴

Shared Mobility

3.21 Cutting down on the amount of time vehicles spend unoccupied or used below capacity helps to reduce inefficiency in transport networks, and is being developed by providers such as Beryl and Lime (a popular bike sharing service). Future developments may include options such as shared electric scooters, subject to regulatory changes.

3.22 An example already in use of shared cars in London is to provide car club spaces in lieu of private parking. Car clubs allow people the benefits of having a car without the responsibility of owning one.

3.23 Policy T6.1 of the draft London Plan¹⁴⁵ references the need for car club spaces within new developments as a method of reducing space for parking. For residents and workers who use a car occasionally, car clubs could be an effective method to reduce the levels of parking needed in the borough. Evidence also shows that car clubs reduce car ownership and hence car use, as people tend to use shared car less than personal vehicles.¹⁴⁶

Potential for change and planned schemes within Barnet

Given the low current rates of walking and cycling in the borough, there is a huge potential for an increase in uptake of sustainable transport modes. This potential is further facilitated by the assets Barnet already possesses, such as large areas of green space and good public transport connections to central London. The potential for each transport mode is explored in the following sections.

Walking

According to analysis conducted by TfL¹⁴⁷ there is a huge potential for increasing walking trips. 89% of trips that could be walked are currently done by car; 40% of these trips are less than one kilometre. In this research, TfL states that the number of potential walk trips is highest in Barnet and Croydon, where the number of daily trips exceeds 100,000. **Figure 3.4** and **Figure 3.5** show the potential number of walking trips in Barnet in comparison with other boroughs by number and per capita.

The analysis of potential walking trips defined a trip as a one-way movement from one place to another to achieve a single main purpose, 'trip chaining' trips, where the walking trip is part of a wider chain of trips that cannot be walked in their entirety are included. The analysis looked at trips currently made by a motorised mode such as car or taxi. These trips were further filtered by a number of exclusionary criteria designed to reflect normal walking trip patterns. For example, these criteria exclude trips where the traveller is carrying heavy loads or is over 69/under 12 and the trip is longer than 1.5km.

¹³⁹ Greater London Authority (2018) Future Transport p37 https://www.london.gov.uk/sites/default/files/future_transport_report_-_final.pdf

¹⁴⁰ House of Commons, Science and technology Committee (2019) Clean Growth: Technologies for meeting the UK's emissions reduction targets <https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1454/1454.pdf>

¹⁴¹ Barnet Council <https://www.barnet.gov.uk/citizen-home/parking-roads-and-pavements/Roads-and-Pavements/electric-vehicle-charging-points.html>

¹⁴² Timmers, V & Achten P (2016) Non-exhaust PM emissions from electric vehicles. Atmospheric Environment. <https://doi.org/10.1016/j.atmosenv.2016.03.017>

¹⁴³ Department for Transport (2018) The Road to Zero. Next steps towards cleaner road transport and delivering our Industrial Strategy. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf

¹⁴⁴ Ibid.

¹⁴⁵ Greater London Authority (2018) Draft London Plan https://www.london.gov.uk/sites/default/files/draft_london_plan_-_showing_minor_suggested_changes_july_2018.pdf

¹⁴⁶ CoMoUK London Annual Survey (2018) <https://como.org.uk/wp-content/uploads/2018/06/Carplus-Infographics-2017-London-AW.pdf>

¹⁴⁷ TfL (2017) Analysis of Walking Potential. <http://content.tfl.gov.uk/analysis-of-walking-potential-2016.pdf>

Figure 3.4: Potential walking trips by borough

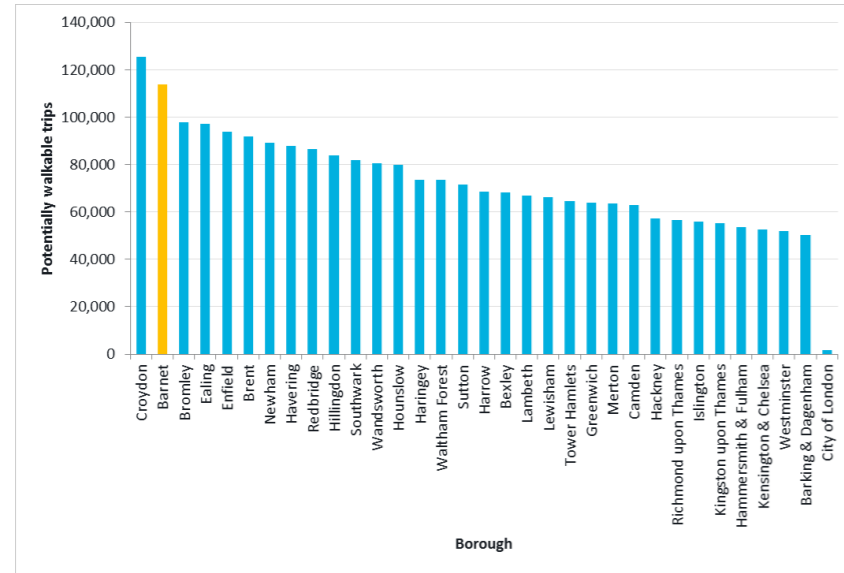
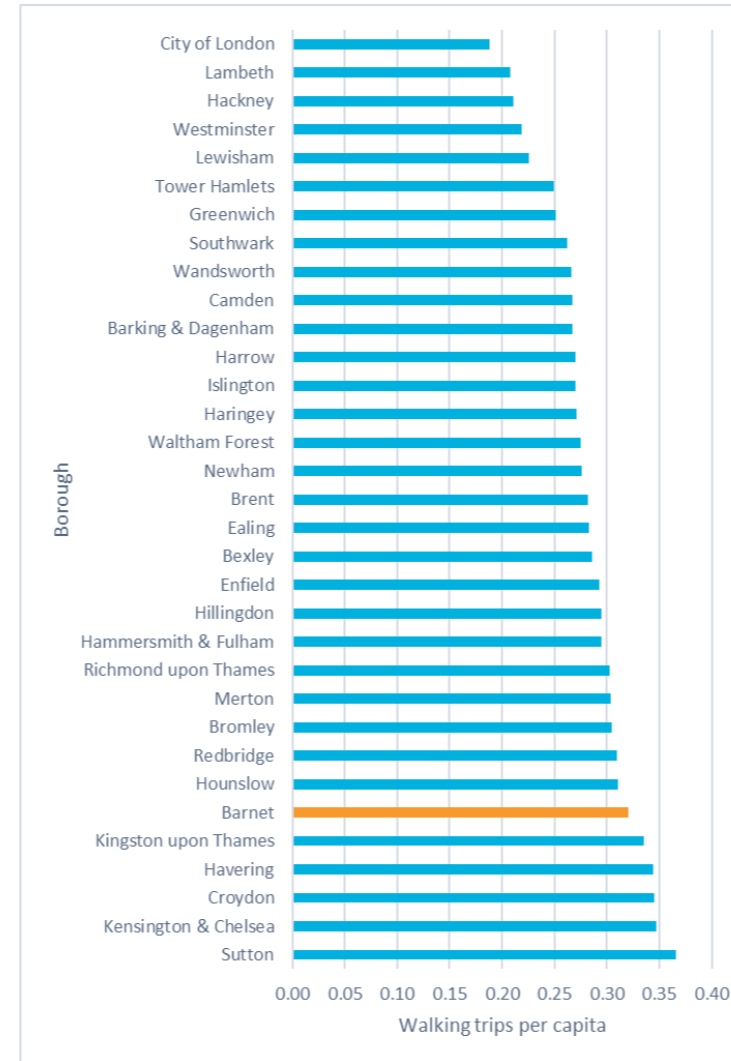


Figure 3.5: Potential walking trips by borough per capita



More than half of all potential walkable trips are for shopping and leisure purposes¹⁴⁸ and several of Barnet’s town centre areas have been identified as having significant walking potential¹⁴⁹. Centres identified include: Burnt Oak, Mill Hill, Edgware, Hendon, Garden Suburb, Golders Green, Finchley Central, East Finchley, Totteridge, New Barnet, Chipping Barnet and Southgate.

According to the TfL Walking Action Plan, 21% of Londoners said that too much traffic, or fast-moving traffic is their main barrier to walking. Reducing the levels of traffic, or reducing the speed of traffic could promote walking. Other concerns included streets not being pedestrian

friendly and fear of road collisions. TfL suggests that for Outer London, the solutions will arise from significantly improving public transport and building denser, mixed-use developments that encourage active travel patterns.

