Barnet Long Term Transport Strategy 2020 - 2041

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Barnet Council
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1 Introduction

Introduction

What is this document?

The Long Term Transport Strategy 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.

This Strategy:

- 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.

Why is it needed?

Having an overarching transport strategy enables investment to be targeted in order to achieve desired outcomes in a coherent manner. This means the transport network is considered in-the-round when prioritising spending and takes full account of other council strategies such as the Draft Growth Strategy.

Why 2041?

The timescale of 2041 has been chosen to tie in with the Mayor of London's Transport Strategy. It is far enough into the future to allow for major infrastructure changes, whilst still allowing prediction of social, economic and technological change with some degree of confidence.

Context

Who controls transport in Barnet?

Not all transport in the borough is under the Council's control.

Public realm, roads and parking

Major roads which form part of the Transport for London (TfL) Road Network are controlled by TfL (A1, A41, A406) and motorways by Highways England (M1); TfL also operate and maintain traffic signals on all roads, and have certain wide-ranging powers, such as the ability to introduce road pricing proposals like the Ultra Low Emission Zone and the Congestion Charge. However, the Council are responsible for managing and maintaining the majority of Barnet's roads.

The Council oversees the creation and enforcement of on-street parking spaces and Council owned car-parks.

The Council's decisions on road space allocation and parking have wide ranging impacts, not only on the efficiency of moving people and goods but also on the creation of pleasant spaces and successful high streets in the borough.

London Underground and buses

Both the London Underground network (including stations) and bus services are parts of the TfL network and are not managed by the Council. Nevertheless, the Council can and does engage with TfL and can help shape how its residents interact with both modes of transport and can influence the services, for example through changing road design around an Underground Station.

National Rail

Network Rail (NR) own and manage the majority of railway infrastructure in the borough, including tracks and power lines. Railway stations and services in Barnet are managed and operated by Govia Thameslink Railway and its subdivisions (Thameslink, Southern and Great Northern franchises).

Taxis and private hire vehicles

TfL are responsible for licensing taxis and private hire vehicles. Without a license from TfL, it is illegal to work as a taxi or Private Hire Vehicle (PHV) driver.

New mobility

New forms of travel are increasingly available in London, such as dockless bikes and electric scooters. The regulatory framework for these is still emerging: TfL released a Code of Practice for dockless bike operators to work with London boroughs.

Policy

This strategy complements and supports the Council's other strategic policy documents. Transport is particularly important for achieving the aims of the Draft Growth and Joint Health and Wellbeing strategies. This strategy must also work within the framework of regional and national policy.

The Council's Corporate Plan[1]

The Council's existing Corporate Plan 2019 – 2024, includes the objective to

> keep 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.

This strategy document is aligned with these objectives and seeks to develop them across the longer time frame.

The Council's Local Plan

The Council's emerging Local Plan will cover the 2021-2036 period. It will provide a positive strategy for delivering The Council's priorities through sustainable development. It identifies areas for housing and employment growth and reflects the benefits of major investment in infrastructure that the new Brent Cross Thameslink Station will bring and Crossrail 2 and the West London Orbital could bring to the Borough. It will also assist in the delivery of other Council Plans and Strategies. This includes the Draft Growth Strategy which sets out where The Council will focus its interventions to support delivery of development and regeneration. These plans and strategies will provide a robust planning framework against which the aspirations of The Council can be successfully delivered.

The Council's Growth Strategy[2]

At the time of writing, feedback from the consultation on the Draft Growth Strategy is being analysed and considered and a final version of the strategy is being developed. The Draft Growth Strategy runs from 2019 to 2030 and it includes three objectives relevant to this strategy, aiming to create "a connected borough".

A connected borough

Enable new and enhanced public transport connections	improving orbital connectivity and interchange between rail lines, reducing congestion and improving transport accessibility.
Deliver healthier street design to support all forms of travel	responding to demographic and cultural changes to enhance travel choices, promote active travel and improve safety.
Deliver a cleaner, greener and more pleasant borough	reduce congestion and improve air quality, by encouraging the use of more sustainable forms of transport and supporting the transition to electric vehicles and other technologies as they emerge.
State-of-the-art digital infrastructure	Work with public and private sector partners to incorporate this into regeneration schemes, council assets and where local employers need it, such as across our town centres.

The Strategy describes how The Council will facilitate the major growth that is expected in Barnet over the next decade. More information is included in the next chapter.

The Council's Health and Wellbeing Priorities[3]

Barnet's Health and Wellbeing Board's priorities include "creating a healthy environment", which they are seeking to deliver by interalia promoting walking and cycling through the 'healthy streets' approach.

The Council's Local Implementation Plan and Mayor of London's Transport Strategy[4]

The Local Implementation Plan (LIP) details how The Council will play its part in achieving the objectives set in the Mayor of London's Transport Strategy (2018). The overarching objective for the Mayor of London's Transport Strategy is for 80% of all trips in London to be on foot, by cycle or public transport by 2041. For this to be achieved, the Mayor of London has set the target of increasing the proportion of trips made by walking, cycling and public transport in Barnet from 59% today to 72% in 2041. A proportion of The Council's transport budget comes through the LIP process: to get funding, proposals will need to demonstrate how they help achieve the Mayor of London's targets.

A lack of public transport options, particularly to travel from west to east across the borough (and vice versa), and the concentration of key national freight routes on Barnet roads that The Council does not control makes meeting the Mayor of London's targets challenging, particularly for mode share (how people travel), road safety, air quality and parking standards. Despite this, the current annual LIP includes projects to move towards these targets.

The Council shares many of the same goals articulated in the Mayor of London's Transport Strategy, including improving air quality, reducing car dependency, and enabling more Londoners to walk and cycle.

Healthy Streets Approach

The Healthy Streets Approach embodied in the Mayor of London's Transport Strategy, puts human health and experience at the heart of planning the city. It uses ten evidence based indicators to assess the experience of being on London's streets. Rather than providing an ideal model for a street, the approach accounts for each street's function and points towards how better quality environments can be created. The approach is a guide to policy. The Healthy Streets indicators are shown in Figure 1.1.

[1] Barnet Council (2019) Barnet 2024: Corporate Plan 2019-2024 **https://www.barnet.gov.uk/sites/default/files/corporate_plan_-_barnet_2024.pdf**

[2] Barnet Council (2019) Growth Strategy 2030 **https://engage.barnet.gov.uk/growth-strategy**

[3] Barnet Council **https://www.barnet.gov.uk/health-and-wellbeing/barnets-health-and-wellbeing-board**

[4] Barnet Council (2018) Local Implementation Plan; TfL (2018) Mayor's Transport Strategy

Figure 1.1: TfL Healthy Streets indicators

Climate Change Act 2008[5]

The UK Climate Change Act commits the country to reducing greenhouse emissions by at least 80% compared to 1990 emission levels by 2050. In May 2019, UK Parliament declared a climate emergency, calling on the Government to:

> 'increase the ambition of the UK's climate change targets under the Climate Change Act 2008 to achieve net zero emissions before 2050, increase support for and set ambitious, short term targets for the roll-out of renewable and low carbon energy and transport.'[6]

Transport is the largest emitting sector of the UK greenhouse gas emissions and, whereas other sources are decreasing, emissions from transport continue to increase.[7]

[5] UK Public General Acts (2008) Climate Change Act 2008
http://www.legislation.gov.uk/ukpga/2008/27/contents

[6] UK Parliament (2019) Votes and Proceedings Wednesday 01 May 2019
https://publications.parliament.uk/pa/cm201719/cmvote/190501v02.html

[7] Department for Business, Energy & Industrial Strategy (2017) UK Greenhouse Gas Emissions
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/776083/2017_Final_emissions_statistics_one_page_summary.pdf

Policy Objectives: Mayor of London's Transport Strategy & Barnet Council's Local Implementation Plan

Mayor of London's Transport Strategy (2018)	Overarching mode share								
	London's streets will be healthy and more Londoners will travel actively	London's streets will be safe and secure	London's streets will be used more efficiently and have less traffic on them	London's streets will be clean and green	The public transport network will meet the needs of a growing London	Public transport will be safe, affordable and accessible to all	Journeys by public transport will be pleasant, fast and reliable	Active, efficient and sustainable travel will be the best option in new developments	Transport investment will unlock the delivery of new homes and jobs
LB Barnet LIP (2019)	Promote physical activity	Healthy Streets	Vision Zero and reduced crime	Sustainable commutes	Improve air quality, particularly for children	Orbital public transport	Bus priority improvement	Step-free facilities	Sustainable regeneration and growth

Methodology

How has the Long Term Transport Strategy been created?

The strategy has been developed through an evidence-led approach involving extensive stakeholder engagement.

Stage 1: Evidence base

An evidence base was developed covering historic trends, the current situation and an assessment of future scenarios. Data was taken from a broad range of sources: the DfT and TfL data stores, The Council's own work in developing policies such as the Local Plan and the Growth Strategy. Data relating to Barnet was compared to other London boroughs to provide benchmarks. The evidence base was shared with stakeholders via our Transport Strategy steering groups, including the Members, Officers, transport and infrastructure stakeholders and community group stakeholders, in a series of workshops to ensure it reflected their experience of the borough.

Stage 2: Vision

Rather than attempting to predict the future of transport in the borough and then seeking to provide the infrastructure to meet predicted demand, this stage recognised the influence that the strategy will have on shaping the future of transport in Barnet. A vision was developed with officers and Members to articulate what transport in Barnet should achieve by 2041 and how it can contribute to creating a better Barnet.

Stage 3: Action Plans

Transport proposals were then developed and assessed in terms of their contribution to achieving the vision. These proposals were developed through engaging with the same stakeholders from stage 1 and collated into action plans.

Stage 4: Reporting and consultation

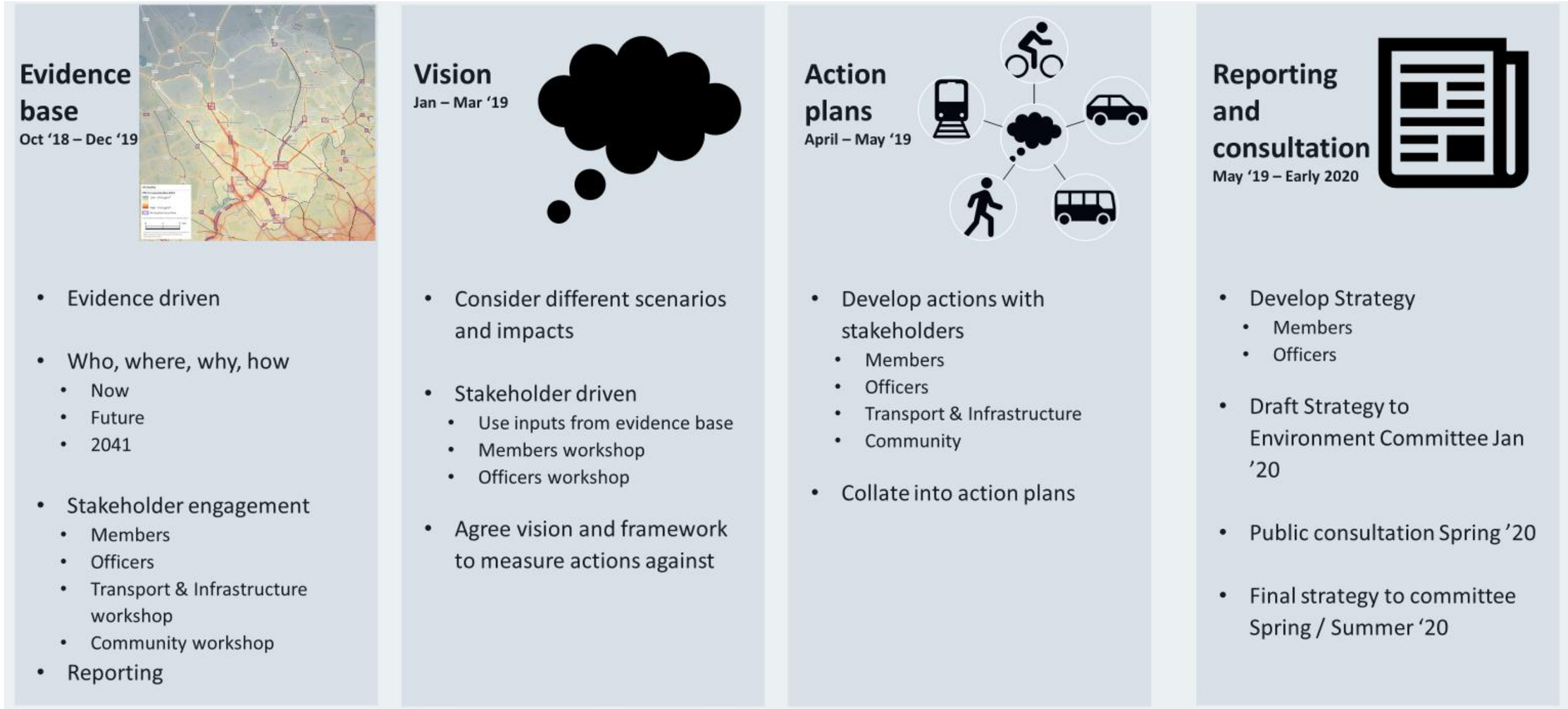
The draft strategy will be considered by Environment Committee in January 2020. Following committee, it is expected that public consultation on the draft strategy will be undertaken.

Content

What does the Long Term Transport Strategy contain?

- *Chapter 2 – Barnet in context*: Summary of existing travel patterns in the borough and likely changes, including likely impact of new technology.
- *Chapter 3 – Vision*: What the strategy hopes to achieve.
- *Chapter 4 – Proposals*: What is necessary to achieve the Vision.
- *Chapter 5 – Delivery Plan*: What actions need to be taken to consider and deliver the proposals, by whom and when.

Figure 1.2: Long Term Transport Strategy development process



2 Barnet in Context

Introduction

The information presented in this chapter is a summary of the Evidence Base document, produced as the first stage of developing the strategy, which should be referred to for full data sources. The full Evidence Base can be found online at XXX [the link will be provided in the final version – for the draft strategy the Evidence Base can be found as Appendix B to the Committee Report].

Barnet today

1.1 Barnet is a popular place to live, work and do business: it offers quick access to central London via the Northern Line, Thameslink, Great Northern and the bus network; a high quality and quantity of green space; and excellent schools, town centres and services. The borough hosts 10% of all active businesses in outer London and 5% across London as a whole.

Working with our partners, The Council has been successful in ensuring regeneration and development has continued across the borough despite the economic challenges of recent decades. The Council has focused on bringing forward specific areas for growth, such as Colindale, Mill Hill East and Brent Cross, alongside placing a strong emphasis on estate regeneration to deliver renewal on their largest housing estates. Regeneration has progressed at Dollis Valley, Grahame Park and West Hendon, with over 2,000 new homes delivered, alongside improved community facilities and better quality open spaces; notably, May 2018 marked the completion of Stonegrove Spur Road, part of a project which delivered 999 homes.

The Council has worked hard to deliver against its housing targets, for example 2,360 new homes were delivered in Barnet in 2017/18, meeting The Council's current London Plan housing target. This was the highest number of any London Borough, equating to 7.4%, or one in thirteen, of London's newly built homes being delivered in Barnet.

1.2 Spatially, the borough can be divided into three areas with differing characteristics:

- **West**. The A5 road corridor links town centres such as Edgware, Burnt Oak / Colindale, West Hendon, Brent Cross and Cricklewood, which are served by the Northern line and Thameslink services. It has an urban character: wards such as Colindale and Burnt Oak have population densities approaching the inner London average. The area is also home to many key destinations including Brent Cross Shopping Centre, Middlesex University and the RAF Museum.
- **Central**. The north of the Barnet's central area includes a significant proportion the green space which the borough is known for. Population densities are some of the lowest in London: the area is key to the borough's leisure and wellbeing targets. There is limited transport connectivity across the centre from one side of the borough to the other (orbital connections), except by car.
- **East**. The east of the borough includes key employment sites and historic town centres such as High Barnet, North Finchley, Finchley Central and Golders Green. Similar to the west of the borough, there are very good north to south (radial) connections provided by the Northern Line and Great Northern services, though some areas are some way from a station.

The borough is also of critical strategic importance for London: key freight routes including the M1, A1 and A406 run through the borough, providing access for the goods and services that the city depends on. This strategic location means up to 25% of road traffic in Barnet is passing through, neither originating nor ending in the borough. Barnet is part of the London Lorry Control Scheme, designed to reduce road danger from freight vehicles.

Transport in Barnet today

Barnet has high car use for an outer London borough, particularly in the north of the borough. Barnet has the second highest car ownership levels per household in London: almost double the level of neighbouring Haringey. These cars are overwhelmingly petrol or diesel: despite the number of electric cars doubling in the past two years, in late 2018 only 1% of all cars registered in the borough were electric. Almost a third of Barnet households do not have access to a car

Journey distances in Barnet do not mean that travel by car is an inevitable choice: two thirds of car journeys in the borough are under 5km and a quarter of car trips begin and end in the borough. Furthermore, all seven main Barnet town centres have a PTAL rating above 4, meaning they are easily accessible by public transport. Although radial journeys are much easier than orbital travel. TfL also estimate that there are almost half a million journeys per day in Barnet that could be converted from motorised transport to walking and cycling, after excluding

journeys that are too long, part of a chain (such as from home to the shops to school) or involving carrying heavy shopping or equipment. The key barriers to walking and cycling are environments dominated by fast flowing traffic, lack of cycling infrastructure and fears over safety.

Commuting patterns, particularly in wards in the north of the borough, are also dominated by the car, as shown in Figure 2.1. This is unlikely to be an issue of access to other modes: 62% of all residents in the borough live within 1200m of a rail or Underground station; 100% within a 20-minute cycle. Nor is it a problem of distance: Barnet businesses mostly employ Barnet residents, and the other key centre of employment is central London, accessed mostly via the Northern Line in under 30 minutes (Figure 2.2). Instead, it is in part a result of bus, rail and Underground services not enabling people to cross the borough orbitally in a quick, efficient and comfortable manner: underground and rail services run into central London not across the borough, and buses get caught in the same congestion as private vehicles.

Those services to central London are vital for the borough, as demonstrated by the map of destinations of tube journeys originating in Barnet (Figure 2.3): the top ten are all key employment sites in central London on the Northern Line. Thameslink and Great Northern services also provide links into central London but are currently relatively underused by Barnet residents as they do not provide the frequencies offered by either the Northern line or the Piccadilly and Jubilee lines, which sit just outside of the borough boundary. The Northern Line is capacity constrained and any problems with the running of the line causes major difficulties to Barnet residents.

Figure 2.1: Proportion of commutes by car

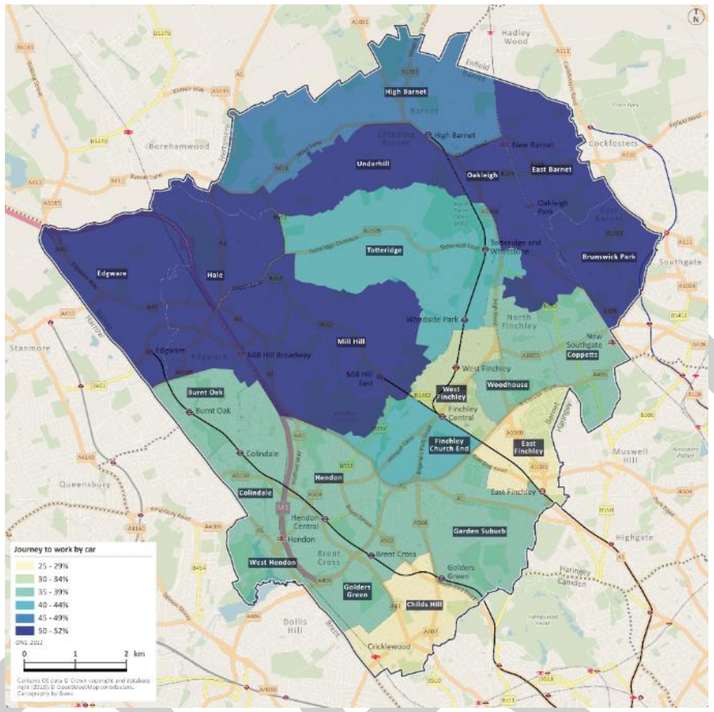


Figure 2.2: Number of employment centres within 30 minute public transport journey

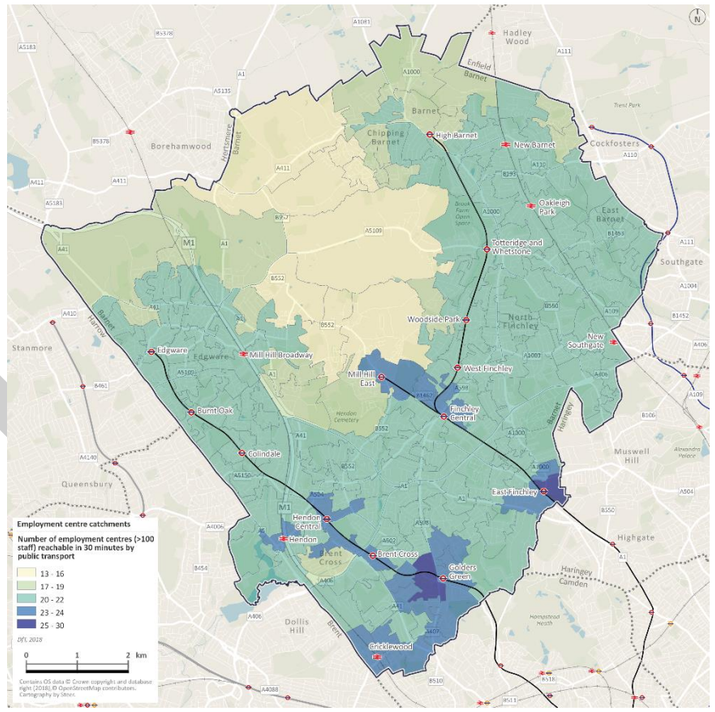
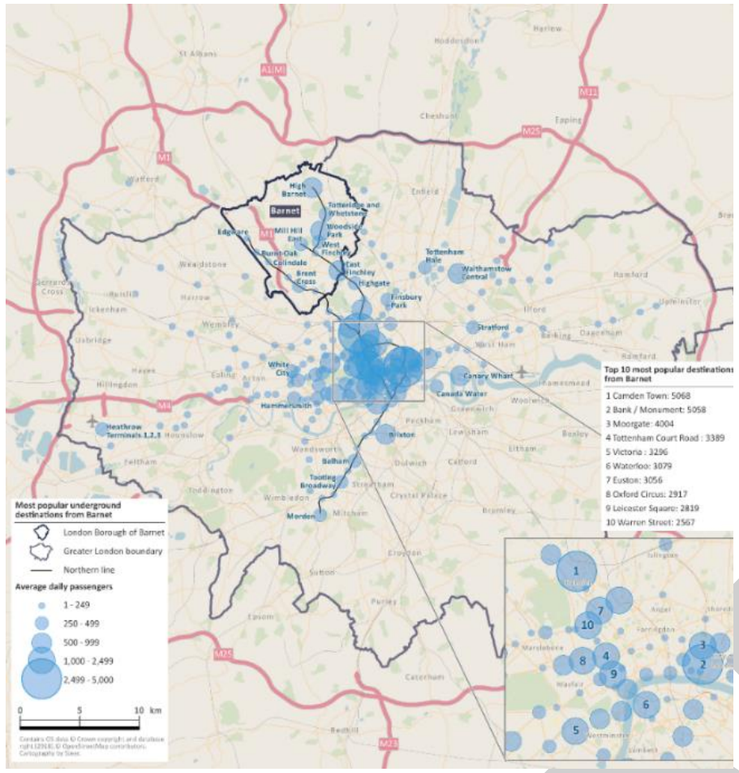


Figure 2.3: Most popular destinations of London Underground journeys originating in Barnet



Impacts of high car use

High car usage in Barnet has four key negative consequences: serious road traffic accidents, time lost due to road congestion, the impact on health in the borough and air quality. Moreover, these impacts are not equally distributed: the worst air quality in the borough is in the west, where levels of car ownership are lowest.

