

Ultra Low Emission Vehicle Action Plan 2018 – 2028

Supporting Haringey's Transport Strategy 2018-2028

London Borough of Haringey

V1 – September 2018

Foreword from Councillor Kirsten Hearn

I am proud to introduce Haringey's first Ultra-Low Emission Vehicle Action Plan. The Council are committed to improving the quality of life for all residents in the borough. Haringey are taking action to improve air quality, reduce noise pollution and greenhouse gas emissions, and promote public health. We are supporting the uptake of electric and other ultra-low emission vehicles in the borough. Climate change is a threat to all nations of the world. We have no alternative but to act now for the benefit of future generations. Having clean transport technologies enables us to do this.

We are promoting walking and cycling as our preferred transport choice, but some of our transport needs will only be delivered by vehicles. We want these vehicles to be the least polluting as possible. The Council has been working on supporting electric vehicle uptake for some years, responding to the local demand. In 2014, there were 94 electric vehicles in Haringey, in 2017 there were 225, and by 2020 we expect approximately 1000 electric vehicles in Haringey. To support these users the Council will soon have installed 35 standard charging points and 6 rapid charging points across the borough.

We want to implement and encourage innovative solutions to enable people and businesses to switch to this cleaner future. We are engaging with local businesses, developing Wood Green into a 'Neighbourhood of the Future', and working with academia and start-ups to show support for innovative solutions. Our aim is to ensure that the take up of this technology remains high across the community. This Action Plan sets the Council's policy position on ultra-low emission vehicles and will monitor our performance in delivering this.

Haringey is a vibrant and diverse borough. We have a wide array of communities which means we have over 100 languages spoken in the borough. We are home to many LGBT people; 21 percent of our population is under 16 and 12 percent over 60; 14 percent are disabled people. Equality, diversity and inclusion is at the heart of what we do. We want to ensure everyone can be a part of this transition and that it is accessible to all in our community.

Together we can address the challenge of stopping climate change. The introduction of the inner London Ultra Low Emission Zone, the Mayor's targets for air quality, and the banning of all diesel and petrol sales post 2040 are part of making that change. We aim to break down the barriers to electric vehicle uptake and ensure residents and businesses are ready for a positive shift to clean transport. We owe it to our children and our children's children to take this action now.

I welcome your views on this Action Plan.

Glossary of terms

AP	Action plan
AQAP	Air quality action plan
EV	Electric vehicle
GHG	Greenhouse gas
LBOH	London Borough of Haringey
LIP	Local Implementation Plan
MTS	Mayor's Transport Strategy
NO _x	Nitrogen oxides
PM	Particulate matter
SME	Small and medium-sized enterprise
TfL	Transport for London
ULEV	Ultra-low emission vehicle
ULEZ	Ultra-low emission zone

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Introduction

This Action Plan sets the vision and objectives to deliver Haringey's ultra-low emission vehicle network for the next 10 years. This Plan is a result of collaboration between the Council's services, Transport for London, London Councils, the Greater London Authority and car suppliers - demonstrating the holistic and strategic approach undertaken.

This Action Plan supports Outcome 3 of Haringey's overarching Transport Strategy of 'An improved air quality and a reduction in carbon emissions from transport.' The Council aim to have a complementary suite of sustainable travel modes operating in the borough. Along with increasing walking and cycling, and use of public transport, ultra-low emission vehicles are encouraged where the private car is still in use.

This Action Plan relates to, and should be read alongside Haringey's Transport Strategy¹, Air Quality Action Plan² and Annual Carbon³ reports. These documents go into greater detail of the wider

Vision of the Action Plan

To facilitate the transition towards an ultra-low emission Haringey. Through providing infrastructure, education and advice, we will improve local air quality and deliver our climate change ambitions.

context.

Key objectives are:

1. Increase public awareness of ultra-low emission vehicles, their benefits and charging technology through public campaigns and education
2. For the Council fleet to lead by example and have an all ultra-low emission fleet by 2030
3. Collaboration with partners to ensure all commercial fleets operating in the borough use only ultra-low emission vehicles by 2040
4. To develop an electric vehicle charging network in line with expected demand over the next 10 years
5. To be a leader in innovation for carbon-friendly and cost-efficient charging technology

Within the scope of the Action Plan, nitrogen oxides (NOx), particulate matter (PM) and greenhouse gas (GHG) emissions – carbon dioxide (CO₂) – are included. Whilst the former two are air pollutants and lead to wider environmental problems such as acid rain, it is their local effects on public health the Council are most concerned with. The Council are focusing on the latter GHG emissions in efforts to be a low carbon borough and contribute to regional and national efforts to achieve climate ambitions. As the Action Plan tackles vehicular emissions, cars, buses, private-hire vehicles, heavy goods vehicles and canal boats are included.

Introducing this Action Plan for the first time recognises the growth in ultra-low emission vehicles (ULEVs) and demonstrates Haringey's commitment to staying in-line with regional and national progress, as well as being at the forefront by leading by example. This Action Plan commits the Council to improving health outcomes in the borough whilst supporting the overarching Haringey Transport Strategy in targeting reductions in vehicle emissions. This will be achieved by accelerating the uptake of cleaner vehicles and technologies that are capable of improving air quality and health and finally, contribute to sustainable growth as part of the transition to a low emission economy.