Cycling

The potential for change in cycling in Barnet is two-fold: first, to convert trips that already exist to cycling; second, to ensure that new trips generated by the increase in housing, jobs and amenities in the borough, are cycled.

In terms of current trips, Barnet is second only to Croydon in number of potentially cyclable trips that currently use motorised transport (390,000 a day, approximately one per resident per day).¹⁵⁰ Currently only 8,700 trips are undertaken by bike per day despite 67%¹⁵¹ of journeys in Barnet being less than five miles. Of these 390,000 potentially cyclable trips, 345,000 are currently made by car. Converting these trips to cycle would not only go a long way to meeting the MTS’s active travel and air quality targets, but also would reduce congestion on Barnet’s roads ensuring faster and more reliable journey times for traffic that does need to be on the road. This is true even with reduced road space, as demonstrated by 5% more people, using all modes, able to go through the Cycle Superhighway North-South and East-West corridors two weeks after the cycle superhighways were completed.¹⁵²

The analysis of potential cycling trips defined a trip as a one-way movement from one place to another to achieve a single main purpose. The analysis looked at trips currently made by a motorised mode such as car or taxi. These trips were further filtered by a number of exclusionary criteria designed to reflect normal cycle trip patterns. For example, these criteria exclude trips where the traveller is carrying heavy loads or is over 64 or when the trip is longer than 8km. A similar method is applied to the walking potential trips, with relevant exclusionary criteria.

The Strategic Cycling Analysis undertaken by TfL identifies key potential cycle routes within Barnet, including the A1000, Ballards Lane, Woodhouse Road, Devonshire Road B1462, B552, as shown in Figure

¹⁴⁸ Transport for London (2017) Analysis of walking potential 2016 <http://content.tfl.gov.uk/analysis-of-walking-potential-2016.pdf>

¹⁴⁹ Ibid

¹⁵⁰ Ibid

¹⁵¹ Ibid

¹⁵² London Assembly (2018) London’s Cycling Infrastructure https://www.london.gov.uk/sites/default/files/londons_cycling_infrastructure.pdf

3.6.¹⁵³ Although a Quietway between North Finchley to Hornsey is planned, there are no other concrete proposals for improved cycling infrastructure in the borough to realise this potential.

Delivering dense housing in the local area will provide an opportunity for cycling to be embedded in the design from the outset, rather than retro-fitted, boosting cycle potential further. The Area Action Plan for Colindale¹⁵⁴ already includes opportunities to link the area to West Hendon and Brent Cross avoiding the A5, M1 and A41.

The main barrier that stops people in London cycling more is a perception of danger. This stems from a fear of collisions with motor vehicles and the belief that traffic conditions are too busy to allow people to cycle¹⁵⁵. The LTTS will need to consider how to address this on Barnet's key cycling routes: perceived danger and fear of too much traffic are not inevitabilities but the result of current travel behaviour and road design.

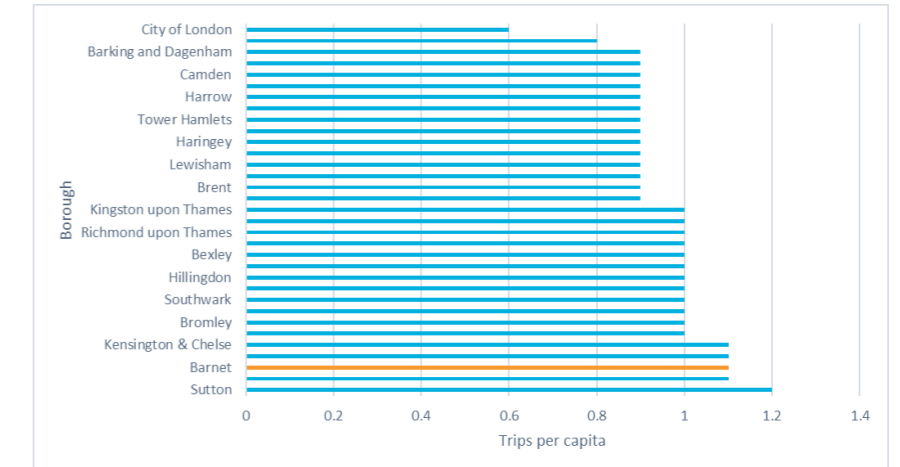
Figure 3.6: Key potential cycle routes



Figure 3.7: Potential cycling trips by borough



Figure 3.8: Potential cycling trips by borough per capita



Bus

The MTS seeks to improve bus journey and reliability by improving conditions for buses serving inner/ outer London and town centres and providing orbital links (MTS Proposal 59). This is particularly pertinent in Barnet, with its poor orbital links by modes other than car. The Mayor has set boroughs the target of increasing average bus speeds by 5 to 15%; in Barnet's case this would improve average bus speed from 10.7mph to between 11.3 and 12.4mph.¹⁵⁶ The best way to do this in outer London is to reduce congestion, by encouraging more trips to be undertaken by walking, cycling and public transport.

The same MTS proposal describes potential for an orbital express network that would see an express bus corridor encircling London. Extending from Ilford, through Barnet to Heathrow it would connect with already existing routes from Heathrow going towards Kingston and Croydon. The LTTS must consider these plans and how they fit with the wider aims of the borough.

The Borough has very few public transport links on the orbital routes. Those that do exist are suffering of low reliability and delays. The advantages of car travel are compounded by the door-to-door journey, reliability and independence the mode provides.

Table 3.4 compares the travel times between eastern and western town centres / Underground stations for public transport and cars. Car travel is typically two to four times faster. The advantages of car travel

¹⁵³ Transport for London (2017) Strategic Cycling Analysis <http://content.tfl.gov.uk/strategic-cycling-analysis.pdf>

¹⁵⁴ Barnet Council (2010) Colindale Area Action Plan. <https://www.barnet.gov.uk/citizen-home/planning-conservation-and-building-control/planning-policies-and-further-information/local-plan/colindale-aap/colindale-area-action-plan.html>

¹⁵⁵ Transport for London (2017) Attitudes to Cycling <http://content.tfl.gov.uk/attitudes-to-cycling-2016.pdf>

¹⁵⁶ TfL LIP Information to Boroughs, 2018

are compounded by the door-to-door journey, reliability and independence the mode provides.

Table 3.4: Orbital travel times using public transport vs private car¹⁵⁷

		West							
		Edgware		Burnt Oak		Cricklewood		Golders Green	
		PT	Car	PT	Car	PT	Car	PT	Car
East	High Barnet	50	16+	40-50	16+	35-45	22+	35-45	18+
	North Finchley	40-50	18+	40	14+	35-40	12+	30-35	10+
	Finchley / Church End	30-35	14+	30-40	12+	25-35	10+	20	7+
	East Finchley	35-40	20+	35-40	18+	25-35	12+	20-30	7+

Underground

- 3.24 The key planned upgrade for Barnet’s residents is the capacity upgrade at Camden Town. By creating more circulation space to change between trains underground at Camden Town, future capacity expansion on the Northern Line is facilitated. However, this plan has been put on hold until capital funding is available.
- 3.25 Mill Hill East is scheduled for step-free access improvements by the end of 2020. By 2022, 40% of the tube network will be step-free, including popular destinations for Barnet residents such as Bank.
- 3.26 However, it is expected that the increase in residents in Barnet will drive more crowding on both branches of the Northern Line. By 2041, with only the schemes already committed, the High Barnet branch in the morning rush hour is expected to exceed 5 people per square metre before leaving the borough and the Edgware branch shortly after¹⁵⁸. Data from Massachusetts suggests 61% of men and 69% of women refuse to board public transport if there are more than 4 people per square metre already on board.¹⁵⁹ The LTTTS must consider how the Council can alleviate this situation.

¹⁵⁷ Travel times when using public transport and walking vs private car. Times estimated for a journey beginning during the morning peak.

¹⁵⁸ GLA (2018) Mayor’s Transport Strategy

Rail

There are three key rail schemes that will affect Barnet’s residents: a new Thameslink station at Brent Cross; Crossrail 2; and London Overground improvements such as the West London Orbital.

As part of the Brent Cross redevelopment, a new Thameslink station will be built at Brent Cross West, On the same line as Cricklewood, Hendon and Mill Hill Broadway, Brent Cross West will provide access to Kings Cross in under 15 minutes. The new station is scheduled to open in 2022. The LTTTS should seek to capitalise on this opportunity to encourage modal shift, particularly by ensuring that residents living in the new developments in the area use this new station.