Road safety

Almost two people per week are killed or seriously injured on Barnet's roads every week: 71% of collisions in Barnet involve cars and 79% of people killed or seriously injured in London are walking, cycling or riding a motorcycle when they are hit.

Congestion

Cars are less space efficient than other modes. By taking more road space to transport the same number of people, they cause more congestion and slower journey times. 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.

Health

Life expectancy in Barnet is 82.2 years for men and 85.5 years for women, significantly higher than the London and national averages. Achieving a minimum of 150 minutes of exercise per week can reduce the risk of chronic conditions which limit the number of years spent in good health.

Just under half of Barnet's residents are failing to achieve the recommended level of physical activity participation. This is particularly acute for people who commute: residents aged 35-44 years report the second lowest levels of physical activity participation compared to other age groups and levels are significantly lower than the national average. 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*. Inactivity levels also contribute towards one in five 5 year olds, one in three 10 year olds and more than half of adults in Barnet being overweight or obese.

Social isolation leads to multiple ill health consequences: older adults are at particular risk of social isolation caused by poor transport infrastructure. In areas where public transport is insufficient, this can increase the risk of social isolation amongst older adults.

Air quality

Within Barnet, emissions from traffic have the most severe and pervasive impact on air quality justifying making the whole Borough an Air Quality Management Area (AQMA). Air quality in some areas of Barnet 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; $PM_{2.5}$ concentrations are shown in Figure 2.4. Modelled data relating to 2016 (released by TfL in July 2019) shows that twelve schools in Barnet breached legal air quality limits.[8] Air Quality is a problem in Barnet, however progress has been made through a variety of initiatives, as noted in the Council's Air Quality Action Plan which was produced in 2017. Initiatives in 2018/19 include the introduction of electric vehicle charging points, the planting of trees in poor air quality areas and education and communications with school children[9]

Figure 2.4: PM2.5 concentration in Barnet

[8] 2016 London Atmospheric Emissions Inventory (2019) supplied by the GLA

[9] Barnet Council (2017) Air Quality Action Plan https://www.barnet.gov.uk/environmental-problems/air-quality/air-quality-action-plan

Major planned transport improvements

There are a series of major proposals planned in Barnet and across the wider region which will impact travel patterns in Barnet. Each of these proposals is in keeping with the Mayor of London's Transport Strategy. Some of the major proposals planned are noted below.

Brent Cross West

Creation of the new Brent Cross West station will link the Brent Cross Cricklewood development with St Pancras International in 15 minutes via Thameslink services, with an expected 2.5 million passengers per year. At present it is due to open in May 2022, the project will also deliver a drivers' accommodation centre, waste transfer station, rail freight facility and replace existing railway sidings, as well as two new bridges across the railway.

Status: committed and funded

Ultra Low Emission Zone

The Ultra Low Emission Zone (ULEZ) was introduced by TfL in Central London in April 2019. The proposal charges all vehicles entering the zone at any time which do not conform to Euro VI standards a daily fee of £12.50 (on top of the existing Congestion Charge during congestion charging hours). It will be extended to the North and South Circular in 2021.

In its first four months operating in central London, the ULEZ has accelerated the uptake of cleaner vehicles: compliant vehicles, which do not have to pay, increased as a proportion of all vehicles in the zone from 39% in February 2017 to 73% in the first four months of the charge being introduced. The number of older, more polluting vehicles decreased by a third.

Status: committed and funded

TfL Bus improvements

TfL are making various improvements to their bus services, including ensuring buses conform to the latest emissions standards and have better information for passengers. Of particular relevance to Barnet, they are extending and redirecting bus routes specifically to support housing growth in outer London, such as the 125 bus route which has been extended to serve Colindale.

Status: committed and funded

Northern Line capacity upgrade

The Northern Line is of vital importance to Barnet. There are several proposals to improve the running of the Northern Line: for example, Bank Station will have 40% greater capacity by 2022. TfL also have plans to increase the capacity at Camden Town. Both these improvements could facilitate more frequent services on the Northern Line: the Mayor of London's Transport Strategy suggests the Northern Line could carry 54,000 additional passengers a day if capacity was increased to 30-32 trains per hour

Status: part committed and funded

Underground Station Step free access

Of the 13 Underground stations in Barnet, 5 have step-free access from street to train and 2 from street to platform. Burnt Oak and Mill Hill East are scheduled for step-free access by 2020; Colindale by 2024.

Status: committed and funded

West London Orbital

The West London Orbital is a rail proposal aiming to improve orbital travel in the outer London boroughs. There are two branches to both the north and south of the core proposal, which links Neasden to South Acton. Both northern branches run through Barnet: one from West Hampstead to Neasden via Cricklewood; the other from Hendon to Neasden via Brent Cross. These would connect through to Hounslow and Kew Bridge in the south, as well as facilitating interchange with HS2 at Old Oak Common. The Council will lobby to ensure both branches in Barnet are included in the final scheme.

Status: planned

Crossrail 2

Crossrail 2 is a proposed railway linking south west and north east London which would increase London's rail capacity by 10%. The benefit to Barnet residents would be the relief that Crossrail 2 is expected to provide to the overcrowding on the Northern Line, although it will have a larger impact on the southern section of the line. The Council will support Crossrail 2 proposals, particularly if a New Southgate link is included.

Status: planned

Barnet in the future

Barnet is a growing borough. By 2030, approximately 50,000 more people will live in Barnet, an increase of 13%. The Draft London Plan envisages delivery of 23,490 homes over 10 years to 2026. However, high demand for housing means that additional capacity for new homes will need to be identified and delivered in the borough sooner. The exact target number of homes needs to be agreed, as the Mayor of London and Central Government have published different targets for Barnet. But it is known that know it will be at least 50% greater annually and could be as much as 45,000 homes by 2030. There are also estimated to be an additional 27,000 jobs in the borough.

This growth will not be evenly spread across the borough: it will largely happen by increasing the density of town centres and areas with planned transport improvements such as Brent Cross and Colindale, as shown in the Growth Strategy. Figure 2.5 shows the discrepancy in population density increases according to the Greater London Authority's population projections (which are different to those in the draft Growth Strategy). The distinct characteristics of the three different areas of the borough will become more pronounced: areas such as Colindale and Golders Green will exceed the current Inner London average population 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; whereas rural areas are unlikely to change significantly. This impacts on transport strategy development: the denser the area, the less space that is available for private vehicles and the greater the need for good public transport and the promotion of walking and cycling.

The number of people aged over 65 are projected to increase by 37% 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, shown in Figure 2.6.

Figure 2.5: Population density change by 2041

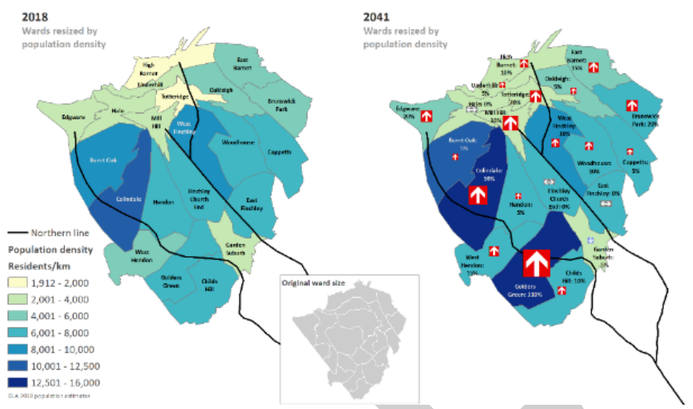
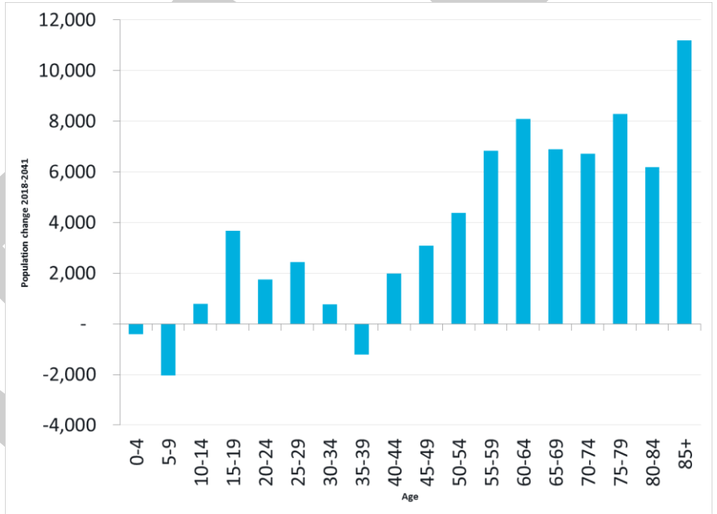


Figure 2.6: Expected population growth in Barnet to 2041



Role of transport in realising growth

If existing travel patterns continue

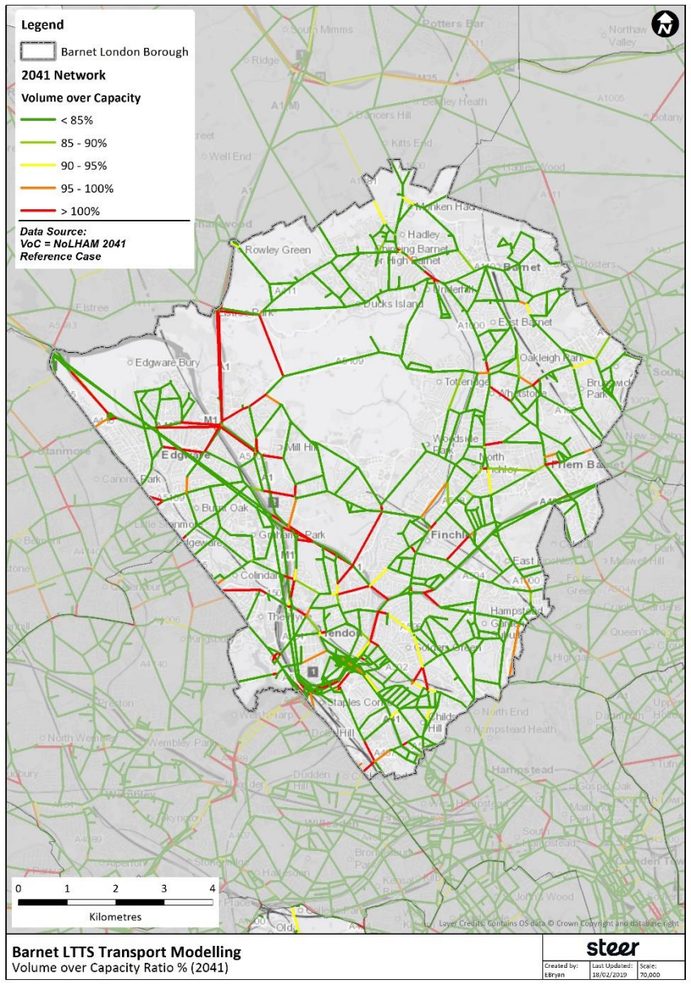
1.3 Transport will be vital to ensure this growth can be achieved without diminishing the quality of life in Barnet. Growth is focussed on transport centres because that is where the planning system allows the greatest densities.

1.4 If existing travel patterns continue and with a finite road space the increased vehicle trips will lead to increased congestion on Barnet's roads. This would worsen as shown in Figure 2.7.

Children and adults will continue to be affected by poor quality air, inactivity will still affect residents' health and collisions will continue on Barnet's roads.

In addition, with growth parts of the public transport network will also suffer. For example, crowding on the Northern Line is estimated to reach 5 people per square metre during the morning peak and buses will become increasingly congested.

Figure 2.7: Barnet roads expected % over capacity by 2041

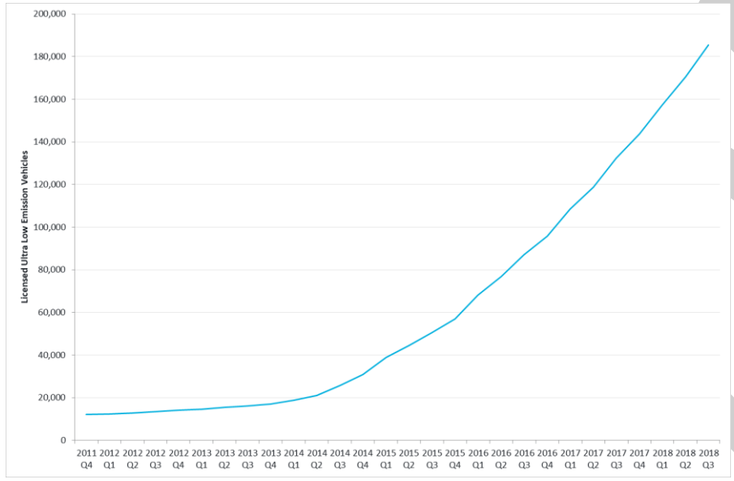


Is technology the answer?

Travel patterns are influenced by available technologies. There are a number of changes in transport technology likely to impact Barnet's travel patterns between now and 2041: electric engines improving air quality, sharing technologies improving efficiencies of space and ownership and personal mobility technologies (such as electric bikes and scooters) becoming increasingly attractive.

The improvement in engine efficiency has reduced fuel consumption and emissions over the past decades, improving air quality, except in the case of diesel. The take up of electric vehicles should accelerate this change by eliminating tailpipe NO_x and CO_2 emissions, though particulate matter emissions may increase due to more cars being on the road. Transport for London have committed to using only their most efficient buses in areas with the worst air quality; over the course of this strategy, the entire bus fleet is expected to shift to alternative technologies. In terms of private vehicles, take up is underway and likely to accelerate: Figure 2.8 shows the accelerating number of Ultra Low Emission Vehicles registered in the UK between 2011 and 2018. However, switching to electric vehicles does nothing to solve the congestion problems in Barnet.

Figure 2.8: Licensed Ultra Low Emission Vehicles in the UK 2011-2018



Autonomous, or self-driving, vehicles, may have a role to play in the future.

Technologies such as e-bikes, e-scooters and other forms of personal mobility are interesting. These forms of transport allow some of the benefits of cycling while reducing heavy physical exertion cited as a key barrier by Londoners; this is particularly pertinent in Barnet given its hilly topography. They have the potential to transform short and medium journeys, particularly if barriers to their adoption are reduced.

What is required

This strategy aims to facilitate the growth that Barnet is aiming for and for transport to have a positive impact on health and the environment. It was in this context that the Vision was developed with Council officers, Members and public stakeholders.

Keeping Barnet Moving

Barnet's population will increase from 394,000 residents to approximately 450,000, placing strain on the transport network.

The number of elderly people in the borough is expected to increase, placing greater emphasis on accessibility and safety.

Air quality in the borough must be improved. 6.5% of all deaths in Barnet are caused by poor air quality.

	Today	2041	
	55%	72%	Public and active transport mode share
28%		70%	People doing 20 mins active travel daily
0%		58%	People living within 400m cycle network
74		0	People killed and seriously injured on Barnet roads

3 Vision

What is the purpose of the vision statement?

By explicitly stating the desired outcomes of transport investment, proposals can be identified, prioritised and implemented according to how likely they are to realise this vision: this gives clearer direction and purpose than simply assessing whether a proposal is desirable. An agreed end goal also helps to coordinate proposals, rather than having piecemeal, potentially conflicting proposals.

Vision Statement

By 2041, Barnet will have an efficient, convenient and reliable transport network, which enables safe, healthy and inclusive travel, protects the natural environment and supports the borough's growth.

The network will have enabled improvements in the way people and goods travel. It will provide strong orbital and radial links which give everyone a choice of transport modes to complete their journey regardless of age, ability or income.

This statement translates into the following five objectives.

Objectives

Objective 1: Barnet's transport network contributes to the creation of better places to live, work and visit, allows local businesses to thrive sustainably, and is flexible, adapting to future opportunities presented by technology and change in travel patterns.

Transport should facilitate life in Barnet: both leisure and work, now and in the future. As well as enabling people to get where they need to, the transport network should contribute to the creation of pleasant environments to live and work, helped through the adoption of new technologies. Success in this objective encompasses a thriving local economy. It also includes the harnessing of new technologies in a positive manner.

Objective 2: Transport in Barnet keeps the borough moving, enabling people and goods to move within and through the borough efficiently using high quality orbital and radial links.

The primary objective of the transport network is to enable the movement of people, goods and services from one place to another. The capacity of the transport network will always be finite, as will the resources available to increase capacity. This means that available capacity will need to be used as efficiently as possible to minimise congestion.

Objective 3: The transport system is as accessible as possible regardless of age, ability and income, and the negative impacts of transport are minimised.

Everyone in Barnet, regardless of where they live, who they are or their level of income, should be able to get where they want to go, without disproportionately impacting others. Success will be an affordable and sustainable transport network that conforms to accessibility standards and minimises any environmental consequences.

Objective 4: Transport contributes positively to the health of the borough, by prioritising active travel and ensuring continued improvement in air quality.

Active travel is one way for people to incorporate the recommended amount of exercise into their daily routine to stay healthy. Wherever possible, active travel should be prioritised. Success will be higher active travel mode shares, a healthier population and lower airborne pollutant levels.

Objective 5: The road network and transport system in Barnet is safe and residents and visitors feel safe across all transport modes.
Resident or visitor to Barnet should feel safe when travelling. Improved road safety can be influenced by road design and education.
Poorly designed transport systems discourage people from walking and cycling. Success means improvements of the perceptions of safety and a reduction in the number of people killed and seriously injured on Barnet's roads.

What is required

To achieve these objectives two clear pathways are available. First, residents should be given a real choice of active, sustainable and efficient modes of travel. Second, car and other vehicle trips must be increasingly powered by more sustainable fuels. Both these pathways are described in more detail below.

Provide sustainable alternatives to private car

Car use will remain important to Barnet residents in the future. Cars offer comfortable door-to-door travel, independent from weather and are capable of supporting multiple passengers and moving of heavy goods. However, given the forecast growth in the borough without some reduction in car trips the objectives of this strategy will not be met:

- **Objective 1**. Barnet's highstreets and town centres will be improved by the transport network becoming more sustainable and an increased proportion of active travel particularly walking.
- **Objective 2**. If only carrying one or two people, cars are a less efficient use of road space and fuel than higher capacity modes of transport. 75% of congestion on London's roads is caused by the volume of traffic exceeding road capacity: this compares to 9% being caused by accidents and 7% by road works.[10] A bus rapid transit system, can carry up to ten times the number of people as mixed traffic in the same space; segregated cycle routes in London have been shown to carry up to five times as many people as the adjacent main carriageway lane at peak loading.[11] The average car is parked for 96% of its life.
- **Objective 3**. A third of Barnet residents do not own a car and the pattern of car ownership correlates with household income.[12] Focussing spending on active and sustainable modes of transport benefits all residents and will improve air quality.
- **Objective 4**. Active travel is a key pillar of Barnet's Joint Health and Wellbeing Strategy. Increased walking and cycling which additionally reduces vehicle journeys improves health and air quality.
- **Objective 5**. Reducing car conflicts with pedestrians is key to achieving Vision Zero. 71% of vehicles involved in collisions in Barnet are cars, and 61% of pedestrian casualties in London came from collisions with cars (11% with motorcycles, 8% with light goods vehicles).

The large expected increases in population and jobs, which will generate more demand on Barnet's transport network requires action. The additional trips which growth will generate cannot be accommodated on the existing road network: without significant mitigation. As a result of increased online shopping light goods vehicle trips are expected to increase by 50% by 2041. Significant stretches of the borough, particularly the key freight junctions around the A5, A1 (M) and M1, will exceed capacity.[13] To mitigate this and achieve the vision, a significant number of car trips will need to be converted into walking, cycling and public transport trips.

Why not boost road capacity?

- There is limited space in Barnet where new roads can be built or existing ones widened.
- Boosting road capacity rarely alleviates congestion in the long term. Increasing road capacity has been shown to increase car trips over time.[14]
- Increased road capacity would exacerbate current environmental issues particularly air quality.
- Investment in walking and cycling infrastructure will be needed to achieve the vision.[15]

Is this possible?

To change the amount of car use, Barnet residents, employees and visitors need to be given a real choice. For example, a journey from Mill Hill Broadway to Mill Hill East currently takes 10 minutes by car, but 15 minutes by bicycle. This is not perceived by most cyclists as a particularly safe or attractive journey and therefore does not represent a real choice: journey time, comfort and safety all encourage people to drive. This reality is widespread across the borough. Improving active travel infrastructure is necessary to give residents a real choice in how they travel.