¹ [Haringey Transport Strategy, 2018](#)

² [Haringey Air Quality Action Plan 2010 – 2018](#)

³ [Haringey Council website – Reducing CO₂ emissions](#)

Background

Air pollution

The need for ultra-low emission vehicles (ULEVs) has been heightened due to increasing concern over the dangerous levels of air pollution in London and the wider climatic impacts from the transport sector. Concentrations of nitrogen oxides (NO_x) and particulate matter (PM) have continued to exceed the healthy limit prescribed by the World Health Organisation. London exceeds the annual limit every year, and some roads consistently surpass the yearly limit in January alone. Dangerously high levels of air pollution have a significant impact on personal health and wellbeing. It is estimated that each year 9 000 lives are shortened in London because of toxic local air.⁴ The design of London's streetscape also traps the air pollution as high-rise buildings prevent the air to freely circulate and disperse.

Transport for London (TfL) has set ambitious targets in 'An Ultra Low Emission Vehicle Delivery Plan for London'⁵ but lacks a local action plan in this work. This Action Plan sets out the Council's position and how our community can have confidence in the delivery of infrastructure that will enable the switch to cleaner, more cost effective modes of transport. It sets what the Council and wider community can do to ensure the borough realises its ULEV vision.

Haringey, like most other London boroughs and urban areas, experiences poor air quality, with the main contributor being road traffic. Since 2001, Haringey has been an Air Quality Management Area (AQMA) for nitrogen dioxide (NO₂) and PM. The dominant source of NO_x emissions in Haringey is from road transport, making up to more than 50 per cent of emissions, as shown in Figure 1. This trend is not dissimilar to that of PM; levels of both in Haringey are much greater than in London as a

Nitrogen oxides - NO_x

All combustion processes produce nitrogen oxides (NO_x). In London, road transport and heating systems are the main sources of these emissions. NO_x is primarily made up of two pollutants: nitrogen oxide (NO) and nitrogen dioxide (NO₂).

NO_x mainly affects respiratory conditions causing inflammation of the airways at high levels. Long-term exposure can decrease lung function, increase the risk of respiratory conditions and increases the response to allergens.

Particulate matter - PM₁₀ and PM_{2.5}

Particulate matter (PM) is a complex mix of non-gaseous material of varied chemical composition. It is categorised by the size of the particle. The smaller the particles, the deeper they can penetrate into the respiratory system and the more hazardous they are to breathe. Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.

Most PM emissions in London are caused by road traffic, with exhaust emissions and tyre and brake wear being the main sources. Other sources include construction sites, wood burning stoves, accidental fires and burning of waste.

whole, shown in Figure 2 and 3.

Addressing the major source of air pollution is the most effective approach to alleviating air pollution and its knock-on impacts. It delivers benefits in other areas such as health and wellbeing of our community, as well as reduced noise pollution, wider climate commitments, economic benefits to the user and strengthening of national energy security.

⁴ [London Environment Strategy, 2018](#)

⁵ [An Ultra Low Emission Vehicle Delivery Plan for London, 2016](#)