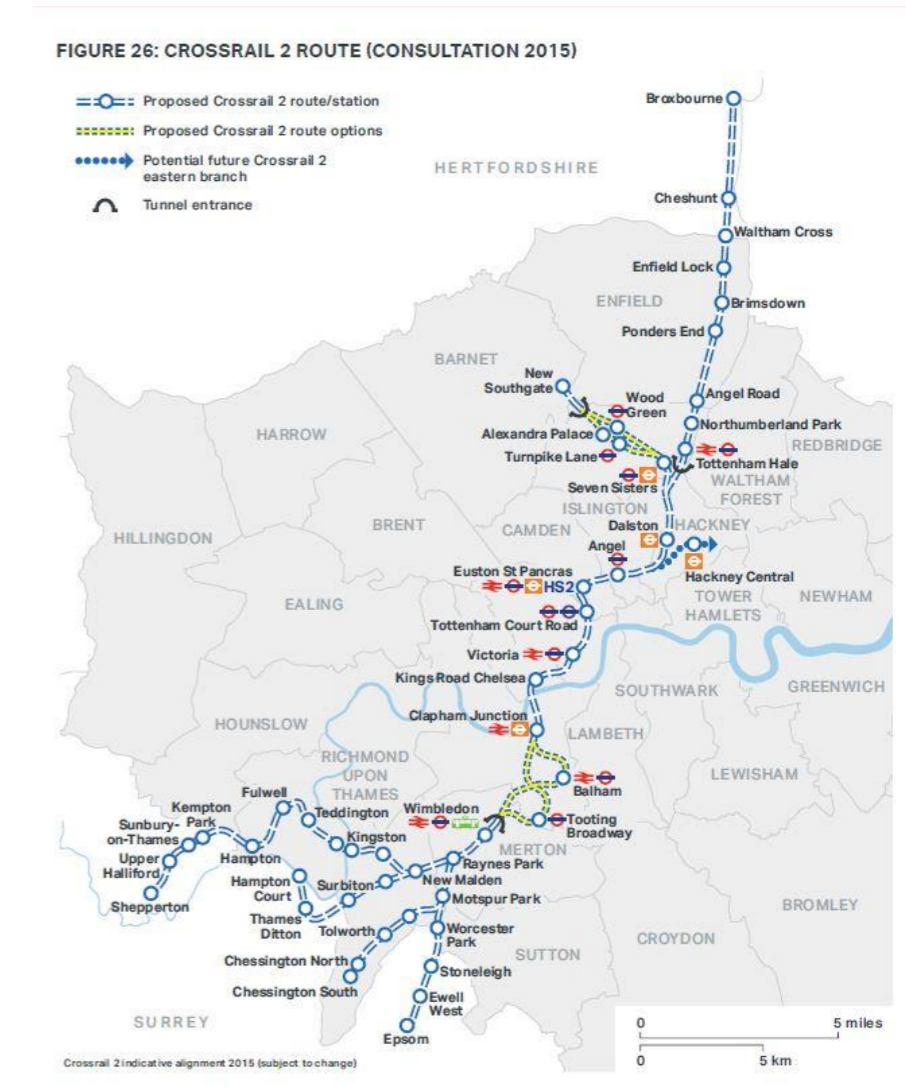
Crossrail 2 is proposed to open by 2031. Though the Crossrail 2 route alignment and stations have yet to be finalised, Proposal 61 in the MTS states that TfL will seek for construction to start in the early 2020s. The design published in the MTS includes New Southgate in Barnet as a proposed Crossrail 2 station, as shown in Figure 3.9. However, even without a station within the borough itself, Crossrail 2 will likely have an indirect impact on Barnet residents by alleviating crowding on both branches of the Northern Line through absorbing passenger loads for journeys from north east to central and south London who might otherwise interchange onto the Northern Line. For example, journeys from Seven Sisters to Tottenham Court Road could be completed on Crossrail 2, rather than an interchange with the Northern Line at Kings Cross.

Elizabeth Line (Crossrail 1), which is currently being built, aims to provide an east-west radial link, cutting travel times along the route. According to Transport for London, the line will have a relatively limited impact in areas away from the route and further intervention is required.¹⁶⁰

¹⁵⁹ Massachusetts Bay Transportation Authority (2016) At what level does crowding become unacceptable

<https://www.mbtackontrack.com/blog/48-at-what-level-does-crowding-become-unacceptable>

Figure 3.9: Crossrail 2 route (consultation 2015)



Potential improvements to the London Overground – West London Orbital – are discussed in the MTS, as shown in Figure 3.10. The West London Orbital is a new planned connection that would help connect west of the Borough – the focus area for new housing in the Borough. According to the Transport for London’s business case, the travel times between Brent Cross and Harlesden is the same as between Harlesden and Southfields, despite being 50% shorter.

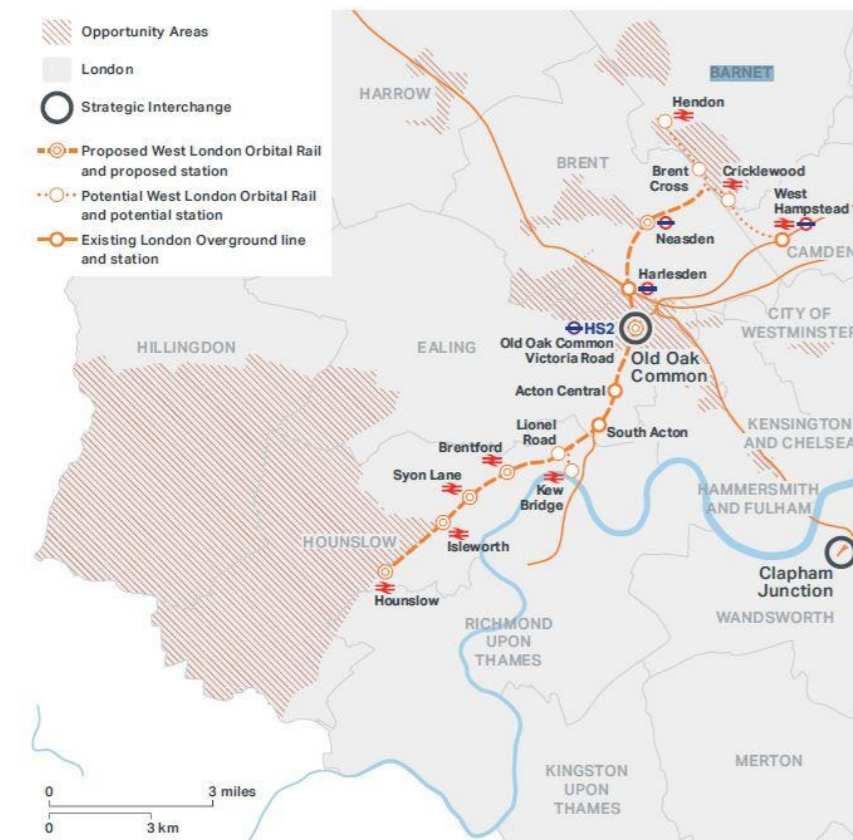
¹⁶⁰ Transport for London (2019) West London Orbital Strategic Business Case content.tfl.gov.uk/west-london-orbital-strategic-outline-business-case.pdf

Brent Cross and Cricklewood will see 7,500 built in the upcoming years and Old Oak and the Great West Corridor are forecast as future large-scale employment centres. An efficient public transport link is crucial to ensure a symbiotic growth of those areas, without a dependence on private cars.¹⁶¹

This proposal could significantly improve currently underserved orbital connections in North West London between Barnet, Brent and on to Hounslow.

Figure 3.10: Proposed West London orbital rail

FIGURE 41: PROPOSED WEST LONDON ORBITAL RAIL



The LTTS must consider these schemes and prioritise which should be lent the greatest support given the likely constrained funding landscape over the next decade.

Car

3.27 Without action from the LTTS, car trips are expected to increase by 8% by 2041. This will place greater strain on the already congested road

¹⁶¹ Transport for London (2019) West London Orbital Strategic Business Case content.tfl.gov.uk/west-london-orbital-strategic-outline-business-case.pdf

network, as detailed in the next section. The LTTS must consider methods that reduce car mode share without compromising the quality of life of residents in the borough.