There is potential for change. TfL's analysis indicates that Barnet has the highest number of trips currently driven which can be converted to walking or cycling: over 100,000 for walking trips alone. This strategy aims to convert these trips by removing barriers to active travel.

Improved signage and more favourable junction timings can provide immediate improvements to walking journeys. In the longer term crowded highstreets can be improved by increased pedestrianisation.

Active travel will also be helped by growing technologies giving more choice over how to complete journeys: personal mobility vehicles such as e-bikes and electric scooters can offer cheap, fast and low effort journeys.

What about disabled people?

- Disabled people are often disadvantaged by the current transport system. For example, bus use is a real challenge to many disabled people with mobility impairments.
- Improving journey times, accessibility, air quality, road safety and the local economy matters just as much to disabled people as others.
- Walking and cycling is not possible for all., Increased road capacity resulting from people choosing more efficient

[10] Transport for London (2017) Residential Car Parking: Part of the London Plan Evidence Base **https://www.london.gov.uk/sites/default/files/london_plan_evidence_base_-_residential_car_parking.pdf**

[11] Integrated Transport Planning Ltd. (2017) Understanding and managing congestion **http://content.tfl.gov.uk/understanding-and-managing-congestion-in-london.pdf;** Transport for London (undated) Segregated Cycling Infrastructure: Understanding cycling levels, traffic impacts, and public and business attitudes **http://content.tfl.gov.uk/segregated-cycling-infrastructure-evidence-pack.pdf**

[12] Census 2011

[13] Steer modelling (2019) based on TfL Strategic Models

[14] Department of Transport (1994) Trunk Roads and the Generation of Traffic **https://bettertransport.org.uk/sites/default/files/trunk-roads-traffic-report.pdf;** Highways England (2019) National Pinch Point Programme: One Year After Evaluation Meta-Analysis

[15] For more information see Transport for London (undated) Valuing the health benefits of transport proposals: Guidance for London **http://content.tfl.gov.uk/valuing-the-health-benefits-of-transport-proposals.pdf** **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791450/National_PP_Programme_Meta_Final_draft.pdf**

modes of transport such as cycling will benefit those who do need to drive.

– However, many disabled people can travel actively, if provided with the correct infrastructure. Because disabled people are more likely to be physically inactive designing safe and accessible active travel is key to them obtaining a benefit to a more active life. For example, cycling offers a non-weight bearing form of exercise that can improve physical fitness and strength. Whilst disabled people do already cycle (15% of disabled people cycle, compared to 18% of non-disabled people), the infrastructure needs to accommodate adapted cycles: inaccessible cycle infrastructure is the single biggest difficulty faced by disabled cyclists in the UK.[16]

What about the elderly?

– Elderly people have greater accessibility issues than their younger counterparts. This can lead to social isolation if they cannot use the transport network. The number of elderly people in Barnet is expected to increase far more than other demographics.
– Active travel measures, when properly implemented, can improve elderly people's experience of the borough. Higher levels of wellbeing and lower levels of loneliness are reported in neighbourhoods designed for walking and cycling rather than car travel; and buses can be a more important mode of transport than private cars for elderly people.[17] these measures can include such items as provision of benches and drinking fountains on popular pedestrian routes, enabling people to take a breather, and clear signage and placemaking, for example through differentiated pavement surfaces.
– Measures to help active travel, such as pedestrian priority lights, help the elderly feel comfortable negotiating street crossings, particularly where crossing distances are long.[18]

What about freight?

– Freight, servicing and logistics will remain largely road based in future. This strategy recognises that: reducing congestion by encouraging active travel and public transport use means freight, logistics and service vehicles will have faster and more reliable journey times.

What about retailers and the high street?

– Shop owners are often concerned that any removal of parking in town centres will mean customers cannot access their shops, reducing sales. The impact of reducing town centre parking has to consider that people arriving by car tend to spend more per visit but they visit town centres less often than people walking and cycling. Studies have shown that the higher frequency of visits can result in a higher spend per capita over a month by people walking and cycling than by people driving.[19]
– Reducing traffic can be good for high streets. Studies have shown examples where after high street and town centre improvements which reduce traffic, retail vacancy rates were lower, retail rental values were higher, retail sales were higher and more customers came more frequently.[20] These findings in London have been corroborated in Madrid, where areas closed to cars increased retail sales three times faster than areas where traffic did not change.[21]
– From a business perspective, physically active employees take fewer sick days, report higher job satisfaction and feel more energised at work. Business Improvement Districts and CEOs of over 180 major London employers see an increase in cycling infrastructure as helping their long-term success.

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

[17] Transport for London (2018) London Travel Demand Survey. https://tfl.gov.uk/corporate/about-tfl/how-we-work/planning-for-the-future/consultations-and-surveys/london-travel-demand-survey [Accessed 10.01.2019]

[18] Garin et al (2014) Built environment and elderly population health: A comprehensive Literature Review. Clinical Practice & Epidemiology in Mental Health, 10: 103-115; Kerr J, Rosenberg D & Frank L (2012) The Role of the Built Environment in Healthy Aging: Community Design, Physical Activity, and Health among Older Adults. Journal of the Planning Literature, 27(1): 43-60 both quoted in Public Health England (2016) Working Together to Promote Active Travel: A briefing for local authorities https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/523460/Working_Together_to_Promote_Active_Travel_A_briefing_for_local_authorities.pdf

[19] Transport for London (undated) Walking & Cycling: the economic benefits http://content.tfl.gov.uk/walking-cycling-economic-benefits-summary-pack.pdf; Living Streets (2018) The Pedestrian Pound: The business case for better streets and places https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf

[20] Transport for London (2018) Walking Action Plan: Making London the world's most walkable city http://content.tfl.gov.uk/mts-walking-action-plan.pdf?intcmp=54543

[21] Madrid Council (2018) Efectos gasto navidad 2018/19: Gran Via y Madrid central https://bbvaopen4u.com/en/actualidad/paystats-helps-assess-impact-low-emission-area-madrid-central

Change predominant fuel types for vehicles: freight, public transport and cars.

Motorised road transport will remain a part of the transport mix in Barnet. To reduce the air quality impacts of motorised traffic, a shift from petrol and diesel fuelled vehicles towards more sustainable fuels should be encouraged.

Electricity can power not only private cars, but also delivery vans and public transport vehicles, such as buses. By 2040, there would be a national ban on the sale of petrol and diesel vehicles.[22] Although no practical alternative fuel exists for heavy goods vehicles at present, 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.[23]

Changing fuel type will impact the strategic objectives by:

- **Objective 1.** Providing charging points for electric vehicles, if managed correctly, will cater for the new technologies
- **Objective 2.** Changing fuel type on its own will have little impact on congestion or available routes.
- **Objective 3.** Electric Vehicles (EVs) are cheaper to run and maintain than their liquid fuel counterparts.[24] Although they currently have a higher upfront cost, this is likely to decrease as technology advances. EVs make much less noise than petrol or diesel engines.
- **Objective 4.** Currently, approximately 50% on NO_x, PM_{10} and PM2.5 emissions are generated by road transport. EVs produce no tailpipe emissions: if all vehicles were electrically powered, air quality in the borough would significantly improve. However, the majority of particulate matter emissions are caused by brake and tyre wear which EVs would still produce.
- **Objective 5.** The proliferation of alternatively fuelled vehicles is not likely to improve road safety. EVs were deemed too silent to be noticed by other road users, particularly pedestrians and cyclists, which resulted in governmental regulation requiring the fitting of sound generators.[25]

What about the upstream emissions?

- Current UK power generation sources mean that EV CO_2 emissions are 25% lower than their petrol or diesel equivalents.[26] As the country's fuel mix progresses towards renewable sources, this will increase.[27]

What about the cost for Barnet's residents?

- 24% of British consumers are discouraged from purchasing an EV due to their high prices.[28] At present, most EV owners live in households containing two or more cars and the trend is expected to continue. Among existing car owners, high price was the most frequently (63%) stated barrier to switching to lower emission vehicles.[29]
- It is expected that the price of EVs will decline as the demand and supply for those types of cars rise, establishing itself as a more competitive market.

[22] 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

[23] 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

[24] British Gas (undated) Electric v Petrol https://www.britishgas.co.uk/the-source/our-world-of-energy/energys-grand-journey/Electric-v-Petrol

[25] Department for Transport (2019) New noise systems to stop silent electric cars and improve safety https://www.gov.uk/government/news/new-noise-systems-to-stop-silent-electric-cars-and-improve-safety

[26] Davis (2011) Your new electric car emits 75 gCO2/km (at the power station). https://ecometrica.com/assets/electric_car_emits_75_gCO2_per_km.pdf

[27] Department for Business, Energy & Industrial Strategies (2019) Energy Trends June 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812625/Energy_Trends_June_2019.pdf

[28] 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

[29] Public Health England (2019) Review of interventions to improve outdoor air quality and public health. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795185/Review_of_interventions_to_improve_air_quality.pdf

4 Proposals

Introduction

This section details the proposals recommended for achieving Barnet's transport vision and objectives. As stated in the introduction, these are high level proposals only: further work, such as data collection, detailed design and public consultation, will be required before they could be implemented. Moreover, not all proposals are intended to be introduced immediately. This strategy takes a long-term view to 2041, when travel patterns are likely to be very different from what they are today.

Proposals are presented by type of transport they address: each of these sub-sections has an introduction explaining what role that type of transport has to play in achieving the overall objectives. Each proposal is then broken down by:

- **Proposal description** – what the proposal is and potentially suitable locations;
- **Case study** – an example of where a similar proposal has been introduced elsewhere and how it has worked;
- **Fit for purpose** – the minimum application of the proposal needed to achieve its purpose;
- **Requirements** – what is required to introduce the proposal, such as space or cost; and
- **Alternatives / consequences of inaction** – an explanation of what will happen if this proposal is not introduced, as well as other potential variants of the proposal.

The following chapter also addresses potential funding for these proposals and a high-level delivery plan. The delivery plan shows indicative costs which are subject to feasibility studies being completed, council approval and the funding being available.

Figure 4.1 provides an overview of the Long Term Transport Strategy proposals. Non-location based proposals, such as cycling training and car clubs, are not displayed on the map but are listed on the list of proposals to the right. Each proposal will be explained in more detail within this chapter.

Figure 4.1: Proposals summary map

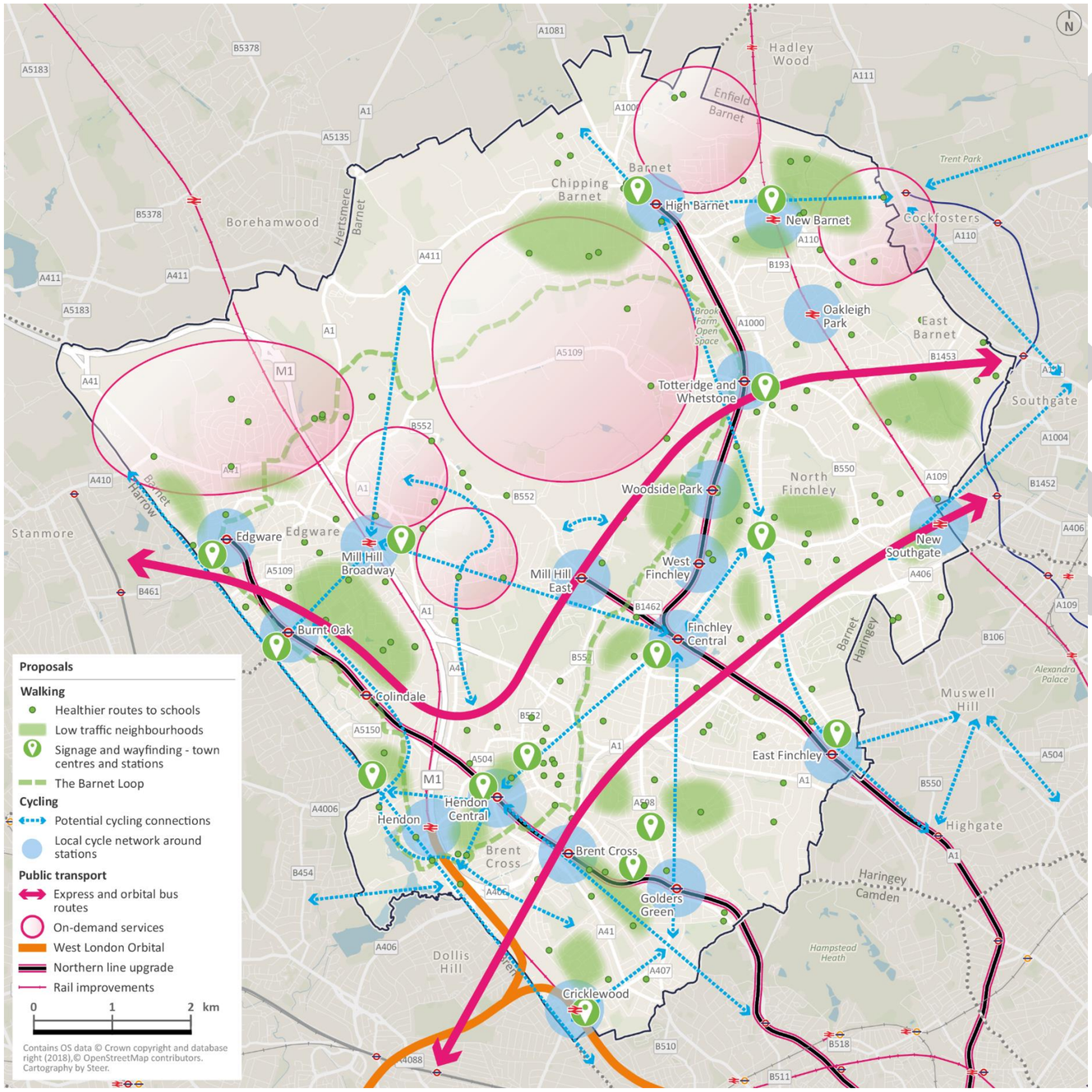


Table 4.1: Proposals

Reference	Proposal title	Page No.
W1	Healthier routes to schools	9
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Walking

Vision

Walking should be the natural mode for short journeys in Barnet, enabled by an attractive public realm, increased safety and air quality improvements, as well as clear and legible signage and wayfinding and well maintained footways.

Overview

Benefits

Walking is a cost-free, emission-free, healthy and space efficient way to travel. It is the easiest and most common way of incorporating the 150 minutes of weekly physical activity recommended by the Chief Medical Officer for England, which can bring the benefits shown in Figure 4.2.[30] Good walking environments can help to foster healthy ageing, making it possible for people to stay longer in their own homes and reduce the risk of social isolation.

Figure 4.2: Benefits of physical activity[31]

These benefits are particularly important in Barnet given its ageing population, air quality and congestion issues, all of which could be significantly improved by converting existing car trips to walking.

Improvements to the walking environment often benefit other modes of transport, as walking is required to access public transport, change between modes, access cycling or parking.

Given the underlying dependence on walking, pedestrian proposals tend to offer high value for money.

Objectives of the strategy	Rating	Explanation of rating
Barnet's transport network enables sustainable growth that creates better places to live and work, supports local businesses to thrive, and is flexible, adapting to future opportunities presented by technology and travel patterns.	★★★★☆	Better pedestrian environments have been consistently shown to improve retail sales. Reduction in air pollution and nicer environment / public realm.
Transport in Barnet keeps the borough moving, enabling people and goods to move within and beyond the borough efficiently using high quality orbital and radial links.	★★★☆☆	Walking is not always practical over large distances but is very space efficient over short distances.
All users can use the transport system regardless of age, ability and income, and the negative impacts of transport are limited.	★★★★★	Walking is free and good pedestrian environments are enjoyable by all.
Transport contributes positively to the health of the borough, by prioritising active travel and ensuring air quality is good.	★★★★★	Walking is emission-free and contributes to good health.
The road network and transport system in Barnet is safe and residents and visitors feel safe across all transport modes.	★★★★★	Pedestrians pose minimal threat to other transport users.

Potential

TfL's analysis has identified over 110,000 existing daily trips that could be walked in Barnet alone; 89% are currently driven and 40% are less than 1km. Chipping Barnet, New Barnet, Totteridge & Whetstone, Finchley Central and North Finchley are all highlighted as key centres of walking potential. [32]

Barriers

The main barrier to walking cited by Londoners is time. This can be partially addressed through the Growth Strategy, by ensuring that local services are easily accessible from housing centres.

Another barrier is personal security, particularly relating to crime and personal safety. This has also been raised in the stakeholder engagement for the production of this strategy. Although mainly reliant on education and broader societal changes, street design can make pedestrians feel safer, for instance by improving lighting.

Other key barriers cited by Londoners can all be addressed through better street design and maintenance:

- Over 1 in 5 people cited too much traffic moving too fast as a key barrier to walking. 66% would walk more if routes improved to give greater priority to people walking.
- 12% fear road collisions.
- 65% of disabled Londoners quote bad pavement condition as a barrier to walking with further 43% saying that obstacles are one of the main deterrents.

Strategy in Barnet

Walking in Barnet will focus on three types of trips: trips to school; shopping and leisure trips to town centres; and trips to transport hubs.

Trips to school will be targeted because air quality issues are particularly acute around some of Barnet's schools and there is potential to embed sustainable travel patterns in residents at a young age.

Shopping and leisure trips are also a key focus: over half of all potentially walkable trips are for shopping and leisure purposes. Hence, proposals should focus on improving the pedestrian environment of Barnet's town centres.

Commuting patterns in Barnet do not offer much whole journey potential for walking; however, the stage from home to station does. 62% of Barnet residents live within 1200m (approximate 15-minute walk at average speed) of an Underground station. Areas around Barnet's transport hubs will therefore be targeted with measures designed to increase walking.

[30] Department for Health and Social Care (2019) UK Chief Medical Officers' Physical Activity Guidelines https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf

[31] Department for Health and Social Care (2019) Physical activity benefits for adults and older adults https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/541233/Physical_activity_infographic.PDF

[32] Transport for London (2018) Walking Action Plan. http://content.tfl.gov.uk/mts-walking-action-plan.pdf

Action plan

Table 4.2: Walking action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
W1	Healthier routes to schools	Considered across the borough	£5,000 - £150,000 per school	2020-2025	TfL LIP allocation & Council	Design, consult and implement	Schools and parents
W2	Low traffic neighbourhoods	Densely populated areas between arterial routes	Dependent on scheme	2020-2025: identify and implement exemplar 2025 - 2041: monitor and expand	TfL LIP allocation, Liveable Neighbourhoods, Council resources, S106	Design, consult and implement. Assemble funding packages	Neighbourhood stakeholders; TfL
W3	Signage and wayfinding	Town centres	Dependent on scheme	2020-2025	TfL LIP allocation & Council, S106, Liveable Neighbourhoods	Design, consult and implement	Town centre stakeholders, TfL
W4	Active route – the Barnet Loop	Barnet Loop	£500,000 - £1m	2020-2025	TfL LIP allocation & Council	Full responsibility	
W5	Investing to improve the footway network	Consider across the whole borough	£2.5 – £4.5 million per year	2020-2041	TfL LIP allocation & Council	Full responsibility	TfL

Proposal W1: Healthier routes to schools

Proposal Description

Healthier routes to schools will prioritise walking routes around schools. By addressing three issues, schoolchildren can take advantage of all the benefits of an active commute. Over 92% of primary school children resident in Barnet attend schools within the borough, which increases the likelihood of the students living within a walkable or cyclable distance.

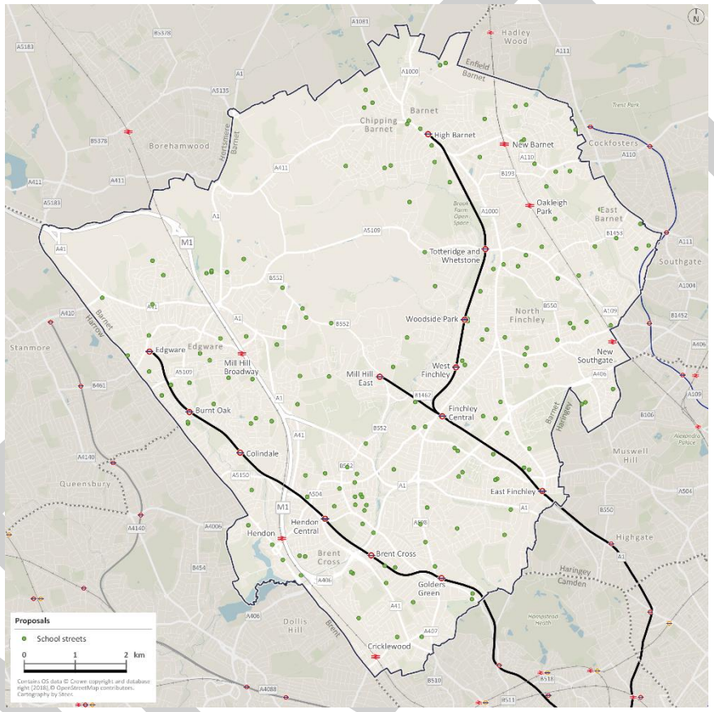
The key barriers to walking to school to remove are:

- Congestion. A third of vehicles on Barnet's roads in the morning peak are used for the school run.
- Air quality. Modelled data relating to 2016 (released by TfL in July 2019) shows that twelve schools in Barnet breached legal air quality limits.[33]
- Fear of collisions. Removing vehicles from school gates reduces the risk of children being involved in collisions.

One method of achieving healthier routes to schools is School Streets, which can complement the school travel planning work already being undertaken by The Council. School Streets projects involve closing residential streets adjacent to the schools to through-traffic during pick-up and drop-off times, which results in improved road safety around the schools and improved air quality. Residents needing to access their properties via affected streets can apply for exemption permits.

Residential streets without schools on them can also be closed temporarily under existing Council powers, to enable children to play on the streets where they live. Local parents and other residents can apply and act as marshals, allowing residents to drive in at walking pace and redirecting other traffic. This can increase the sense of community and encourage children to play in the streets where they live. The success of Play Streets in Hackney has encouraged boroughs such as Richmond-upon-Thames to introduce them.[34] The Council is exploring if either or both of these methods would be appropriate.