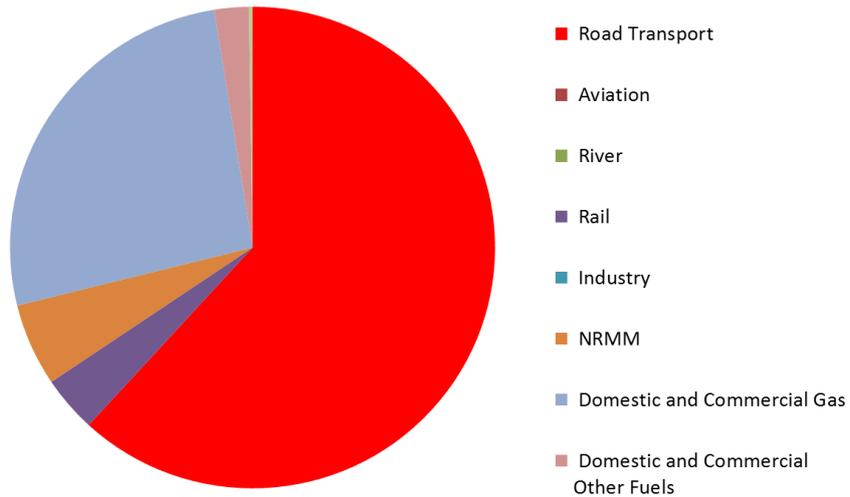


Figure 1. NOx emission sources in Haringey, 2017

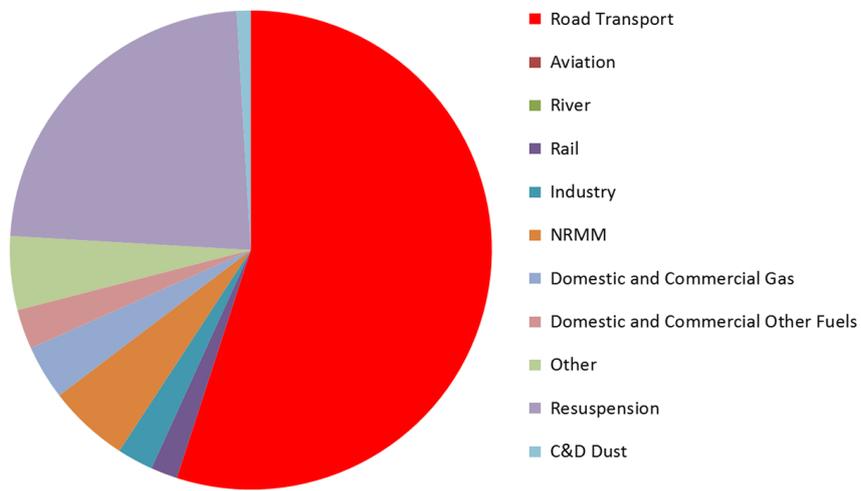


Figure 2. PM10 emission sources in Haringey, 2014

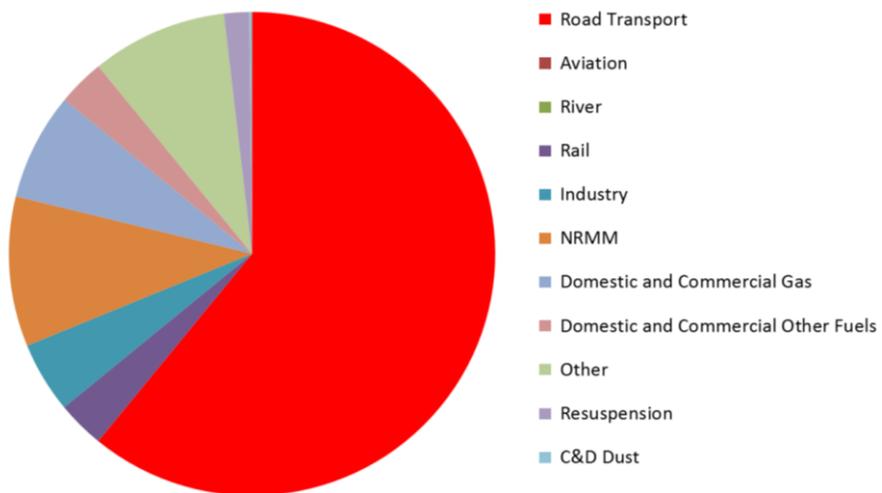


Figure 3. PM2.5 emission sources in Haringey, 2016

The Council has already taken strides in tackling local air pollution, with NO_x and PM both decreasing between 2011 and 2017. The Council use a combination of highly accurate continuous monitoring stations at two locations (one roadside on Tottenham High Road and one background in Priory Park, Crouch End) and indicative diffusion tubes at 13 locations. In 2017, levels of NO₂ decreased at our continuous roadside monitoring locations. With the exception of one diffusion tube site, all other sites showed a decrease in NO₂ compared to 2016, showing steady and continued progress.

Monitoring PM₁₀ ceased in 2014 and for PM_{2.5} in 2016. Overall, monitoring for PM₁₀ across London shows that the current objective values are largely met. The information on air quality in London can be found in our Air Quality Annual Summary Reports.

Climate change

The transport sector is the largest contributor to UK's greenhouse gas (GHG) emissions, being responsible for 26 per cent of total emissions.⁶ Whilst the UK has seen a decline in overall emissions, this is largely from the rapid decarbonisation of the power sector. The transport sector however, is the only sector to fail at curbing emissions and instead, emissions from this sector continue to rise. Road transport in particular, makes up the majority of transport-related emissions.

London transport planning over the past decade has focused on reducing car use through encouraging the use of low carbon, sustainable transport, which have induced a modal shift. This has had a positive impact as public and active transport now account for 64 per cent of all one-way commuter movements in London, up 10.4 per cent between 2000 and 2015.⁷

⁶ [Business Green, 2018](#)

⁷ [IPPR, 2017](#)

Policy context

National context

UK's Air Quality Plan: UK plan for tackling roadside nitrogen dioxide concentrations, 2017⁸

This plan sets out the Government's aims and objectives to alleviate excessive air pollution across the UK. This provides local authorities with a £255 m Implementation Fund, available to support local authorities to prepare their plans and deliver targeted action to improve air quality.

Climate Change Act, 2008⁹

The UK Government is legally mandated by the Climate Change Act 2008 to reduce emissions by at least 80 per cent lower than the 1990 baseline by 2050. It ascribes carbon budgets for each sector, in which the Committee on Climate Change advise on and update for every five-year period.