Impacts

Summary:

- Barnet plans to improve and enhance access to green space
- Road transport emissions need to reduce significantly
- Air quality is predicted to improve in line with technological improvements

What this means for the LTTS:

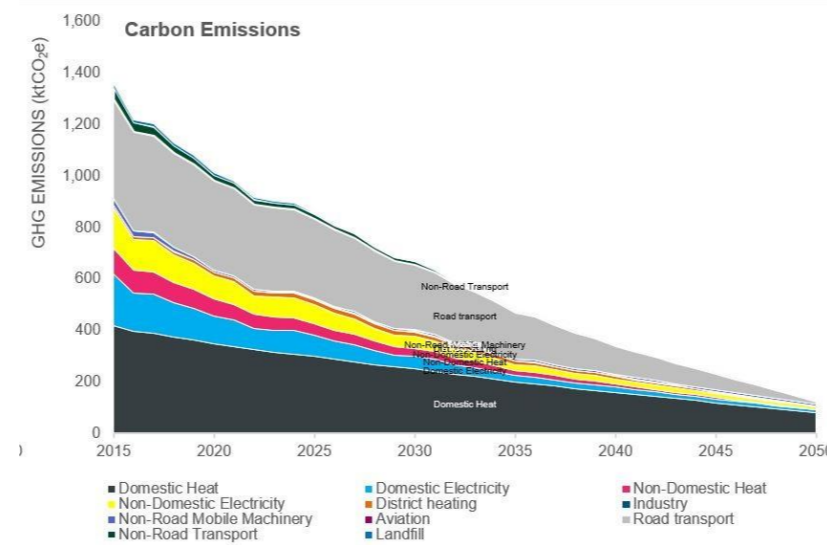
- Improved links to greenspaces should be included within the LTTS as an opportunity to create green routes for walking and cycling
- The LTTS should look at ways to offer residents and commuters more sustainable travel choices, to allow a natural shift away from vehicle use
- Where possible, the LTTS should seek to future proof the borough, allowing space for emerging clean technology to be incorporated into existing transport infrastructure.

Environment

Energy consumption and greenhouse gases

3.28 As part of the Mayor of London’s 2018 Environment Strategy¹⁶², the London Zero Carbon Pathways Tool was developed, which plotted the expected pathway for each borough to reduce Carbon emissions. The chart for Barnet is shown below in Figure 3.11.

Figure 3.11: Carbon Emissions pathway for Barnet to 2050



3.29 As can be seen in Figure 3.11, road transport carbon emissions are expected to reduce dramatically between 2015 and 2050. Between 2015 and 2040, CO₂ emissions from road transport are intended to be reduced from 383 units to 110, a 71% reduction. This reduction is broadly in-line with the neighbouring boroughs of Harrow and Enfield.

3.30 The carbon pathways tool was developed in line with the Mayor’s Environment Strategy, and the reductions reflected in the tool can only be achieved if required investment is made. This includes, for example, installing hydrogen fuelling zones across London and a zero emission zone (ZEZ), banning all petrol and diesel vehicles, in Outer London by 2050. The LTTS will need to prepare for this.

Air quality

3.31 Long term data trends from the air quality monitoring stations are very positive, indicating a steady and consistent reduction in NO₂ concentrations which will be further aided by cleaner fuels and technologies and future legislation. As shown in **Error! Reference source not found.**, approximately 50% of NO_x, PM₁₀ and PM_{2.5} is generated by road transport, therefore a reduction in road transport could be key to improving air quality.¹⁶³

Congestion

3.32 Maps overleaf show the change in demand link flows – need for travel between fixed points in Barnet. The increase in population, expansion

of Brent Cross and other regeneration schemes will mean an increase in traffic demand as shown in Figure 3.12. This figure shows the change in demand on link flows, in other words the demand along different stretches of road. The LTTS will need to reduce and mitigate this excess demand. Figure 3.13 shows that without reduction and mitigation measures, a large proportion of the Edgware area of the borough will have roads operating beyond capacity by 2041. Because the roads will be carrying more traffic and have little extra capacity, junction delays will increase, as shown in Figure 3.14.

Highways England plan to increase capacity on the A1(M) by providing an additional 14 lane miles to relieve congestion in Hertfordshire, including Stevenage and Welwyn Garden City, which may exacerbate these difficulties by delivering more traffic onto Barnet’s roads.

¹⁶² Greater London Authority (2018) Draft Mayor’s Environment Strategy https://www.london.gov.uk/sites/default/files/london_environment_strategy_draft_for_public_consultation.pdf

¹⁶³ Barnet Council (2017) Air Quality Action Plan (2017-2022) <https://www.barnet.gov.uk/sites/default/files/assets/citizenportal/document>