Figure 4.3: Barnet school locations



Case study

London Borough of Hackney introduced Schools Street pilot programmes in July 2017. Following positive feedback from both parents and students, 17 schools will have a programme by 2022. Traffic outside one school was reduced by 70%; the number of pupils cycling to class doubled[35].

Proposals have also worked in outer London. Croydon ran three School Streets pilots in 2017, which were then made permanent and extended to a further 7 schools.[36] These increased walking, scootering and cycling to school by 15% (worst case) and 62% (best case), with a 15% and 25% reduction in car use, winning awards from the British Parking Association and London Road Safety Awards in 2018.

Figure 4.4: Hackney Play Streets[37]

Fit for purpose

- The area affected by the measures should be wide enough to discourage dropping off school children within a walkable distance, while being small enough to limit impacts to residents and businesses.
- The proposal requires careful planning and consultation in terms of assessing the road network – the affected roads cannot be traffic sensitive, there must be suitable diversions and the surrounding streets must have enough capacity to cope with some displaced traffic.
- All school pupils should receive STARS training (many Barnet schools are already involved in the STARS proposal), TfL's accreditation proposal encouraging active travel to school,

[33] 2016 London Atmospheric Emissions Inventory (2019) supplied by the GLA

[34] Hackney Council (2015) Hackney Play Streets Evaluation Report https://drive.google.com/file/d/1-eVfUpOEzJtfJSTKL8bWnNX7yw89hQ7j/view; Richmond Council (2019) Play Streets https://www.richmond.gov.uk/play_streets

[35] East London Lines (2019) Hackney's safe school streets blueprint to be exported across the UK http://www.eastlondonlines.co.uk/2019/05/hackneys-safe-school-streets-blueprint-to-be-exported-across-the-uk/

[36] Croydon Council (2019) Outcome of formal consultation on school streets https://democracy.croydon.gov.uk/documents/s16846/TMAC_20190724_School%20Streets%20-%20final.pdf

[37] Gayhurst School, Hackney (2018) https://www.gayhurst.hackney.sch.uk/_files/images/news%20stories/school%20streets%20proposal/56F75EED118D77AE73D2217072DA8794.jpg

prior to implementation so that they are aware of their alternatives to driving to school.

Requirements

- School Streets proposal costs can be very low, with the set-up cost of a pilot estimated between £5,000 and £150,000, depending on the size of the project[38]. Croydon's School Street extension is proposed to be fully self-financing from parking penalty charge notices.
- Depending on the program, on-street parking might have to be restricted, with retractable bollards or ANPR cameras installed.

Alternatives / Consequences of Inaction

- The number of children arriving by car will not decrease. Traffic conditions and air quality around schools will not improve.
- Children in Barnet could be susceptible to physical and mental health issues; obesity rates will not improve.
- The Council can aim to increase the number of children walking and cycling to school through educational programmes. However, the degree of change that can be achieved by educational programs without improved infrastructure can be limited.

[38] Friends of the Earth (2018) Guide for local groups on School Streets https://cdn.friendsoftheearth.uk/sites/default/files/downloads/Guide%20for%20local%20groups%20on%20School%20Streets_1.pdf

Proposal W2: Low traffic neighbourhoods

Proposal Description

Too much traffic is reported as a barrier to walking by one in five Londoners. Restricting road access to specific types of vehicle at certain times of day can remove this barrier, improve road safety and increase active travel mode shares. Restricting road access in this way can build a series of Low Traffic Neighbourhoods.

Restrictions can be enforced either by physical infrastructure (bollards, raised kerbs, plants) or by automatic number plate recognition (ANPR) technology, often introduced in combination with a one-way street system. These are known as modal filters and can be adjusted on a case-by-case basis: residents, emergency services, buses, delivery and servicing vehicles and taxis can all be made exempt from these filters if enforced by ANPR.

Moveable barriers such as lockable bollards are particularly effective in implementing modal filtering that is adaptable to changes in traffic flow and access requirements. These filters can be placed on entrances to residential roads, allowing residents, emergency vehicles and registered delivery vehicles access, but blocking rat-running by forcing other traffic onto arterial roads.

Modal filtering could work in conjunction with Proposal PT5: Gateways and Proposal W3: Signage and wayfinding, to ensure a holistic approach and creation of spaces which prioritise pedestrian movement. This has the side-effect of improving the cycle environment, as shown in Figure 4.6.

The areas highlighted in Figure 4.5 have been chosen as areas of dense residential streets bounded by arterial roads which could make good areas to implement low traffic neighbourhoods.

Figure 4.5: Possible locations for Low Traffic Neighbourhoods

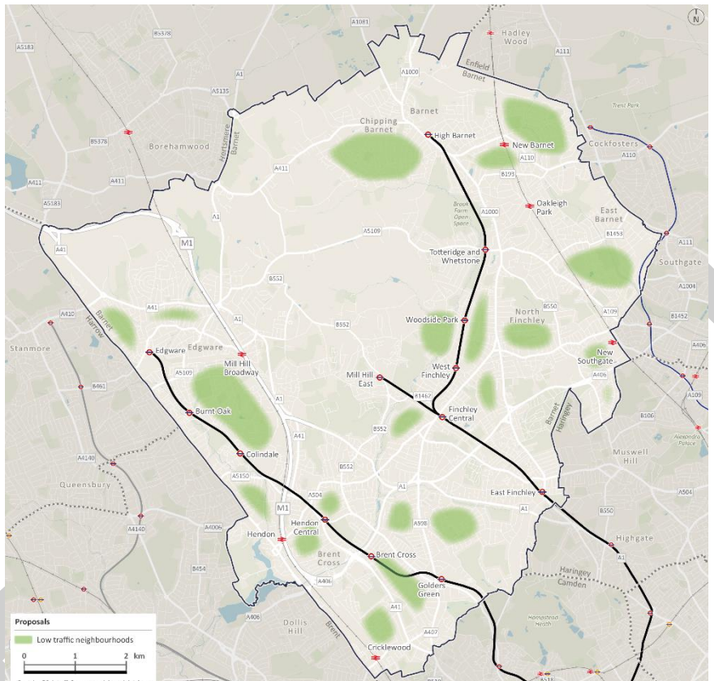


Figure 4.6: Example of modal filtering in Waltham Forest

Case study

43 modal filters were installed across the Walthamstow Village area as part of the borough's Mini-Holland proposal. These created a network of active travel zones, where walking and cycling was more pleasant and convenient than travelling by car.

The impacts of the proposal included an increase in active travel, a decline in congestion and in the number of cars, improved air quality and widespread support from residents and visitors.

- 19% and 28% increase in walking and cycling trips respectively. Whereas previously Waltham Forest had very low levels of walking and cycling, residents are now walking for an extra 32 minutes and cycling an extra 9 minutes per week than the outer London average.[39]
- A simultaneous decline in road traffic, which decreased by 44% on average for roads within the area. Around 15% of traffic evaporated entirely.[40]
- These impacts have resulted in improved air quality.

Despite initial controversy and resistance, only 1.7% of residents would scrap the proposal and go back to how it was before, whereas 55% of residents would not change anything. 100% of

[39] Waltham Forest Council (2018) Enjoy Waltham Forest Walking and Cycling Account 2017/18 **https://www.enjoywalthamforest.co.uk/wp-content/uploads/2019/01/Final-Walking-Cycling-Account-201718.pdf**

[40] Living Streets (undated) A Guide to Low Traffic Neighbourhoods **https://www.livingstreets.org.uk/media/3844/lcc021-low-traffic-neighbourhoods-detail-v9.pdf**

visitors to the area said the proposal was either good or very good.[41]

Fit for purpose

- Access for commercial vehicles, emergency services and buses must be considered and maintained where possible.
- Each neighbourhood should be walkable in approximately 10-15 minutes and then joined to other neighbourhoods across distributor roads and around key transport interchanges.
- The Council should collaborate with the police to ensure the enforcement of modal filtering.

Requirements

- The Waltham Forest proposal (inclusive of mini-Hollands projects) cost £27 million to plan and implement.
- A full study would be required to zone areas of the borough and recommend the types of filtering applied.
- Enforcement of flexible modal filtering would require the installation and monitoring of ANPR cameras.

Alternatives / Consequences of Inaction

- Residential roads will continue to be used as rat-runs which, in turn, may deter residents from choosing to walk and cycle for local trips.
- Residents and visitors in Barnet will continue to use private cars for short journeys, which will contribute to congestion, worsening air quality and can have adverse health impacts.

[41] Waltham Forest Council (2018) Enjoy Waltham Forest Walking and Cycling Account 2017/18 **https://www.enjoywalthamforest.co.uk/wp-content/uploads/2019/01/Final-Walking-Cycling-Account-201718.pdf**

Proposal W3: Signage and wayfinding

Proposal Description

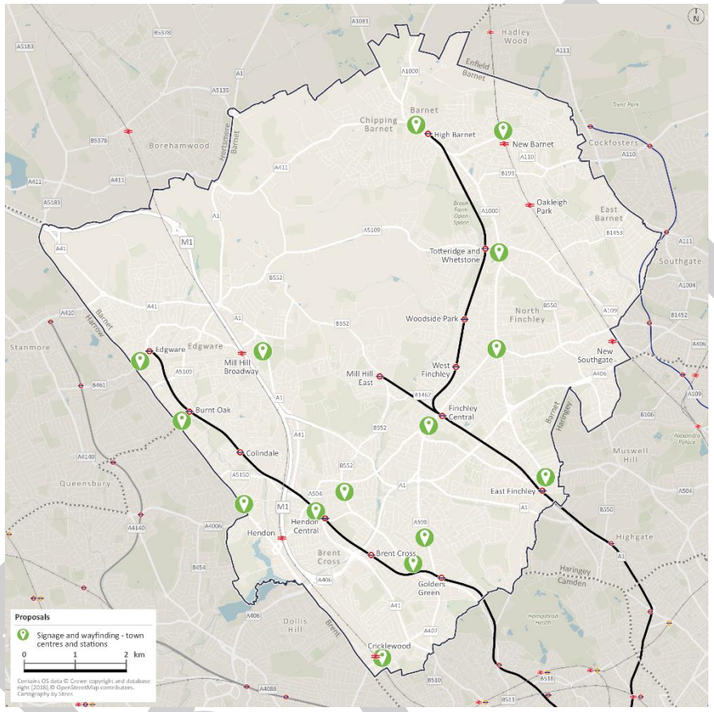
Signage and wayfinding can encourage walking by:

- Highlighting routes that avoid traffic
- Displaying journey time information
- Advertising points of interest, such as green spaces.

Highlighting walkable routes away from roads with traffic and displaying information on journey times can reveal aspects of the borough that people otherwise may not know about, or not know how close they are to walk.

Furthermore, the installation of maps creates the opportunity to build in accessibility features, including information in braille and / or drinking fountains.

Figure 4.7: Possible signage and wayfinding proposal locations – town centres and stations



Case Study

Production and installation of maps showing the local area within a walking distance has been completed across parts of London through TfL's "Legible London" scheme.

TfL's Legible London scheme was initially carried out in Richmond and Twickenham, which resulted in:

- 7,000 additional weekday pedestrian trips
- Increase in pedestrian confidence in exploring the local area from 49% to 76%.
- Over half of respondents agreeing that the maps encouraged them to walk more often and walk to places they would not walk to before[42].

Figure 4.8: Legible London map

Fit for purpose

- Easy to spot, read and understand by all.
- Not blocking other pedestrians or cyclists and are within a safe distance from motorised traffic.
- Accessibility features should be incorporated.

Requirements

- The cost would be dependent on the breadth of the proposal. The costs of providing a Legible London proposal for an Outer London town centre (Kingston Town Centre) were estimated at under £200,000 in 2013.[43]
- The Council will continue to work with TfL to increase the number of Legible London signs in the borough and support their introduction in Cricklewood.

Alternatives / Consequences of inaction

- An illegible environment might deter people from walking and cycling, but also from using public transport.
- As an alternative to Legible London maps, The Council could design and deliver a bespoke mapping proposal. However, it is likely that a proposal delivered in conjunction with TfL as an extension to the existing Legible London project will be more cost-effective and easier to understand and maintain consistency with the rest of London.

[42] Transport for London (2010) Legible London proposal evaluation in new areas. **http://content.tfl.gov.uk/legible-london-proposal-evaluation-new-areas-report.pdf**

[43] The Royal Borough of Kingston Upon Thames (2013) Introduce Legible London in Kingston Town Centre **https://moderngov.kingston.gov.uk/documents/s48208/Legible%20London%20for%20KT.html?CT=2**

Proposal W4: Active route – the Barnet Loop

Proposal description

The Council has already established active trails, The Mayor of Barnet's Golden Kilometre initiative and Healthy Heritage walks, encouraging people to walk, run and cycle for leisure.[44] This not only creates a pleasant borough, it also supports the Joint Health and Wellbeing Strategy by providing routes for exercise.

The existing Dollis Valley Greenwalk will be extended by the creation of additional routes through the borough's greenspaces and the Silk Stream Valley Greenwalk, creating a 17-mile loop around the borough for recreational walking, running and cycling. The Barnet Loop also has the ability to provide links to town centres, leisure facilities and transport hubs in the borough.

A pleasant recreational walking, running and cycling environment would also encourage active travel to destinations such as schools and shops by providing an environment where people can build confidence on foot, cycles and scooters away from roads. In addition, with the increase in properties in the borough without private gardens, this will support access to greenspaces. For example, the routes could be used by families to teach their children to ride a bike or are a safe space for children to use their scooters.

Fit for purpose

To create a welcoming environment for all, the Barnet Loop will need to be traffic-free where possible. When it is on quiet residential roads, these could be exemplars of Healthy Streets, with minimal traffic, plenty of space on pavements and amenities such as trees.

The Barnet Loop needs a distinctive and comprehensive signage and wayfinding strategy, both helping people find their way and to give the Loop a coherent and enjoyable character.

Where pedestrians and cyclists share the path, there should be clear pedestrian priority.

Requirements

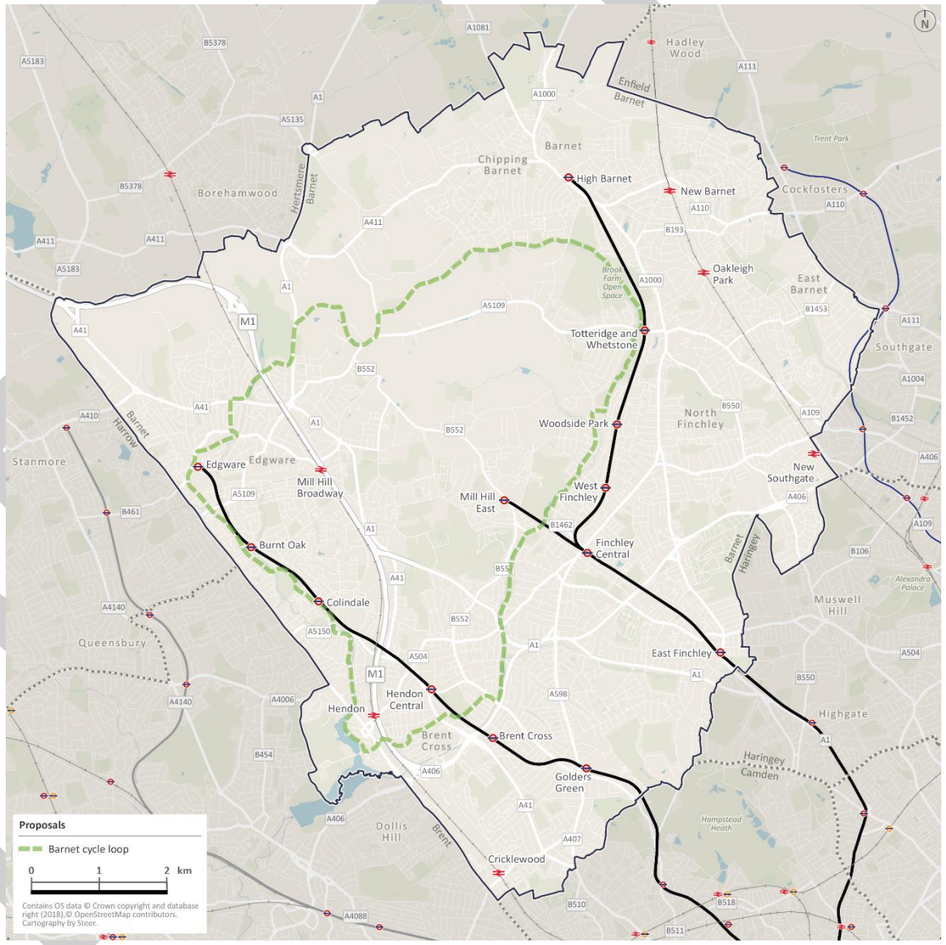
The Council must identify the precise routing for the Barnet loop.

Funding will be needed for ongoing maintenance of walkways and signs.

Alternatives / Consequences of inaction

- Few people encouraged to walk, run and cycle, so the mode share target unlikely to be met
- Health problems associated with lack of exercise

Figure 4.9: Proposed Barnet Loop route



[44] Barnet Council (2019) Healthy Heritage Walks https://www.barnet.gov.uk/health-and-wellbeing/healthy-heritage-walks;

Barnet Council (2019) Active Trails https://www.barnet.gov.uk/parks-sport-and-leisure/walks-and-trails/walking-running-and-cycling-trails

Proposal W5: Investing to improve the footway network

Proposal Description

Uneven and damaged footways can create barriers to walking, particularly for those who may be unsteady on their feet such as the elderly, those with mobility difficulties and sight impairments and who may use equipment to support their mobility such as walking aids, wheelchairs or those who are caring for children and my use pushchairs.

Improving footways can make walking more pleasurable and reduce fears of tripping / falling. The Council has been investing in the borough's highways and footways for the past four years and since 2014 has invested in excess of £40 million to improve our roads. Whilst the works take place action is also taken to tidy up associated infrastructure and generally reduce street clutter[45].

Highways and footways really do matter to Barnet's residents, businesses and visitors, and the Council's public opinion surveys continually highlight dissatisfaction with the condition of local roads. Public pressure can often result in short term fixes, rather than properly planned and implemented longer term solutions. The proposed programme aims to stop the requirement for short term repairs that provide poor value for money and often undermine the structural integrity of the asset.

Fit for purpose

The investment aims to create a safe and smooth surface enabling everyone, including wheelchair users and people with pushchairs to use the footways. Supporting amenities such as trees, innovative solutions to materials such as rubber crumb is used to deal with tree roots around / close to trees, which will enable the tree to continue to grow and provide a permeable material for drainage whilst also ensuring that damage to the footway caused by tree roots is minimised. This also support the Council's Tree Policy[46] and meets the Mayor of London's Transport Objective of providing alternative sustainable transport options and creating safe and enjoyable environment for walking. The Council is committed to proposals in Barnet's Local Implementation Plan to deliver walkable neighbourhoods and healthy streets improvements around town centres and transport hubs to complement the strategic network of routes, making walking more attractive for short journeys.

Requirements for delivery

- The Council will continue to identify and prioritise roads for footway renewal. Funding will be needed for ongoing maintenance.

Alternatives / Consequences of inaction

- Fewer people walking and so the mode share target unlikely to be met.
- If footways are left to deteriorate there is an increased chance of cracks and uneven surfaces forming and thus a greater risk of slips and trips and increased third party claims against the Council.
- Health problems associated with lack of exercise and not improving the health and wellbeing of Barnet residents.

[45] Barnet Council (January 2019) Environment Committee Report: Highways Planned Maintenance Programme 2018/19 https://barnet.moderngov.co.uk/documents/s44240/Highways%20Planned%20Maintenance%20Programme%20201819.pdf

[46] Barnet Council (2017) Barnet Tree Policy https://www.barnet.gov.uk/parks-sport-and-leisure/barnet-tree-policy

Cycling

Vision

Safe infrastructure and plentiful cycle parking will make cycling in Barnet pleasant and convenient. Routes should link town centres and transport hubs, as well as providing access to Barnet's leisure facilities and greenways.

Overview

Benefits

Cycling is used here as encompassing a variety of vehicles, more and more of which are becoming available as technology improves. Bicycles, electric bikes, scooters, electric scooters and other forms of micromobility are all included here under cycling.

Cycling has many of the same benefits as walking: it is relatively inexpensive, healthy and emission-free way to travel. It is also space efficient. One car parking space can provide parking for twelve bicycles.

Cycling can also be very convenient. The average cycling speed is three times higher than the average walking speed, meaning longer journeys can take less time and effort. Adapted bicycles can also be used as mobility aids.

Objectives of the strategy	Rating	Explanation of rating
Barnet's transport network enables sustainable growth that creates better places to live and work, supports local businesses to thrive, and is flexible, adapting to future opportunities presented by technology and travel patterns.	★★★★☆	Cycling improvements can encourage higher spending along the route by reducing air pollution and creating a more pleasant environment for shopping.
Transport in Barnet keeps the borough moving, enabling people and goods to move within and beyond the borough efficiently using high quality orbital and radial links.	★★★★☆	Cycling is a very space efficient and flexible mode of transport over medium distances.
All users can use the transport system regardless of age, ability and income, and the negative impacts of transport are limited.	★★★★☆	Cycling is low-cost. Although cycles can be mobility aids, not everyone is physically able to cycle. However, electrically assisted cycles are now enabling more people to cycle.
Transport contributes positively to the health of the borough, by prioritising active travel and ensuring air quality is good.	★★★★★	Cycling is emission-free and an easy way to achieve some of the 150 minutes a week of physical exercise recommended by the NHS.
The road network and transport system in Barnet is safe and residents and visitors feel safe across all transport modes.	★★★★☆	Cyclists pose less risks in case of collisions than other vehicles, although design of cycle routes must take account of possible conflict with pedestrians.

Potential

Only 2% of trips in Barnet are currently cycled, a number that is significantly lower than some neighbouring boroughs. For example, 8% of trips in Haringey are cycled.[47]

TfL estimate 390,000 daily trips currently undertaken by motorised transport which could be cycled. The majority – 345,000 – of these trips are currently driven, with the remainder using bus or rail.