Clean Growth Strategy, 2017¹⁰

This strategy prioritises accelerating the shift to low carbon transport. Key steps include:

- Ending the sale of new conventional petrol and diesel cars and vans by 2040
- Investing £1 billion to support the take-up of ULEVs, including helping consumers to overcome the upfront cost of an electric vehicle (EV)
- Accelerate the uptake of low emission taxis and buses

London context

Draft New London Plan, 2017¹¹

The Mayor of London is keen to tackle GHG emissions, which is reflected in the emerging New London Plan (2017). Specific policies on providing electric vehicle charging infrastructure are highlighted:

Policy T6.1 Residential parking: All residential car parking spaces must provide infrastructure for electric or ULEVs. At least 20 per cent of spaces should have active charging facilities, with passive provision for all remaining spaces.

Policy T6.2 Office parking: Operational parking requirements should be considered on a case-by-case basis. All operational parking must provide infrastructure for electric or other Ultra-Low Emission vehicles, including active charging points for all taxi spaces.

Policy T6.4 Hotel and leisure uses parking: All operational parking must provide infrastructure for electric or other Ultra-Low Emission vehicles, including active charging points for all taxi spaces.

Mayor's Transport Strategy, 2018¹²

There are three central themes to this strategy: healthy streets and healthy people; a good public transport experience; and new homes and jobs. The Healthy Streets concept, as shown in Figure 4, has been introduced to the Mayor's Transport Strategy as streets make up to 80 per cent of the city's public space. Of the ten components that make up the Healthy Streets agenda, two relate directly to ULEVs: improving air quality and reducing traffic noise. The uptake of ULEVs would contribute to achieving both of these goals.

⁸ [DEFRA, 2017](#)

⁹ [Climate Change Act, 2008](#)

¹⁰ [Clean Growth Strategy, 2017](#)

¹¹ [Draft New London Plan, 2017](#)

¹² [Mayor's Transport Strategy, 2018](#)



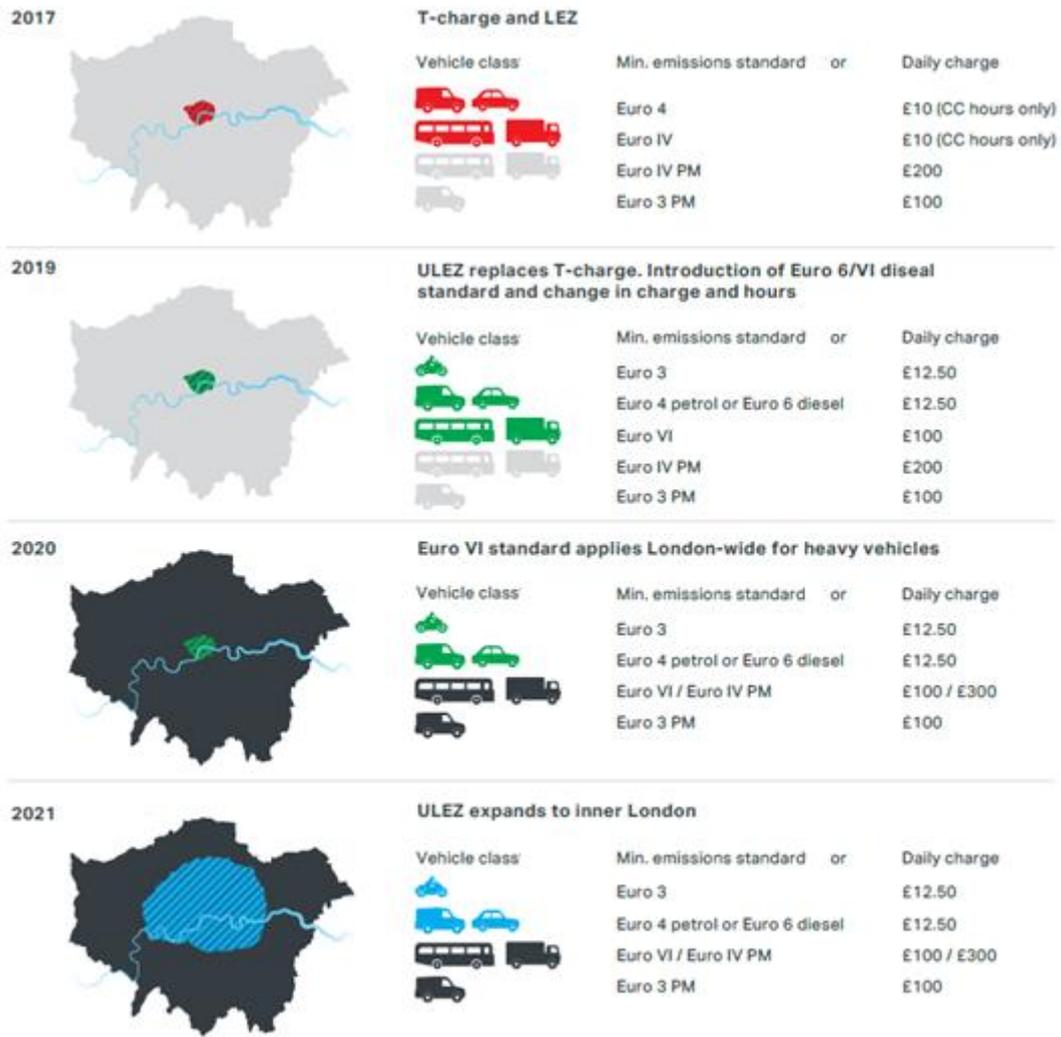
Figure 4. Mayor's Transport Strategy - Healthy Streets Concept