<https://www.barnet.gov.uk/sites/default/files/assets/citizenportal/document>

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

Figure 3.12: Changes in demand link flows to 2041¹⁶⁴

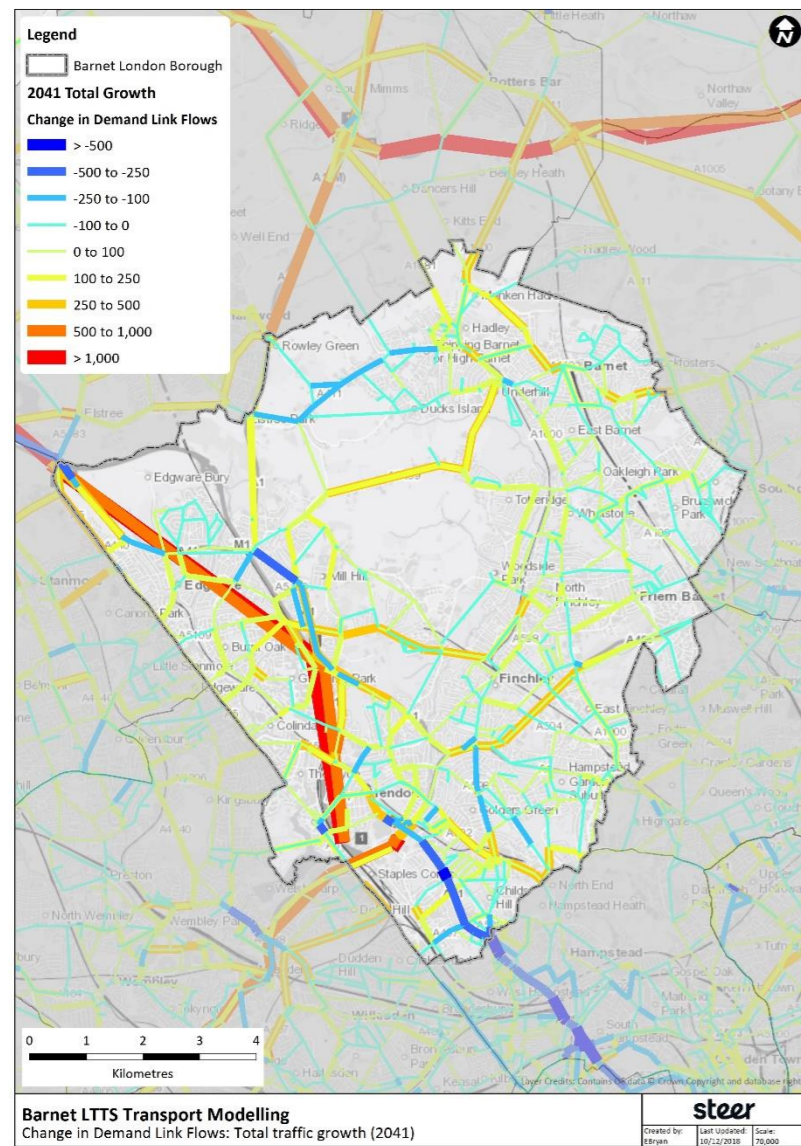


Figure 3.13: Volume over capacity ratio (2041)¹⁶⁵

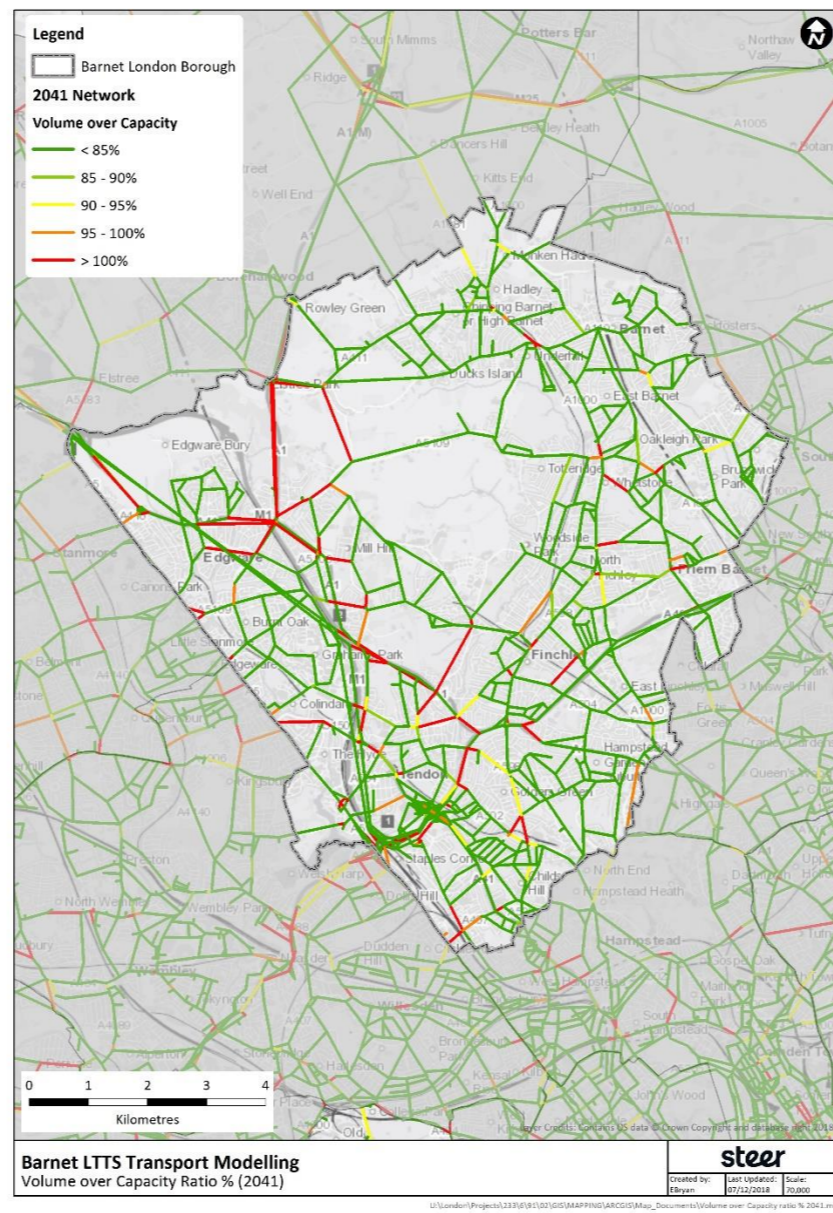
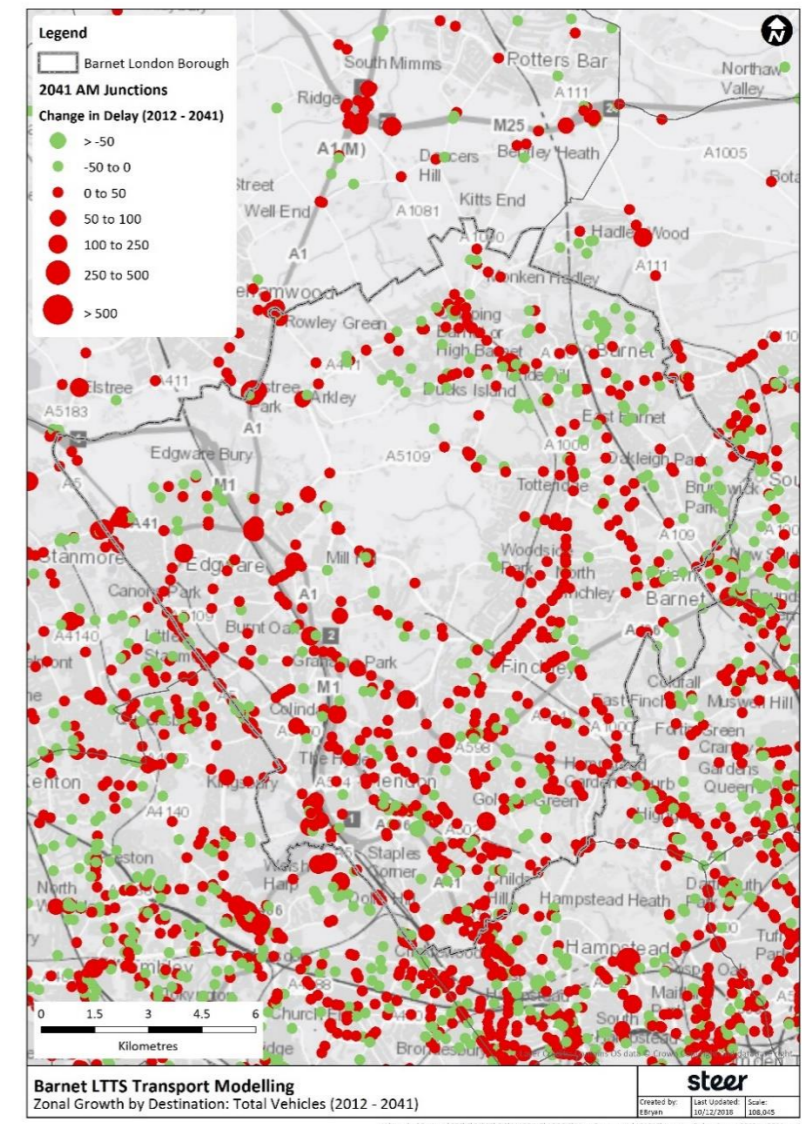


Figure 3.14: Junction delay changes by 2041¹⁶⁶



¹⁶⁴ Steer modelling (2019) based on TfL Strategic Models

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

Evidence Base: Barnet Long Term Transport Strategy 2020 - 2041

If you require Appendices with unnumbered pages please place them after this text.