The A1000, Ballard's Lane, Woodhouse Road, the A5, Devonshire Road B1462 and the B552 have all been identified as routes of key potential by TfL.

Barriers

Some of the most common reasons that prevent Londoners from cycling include:

- Cycling regarded as an activity 'not for people like me' – 49%;
- Fear of collisions – 46%
- No access to a cycle – 45%
- Fear of bicycle theft – 25%
- Being too old or unfit – 22%
- Poor cycling infrastructure – 16%[48].

The hilly topography of Barnet is also a barrier. Although offering scenic routes and panoramic vistas which can encourage leisure cycling, the hills can compound the feeling of being too unfit, especially for less experienced cyclists.

Strategy in Barnet

The strategy aims to encourage cycling by ensuring developments include cycle parking and shower and changing facilities; providing appropriate cycle routes and opportunities for people to cycle to or from another mode of transportation (bus, train, tube); and increasing residents' access to bicycles, particularly e-bikes. To complement these measures, cycle training and cycle events will be used to enable people of all ages and abilities to enjoy cycling.

[47] Transport for London (2018) London Travel Demand Survey

[48] Transport for London (undated) Cycling Action Plan: Making London the world's best city for cycling **http://content.tfl.gov.uk/cycling-action-plan.pdf**

Action plan

Table 4.3: Cycling action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
C1	Cycle parking	Transport gateways, offices, schools and town centres and new residential areas	£100,000 per year	2020-2025: high cycle parking standards for new developments 2025-2030: town centre improvements	TfL LIP allocation, S106, Council resources	Install; support and encourage developers to install	Developers, TfL
C2	Cycle network	Whole borough, focussing on town centres, new developments and key destinations	£250,000 per km	2020-2025: provide safe routes to stations 2025-2030: town centres 2030-2035: arterial routes	TfL LIP allocation, Liveable Neighbourhoods	Full responsibility – although close work with TfL and developers would be required depending on the ownership of the road	Developers, TfL
C3	Cycle provision	Densely populated areas and new developments	-	2020-2025: identify private sector partner 2025: review partnership	Private sector	Support and encourage private companies	Private sector providers
C4	Cycle training	Consider across the whole borough and to everyone	£300,000 per year	2020-2041	TfL	Full responsibility	TfL

Proposal C1: Cycle Parking

Proposal Description

The lack of safe cycle parking stops people cycling: a third of victims of bike theft have stopped cycling and more than 50% of Londoners regard lack of cycle parking provision as a main obstacle to cycling. [49]

TfL estimates that in the long term, Barnet needs approximately 1,000 additional on-street cycle spaces.[50] Cycle parking should be provided at transport gateways, offices, schools and town centres in line with TfL's Cycle Parking Implementation Plan; residential areas should also be addressed because as many as 58% of Londoners do not have space to store a bicycle at home.[51] This is particularly pertinent in areas of dense new development such as Colindale and Brent Cross, where The Council may be able to extend schemes such as the installation of 30 bike hangars at Barnet Homes locations since 2016 providing 180 cycle parking spaces.

Standards for cycle parking provision in new development are set out in the London Plan; the quality is determined by the London Cycle Design Standards.

Types of cycle parking include:

- Bike hangars – enclosed and lockable hangars are suitable for residential areas and can typically accommodate 6 bicycles, replacing one car space. The cycle hangar offers a secure solution to long-term cycle parking. The first on-road cycle hangar on Somerton Road near Cricklewood was officially launched in June 2019. Residents can rent a space in a cycle hanger for an ongoing cost to the resident which is currently £72 per year.
- Sheffield stands – open stands that offer two bike/ cycle parking spaces are suitable for town centres. Typically placed on the side of a pavement or along building frontage, these are useful for short term parking.[52]
- Two-tier racks offer high capacity parking cycle parking, suitable for transport hubs and places with limited space.

Figure 4.10: Example of bike hangar on Somerton Road, near Cricklewood

Fit for purpose

- Cycle parking should conform to London Cycle Design Standards Chapter 8.
- Cycle parking should be provided in accessible locations which will not hinder pedestrian, bus or vehicle movements.
- Cyclists should feel safe to lock their bicycles in provided cycle spaces – the stands should be well-maintained, well-lit and where possible located in areas covered by CCTV.
- Cycle parking stands should enable all bicycles, including accessible and adapted cycles, to be locked including both wheels and frame.

Requirements for delivery

- The cost will depend on the type and number of cycle spaces. While cycle parking can be installed by The Council, especially in town centres and green spaces, The Council will need to work with TfL, developers and business owners to ensure sufficient provision of high-quality cycle parking on private land.
- Land would need to be identified around transport hubs and town centres to install cycle parking. In residential areas, where demand is identified, reallocation of space away from on-street car parking may be necessary. To achieve these, cycle parking standards are included in the Local Plan for new developments.

Alternatives / Consequences of Inaction

- Fewer people cycle because of inconvenience
- Increased bicycle theft
- Perception that cycling is not prioritised in the borough.

[49] Transport for London (2019) Cycle Parking Implementation Plan. content.tfl.gov.uk/cycle-parking-implementation-plan.pdf

[50] Transport for London (2019) Cycle Parking Implementation Plan. content.tfl.gov.uk/cycle-parking-implementation-plan.pdf

[51] Transport for London (2019) Cycle Parking Implementation Plan. content.tfl.gov.uk/cycle-parking-implementation-plan.pdf

[52] Transport for London (2006) Workplace Cycle Parking Guide http://content.tfl.gov.uk/Workplace-Cycle-Parking-Guide.pdf

Proposal C2: Cycle Network

Proposal Description

A cycle network could encourage people to cycle who are intimidated by fast flowing traffic and competition with cars. Fear of collisions is currently a barrier to cycling for 46% of Londoners; removing this barrier should increase the cycling mode share. , Designated cycle routes reduce the number of collisions by 50%; protected cycle lanes by 90%.

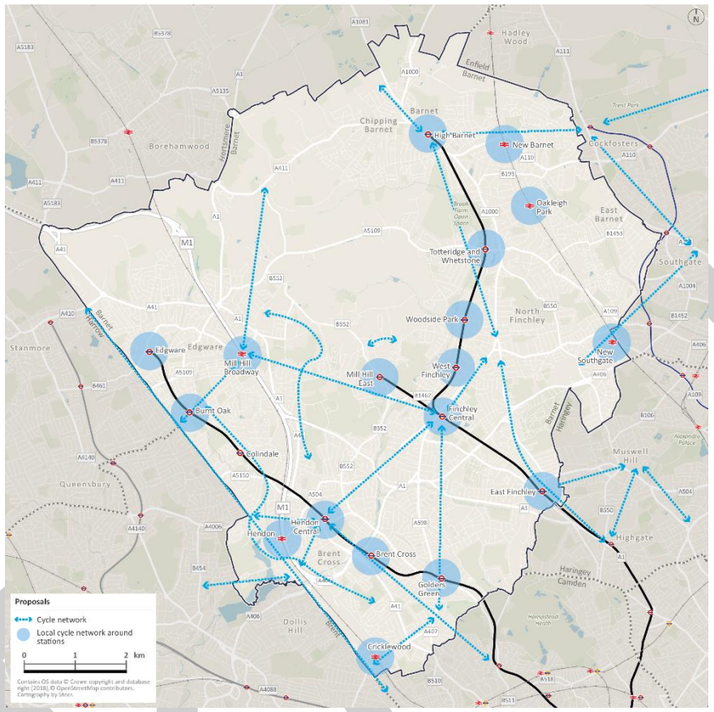
This cycle network should accommodate personal mobility needs and accessible cycles, boosting social equality by providing disabled people with greater choice of ways to travel.

Cycle lanes conforming to the London Cycling Design Standards could be implemented on key routes identified as potential cycling corridors. Cycle routes need to be direct, allowing for connections between residences and town centres as well as transport hubs. The Council's Local Implementation Plan includes the development of a cycle network; this strategy endorses those proposals.

The strategy should focus on corridors of high demand such as those identified by Transport for London, as well as local trips around town centres and stations as highlighted in Figure 4.11.

For leisure cycling, a Barnet loop could be created (see Proposal W4: Active route – the Barnet Loop). This would convert the Dollis Valley Greenwalk into a loop, by linking the existing start and end points at Moat Mount Open Space and Windsor Open Space via West Hendon and Edgware.

Figure 4.11: Potential focus for cycling network[53]



Case Study

The best examples of cycle lane introduction in outer London are the mini-Holland proposals introduced in Kingston, Enfield and Waltham Forest. Cycling increased by 18% in Waltham Forest after the introduction of interventions separating cycle routes from traffic.

Moreover, across all three proposals there was no evidence that more time was being spent in cars due to congestion or that perceptions of the walking environment had deteriorated, showing successful engagement with all transport users, including pedestrians.[54]

Fit for purpose

- In line with TfL's New Cycle Route Quality Criteria, cycle routes must provide protection for cyclists, either by avoiding roads with heavy traffic or by physically segregating areas for cycling.[55] Creating routes of this quality should mean that people who do not currently cycle are encouraged to do so.
- Cycle routes could be provided between areas which have the potential to attract cyclists. They would need to be direct. The following routes are among the highest priority connections according to TfL analysis:
    - North Finchley to Totteridge and Whetstone;
    - North Finchley to High Road and Ballard's Lane;
    - Finchley to Hornsey, which The Council are already working on;
    - North Finchley to Highgate; and
    - Hendon to Brent Cross.
- Cycle routes should begin and end in areas where cyclists can join them with ease, not for instance ending at busy junctions.
- The network should be clearly signed, enabling cyclists to find their way and easily assess the effort required to complete their journey. Signage also advertises the route to new and potential cyclists and makes other road users alert to the likely presence of cyclists.

Requirements for delivery

- If quiet back road routes cannot be found, road space on main roads would need to be reallocated to create room for segregated cycle routes. This might require removal of on-street parking. This would be assessed on a case-by-case basis. Traffic lights which will release cyclists before road traffic would be needed to be installed at key junctions. Some key junctions would need to be redesigned.
- According to TfL's Cycling Action Plan, boroughs will be able to access a cycling fund destined to deliver 450km of cycle routes. To access the fund, the routes must be in line with TfL's cycling potential analysis.
- The Council will engage with residents and cycling groups to ensure the public are informed of changes and to encourage the uptake of cycling.
- S106 and CIL money can be used from developers: cycle routes would be required to realise housing development densities.

[53] Based on Barnet Council's (2019) Local Implementation Plan

[54] Aldred, R. (et al.) (2019) Impacts of an active travel intervention with a cycling focus in a suburban context: One-year findings from an evaluation of London's in progress mini-Hollands programme in Transportation Research Part A: Policy and Practice
https://www.sciencedirect.com/science/article/pii/S0965856417314866

[55] Transport for London (2019) New Cycle Route Quality Criteria
http://content.tfl.gov.uk/cycle-route-quality-criteria-technical-note-v1.pdf

Alternatives / Consequences of Inaction

- Inaction would mean that congestion in Barnet significantly worsens, as the increasing population means increasing demand for trips with insufficient road capacity.
- If cycle routes are not provided then significant shift from private cars to cycling will not happen, regardless of alternative improvements such as cycle parking and educational programmes.

Proposal C3: Cycle Provision

Proposal Description

While the cost of cycling is significantly lower than the cost of owning a car, some people can be discouraged by the upfront cost. Cycle hire proposals provide access to bicycles without large upfront costs or responsibility for maintenance.

Such proposals are becoming increasingly popular are now available across London. While The Council is already collaborating with bike sharing companies such as Beryl, there may be scope to further expand the cycle hire provision in the borough. Traditional docked hire proposals, such as TfL's Santander Cycles, are less suitable for Barnet's development density as they are less flexible.

Case Study

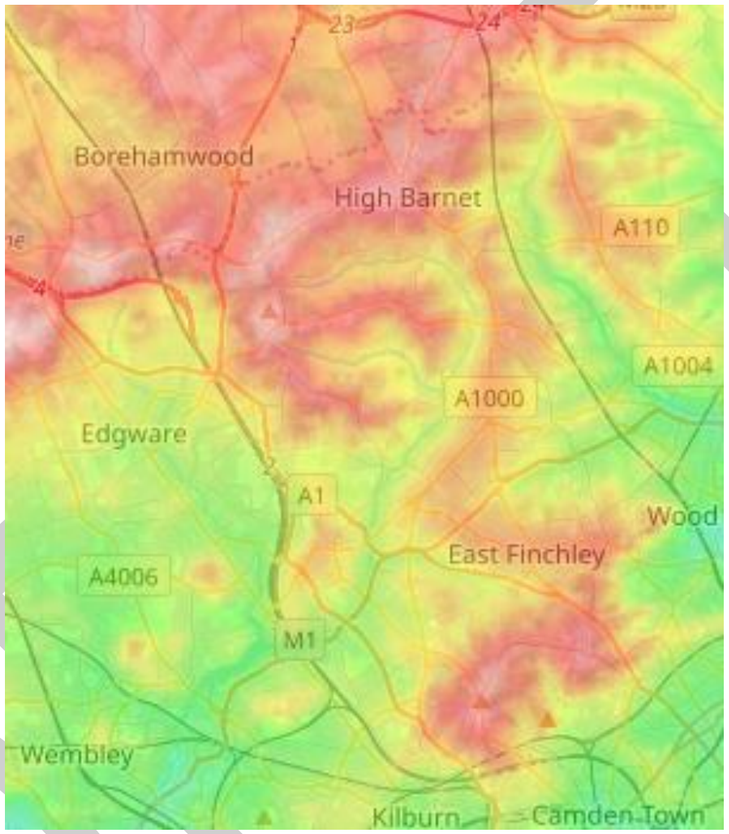
Brighton Electric Cycle Trial saw 80 employees being loaned e-bikes for a period of 6 to 8 weeks. Participants were chosen among those who were driving to work, were predominantly non-cyclists and had low levels of physical activity. Brighton was chosen as a trial city due to its hilliness and windiness – conditions shared by Barnet.

Three out of four participants used the bikes at least once, with 15 participants using them every day. In addition to 49 participants who noted a decrease in car travel to work (either as driver or passenger), a 20% reduction in car miles travelled was observed. Almost half of the trial group said that they would like to have an e-bike available to use in future.[56]

Fit for purpose

- Given Barnet's topography and demographics, electric bicycles are likely to be more effective than standard bicycles. Over one in five Londoners quotes being too old or unfit as a barrier to cycling; electric bicycles offer similar advantages to conventional bikes when compared with a car – improved air quality, reduced road congestion and improved road safety – but require less physical effort.
- The proposal would need to be launched in areas where there is a population with high cycling potential to ensure sufficient uptake.
- Existing training and infrastructure should be extended to ensure safe and frequent travels.

Figure 4.12: Topographic map of North London[57]



Requirements for delivery

- The introduction of a dockless bike sharing proposal would require partnership with a private company.
- The proposal will need to be managed to ensure the streetscape is not cluttered by dockless bike parking, creating accessibility problems.
- Spaces for dockless bike parking would need to be provided at designated areas and should be identified by The Council in collaboration with the provider. This would avoid negative perceptions associated with dockless cycles blocking pavements.

Alternatives / Consequences of Inaction

- If electric bicycles are not provided people may be discouraged from cycling in uneven, hilly terrain, despite other improvements to cycling infrastructure such as cycle lanes and cycle parking.

[56] Cairns *et al.* (2017) Electrically-assisted bikes: Potential impacts on travel behaviour. **https://doi.org/10.1016/j.tra.2017.03.007**

[57] Topographic-map.com (undated) **https://en-gb.topographic-map.com/maps/lpj5/London/**

Proposal C4: Cycle training

Proposal Description

People often feel unsafe when cycling. This perception of danger is one of the biggest barriers to more people cycling. As well as improving the Cycle Network, the council would also extend its training schemes to equip people with the necessary skills to navigate traffic with confidence.

The Council already run training schemes for all types of cyclists. These range from adapted cycle events supporting disabled people to training in schools and free Dr Bike sessions on the first Thursday of every month. Training is provided free-of- charge for anyone who lives, works or studies in Barnet for people of all skill levels: there are basic, urban, advanced and family courses.

These will be expanded as more people are encouraged to shift to active travel.

Fit for purpose

- Training must be adapted to the skill level of the participants.
- Training must be integrated with the creation of safe cycling routes, in line with the proposals above.

Requirements for delivery

- Council funding and partnership with schools and employers

Alternatives / Consequences of Inaction

- Fewer people cycling as barrier of perceived safety remains

Public Transport

Vision

Public transport will be the preferred mode for medium and long distance journeys in Barnet and across the borough boundary into other boroughs and counties such as Hertfordshire. Journeys will be pleasant, quick, reliable and convenient whether travelling into central London or across the borough.

Overview

Benefits

Not all journeys can be walked or cycled. Public transport, encompassing bus, rail and Underground, is a space efficient, safe way to travel. It is also increasingly environmentally friendly: London's first two double-deck all electric buses are planned to be introduced in 2020 on routes serving Barnet.

Good quality public transport is critical to unlocking employment and residential development opportunities and is critical to creating a better Barnet. If fast, cheap and reliable, it can be a viable alternative to car travel.

Using public transport often includes short active trips by foot or cycle to and from bus stops or stations at the beginning and end of a journey. In London, trips involving public transport contribute to 50% of walking trips[58]. Given the demographic of the borough's inactive population, encouraging walking or cycling for limited distances can be the first step in ensuring sufficient levels of physical activity.

Objectives of the strategy	Rating	Explanation of rating
Barnet's transport network enables sustainable growth that creates better places to live and work, supports local businesses to thrive, and is flexible, adapting to future opportunities presented by technology and travel patterns.	★★★★☆	Rail and bus routes are relatively inflexible compared to other modes of transport.
Transport in Barnet keeps the borough moving, enabling people and goods to move within and beyond the borough efficiently using high quality orbital and radial links.	★★★★★	Public transport is the highest capacity form of transport, ensuring limited space is used in the most efficient way.
All users can use the transport system regardless of age, ability and income, and the negative impacts of transport are limited.	★★★★☆	Public transport provides a cheap alternative to car journeys. Although not always accessible, this is improving.
Transport contributes positively to the health of the borough, by prioritising active travel and ensuring air quality is good.	★★★★☆	Emissions per passenger journey are lower when compared to cars. Likely to incorporate active transport as first/last mile.
The road network and transport system in Barnet is safe and residents and visitors feel safe across all transport modes.	★★★☆☆	Rail is a very safe mode of transport; buses are involved in fewer collisions than cars. However, personal safety on both modes is an issue.

Potential

The potential to shift from private to public transport is only limited by the extent and frequency of the public transport network. The Northern Line is very popular: it is the most crowded of all London Underground lines in the AM peak. Increasing capacity should result in an improved service and therefore more trips.

The bus network in Barnet may well increase: TfL has committed to redistributing bus capacity from overprovisioned Central London to underserved Middle and Outer London.[59] The Council should try to use this opportunity to provide its residents with more fast, reliable and direct services.

Although capacity may become an issue on the Northern Line, Great Northern and Thameslink services have spare capacity which can be used to access central London.

Barriers

People might be discouraged from using Public Transport due to poor quality services. Despite as many as 97% of Barnet's residents living within a five-minute walk of a bus stop, bus use only accounts for approximately 10% of trips in Barnet. The frequency, reliability and destinations served from each bus stop vary significantly. Despite this, routes that pass through Barnet have seen increased patronage since 2010.[60]

Four in five Londoners were not satisfied with the quality of information regarding the bus network. It is important to ensure that public transport links not only exist, but the information about them is easily accessible and understandable. Technology (including apps such as Citymapper) can help address this issue.

Strategy in Barnet

Although Barnet benefits from good radial routes into Central London on Thameslink services and the Northern Line, these will come under increasing pressure as the population of the borough increases. The Council will lobby both operators for upgrades to these services to cope with increased demand, as well as Great Northern to improve their frequencies.

Improving orbital connections across the borough and into neighbouring areas is vital so that residents have a choice of ways to travel.

The radial connections need to be upgraded to cope with increased demand. The Council will need to collaborate with Public Transport providers, such as TfL or Arriva to ensure these

[58] Greater London Authority (2015) Health Impacts of Cars in London https://www.london.gov.uk/sites/default/files/health_impact_of_cars_in_london-sept_2015_final.pdf

[59] Transport for London (2019) TfL proposes new outer London route as it confirms plans for central London's buses https://tfl.gov.uk/info-for/media/press-releases/2019/april/tfl-proposes-new-outer-london-route-as-it-confirms-plans-for-central-london-s-buses

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

upgrades are carried out, for example the Camden Town capacity upgrade.

Technology is creating opportunities for areas without sufficient demand to cater for traditional public transport operations: The Council will explore these to ensure residents can access the public transport network.

Action plan

Table 4.4: Public transport action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
PT1	Express and orbital bus routes	Linking West London Orbital, both branches of the Northern Line, Great Northern, Piccadilly, Jubilee and potential Crossrail 2 lines	Up to £40m	2020-2022: improve orbital quick wins 2022-2025: continuous bus lanes 2025-2035: Possible segregation	Mayoral CIL, Borough CIL	Develop concepts and work with TfL on feasibility studies	TfL to fund and operate. Council to maintain
PT2	Improving the existing bus network	Whole borough	£200,000	2020-2025	LIP allocation, Liveable Neighbourhoods	Encourage and support	TfL
PT3	Improve the existing rail and Underground services	Great Northern, Thameslink and Northern Line	-	2020-2030	TfL, rail franchising	Lobby	Franchise holders, London Underground
PT4	On-demand services	Less densely populated areas	-	2025-2030	Liveable Neighbourhoods	Encourage and support	TfL to implement
PT5	Gateways	Key public transport hubs such as tube and train stations	Dependent on scheme	2020-2030	Liveable Neighbourhoods	Encourage and support, part fund, lobby, direct s106	Network Rail, S106, TfL

Proposal PT1: Express and Orbital Bus Routes

Proposal Description

Orbital journeys in Barnet by public transport are currently very difficult: although bus routes exist, they are often caught in congestion, reducing reliability and increasing journey times.

An efficient orbital service would not only join key destinations such as Hendon, Brent Cross, Finchley, New Southgate and Arnos Grove, but also provide resilience for radial routes such as Thameslink, Northern Line, Piccadilly Line, Jubilee Line and, in the future, Crossrail 2 and the West London Orbital by joining them together. This would involve close collaboration with neighbouring boroughs of Enfield and Brent.