The Mayor's aims for London's vehicle emissions are:

- For all taxis and private-hire vehicles to be zero emission capable by 2033
- For all buses to be zero emission by 2037 and to introduce low emission bus zones
- For all new road vehicles driven in London to be zero emission by 2040
- For London's entire transport system to be zero emission by 2050
- Introduce the Ultra-Low Emission Zone (ULEZ) for central London in 2019 and expand to North and South Circular roads in 2020, including Haringey.

The central and inner London ULEZ, both shown in Figure 5 and Figure 6, will impose financial penalties on non-compliant vehicles to improve air quality. It will place a daily charge on the most polluting vehicles to enter Central London from April 2019, on top of the Congestion Charge. In 2020, the ULEZ will expand to London-wide for heavy goods vehicles (HGVs) which includes buses, coaches and lorries; and inner London up to the North and South Circular roads in 2021 for cars and vans – which includes Haringey. Once in force, the drivers of the most polluting cars and vans will have to pay an extra £12.50 (on top of the Congestion Charge) to enter London. Buses, coaches and HGVs will be charged £100 per day. ULEVs will be exempt from these charges.¹³

¹³ [TfL, 2018](#)



Note: In hatched areas, standards indicated by both colours apply

Figure 5. The central and inner London Ultra-Low Emission Zone and financial penalties for different vehicle sectors.

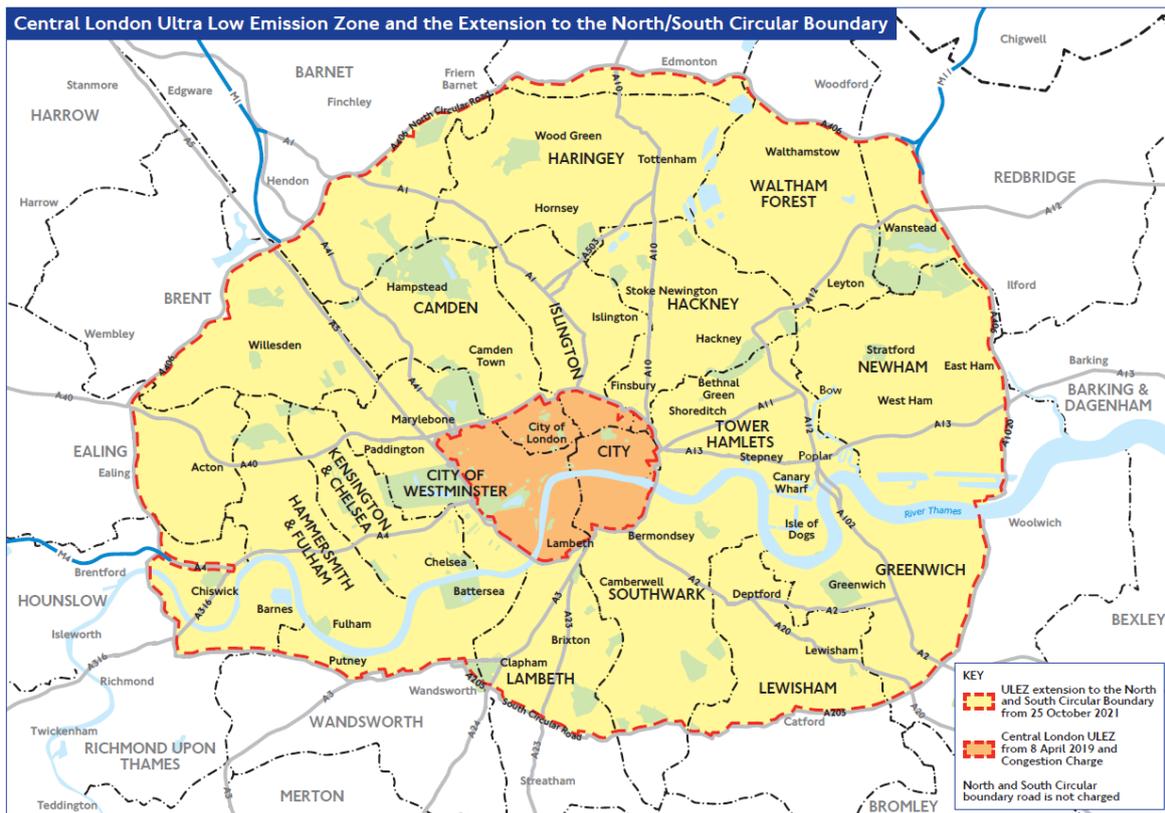


Figure 6. Map of central (orange) and inner (yellow) London Ultra-Low Emission Zone. This shows that all of Haringey's roads will be covered by the ULEZ from Oct 2021

London Environment Strategy¹⁴

The Mayor is taking steps for London to be a zero carbon city by 2050, with energy efficient buildings, clean transport and clean energy. Decarbonisation will have to be realised across all sectors. To meet this ambition, the transport sector will have to cut its emissions by 72 per cent by 2050. Efforts to tackle non-road emissions such as from our waterways are also included.