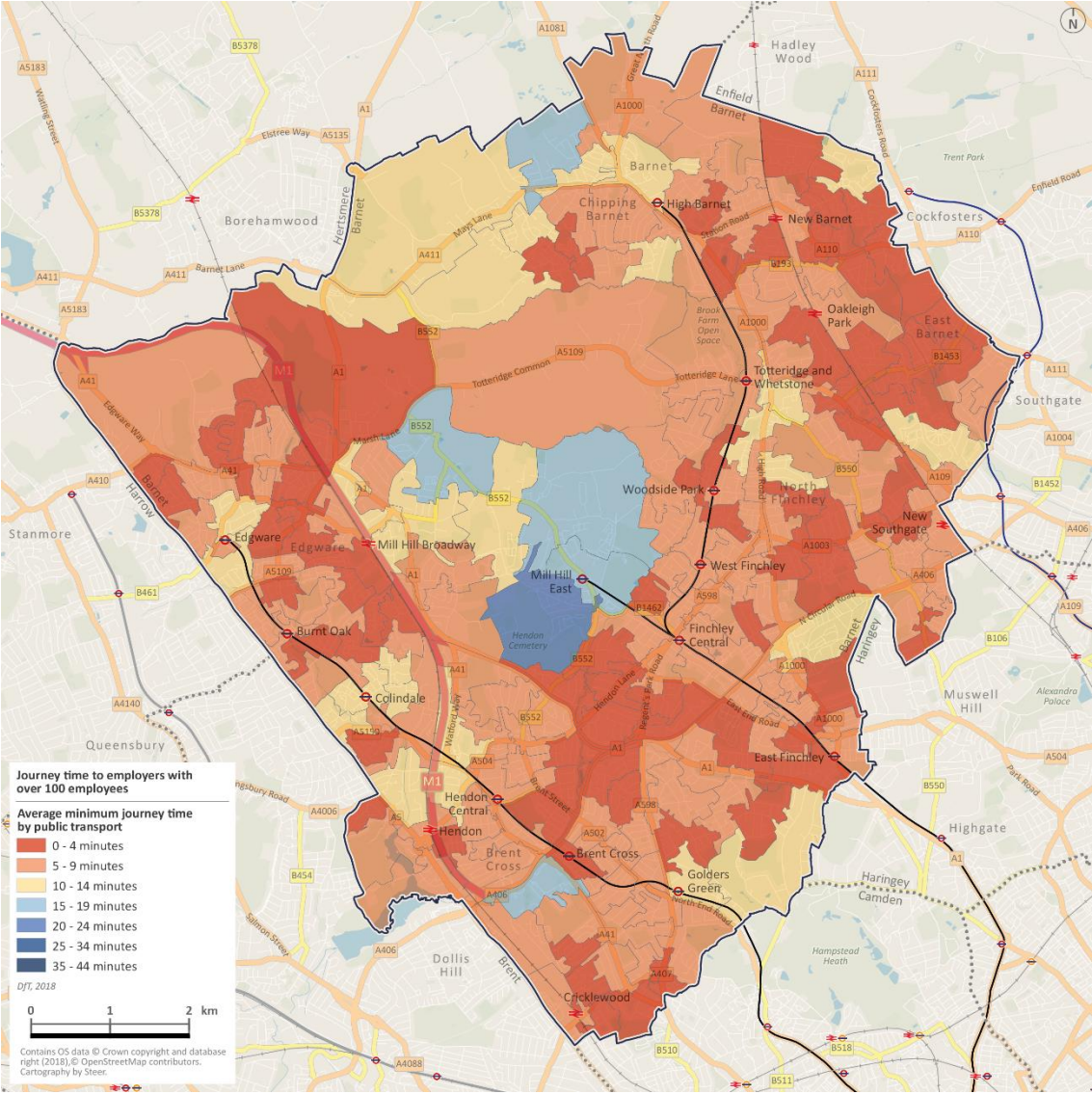
A Journey Time Comparison Maps

The set of maps overleaf illustrates average minimum travel times by Public Transport to:

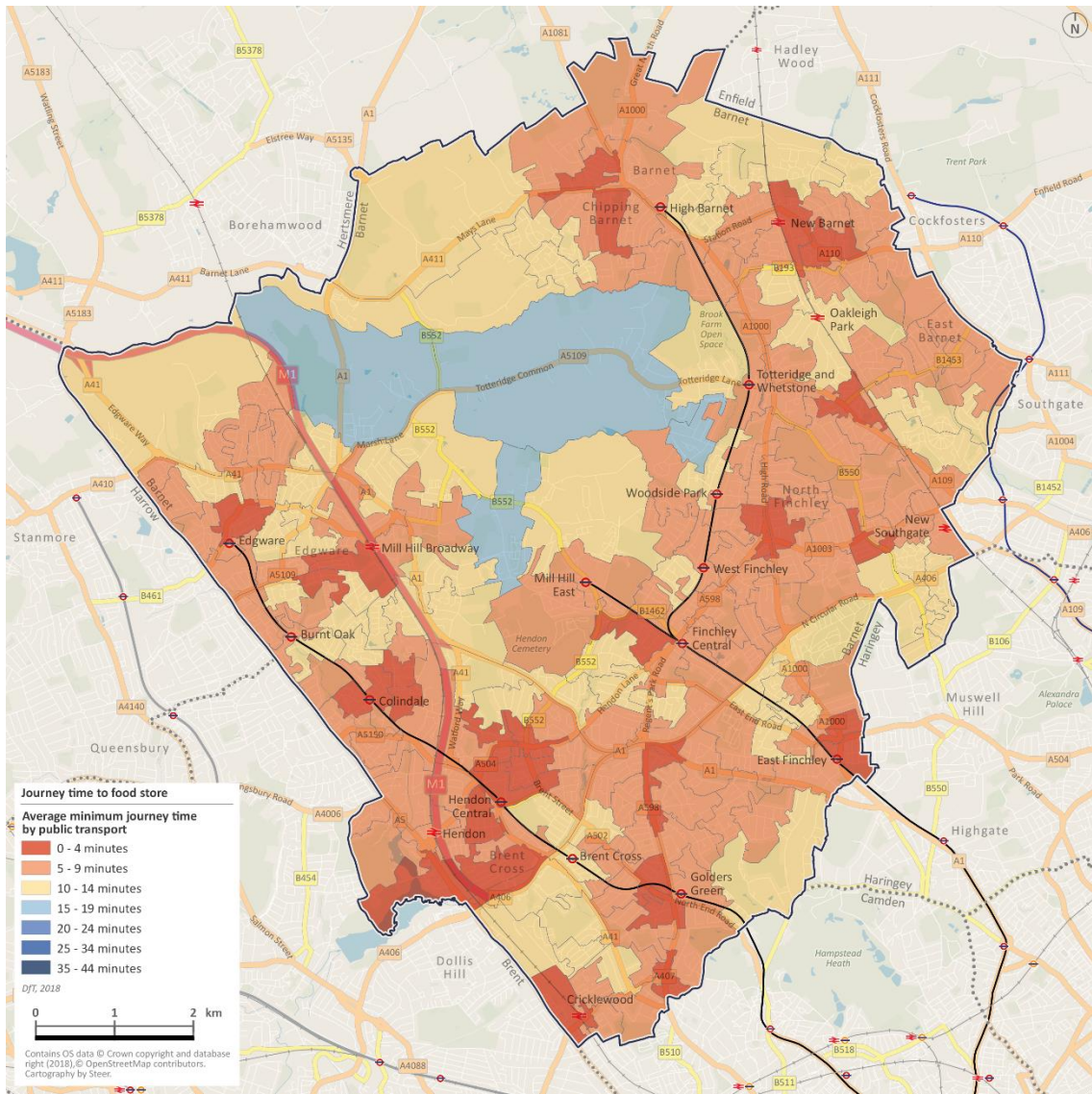
- Employment (employers with over 100 staff);
- Services – food stores, GPs and public hospitals;
- Education – both primary and secondary; and
- Barnet's town centres.

Dark shades of red indicate short travel times to those services, while dark shades of blue indicate long travel times. The travel times are based on services available within the Borough – for example, hospitals outside of Barnet were not considered, The maps not only explain travel patterns in well-accessible areas, but also highlight places which might need improvement to achieve the strategy objectives in the long term.