Although a feasibility study would be required to determine the form this could take, a bus rapid transit could be a cost-effective option: rail is likely to be more expensive. A bus rapid transit differs from a normal bus service because it is segregated from traffic; such a service would replace other bus routes serving the same destinations.

Routes would also need to be determined by a future feasibility study, which would detail likely impacts on the local area. Initial ideas include routes along disused rail corridors such as Finchley to Finsbury Park, along either Ballard's Lane or the A406 as the highest priority corridor and routes further north as shown in Figure 4.13.

Case Study – Cambridgeshire Guided Busway

Cambridgeshire Guided Busway, opened in 2011, links Cambridge and neighbouring towns with 25 kilometres of segregated bus routes, making it the longest fully segregated busway in the world. The combination of segregation and a guided wheel system mean the Busway can accommodate bus speeds as high as 89 km/h. In the first year, a total of 2.5 million trips were made on the Busway, a figure 40% higher than the original estimates; this increased to 4.1m in the year to July 2018.[61]

Fit for purpose

- A route must be identified, linking key destinations and transport nodes and separated from traffic to ensure speed, reliability and frequency as much as possible.
- Local businesses and residents along the route must be able to load and unload.
- The Express Bus must be well-integrated to both the existing Oyster payment system, allowing interchange onto normal buses and the Underground and rail networks, and active travel networks in the borough.

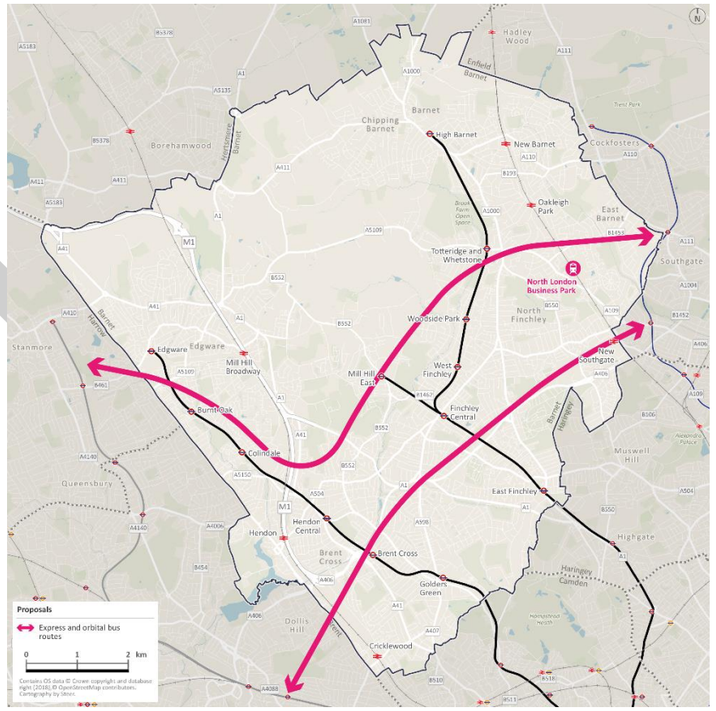
Requirements

- Feasibility and strategic outline business case studies would be required, which would include costings, demand forecasting and route suggestions and impact assessments.
- Segregation may need to take place on existing roads: a new corridor like the Cambridge example is unlikely to be feasible and tunnelling is likely to prove too expensive. This would require a phased approach: first replace parking with a bus lane, then introduce segregation.
- Lessons should be learned from attempts to implement the West London Tram, which was permanently postponed by TfL in 2007 after residents raised concerns about the displacement of traffic onto residential streets.
- Liaison with TfL and bus operators necessary to ensure the feasibility, implementation and funding of any proposals.

Alternatives / Consequences of Inaction

- Congestion
- Poor air quality
- Poor road safety
- Poor physical health
- Poor network resilience
- One alternative would be light rail, as has been successfully introduced in Nottingham, Sheffield and Croydon. Although busways are considered a more cost-effective option, any feasibility study should also include alternative modes such as light rail.

Figure 4.13: Express buses joining key destinations (exact routes to be determined through a feasibility study)



[61] Cambridgeshire County Council (2018) Economy and Environment Committee meeting Thursday 16 August 2018 https://cambridgeshire.cmis.uk.com/CCC_live/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=f7OS%2bLFI9JMErcKLDKTE9pN1D7NKsQdbsw1TaNs8lGglOHP1rBvDDQ%3d%3d&rUzwRPf%2bZ3zd4E7Ikn8Lyw%3d%3d=pwRE6AGJFLDNlh225F5QMaQWCtPHwdhUfCZ%2fLUQzgA2uL5jNRG4jdQ%3d%3d&mCTIbCubSFfXsDGW9IXnlg%3d%3d=hFflUdN3100%3d&kCx1AnS9%2fpWZQ40DXFvdEw%3d%3d=hFflUdN3100%3d&uJovDxwdjMPoYv%2bAJvYtyA%3d%3d=ctNJFf55vVA%3d&FgPlIEJYlotS%2bYGoBi5olA%3d%3d=NHdURQburHA%3d&d9Qjj0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJFf55vVA%3d&WGewmoAfeNR9xqBux0r1Q8Za60lavYmz=ctNJFf55vVA%3d&WGewmoAfeNQ16B2MHuCpMRKZMwaG1PaO=ctNJFf55vVA%3d

Proposal PT2: Improve the existing bus network

Proposal description

Buses are a vital and growing part of Barnet's transport network: passenger numbers on routes passing through Barnet have increased by 9% since 2010. However, passengers wait approximately 20% longer than intended on high-frequency routes and travelling within the borough by car is typically two to four times faster than taking the bus.

The Mayor of London's Transport Strategy has set Barnet a target of improving 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.[62] Other proposals within this strategy document will contribute to this by reducing congestion, particularly through encouraging more trips to be undertaken by walking, cycling and public transport. The Council can also contribute to improving bus services in the borough through a series of prioritisation measures.

One method of prioritising buses over other forms of travel is bus lanes: if road space allows, one lane reserved exclusively for buses at certain times of day allows them to bypass congestion. Another form is smart SCOOT systems, which prioritise buses at traffic lights. The Council could work with TfL to improve bus speeds, reliability and routing using a variety of methods. The remaining 9% of Barnet bus stops that are not currently fully accessible could be upgraded in collaboration with Transport for London.

Perceptions that buses are unsafe are also a barrier to use: this is particularly prevalent at night, when buses are often the only form of public transport available.

Fit for purpose

- To be a reasonable alternative to car, buses must run reliably, frequently and quickly to popular destinations.
- Passengers must feel safe on buses.

Requirements for delivery

- Liaison with TfL to identify and rectify underserved areas and junctions that cause delays, as well as personal safety measures.

Alternatives

- High car mode share, meaning greater congestion

[62] Transport for London (2018) LIP Information to Boroughs

Proposal PT3: Improve the existing rail and Underground services

Proposal description

Rail and Underground services are vital for Barnet residents wanting to access London: the ten areas that employ the most numbers of Barnet residents outside the borough are all served by stations on the Northern Line. The Northern Line will come under increasing pressure as the population of Barnet increases: it already operates at 130% of capacity between 8 and 9am on weekdays, the most crowded of all London Underground lines.[63]

There are two ways to relieve this pressure: increase the capacity of the line; and reduce demand on the line. Increasing the capacity of the Northern Line is dependent on Transport for London and London Underground. The Council will lobby to prioritise investment in the line, to increase frequencies and relieve congestion at Camden Town, where issues are caused by people changing branch.

The increase in people working from home will help to reduce demand on the line: this has already had an appreciable impact on Fridays.

The other key way to reduce demand on the Northern Line is to provide a similar service on Thameslink and Great Northern services: these rail lines also serve large areas of the borough and central London. Opening the new Thameslink station at Brent Cross West should help; other possibilities include a new Great Northern station at North London Business Park, to address the area between Oakleigh Park and New Southgate which is currently underserved.

The Council has recently written to the Department for Transport encouraging the transfer of responsibility for Great Northern services to Transport for London.

Fit for purpose

- London Underground should take all reasonable steps to increase capacity so that increasing frequencies are possible to cope with the additional demand expected from housing developments close to stations.
- Great Northern services should increase in frequency as much as capacity at Moorgate will allow.

Requirements for delivery

- Control of Great Northern should pass to Transport for London.
- Camden Town capacity upgrade.

Alternatives / consequences of inaction

- Overcrowding on the Northern Line will increase, putting people off using the Underground. This will make it harder to meet the Mayor of London's mode share targets.

[63] London Assembly (2019) Tube Capacity (1)
https://www.london.gov.uk/questions/2019/19838

Proposal PT4: On-Demand Services

Proposal Description

Some areas of Barnet are not densely populated enough to support rail links or frequent fixed bus links: not enough people would use the services to sustain high frequencies, and low frequency services are unattractive because they may not run at the time residents want or where they need to go. However, these areas should not be left without transport provision.

On-Demand bus services (also known as demand responsive transport, DRT) operate flexibly in response to local demand – they can adapt their routes and timings depending on the destinations of the passengers.

DRT typically allow passengers to book a ride via an app, website or through a telephone call, providing easy and quick access to the service. Where possible, On-Demand services stop in close proximity to the desired origin and destination of the passenger and provide a direct link between them, making DRT an inclusive choice for disabled people.

The areas highlighted in Figure 4.15 have low population densities, making them generally unsuitable for traditional, point-to-point bus routes. To ensure public transport coverage, on-demand services may be suitable in these areas.

Case study

In London, TfL are running two trials of On-Demand services in Sutton and Ealing.[64] No data has yet been published regarding their success, but the Council will monitor these proposals.

ArrivaClick is an On-Demand service operating in areas of Liverpool, New Lubbesthorpe and Sittingbourne. More than half of ArrivaClick users switched from using cars in Sittingbourne; 43% of customers were using the service as part of their daily commute.

The New Lubbesthorpe branch obtained funding through Section 106 agreements. [65]

Figure 4.14: ArrivaClick On-Demand bus in New Lubbesthorpe

Fit for Purpose

- The DRT service must be accessible to all, both physically and in terms of technology. All drivers must be fully trained and vehicles suitably equipped to help passengers with impaired mobility. Bookings should be able to be via telephone as well as online and via an app.

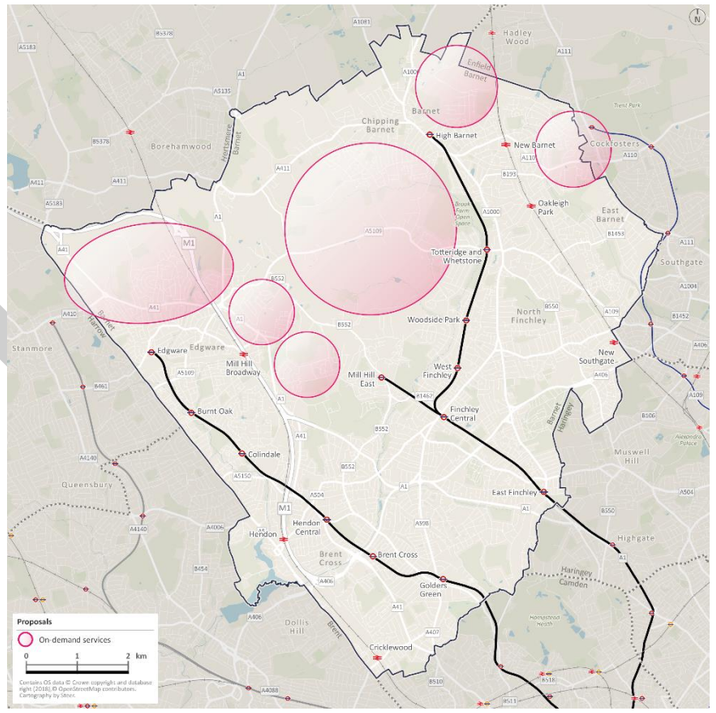
Requirements

- TfL Partnership with an On-Demand transport company will have to be established.
- Cost will depend on the area covered by the proposal and the availability of services.
- The Council (in conjunction with partners) would help to promote the services.

Alternatives / Consequences of Inaction

- Social isolation

Figure 4.15: Areas potentially suitable for demand responsive transit



[64] Transport for London (2019) Demand Responsive Bus Trial https://consultations.tfl.gov.uk/buses/demand-responsive-buses/

[65] Arrivabus (2019) Leicester to benefit from sustainable travel proposal https://www.arrivabus.co.uk/midlands/latest/leicester-to-benefit-from-sustainable-travel-proposal/

Proposal PT5: Gateways

Proposal Description

Public transport hubs such as tube and rail stations can be transformed into “gateways”, improving the public realm and interchange between active and public transport.

Each Gateway proposal should develop a comprehensive plan to integrate walking, cycling and public transport in line with the Healthy Streets programme, creating pleasant, informative, useful gateways to the public transport network by decluttering, providing information and facilities such as rest areas and cycle parking.

These proposals should increase active travel mode shares to public transport: currently as many as 21% of people reach an Underground station by a car, despite 62% of Barnet residents living within 1200m (approximately a 15 minute walk) of an Underground station and 100% within a 20 minute cycle. Improving the network required to reach the stations is part of the solution.

Gateway proposals should be designed on a case by case basis, depending on the unique issues present at each location.

The Council is working with the local community and development partner to re-design North Finchley and will look to align the scheme with this proposal and with the Healthy Streets principles.

Case Study

In 2015 the surroundings of Sutton Station, in the Outer London Borough of Sutton, were significantly upgraded. The public realm was decluttered, and traffic rerouted; improved cycling facilities and wider pavements were included, improving access to the station.

The Gateway is estimated to recover the costs in just 8 years, with the proposal bringing £223,000 in health benefits year on year.[66]

Fit for purpose

Gateways should be planned and built with the future in mind, to ensure that they can cope with future technologies and capacity requirements. Key features of the program should include:

- The layout of bus stops and stations should be easy to understand and navigate, with legibility issued addressed.
- Clutter-free public spaces – as many as 43% of disabled Londoners say that obstacles on pavements are a barrier to walking.[67]
- Accessibility– Only 7 out of 13 Northern Line stations in Barnet have step-free access.
- Cycling infrastructure – cycleways, cycle parking and additional facilities such as bike repair centres could be installed always in line with London Cycle Design Standards.

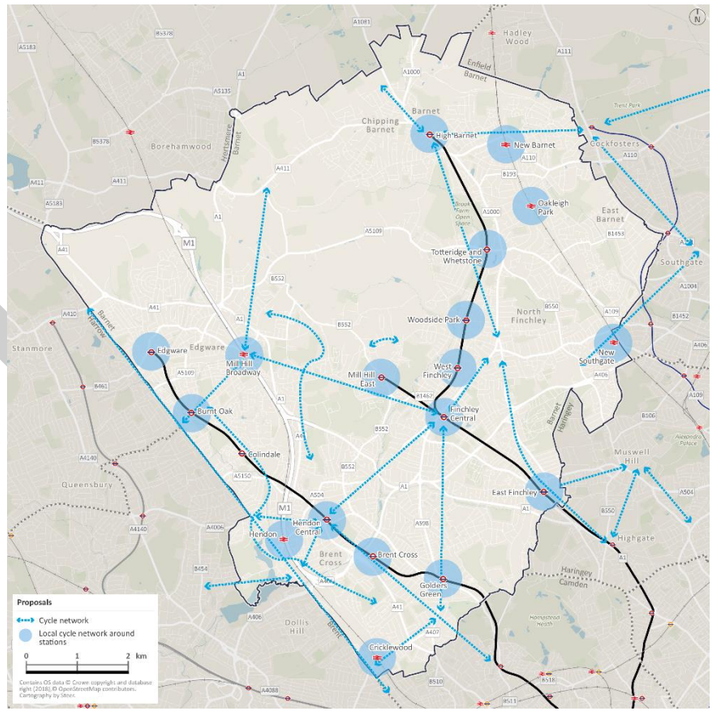
Requirements

- The cost would be dependent on the size of the proposal.
- The Council would need to liaise with station owners and operators to ensure the implementation and viability of the gateway proposals. For example, gateway improvements could be made at the same time as London Underground’s scheduled step-free improvements at Colindale (by 2024).

Alternatives / Consequences of inaction

- Poor public realm will mean public transport trips are unattractive
- Public transport users may continue to drive their first/last mile to and from public transport hubs

Figure 4.16: Tube and train stations in Barnet with proposed cycle network



[66] Transport for London (2017) Better Streets Delivered 2 **http://content.tfl.gov.uk/better-streets-delivered-2.pdf**

[67] Transport for London (undated) Walking Action Plan: Making London the world’s most walkable city **http://content.tfl.gov.uk/mts-walking-action-plan.pdf**

Car

Vision

Vehicles will run on cleaner fuels to reduce emissions and roads will be designed with safety as a paramount consideration. Congestion will be relieved by increased active and public transport modes as vehicles are mainly used for occasional or necessary journeys and with shared ownership models being more convenient and cost-effective for users.

Overview

Cars, whether privately owned, part of a car club or as taxi services, provide a flexible means of reaching a destination. They are often the most convenient mode of transport – they are independent from timetables or weather, they provide a door-to-door solution (dependent on the availability of parking) and space and convenience to carry heavy or sizeable luggage. Cars are often the mode of choice in sparsely populated areas, which offer limited access to public transport and where the distances are unsuitable for walking.

However, there are negative impacts associated with car use: cars contribute to pollution and can cause collisions, congestion and damage areas of public realm. Cars can also be a barrier to the uptake of other, more efficient, healthier modes of transport.

Objectives of the strategy	Rating	Explanation of rating
Barnet's transport network enables sustainable growth that creates better places to live and work, supports local businesses to thrive, and is flexible, adapting to future opportunities presented by technology and travel patterns.	★★☆☆☆	Efficient car flows are determined by existing capacity.
Transport in Barnet keeps the borough moving, enabling people and goods to move within and beyond the borough efficiently using high quality orbital and radial links.	★★★☆☆	Cars offer fast and direct travel but cause congestion and can be a barrier to more efficient modes.
All users can use the transport system regardless of age, ability and income, and the negative impacts of transport are limited.	★★★☆☆	Cars are generally more expensive than other transport modes.
Transport contributes positively to the health of the borough, by prioritising active travel and ensuring air quality is good.	★☆☆☆☆	Car journeys, even if made by low-emission vehicles do not encourage physical activity.
The road network and transport system in Barnet is safe and residents and visitors feel safe across all transport modes.	★☆☆☆☆	Car usage may discourage walking and cycling; cars also contribute to the majority of killed and seriously injured casualties on the transport network.

Limitations

The Council does not have control over the major roads in the borough, e.g. the A1, M1, A41 and A406. While the Council can influence the local roads, any changes to the key routes will have to be implemented by their respective highway authorities.

Strategy in Barnet

The strategy will focus on limiting the negative impacts through:

- Safer road design and education about other road users;
- Facilitating shared ownership models; and
- Facilitating the development of infrastructure which allows electric vehicles to be the default choice.

The transport implications of Barnet's projected population growth, and associated road congestion will require many changes to transport infrastructure and behavioural changes including reduced car usage.

Action plan

Table 4.5: Car action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
R1	Car clubs	Whole borough, particularly new development	-	2020-2025	S106	Encourage and support	Developers, car club operators
R2	Electric vehicle charging provision	Whole borough, particularly new development	£4,000 - £40,000 per charger	2020-2025: 200 a year 2025-2030: 500 a year 2030-2040: 1,000 per year	S106, Council resources	Identify appropriate locations; assist with traffic orders; continue to mandate in development	Developers, charging point operators
R3	Road safety improvements	Key junctions	£20m	2020: produce Road Safety Strategy 2021-2041: monitor and implement Road Safety Strategy	TfL Liveable Neighbourhoods, Council resources, LIP	Develop Road Safety Strategy	TfL, police
R4	Workplace parking levy	Whole borough / London-wide	Revenue	2025-2030	-	Design, implement and operate. Advocate for London-wide with TfL and other boroughs	TfL, London boroughs
R5	Better management of parking	Whole borough, particularly town centres	Revenue	2020-2025: restrict new development parking and introduce CPZs 2025-2035: convert bays to car club only 2035-2041: restrict town centre parking	-	Total control	Residents and businesses
R6	Road user charging	London-wide	Revenue	2030-2035	-	Lobby / advocate so that design reflects Barnet's aspirations	TfL

Proposal R1: Car Clubs

Proposal Description

Car clubs are pay-as-you-drive systems providing access to cars to registered Members, who can book cars from a variety of locations using websites, mobile apps or over the phone. There are two models: round-trip, where users return the car to a specified car club space once they have finished using it; and flexible or "floating", where users can park the car in any legal parking space within a defined area once finished. Currently there are approximately twenty car club cars available to Barnet's residents.

Car clubs provide benefits for both users and society more generally. For the individual, they are cheaper and more convenient than private car ownership. Cars in the UK spend an average of 96.5% of their lives parked, doing nothing.[68] In Barnet, kilometres driven per person have decreased much faster than car ownership since 2008, meaning the time cars have spent idle will have increased.

For society, 99% of London's car club fleet already complies with Ultra Low Emission Zone standards and the average car club car emits 43% fewer tailpipe emissions than the average private car.[69]

The Council, in cooperation with private companies, can increase the number of car clubs available to residents. There are two key ways The Council can influence the number of car clubs available to residents: first, through the development planning process, offering the opportunity to replace some of the requirements for parking spaces with commitments from developers to provide car clubs for residents of their developments; second, by prioritising parking spaces for car club cars.

Case study

CoMo produce an annual survey of car clubs at both a nation- and London-wide level, which contains a wealth of evidence of their effectiveness. The latest survey on London revealed that 49% of respondents owned at least one car before joining a car club, falling to 23% afterwards; 34% would have bought a car if they had not joined a car club. For each car club car, approximately 10.5 private cars are removed from the road, freeing up public space that is currently used for car parking. Car club cars also tend to operate at a higher level of occupancy than private vehicles: 1.7 people per vehicle compared to 1.55.[70]

Fit for purpose

- *Critical mass*. Car Club vehicles must be provided in sufficient numbers that they are available when needed: if it is not convenient to use a car club car, they will not be used.
- *Desirable locations*. Dedicated spaces should be provided at desirable locations such as dense housing, key shopping centres and public transport nodes. When working with private operators, The Council could franchise bays in lots to ensure coverage is not limited to only the most desirable locations.