Haringey context

Haringey Transport Strategy 2018-2028¹⁵

Adopted in March 2018, this strategy defines our vision as 'to deliver a transport system that matches our growth and prosperity ambitions, whilst also improving our environment, providing accessible choices and making walking, cycling and the use of public transport a first choice for all.' The vision will be achieved through four outcomes:

- A public transport network that is better connected, has greater capacity and is more accessible, supporting our growth ambitions
- Active travel the default choice, with more people choosing to travel by walking or cycling
- An improved air quality and a reduction in carbon emissions from transport
- A well maintained road network that is less congested and safer

Haringey Air Quality Action Plan 2018-2023¹⁶

As part of the Mayor's Air Quality Action Fund, air quality action plans (AQAP) focusing on tackling air pollution in local boroughs have been funded. This Action Plan will work in conjunction with the

¹⁴ [London Environment Strategy, 2018](#)

¹⁵ [Haringey Transport Strategy, 2018](#)

¹⁶ [Haringey Air Quality Action Plan, 2010 - 2018](#)

AQAP. The AQAP aims to reduce levels of NO_x and PM whereas this Action Plan seeks to increase the proportion of ULEVs in the borough, which will in turn reduce NO_x. Specific objectives that this Action Plan will support in the AQAP are:

- **Public health and awareness raising:** increasing awareness can drive behavioural change to lower emissions as well as to reduce exposure to air pollution
- **Borough fleet actions:** our fleet includes light and heavy-duty diesel-fuelled vehicles such as maintenance vans and parks vehicles with high primary NO₂ emissions. Tackling our own fleet means we will be leading by example;
- **Cleaner transport:** road transport is the main source of air pollution in London. We need to incentivise a change to walking, cycling, public transport and ultra-low emission vehicles (such as electric) as far as possible.

Haringey 40:20 and Zero Carbon Haringey

The Council has committed to cutting the Borough's carbon emissions by 40 per cent by 2020 and 100 per cent by 2050. We have achieved a 29 per cent reduction in emissions between 2005 and 2015.¹⁷ However, when taking into account Haringey's population growth, our emissions per head of population have already reduced by 40 per cent.

We have already taken strides in tackling emissions; in the domestic, industrial and commercial sector, and transport sector. All sectors saw a decrease in emissions between 2005 and 2015 however, the proportion contribution has not changed. Transport emissions accounted for 23 per cent of Haringey's total emissions in 2015, as shown in Figure 7. Haringey's transport emissions have decreased by 20 per cent between 2005 and 2015. This has been achieved despite an increase in the number of passenger vehicles on the road and the vehicle kilometres travelled during the same period.¹⁸

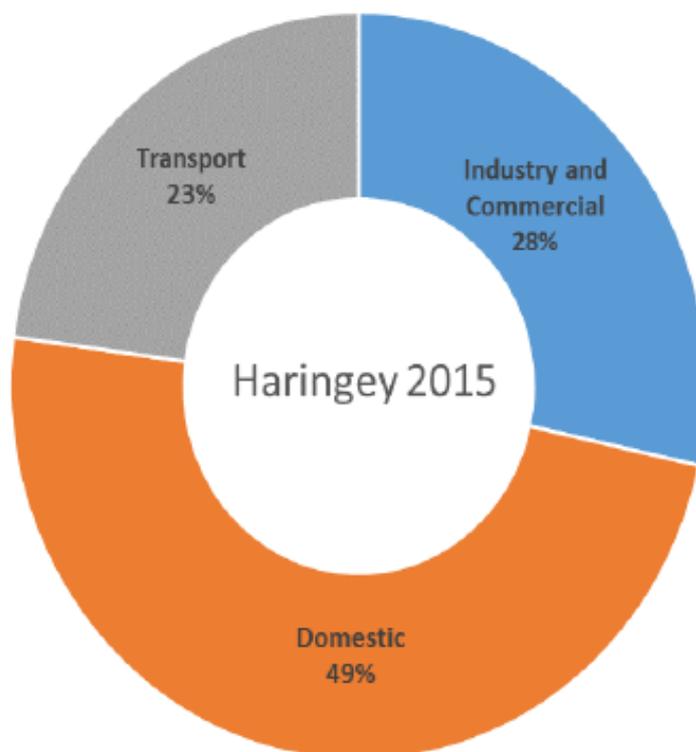


Figure 7. Haringey greenhouse gas emission sources in 2015.