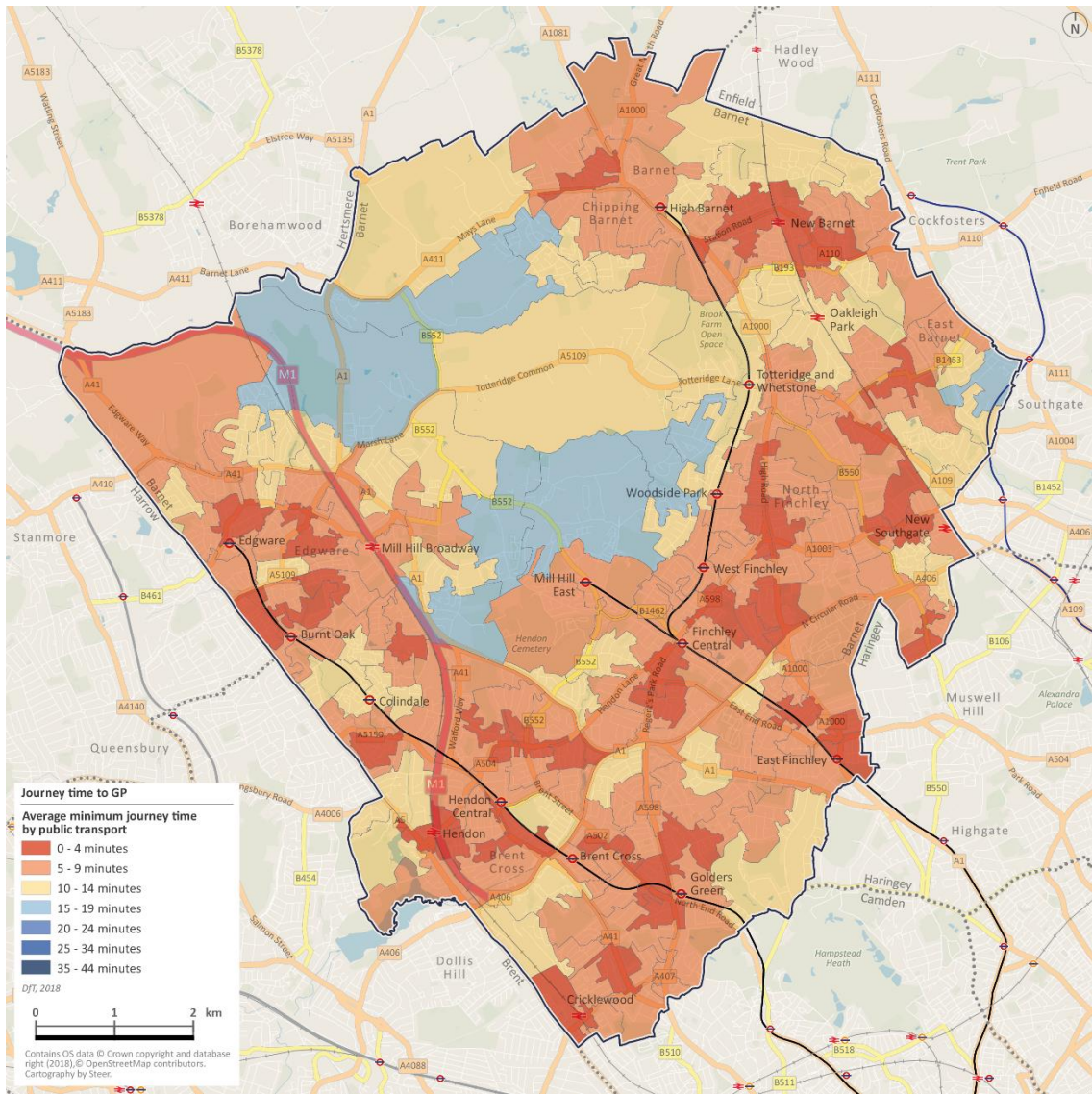
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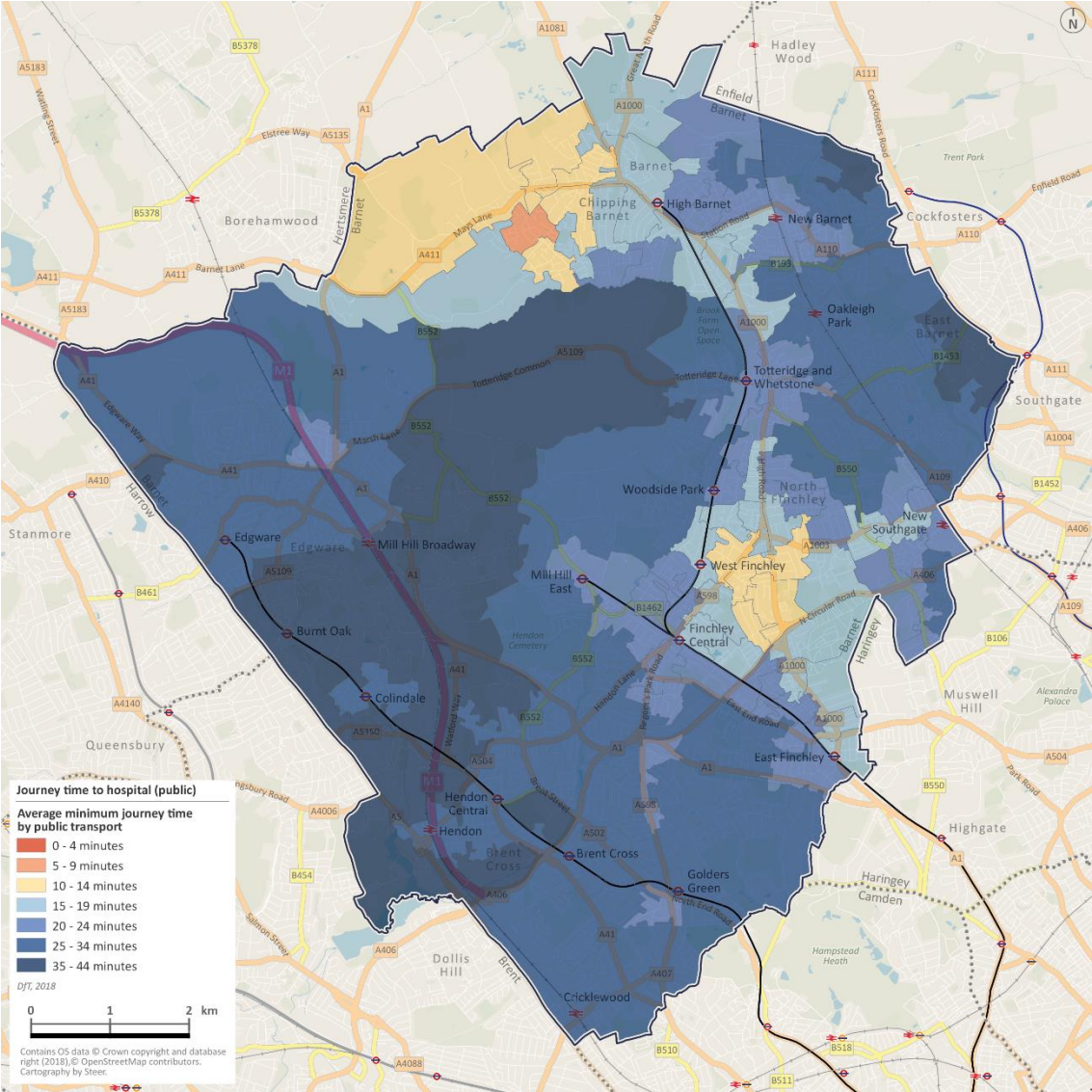
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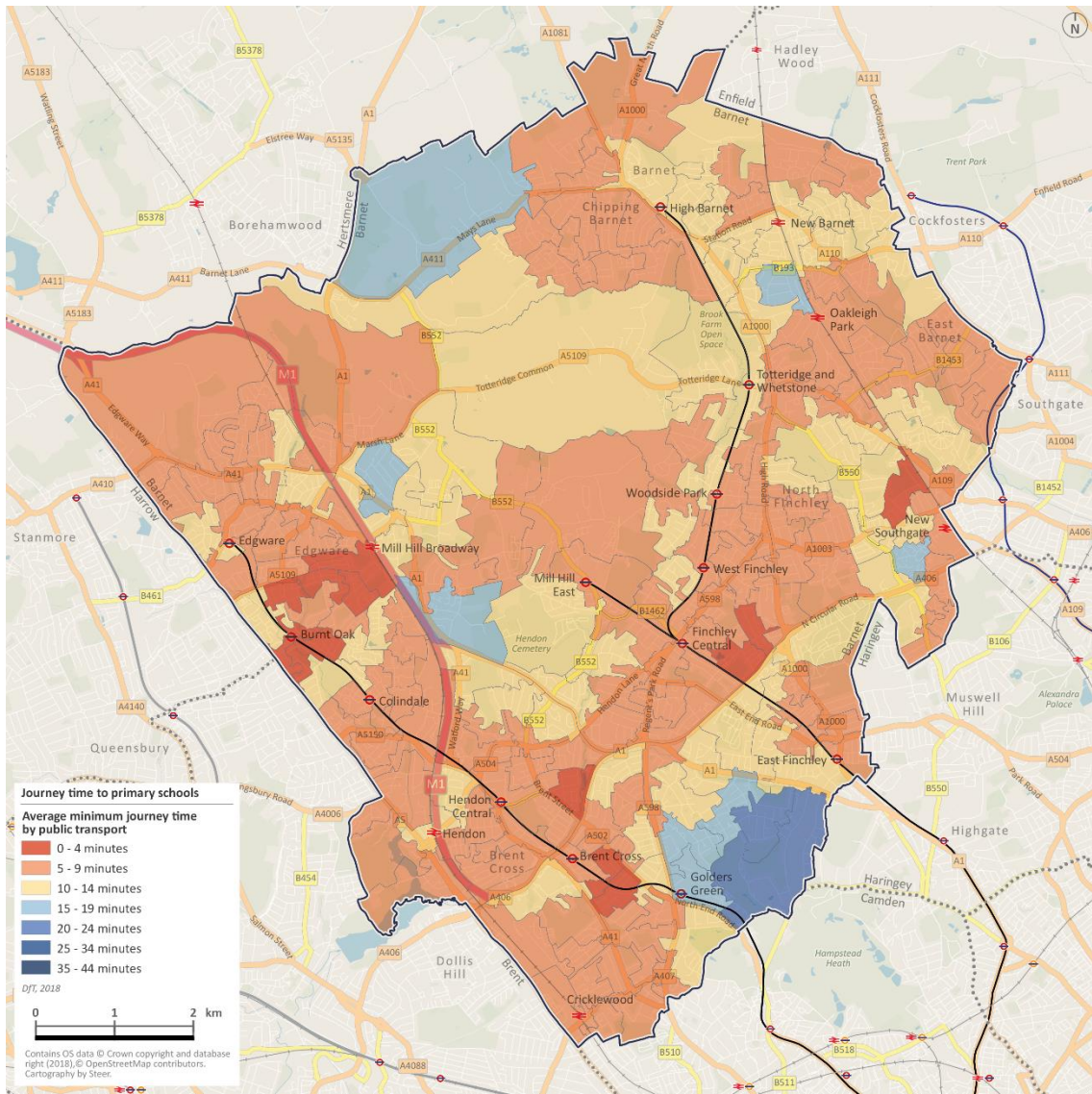
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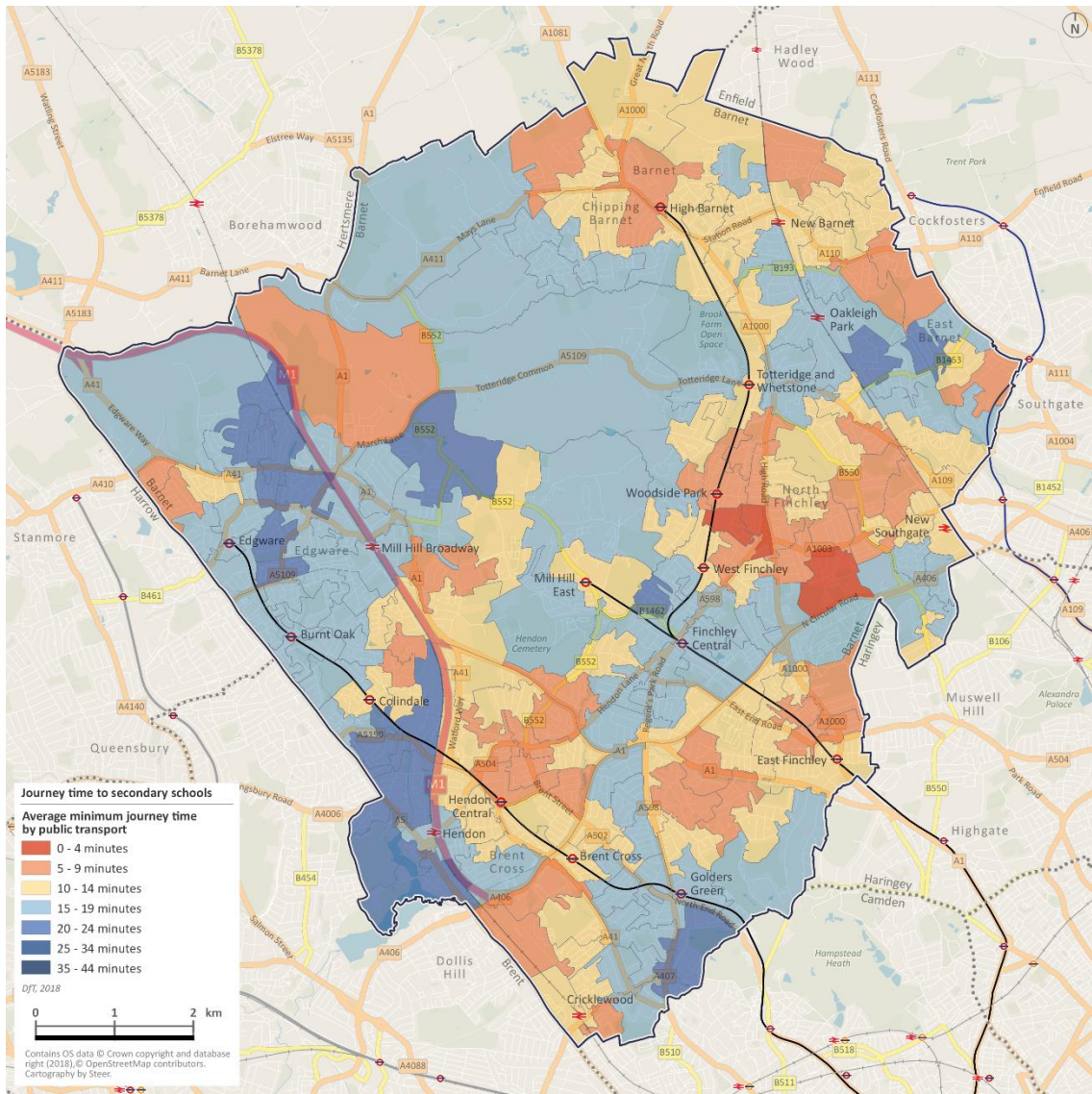
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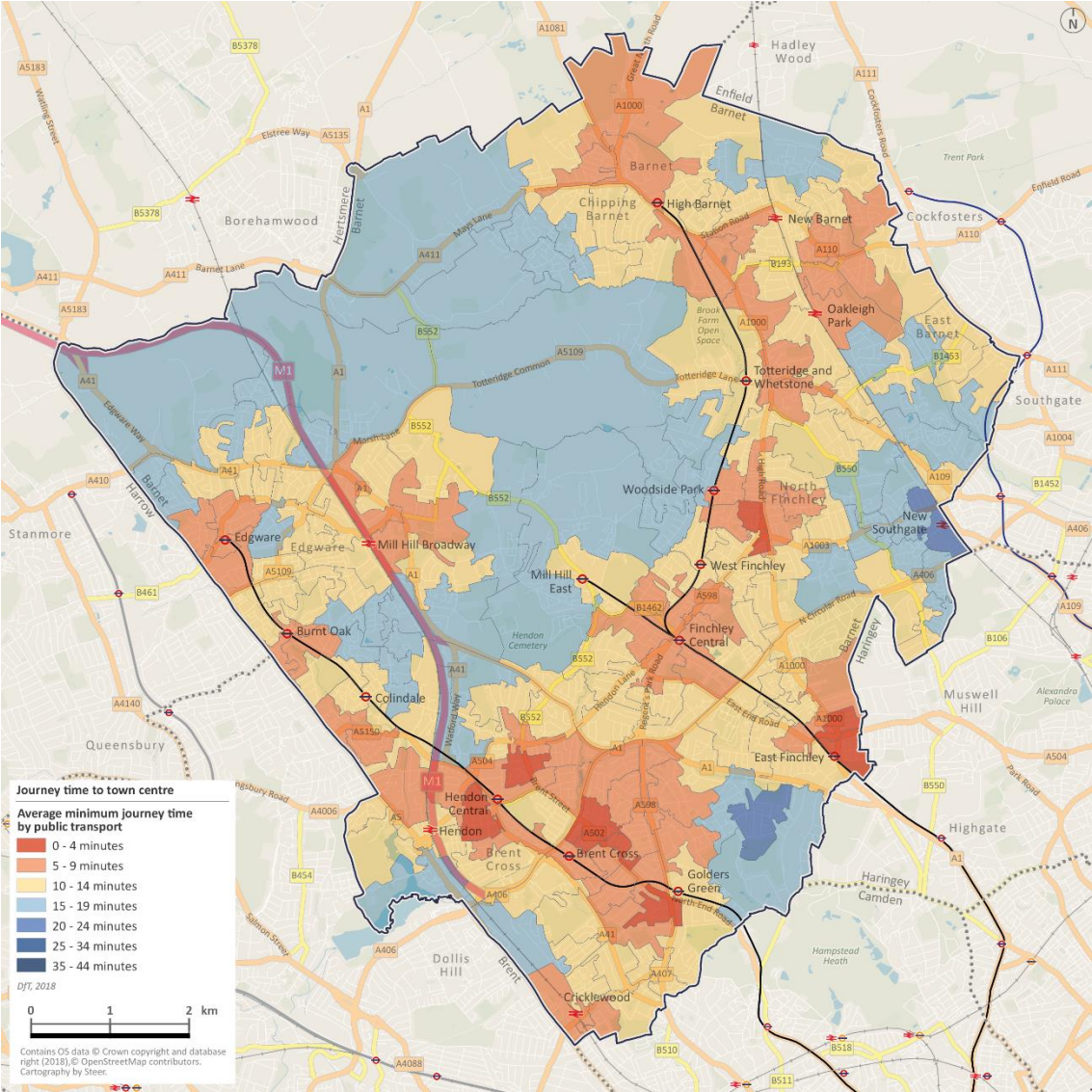
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Control Information

Prepared by

Steer
28-32 Upper Ground
London SE1 9PD
+44 20 7910 5000
www.steergroup.com

Prepared for

LB Barnet
2 Bristol Avenue
Colindale
NW9 4BR

Steer project/proposal number

23369101

Author/originator

Ed Robinson

Reviewer/approver

David Sutanto

Other contributors

Francesca Whitfield

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