Requirements

- The Council will need to determine appropriate locations for new car club bays.
- Engagement with car club providers.

Alternatives / Consequences of Inaction

- High parking demand, leading to inefficient use of scarce road space
- High car ownership
- No improvement to congestion and air quality.

[68] Bates, J. and Leibling, D. (2012) Spaced Out: Perspectives on parking policy Spaced**https://www.racfoundation.org/wp-content/uploads/2017/11/spaced_out-bates_leibling-jul12.pdf**

[69] Carplus (2017) Annual Survey of Car Clubs 2016/17 **https://como.org.uk/wp-content/uploads/2018/06/Carplus-Annual-Survey-of-Car-Clubs-2016-17-London.pdf**; Comouk (2018) England & Wales Car Club Annual Survey 2017/18 **https://como.org.uk/wp-content/uploads/2019/06/EW-report-v4.0.pdf**

[70] Comouk (2018) England & Wales Car Club Annual Survey 2017/18 **https://como.org.uk/wp-content/uploads/2019/06/EW-report-v4.0.pdf**

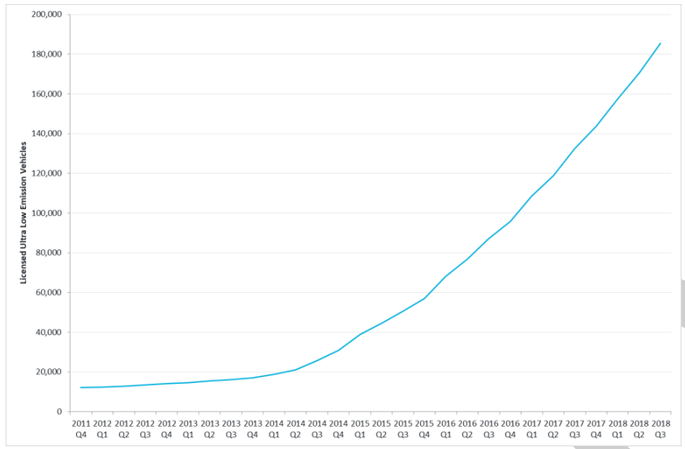
Proposal R2: Electric vehicle charging provision

Proposal Description

Electric vehicles are approximately three times more efficient than petrol cars and produce no tailpipe emissions. Although currently making up just 1.8% of all new vehicle registrations in the UK, electric vehicles are increasingly popular as shown in Figure 4.17.[71] Battery prices fell by 80% between 2010 and 2016, reducing overall vehicle costs, and some cars can now travel up to 300 miles on a single charge.[72]

Sales are likely to continue to grow: new technology adoption tends to accelerate once 5% of market share has been achieved; in Norway electric vehicles account for almost half of all sales. [73]

Figure 4.17: Licensed Ultra Low Emission Vehicles in the UK 2011-2018[74]



This strategy can encourage the accelerated take up of these vehicles by helping to remove barriers. Charging electric vehicles is the most significant factor preventing consumers buying an electric vehicle, followed by distance travelled in one charge. While improving technology will increase range, a network of chargers will be needed. The Council is already supporting the introduction of electric vehicle charging points across the borough and working with developers to ensure the installation of charging points in new developments. These policies will be expanded, as well as private homeowners supported to install charging points in private driveways.

Fit for purpose

- Home charge points should ideally use smart charging technology, charging when demand on the National Grid is lower. This lowers overall system costs, ultimately resulting in cheaper fuel for the consumer.
- Rapid charge points should be made publicly available across the borough.

Requirements

- Planning requirements can mandate the provision of electric vehicles in new developments, in line with the London Plan.
- Chargers suitable for public access, such as at retail / public car parks, urban centre streets and leisure centres as well as charge pillars and lamp posts, and charge a 120km range battery in approximately 3 hours.[75]
- Engagement with EV producers, TfL, National Infrastructure Commission, Ofgem, the Office for Low Emission Vehicles and London Councils' Go Ultra Low City Scheme

Alternatives / Consequences of inaction

- Lower take up of electric vehicles, meaning worse air quality

[71] National Infrastructure Commission (2018) National Infrastructure Assessment **https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf#page=53**

[72] National Infrastructure Commission (2018) National Infrastructure Assessment **https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf#page=53**

[73] Electrek (2019) Electric car sales grew by 40% in Norway this year **https://electrek.co/2019/01/02/electric-car-sales-norway-2018/**

[74] Department for Transport (2019) Table veh0132

[75] The Mayor's Electric Vehicle Infrastructure Taskforce (2019) London electric vehicle infrastructure delivery plan **http://lruc.content.tfl.gov.uk/london-electric-vehicle-infrastructure-taskforce-delivery-plan.pdf**

Proposal R3: Road safety improvements

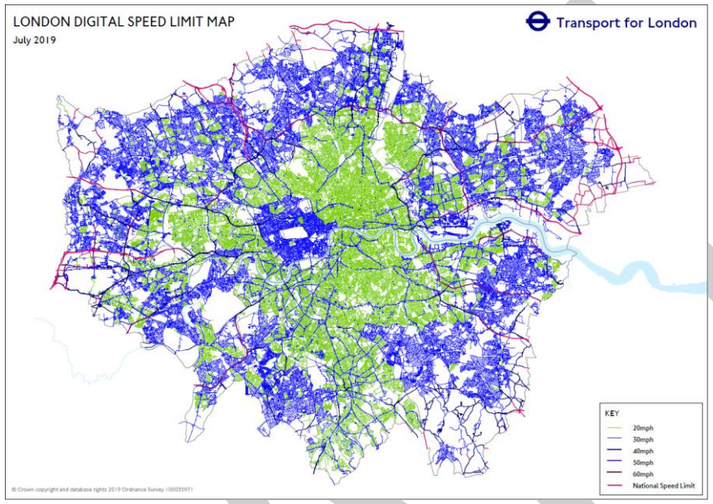
Proposal description

Improving road safety is critical in Barnet: approximately 100 people are killed or seriously injured on Barnet's roads every year, almost two every week. Although this is lower per kilometre driven than other boroughs and 20% of these KSIs occur on TfL's or Highways England's roads, there is much that The Council can do to help improve the safety of all people in Barnet.

To achieve the Mayor of London's Vision Zero, both the number and severity of collisions must be reduced. The best way to reduce severity of a collision is to limit the speed at which the collision takes place. A pedestrian is five times more likely to die if hit by a car travelling at 30mph than 20mph and stopping distances almost double between 20mph and 30mph. Lower speed can also improve traffic flow and reducing particulate emissions.[76]

There are two methods to limit speed: imposing a limit and penalising those who break it, and introducing speed limiting design features such as chicanes, street narrowings or speed cushions. There are already a number of 20mph zones in Barnet. Road designs can be amended either on a case-by-case basis or as part of Low Traffic Neighbourhoods proposals (see Proposal W2: Low traffic neighbourhoods). Reallocated road space in town centres can be used for pedestrian space, small parks, markets and other community uses.

Figure 4.18: Map of London speed limits



Case study

The Department for Transport published evidence for the effectiveness of 20mph road speed limits in November 2018; TfL's Achieving Lower Speeds toolkit does the same for speed limiting road designs.[77]

Fit for purpose

- *Speed limited by road design.* To be effective, engineering features should be introduced which limit speed on non-arterial routes, following advice in TfL's Achieving Lower Speeds Toolkit.
- *Enforcement.* To deter speeding, drivers breaking limits should be penalised.

Requirements

- The cost of the proposal will depend on the breadth and type of design feature chosen.
- To ensure that investment is appropriately prioritised and targeted in the most effective manner, the Council should further develop more detailed road safety plans. This should provide an evidence base (drawing on available data sources) that facilitates a proactive approach to be taken, building on the 2018 Road Safety in Barnet report.[78]

Alternatives / Consequences of inaction

- No reduction in those killed and seriously injured on Barnet's roads

[76] Transport for London (2019) Achieving Lower Speeds: The toolkit **http://content.tfl.gov.uk/achieving-lower-speeds-toolkit.pdf**

[77] Atkins et al. (2018) 20mph Research Study **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757307/20mph-headline-report.pdf;** Transport for London (2019) Achieving Lower Speeds: The toolkit **http://content.tfl.gov.uk/achieving-lower-speeds-toolkit.pdf**

[78] Barnet Council (2018) Road Safety in Barnet **https://barnet.moderngov.co.uk/documents/s45531/Road%20Safety%20in%20Barnet.pdf**

Proposal R4: Workplace Parking Levy

Proposal Description

A workplace parking levy (WPL) is a tool that can be introduced by a local authority, which charges businesses per parking space provided for employees. The money raised through a workplace parking levy has to be reinvested to achieve the aims of the transport strategy.

Workplace parking charges have long been established as an effective tool for reduction of car-use for travel to work internationally.[79] To date, their application in the UK has been limited to Nottingham, though the Mayor of London's Transport Strategy encourages their introduction in London boroughs and Hounslow Council have consulted on introducing a Workplace Parking Levy.[80]

Car travel is the most common method of going to work in Barnet (42%), including for short distance trips. 40% of journeys to work that are shorter than 2 kilometres are currently made by car; of all journeys to work that are driven, 30% are under 5km. These figures show there is potential for change.

Consequences of workplace parking levies include the reduction of available parking spaces and the encouragement of car-pooling spaces. Using differential pricing for vehicle types, a WPL can be used to encourage a shift to cleaner vehicles.

The Council will continue to review the introduction of Workplace Parking Levy in other locations.

Case study

Nottingham introduced a workplace parking levy in October 2011, with charging beginning in April 2012. Businesses can provide 10 staff spaces free of charge. For every space above that, they must pay £415 per year. About 50% of businesses choose to pass the charge onto their employees.

The revenue, estimated at £9 million per year, was invested into expanding Nottingham's tram system and refurbishing the main railway station.[81]

Since the introduction of the workplace parking levy, public transport use has risen by over 40% and carbon emissions have declined by 13%.[82]

The WPL also encouraged some of the businesses to convert their car parks into other uses, effectively unlocking space for development or green and leisure areas.

Fit for purpose

- Precautions need to be taken to avoid relocation of businesses to other areas. Local Businesses must be properly and effectively consulted with before any introduction of a Workplace Parking Levy.
- Any WPL must be introduced together with other parking, public transport and active travel proposals, to limit the displacement of cars from business car parks to surrounding streets.

Requirements

- Establishing and enforcing a Workplace Parking Levy would require collaboration with the local businesses.
- Schemes that the Workplace Parking Levy would fund would need to be identified.
- The Mayor of London's Transport Strategy identifies a Workplace Parking Levy as a low-cost proposal

Alternatives / Consequences of Inaction

- High car mode share
- Congestion
- Poor air quality
- As an alternative or in addition to a Workplace Parking Levy, The Council should ensure a low number of business parking spaces through the development planning process.

[79] Christiansen, P. (et al.) (2017) Parking Facilities and the built environment: Impacts on travel behaviour in Transportation Research Part A: Policy and Practice **https://www.sciencedirect.com/science/article/pii/S0965856416301525**

[80] Hounslow Council (2019) Workplace Parking Levy Consultation Results **https://haveyoursay.hounslow.gov.uk/traffic-and-transport/workplace-parking-levy/**

[81] Centre for Cities (2018) Why a workplace parking levy could help solve cities' transport and congestion problems **https://www.centreforcities.org/blog/workplace-parking-levy-answer-cities-transport-congestion-problems/**

[82] WWF Scotland (2016) International Case Studies for Scotland's Climate Plan: Workplace parking levy, Nottingham, UK **https://www.wwf.org.uk/sites/default/files/2016-12/nottingham%20case%20study%20-%20Workplace%20parking%20levy.pdf**

Proposal R5: Better management of parking

Proposal Description

Better management of on-street car parking is an effective way to encourage people to use healthier and more sustainable modes of transport. This is in recognition that kerbside space is a limited resource, and that on-street car parking has an opportunity cost.

Controlled Parking Zones (CPZs), areas where cars can only be parked in designated bays when displaying a valid permit, can be used to improve air quality: by charging electric vehicles less or exempting them from permit charges people are encouraged to swap more polluting vehicles for electric vehicles. The Council has been doing this since 2015. A similar approach can be taken with pay-and-display public parking. There are already 36 CPZs including sub zones in the borough, one of which applies only on event days. Funds obtained through the issue of permits have to be used to contribute towards improving transport infrastructure. These have mostly been introduced piecemeal in response to immediate pressures on parking: a strategic, borough-wide CPZ strategy could be more effective.

Case Study

A CPZ extension review in Edinburgh found that in areas of uncontrolled on-street parking, an average of 28% of cars parked during the daytime were left there between 8.30 a.m. and 6 p.m.

Surveys were undertaken to see how the employees would change their commuting habits if a CPZ was introduced. Depending on the proposed CPZ size (0.5 mile to 1.5-mile expansion), the number of trips was set to change by:

- Car – 2.8% to 7.9% decrease;
- Walk – 1.3% to 2.3% increase;
- Bus – 1.3 and 5% increase[83].

Fit for purpose

- To be effective, CPZs must be enforced, for example through civil enforcement officers.
- Introduction of a CPZ is likely to displace some of the current users to surrounding areas. This effect would need to be considered and mitigated within 18 months of a CPZ being introduced.
- The affected areas will have to have enough Public Transport capacity to accommodate those who switch from car to Public Transport travel.

Requirements

- Introducing a CPZ is a lengthy process that requires a series of stakeholder consultation and production of Traffic Management Orders before it can be enforced.
- The supply of parking and CPZ permits to residents of new developments should be limited.

Alternatives / Consequences of Inaction

- Congestion
- Residents unable to park
- High car ownership

[83] Rye (et al.) (2007) Expansion of a Controlled Parking Zone (CPZ) and its Influence on Modal Split: The Case of Edinburgh. https://doi.org/10.1080/03081060600585368

Proposal R6: Road User Charging

Proposal Description

Road user charging proposals require payment by certain types of vehicles for using certain parts of the road network. These charges can vary according to type of vehicle, time of day and day of week, as well as distance travelled. They can be used to reduce road trips at congested times, reduce rat running and improve air quality. For example, 25% of traffic on Barnet's roads at peak times is travelling through the borough. By charging non-resident vehicles for deviating from arterial routes, rat running could be reduced.

At the moment there are multiple road user charging proposals in London such as the Congestion Charge and the Ultra Low Emission Zone. The Ultra Low Emission Zone will extend to all areas of Barnet south of the A406 in 2021 for all vehicles, and for buses, coaches and lorries London-wide in 2020. The Council will monitor the impact carefully, particularly on areas just outside the zone. .[84]

Proposals to introduce pay-per-mile charging in London have recently been discussed: such a proposal would replace Vehicle Tax and existing road user charging, the objective of those proposing the scheme is to simplify the system and make it easier to understand and administer. The Council will monitor the progress of such proposals.

Case study

The Congestion Charge was introduced by TfL in the capital's core in 2003. The charge was established to reduce the number of cars passing through Central London. Since the introduction of the charge, traffic has reduced by 27% compared to the baseline conditions – a daily decrease of 80,000 cars.

The Ultra Low Emission Zone charge was introduced in April 2019. It has accelerated the uptake of cleaner vehicles: compliant vehicles, which do not have to pay, increased as a proportion of all vehicles in the zone from 39% in February 2017 to 73% in the first four months of the charge being introduced. The number of older, more polluting vehicles decreased by a third.

Fit for purpose

- Congestion charging should only be introduced in areas that are easily accessible by other modes of transport. If an increase in public transport ridership is expected, the public transport network must have enough spare capacity. It is not suitable for all areas of Barnet today because there are not enough high-quality alternatives to the car and so such a proposal would penalise people for going about their daily lives. If suitable alternatives are in place, such a proposal could significantly reduce road congestion.
- Careful consideration must be given to the road capacity in the surrounding areas. Measures must be taken to limit the negative impact on the displacement zones.
- Any introduction should be delivered in collaboration with TfL and neighbouring boroughs / counties.
- If such a scheme is introduced by TfL or nationally, Barnet must receive a proportion of any funds raised to contribute to transport improvements in the borough.

Requirements

- The set-up and operating costs of a road user charging proposal are likely to be covered by the levied income, though initial investment would be required to set the scheme up.

Alternatives / Consequences of Inaction

- Extending existing road user charging schemes, such as the Ultra Low Emission Zone, is an alternative.
- Poor air quality
- Congestion
- Rat running

[84] Transport for London (2019) Scrappage scheme for vans and minibuses **https://tfl.gov.uk/modes/driving/ultra-low-emission-zone/scrappage-scheme**

Freight and logistics

Vision

Freight will flow efficiently through the borough, enabling the goods and services that the borough and city require to reach their destinations. Negative impacts such as air pollution and collisions will be reduced through journey efficiencies in densely populated areas, fuel changes and road safety improvements, while congestion could be reduced through consolidation.

Overview

Freight and logistics are vital to the functioning of both the borough and, given Barnet's strategic location at the crossroads of the A1, the M1 and the A406, London and the wider region.

The Council have already started time-banded waste collection, with specific areas given specific times for bin collections. This enables optimised routes and timings. However, these waste vehicles form a small part of freight and logistics vehicles, which account for 20% of all traffic in the borough. This is expected to grow: the weight of goods transport by heavy freight transport is expected to increase by between 27% and 45% in the next thirty years; more home deliveries have contributed to the number of LGVs on Barnet's roads increasing by almost 40% since 2011 and are expected to increase further.

More stringent regulation of fuel types and better road design will also mitigate freight's adverse impacts. Because they are heavier, freight and logistics vehicles are often more polluting and more dangerous in collisions than private vehicles. Heavy goods vehicles are responsible for approximately a fifth of the UK's total transport emissions: government policy requires a change of fuel used for freight vehicles to ensure the country meets its climate targets.[85]

Rail freight reduces congestion, is safer and often more environmentally friendly than road freight. However, it is inflexible. Although the Council will continue to explore rail freight options for major sites as it has done at Brent Cross, rail lines are expected to become increasingly busy.

The key objectives for freight in Barnet are to improve journey times and reliability, minimise environmental impacts and ensure the safety of all road users.

Challenges

As freight on Barnet's roads is part of a wider national and international system and is carried largely on roads The Council does not control, The Council's ability to influence it is limited. For example, stringent restrictions on the types of vehicles that enter Barnet are unlikely to be enforceable as freight will need to travel to London and the counties regardless of restrictions. Similarly, even if Network Rail electrified all rail routes in Barnet, freight trains would still need to run on diesel unless the entire national network was electrified. As a result, a key part of The Council's freight policy will require coordination with neighbouring boroughs and national government to ensure fair and enforceable restrictions across the network.

[85] Department for Transport (2017) Transport Investment Strategy: Moving Britain Ahead https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/624993/transport-investment-strategy-print.pdf

Action plan

Table 4.6: Freight action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
F1	Alternative fuels for freight	Consolidation centre; service stations	£50,000 per charger	2030-2041	OLEV funding, Council resources, private sector	Encourage installation	Service station operators, freight operators
F2	Consolidation	Town centres and areas of dense business and resident agglomeration	£1m - £10m	2020: identify drop and go locker sites 2025: introduce town centre consolidation centres 2030: examine opportunities for major consolidation centre	Private sector	Encourage private investment, potentially subsidise	Future BIDs, freight operators, businesses

Proposal F1: Alternative fuels for freight

Proposal description

The number of light goods vehicles on Barnet's roads is likely to increase. These vehicles benefit Barnet residents through providing the goods and services they require. The composition of the fleet is already changing since the introduction of EURO VI standards, with new vehicles polluting far less than previously.

Electric vans can already offer mileage of up to 80 miles (small vans) or 100 miles (large vans).[86] This is likely to increase as technology improves. Most UK vans drive fewer than 60 miles per day, meaning a conversion of the fleet should eventually be possible.

In combination with other proposals in this Strategy, The Council can help fleet operators to convert to electric vans by installing more rapid charging points and ensuring they are available to commercial vehicles, as well as working with TfL to ensure charging points are available on their roads in the borough.

Fit for purpose

- Charging points should be reasonably close to the Strategic Road Network, allowing vans to charge without deviating too far from their optimised routes.
- Advice should be sought on future-proofing electric charging points to avoid investing in technology that quickly becomes obsolete.

Requirements

- Land must be provided for the charging points
- Power connections must be installed
- Money must be set aside for maintenance and upgrading of electric charging points

Alternatives / Consequences of Inaction

- The switchover from diesel to electric vans will be slower, causing unnecessary air pollution in the borough

[86] LoCity (2018) Alternative Fuels: How to challenge common misconceptions https://fuelfacts.locity.org.uk/wp-content/uploads/2018/09/LoCITY-Alternative-Fuels.pdf

Proposal F2: Consolidation

Proposal Description

Consolidation naturally occurs within freight businesses to enable more efficient distribution and can reduce congestion and emissions in built up areas.

Urban consolidation centres combine multiple freight operators into one facility. Multiple suppliers drop goods at the centre, which are then delivered in mixed loads on vehicles whose routes are optimised. Barnet's location on London's boundary, on the edge of the Ultra Low Emission Zone and at the intersection of major freight routes means it is well located for an urban consolidation centre. The Council will work with TfL and the freight industry to identify opportunities.

Micro-consolidation is similar to an urban consolidation centre but on a smaller scale. For a small area such as a town centre, goods can be delivered and transferred to last mile solutions. This removes goods vehicles from the town centre. The Council could encourage initiatives of this nature in its town centres,

Through the planning process, The Council can mandate that major construction proposals operate construction consolidation centres. These have been shown to improve build times and reduce waste, losses and damages.

Case study

Gnewt Cargo delivered a micro-consolidation trial for the Greater London Authority in 2014-2015. Parcels from Hermes, TNT and DX were delivered to three micro-consolidation centres by diesel vans at off peak times; they were then transferred to Gnewt Cargo's clean vehicles, routes optimised and delivered to customers. The trial resulted in a 48% reduction in vehicle kilometres, helping reduce NO_x, PM and CO_2 by 19%, 19% and 12% respectively.[87] Ongoing financial sustainability is a challenge that needs to be addressed.