¹⁷ [Haringey Annual Carbon Report, 2017](#)

¹⁸ [Haringey Annual Carbon Report, 2017](#)

'Zero Carbon Haringey' is the latest iteration in the Council's efforts to achieve zero emissions by the year 2050. It commits the Council to reducing emissions across all sectors: energy, workplaces, homes and transport. Key transport measures that this Action Plan will support are:

- Programme to incentivise move to low and zero emission vehicles by residents and businesses
- Expand provision and accessibility of EV charging infrastructure

The route map to 2050 has been delivered by Ove Arup and Stage 1 reports (The Direction of Travel¹⁹ and Technical Report²⁰) comprise this scoping stage which assess Haringey's progress to date, and how we need to scale up key actions to achieve our ambition. The Council are currently working with Arup to deliver Stage 2 of the project, which is to detail the broad themes of activities with actions.

Wood Green Area Action Plan (emerging)²¹

This Plan will establish the statutory basis for determining planning applications in Haringey. Once adopted, it will form part of the Haringey Local Plan. Within this document, Wood Green prescribes all new developments to provide 100 per cent active charging points on all new parking spaces delivered.

¹⁹ [Haringey Direction of Travel, 2018](#)

²⁰ [Haringey Technical Report, 2018](#)

²¹ [Wood Green Area Action Plan, 2017](#)

The demand for Ultra Low Emission Vehicles

Alleviating the impacts of traditional combustion vehicles will increase quality of life. An alternative to conventional vehicles are ULEVs. ULEV is a term to describe any vehicle that uses low carbon technologies, emits less than 75 g of CO₂/km from the tailpipe, and is capable of operating in zero tailpipe emission mode for at least 10 miles.²² Various technologies are considered ULEV: EVs, plug-in hybrids, and hydrogen fuel cell vehicles. Under the central and inner London ULEZ, daily charges for vehicles are determined by its impact on air quality. European emissions standards are a set of regulations, which define acceptable limits for exhaust emissions of vehicles sold in the European Union. The aim of Euro emissions standards is to reduce the levels of harmful exhaust emissions. Petrol and diesel engines produce different types of emissions and are therefore subject to different standards. Furthermore, the age of a vehicle determines its emissions standards. The standards for the ULEZ charging system are:

- Euro 3 for motorcycles, mopeds, motorised tricycles and quadricycles
- Euro 4 for petrol cars, vans, minibuses and other specialist vehicles
- Euro 6 for diesel cars, vans and minibuses and other specialist vehicles
- Euro 6 for lorries, buses and coaches and other specialist heavy vehicles²³

To reduce the levels of air pollutants the Government has pushed hard on the uptake of ULEVs. These efforts have been through education and awareness, and grants for charging points and new EVs bought. A combination of more public on-street charging points available and policy interventions has resulted in an increase in the uptake of ULEV growth across the UK with over 30 000 ULEV purchases in the UK to date. In 2018, London has seen five times the number of EV registrations than in 2012.²⁴

Electric vehicles

EVs have gained momentum due to their low tailpipe emissions and their applicability in the passenger car sector.

They present environmental and health benefits to the local community, as well as economic benefits to the user. Cost savings to residents and businesses are materialised through cheaper 'fuel' and less maintenance. This is because:

- The battery, motor, and associated electronics require little to no regular maintenance;
- There are fewer fluids to change;
- Brake wear is significantly reduced due to regenerative braking; and
- There are far fewer moving parts relative to a conventional gasoline engine.²⁵

Furthermore, economic incentives to an EV owner includes exemption from congestion charges and the upcoming ULEZ and inner London ULEZ being introduced by the Mayor of London.

A large uptake in EVs would significantly decrease NO_x emissions. However, PM is generated from breaking of the car and friction caused between tyres and the road. Therefore, EVs do not help alleviate PM. PM from canal boats is generated from burning wood for fuel as well as the use of diesel engines and therefore electric engines would tackle PM from waterways.

National context

There has been a tremendous growth in EVs in the UK. Rapid developments in battery technology, coupled with policy support and political will to tackle emissions in the transport sector, have supported the growth of EV demand. These technologies are advancing at a rapid rate, driving up-front costs of these vehicles down and making them increasingly accessible. Grants are available

²² [SMMT, 2018](#)

²³ [TfL, 2018](#)

²⁴ Department for Transport, Vehicle Licensing Statistics: Table VEH0131

²⁵ Edinburgh – Electric Vehicle Action Plan

from the Government to alleviate some of the upfront costs. There are also grants available to residents, workplaces and the Council to alleviate some of the costs of installing a charging point.

Haringey context

Haringey is also seeing a steady growth in EVs, in line with regional and national development. In 2014 there were 94 EV registrations.²⁶ In 2017 there were 225, representing a 140 per cent growth in just three years. This trend is predicted to continue up to 2020 and beyond, with every ward having at least 25 EVs, and some having at least 75.²⁷ The number of charging points is also steadily growing, corresponding to the number of EVs on the road. In 2008/9, 12 charging points were installed. In 2018, the Council agreed another 35 electric vehicle charging points (EVCPs), replacing the majority of the first EVCPs and installing new ones. In addition, the amount of electricity used at charging locations has also been increasing substantially, parallel to a growing number of EV users. Locations of all charging points, old and new, are shown in Table 1. Old EVCPs are being replaced by new ones as technology has improved since the installation of the first EVCPs in the borough. Upgrades to technology include double-headed charging points, which can serve two cars at one time.