Fit for purpose

- Access to Strategic Road Network.
- Storage facilities for a variety of goods.
- Driver amenities such as toilets and rest facilities.
- Well secured.
- Fuelling station.

Requirements

- Land
- Coordination with freight and consolidation centre operators

Alternatives / Consequences of Inaction

- Congestion
- Road safety issues
- Poor air quality

[87] Greater London Authority (2017) Multi-carrier consolidation – Central London trial **https://www.london.gov.uk/sites/default/files/gla-agile1-finalreport-02.05.17.pdf**

Behaviour change

Supporting a change in behaviour will help to support long term changes in the way that people travel. Educating and informing people is key to empowering people to make changes to the way they travel.

Targeted campaigns, training, education, engagement and communications with the general public (and where appropriate specific groups such as children, the elderly or groups who are less likely to use certain types of transport) is key to supporting the successful adoption of new modes of travel and specifically supporting active travel.

There are a number of factors that influence behaviour and so often a package of measures is required to enable effective behaviour change. In addition, activities undertaken and supported by a variety of stakeholders are often most successful and enable a larger audience to be engaged.

The Council is already undertaking some behavioural change activities which are either aimed at everyone or for specific targeted groups. For example, the Council provides free cycle skills training to anyone who lives, works or studies in Barnet and free road safety story and rhyme time for toddlers in some libraries. Safe Drive Stay Alive events are held to inform young people - for new drivers, those about to learn and the passengers of cars driven by their peers[88].

As each proposal within this strategy is considered and progressed, a plan for behaviour change (including communications and engagement activity), including target groups, location (the whole borough or specific locations) and stakeholders who will support the change will be key to the successful rollout of each proposal.

Some example behaviour change campaigns are noted within this section, however specific behaviour change programmes / activities will need to be considered for each proposal.

[88] Safe Drive Stay Alive Event press release (28th November 2019)
https://www.barnet.gov.uk/news/road-risks-brought-life-teenagers

Proposal BC1: Overarching behaviour change programme and specific behaviour change activities for each proposal

Proposal Description

In order for the proposals in the sections above to be as effective as possible in changing transport behaviours in the borough, an overarching short and long term comprehensive behaviour change programme will need to be in place.

In addition, each proposal will need a specific behaviour change programme / set of activities which will contribute to the overarching programme.

All behaviour change programmes should consist of:

- Consistent marketing/branding
- General and targeted messages
- Community engagement
- Research, innovation, monitoring, evaluation, review

Case study

As each behaviour change programme / activity will be bespoke, there are a number of examples of case studies which can be considered and learned from.

One example is the learning from the Department for Transport grants programme called the Local Sustainable Transport Fund. The *What works? Learning from the Local Sustainable Transport Fund 2011-2015* report[89] provides an overview of the projects and provides insight from Local Authority practitioners on the successes, challenges and lessons for delivery of future projects.

Requirements

- The cost for each programme and activity will need to be explored in further detail. Initial funding will be required to develop suitable branding, and to identify general and targeted messages. Continued funding would be used to monitor, evaluate, review and implement any further activities. Staffing will be required with suitable training / experience.
- The Council would need to liaise with other transport organisations such as TfL and National Rail, educational charities and local organisations to support the programme.

Alternatives / Consequences of Inaction

- Planned proposals will not be as effective without behaviour change activities and this would be a missed opportunity to raise the profile of transport choices.

[89] What works? Learning from the Local Sustainable Transport Fund 2011-2015 (2016) **http://www.transportforqualityoflife.com/u/files/LSTF-What-Works-Report.pdf**

Proposal BC2: Education, training and publicity - road, travel and personal safety

Proposal Description

In order for people to be able to make transport choices they not only need to be aware of the travel choices and impacts but need to have the skills and confidence to be able to choose from all possible options. Therefore, an extensive education, training and publicity programme for road, travel and personal safety looking at real and perceived issues is essential. This will include general and targeted initiatives.

Case study

Living Streets' Walk to School Campaign works with 750,000 children in 2,000 establishments across the UK, encouraging pupils to walk to school. An outreach program run between 2012 and 2015 in collaboration with over 1000 schools increased walking to school by 26%, with the increase sustained almost in full a year on. The percentage of children travelling to school by car dropped from 39% to 26%. The increase in walking helped make pupils fitter and more alert[90].

Fit for purpose

- Everyone should have the opportunity to gain and develop the skills and confidence to be able to utilise all transport mode options.

Requirements

- Analysis of real and perceived dangers/barriers and needs analysis will need to be undertaken to determine the education, training and publicity requirement.
- The cost for each activity will need to be explored in further detail and experienced road safety and sustainable travel officers will be required for ongoing training.
- The Council would need to liaise with other transport organisations such as TfL and National Rail, educational charities and local organisations to support the activities.

Alternatives / Consequences of Inaction

- Lack of confidence, knowledge and skills will prevent uptake of the proposals and new or alternative modes of travel, reducing their potential.

[90] Living Streets (undated) How to get more children walking to school: A best practice guide by Living Streets https://www.livingstreets.org.uk/media/1393/walk-to-school-outreach-best-practice-report-web.pdf

Proposal BC3: Travel Planning

Proposal Description

Through travel plan programmes the promotion of safer and more sustainable travel can be reach a far broader audience and have a more effective influence on transport behaviour and choices. For example, educational travel plans empower children and young people to not only change their own behaviour now and in the future, but also to influence their families and local communities.

Young people are a crucial target for modal shift/behavioural change campaigns, as attitudes to travel are more easily formed at an early age, increasing future active travel both by embedding active travel habits at a young age and encouraging parents to alter their habits. One in five parents has never considered walking their children to primary school, a number which can be improved by mobility programmes.[91]

Children are likely to travel more than adults – they take 5-6 daily trips, compared to their parents' 2-3 daily trips. They are also likely to travel less by car – access to cars is restricted by age and resources.

Encouraging children to go to school by walking, cycling or scooting instead of going by car could save over 2 million tonnes of CO_2 emissions in the UK, in addition to saving an average of £400 per family. The two contribute to a stronger economy and reduced costs, owing to improved public health.

In combination with Proposal W1: Healthier routes to schools and Proposal W2: Low traffic neighbourhoods, the Council will ensure all school children receive training on active travel possibilities around their schools.

Requiring development travel plans as part of the planning process ensures that not only the hard measures such as new transport links are funded and implemented, but also soft measures such as cycle maintenance sessions and resident welcome packs incorporating initiatives for first occupiers.

- Development travel plans – developments that meet the travel Plan thresholds
- Requirements through the planning process
- Educational and non-educational developments
- Implementation of hard and soft measures including behaviour change and education, publicity and training

Voluntary travel plans – for organisations with planning applications who fall below the travel plan thresholds, the Council should encourage the development and implementation of full travel plans or of travel plan initiatives

Educational voluntary travel plans – for educational establishments such as schools the STARS[92] (Sustainable Travel; Active, Responsible, Safe) initiative (or future equivalent) can be utilised.

Case study

The Whitefield School Youth Traveller Ambassador programme[93] supports participating schools to recruit a team of children from year 7 and 8 whose role it is to encourage more walking and cycling to school, share key road safety messages, promote responsible behaviour on the transport network and give young people the skills and confidence to travel safely and independently. This is supported by TfL and the local borough.

Fit for purpose

- All should enjoy living, working or visiting in an area that supports travel options and encourages active travel. Walking and cycling infrastructure should be plentiful and well maintained, urban realm should feel safe and secure, traffic should not pose a danger, green spaces should be easily accessible.

Requirements

- The cost for each activity will need to be explored in further detail – for example funding will be required for supporting initiatives, events, campaigns for all travel plans and incentives for voluntary travel plans. Funding for networking opportunities and research and training to respond to new innovations and transport changes should also be considered.
- Staffing will be required - Travel Plan Officers along with support from Legal, Transport Planning and Planning Officers to enable:
  - The updating of travel plan thresholds, procedures, guidance and standard documents
  - The monitoring and review of travel plans and linked measures
  - The promotion of required and voluntary travel plans
- The Council would need to liaise with other transport organisations such as TfL and National Rail, educational charities and local organisations to support the activities.

Alternatives / Consequences of Inaction

- Lack of education about active travel can lead to Barnet's residents developing unhealthy travel behaviours, overdependent on private cars.
- While there are few alternatives to educational campaigns, the mobility campaigns and outreach programs could be assisted by static aids – e.g. wayfinding including maps of local area highlighting safer and more sustainable routes to schools and other key locations.
  - Education – for all of the community (can be tailored for specific groups etc)
  - Communication and Campaigns - for all community

[91] Living Streets (undated) How to get more children walking to school: A best practice guide by Living Streets **https://www.livingstreets.org.uk/media/1393/walk-to-school-outreach-best-practice-report-web.pdf**

[92] Transport for London (undated) STARS **https://stars.tfl.gov.uk/**

[93] Whitefield School (undated) Youth Travel Ambassadors **http://www.whitefield.barnet.sch.uk/268/yta-youth-travel-ambassadors**

Table 4.7: Behaviour Change action plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
BC1	Overarching behaviour change programme and specific behaviour change activities for each proposal	Across borough and in specific locations depending on the proposal	£40,000 per year for an overarching programme. Specific proposal activities will vary in cost	2020-2041	Council resources/ TFL/ S106	To lead on the work and if required commission additional resources	Developers, Public Health, Transport providers, Educational establishments other LAs, charities/NCOs, TfL
BC2	Education, training and publicity - road, travel and personal safety	Across the borough, educational establishments	£100,000 per year	2020-2041	Council/ TFL	To lead on the work and if required commission additional resources	Public Health, Transport providers, Educational establishments, other LAs, charities/NCOs, TfL
BC3	Travel Planning	Across the borough – including development sites and schools	£400,000 per year	2020-2041	TFL, S106	To lead on the work and if required commission additional resources	Developers, Public Health, Transport providers, Educational establishments other LAs, charities/NCOs, TfL

Additional Actions

The following actions have also been identified as having potential to fulfil The Council's objectives.

Name	Description	Action	Timescale
Crossrail 2 route	Ensure Crossrail 2 reaches New Southgate, linking with express orbital link	Lobby TfL	2025-2041
West London Orbital	Support TfL's proposals for West London Orbital with two branches in Barnet	Lobby TfL	2020-2035
Reduce through traffic	Investigate potential for park and ride at Scratchwood services and/or additional parking at Hertfordshire Thameslink stations to reduce through traffic in borough	Council investigation and support Hertfordshire	2020-2041
Play Streets	Encourage residents to apply for Play Streets programmes	Council publicise opportunities	2020-2041
Air quality on main roads	Ensure relevant authorities prioritise air quality improvements on major roads	Lobby TfL and Highways England	2020-2041
Ultra Low Emission Zone (ULEZ) extension	To borough boundary	Lobby TfL	2021-2025

5 Delivery Plan

Introduction

This chapter is an overview of delivery practices, funding and financing options and estimated timescales required to deliver these proposals.

The delivery plan shows indicative costs which are subject to feasibility studies being completed, council approval and the funding being available.

Delivery practices

Monitoring, learning and engaging

This strategy is designed to look forward until 2041. There are many uncertainties in that time frame: the maturation and adoption rates of new technologies, the emergence of new technologies that do not yet exist and shifting governmental and public priorities are all factors that cannot be determined now. A key part of the successful implementation of this strategy therefore is a continuous monitoring, review and learning process.

Council evaluation

Targets should be set against transport objectives with proposals which describe what success will look like. Their value for money and effectiveness can then be evaluated using post-evaluation monitoring, which can also draw on statistics gathered by others (such as by TfL). The success of proposals in Barnet will need to be regularly reviewed.

Public engagement

Furthermore, there is scope for greater public involvement in the monitoring of success of proposals. As well as engaging with Councillors as residents' elected representatives, The Council will provide opportunities for residents to provide their feedback and insight on transport in the borough.

Engagement with other Local Authorities

Periodic reviews will not only focus on proposals in Barnet, but also proposals in other London boroughs and neighbouring counties. Cross-borough cooperation through bodies such as TfL and the West London Alliance will enable The Council to learn lessons from piloted proposals in other local authorities and implement cross-boundary schemes such as the Express Bus service.

Delivery timescales

Some proposals are already underway: the footway renewal programme, creation of a cycle network, the provision of cycle parking and amendments to parking standards in the borough have already begun.

Not all proposals are applicable to all areas of Barnet. By 2041, areas such as Colindale and Golders Green are expected to be more densely populated than the current Inner London average; areas such as the Hale and Underhill will remain semi-rural. New developments offer the opportunity to reimagine transport from the planning stage, as well as making money available through the planning system: new proposals are likely to be introduced in these areas first before less dense areas in the north of the borough.

Other proposals take a longer-term view. Road user charging, for example, is in this document as a potential policy but will be dependent on transport in Barnet being very different in the future to the way it is now.

Table 5.1: Overall high level proposal delivery plan

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
W1	Healthier routes to schools	Considered across the borough	£5,000 - £150,000 per school	2020-2025	TfL LIP allocation & Council	Design, consult and implement	Schools and parents
W2	Low traffic neighbourhoods	Densely populated areas between arterial routes	Dependent on scheme	2020-2025: identify and implement exemplar 2025 - 2041: monitor and expand	TfL LIP allocation, Liveable Neighbourhoods, Council resources, S106	Design, consult and implement. Assemble funding packages	Neighbourhood stakeholders; TfL
W3	Signage and wayfinding	Town centres	Dependent on scheme	2020-2025	TfL LIP allocation & Council, S106, Liveable Neighbourhoods	Design, consult and implement	Town centre stakeholders, TfL
W4	Active route – the Barnet Loop	Barnet Loop	£500,000 - £1m	2020-2025	TfL LIP allocation & Council	Full responsibility	
W5	Investing to improve the footway network	Consider across the whole borough	£2.5 – £4.5 million per year	2020-2041	TfL LIP allocation & Council	Full responsibility	TfL
C1	Cycle parking	Transport gateways, offices, schools and town centres and new residential areas	£100,000 per year	2020-2025: high cycle parking standards for new developments 2025-2030: town centre improvements	TfL LIP allocation, S106, Council resources	Install; support and encourage developers to install	Developers, TfL
C1	Cycle network	Stations, town centres and key destinations	£250,000 per km	2020-2025: provide safe routes to stations 2025-2030: town centres 2030-2035: arterial routes	TfL LIP allocation, Liveable Neighbourhoods	Full responsibility – although close work with TfL and developers would be required depending on the ownership of the road	Developers, TfL
C3	Cycle provision	Densely populated areas and new developments	-	2020-2025: identify private sector partner 2025: review partnership	Private sector	Support and encourage private companies	Private sector providers
C4	Cycle training	Whole borough	£300,000 per year	2020-2041	TfL	Full responsibility	TfL
PT1	Express and orbital bus routes	Linking West London Orbital, both branches of the Northern Line, Great Northern, Piccadilly, Jubilee and potential Crossrail 2 lines	Up to £40m	2020-2022: improve orbital quick wins 2022-2025: continuous bus lanes 2025-2035: Possible segregation	Mayoral CIL, Borough CIL	Develop concepts and work with TfL on feasibility studies	TfL to fund and operate. Council to maintain
PT2	Improving existing bus network	Whole borough	£200,000	2020-2025	LIP allocation, Liveable Neighbourhoods	Encourage and support	TfL
PT3	Improve existing rail and Underground services	Great Northern, Thameslink and Northern Line	-	2020-2030	TfL, rail franchising	Lobby	Franchise holders, London Underground
PT4	On-demand services	Less densely populated areas	-	2025-2030	Liveable Neighbourhoods	Encourage and support	TfL to implement
PT5	Gateways	Key public transport hubs such as tube and train stations	Dependent on scheme	2020-2030	Liveable Neighbourhoods	Encourage and support, part fund, lobby, direct s106	Network Rail, S106, TfL

Reference	Proposal	Location	Estimated Cost (total excl. staff costs)	Timing	Potential Funding	Council Role	Key stakeholders
R1	Car clubs	Whole borough, particularly new development	-	2020-2025	S106	Encourage and support	Developers, car club operators
R2	Electric vehicle charging provision	Whole borough, particularly new development	£4,000 - £40,000 per charger	2020-2025: 200 a year 2025-2030: 500 a year 2030-2040: 1,000 per year	S106, Council resources	Identify appropriate locations; assist with traffic orders; continue to mandate in development	Developers, charging point operators
R3	Road safety improvements	Key junctions	£20m	2020: produce Road Safety Strategy 2021-2041: monitor and implement Road Safety Strategy	TfL Liveable Neighbourhoods, Council resources, LIP	Develop Road Safety Strategy	TfL, police
R4	Workplace parking levy	Whole borough / London-wide	Revenue	2025-2030	-	Design, implement and operate. Advocate for London-wide with TfL and other boroughs	TfL, London boroughs
R5	Better management of parking	Whole borough, particularly town centres	Revenue	2020-2025: restrict new development parking and introduce CPZs 2025-2035: convert bays to car club only 2035-2041: restrict town centre parking	-	Total control	Residents and businesses
R6	Road user charging	London-wide	Revenue	2030-2035	-	Lobby / advocate so that design reflects Barnet's aspirations	TfL
F1	Alternative fuels for freight	Consolidation centre; service stations	£50,000 per charger	2030-2041	OLEV funding, Council resources, private sector	Encourage installation	Service station operators, freight operators
F2	Consolidation	Town centres and areas of dense business and resident agglomeration	£1m - £10m	2020: identify drop and go locker sites 2025: introduce town centre consolidation centres 2030: examine opportunities for major consolidation centre	Private sector	Encourage private investment, potentially subsidise	Future BIDs, freight operators, businesses
BC1	Overarching behaviour change programme and specific behaviour change activities for each proposal	Across borough and in specific locations depending on the proposal	£40,000 per year for an overarching programme. Specific proposal activities will vary in cost	2020-2041	Council resources/ TFL/ S106	To lead on the work and if required commission additional resources	Developers, Public Health, Transport providers, Educational establishments other LAs, charities/NCOs, TfL
BC2	Education, training and publicity - road, travel and personal safety	Across the borough, educational establishments	£100,000 per year	2020-2041	Council/ TFL	To lead on the work and if required commission additional resources	Public Health, Transport providers, Educational establishments, other LAs, charities/NCOs, TfL
BC3	Travel Planning	Across the borough – including development sites and schools	£400,000 per year	2020-2041	TFL, S106	To lead on the work and if required commission additional resources	Developers, Public Health, Transport providers, Educational establishments other LAs, charities/NCOs, TfL

Figure 5.1: Delivery timescales

Reference	Proposal Title	2020	2025	2030	2035	2040	2041
W1	Healthier routes to schools						
W2	Low traffic neighbourhoods						
W3	Signage and wayfinding						
W4	Active route - the Barnet Loop						
W5	Investing to improve the footway network						
C1	Cycle parking						
C2	Cycle network						
C3	Cycle provision						
C4	Cycle training						
PT1	Express and orbital bus routes						
PT2	Improving existing bus network						
PT3	Improve existing rail and Underground services						
PT4	On-demand services						
PT5	Gateways						
R1	Car clubs						
R2	Electric vehicle charging provision						
R3	Road safety improvements						
R4	Workplace parking levy						
R5	Better management of parking						
R6	Road user charging						
F1	Alternative fuels for freight						
F2	Consolidation						
BC1	Overarching behaviour change programme and specific behaviour change activities for each proposal						
BC2	Education, training and publicity - road, travel and personal safety						
BC3	Travel Planning						

Potential funding sources

The Council's budgets alone will not be enough to pay for these proposals. Other potential sources of funding are explained below. The delivery plan shows indicative costs which are subject to feasibility studies being completed, council approval and the funding being available.

TfL Liveable Neighbourhoods Programme[94]

TfL Liveable Neighbourhoods programme has a budget of £139m over the five financial years 2018/19-2022/23. The fund is for proposals between £1m and £10m which contribute to achieving the Mayor of London's target of 80% of all trips being made by walking, cycling or public transport by 2041, creating vibrant streets where local businesses thrive and places for the community to come together and interact.

Local Implementation Plan

Smaller proposals that align with the Local Implementation Plan can also be funded by TfL. To be eligible, proposals must demonstrate how they will help to achieve the targets set by the Mayor of London's Transport Strategy.

Mayoral Community Infrastructure Levy

The Mayor of London's Community Infrastructure Levy funds strategically important infrastructure. It is currently being used to fund Crossrail. To date, it has been assumed that on completion of Crossrail the Community Infrastructure Levy would be used to fund Crossrail 2. If Crossrail 2 does not go ahead, the Community Infrastructure Levy could be used to fund other strategically important transport infrastructure, including in Barnet.

Borough Community Infrastructure Levy

Borough CIL is a levy charged to developers. It is applied on a zonal basis, with different rates charged between and within Local Authority jurisdictions. The local authorities administering and sets the CIL rates. A proportion of Borough CIL could be allocated towards public realm improvements.

Planning Obligations and Developer Contributions (Section 106)

When granting planning permission, The Council can include legally binding commitments to fund improvements to the local area which will benefit the development. These are set by the borough, considering the viability of a proposal.

Tax Increment Funding

Tax increment financing seeks to isolate the uplift in specific tax revenues arising as a result of a transport project. It has been used extensively internationally and for the Northern Line Extension in London and is most applicable in areas with high levels of commercial development. Because it uses already-existing sources of taxation such as business rates or Council tax, neither tax rate increases nor any new taxes are required. However, a baseline business rate income must be established, estimating what business rate income would have been in the area if the proposal had not been built.

Housing Infrastructure Fund

Transport proposals can be funded through the Government's £5.5 billion Housing Infrastructure Fund, provided they unlock housing. The first investment round, providing £759 million to help deliver 200,000 homes across the country, closed in 2018 but Barnet's transport proposals could be eligible for future rounds of funding.

Voluntary Stakeholder Contributions

For proposals that benefit certain stakeholders directly, voluntary contributions can be requested. This method has been used to fund aspects of Crossrail: Canary Wharf Group contributed £150 million to develop the Isle of Dogs station and Berkeley Homes agreed to support the Crossrail station at Woolwich.

[94] Transport for London (2018) **http://content.tfl.gov.uk/tfl-liveable-neighbourhood-guidance.pdf**

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