Table 1. List of confirmed electric vehicle charging points in Haringey as of October 2018.

Road name	Type of technology	Location	No. of EVCPs/bays
Waldeck Road, N15	7 kW (standard)	Eastside, at the side of no. 133 Langham Road	4
Buckingham Road, N22	7 kW (standard)	Opposite no. 3 and 4	3
Lansdowne Road, N17	7 kW (standard)	Outside BronHill Terrace	3
Stanhope Road, N6	7 kW (standard)	Outside no. 23	3
Rutland Gardens, N4	7 kW (standard)	Southside, outside no. 2	2
Talbot Road, N15	7 kW (standard)	Eastside, at the side of no. 37 Broad Lane	3
Lawrence Road, N15	7 kW (standard)	Westside, opposite Studio 28	3
Priory Road, N8	7 kW (standard)	North side, opposite no. 151 and 153	3
The Avenue, N8	7 kW (standard)	Southside, near the junction with Alexandra Road	3
Tintern Road, N22	7 kW (standard)	Eastside, near the junction with Lordship Lane	3
Hillfield Park, N10	7 kW (standard)	Southside, at the side of no. 80 Muswell Hill Broadway	3
High Road, N22 (A105)	22 kW (fast)	Outside no. 16-20	2
West Green Road, N15	7 kW (standard)	No. 1-20 Barker House	3
A10	50 kW (rapid)	North of The Roundway	1

²⁶ OLEV data

²⁷ TfL, MOSA data

The increase in number of EVCPs in the borough is a reflection of growing EV demand. Demand in Haringey has grown in the past few years and is expected to continue beyond 2020 and 2025 (Figure 8). TfL has

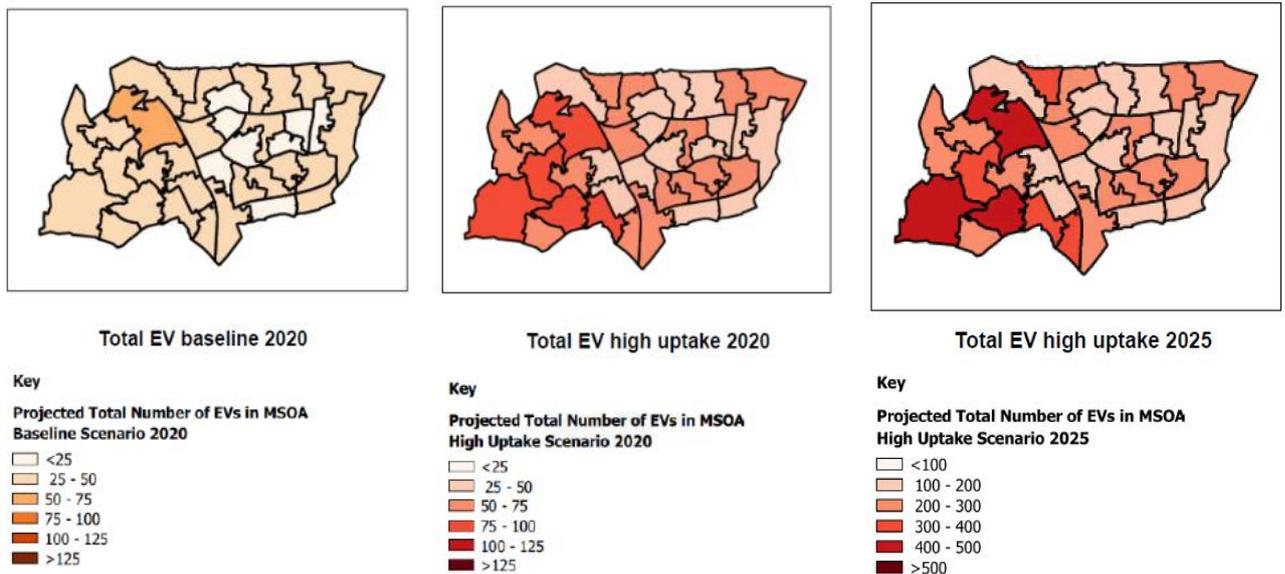


Figure 8. Expected demand of electric vehicles (TfL, 2015)

modelled scenarios of predicted uptake of EVs by 2020 and 2025, based on an average (baseline) scenario and a high scenario.

This expected rise in demand is a strong impetus for the Council to provide sufficient infrastructure to accommodate and support the shift to EVs. It is necessary to future-proof the borough if either the baseline or the high uptake scenarios occur.

In the 'Total EV high uptake 2020' scenario, each ward will have at least 25 EVs, and in other wards, more than 50 or 75. Most users are expected to recharge at the home or close to the home. This means that where there are private driveways vehicle owners will install charging points on their property. However, as around two-thirds of Londoners do not have access to driveways or off-street parking facilities, significant on-street charging infrastructure will have to be made available for EV users.

On average, there are 3 users for every on-street charging point (in residential areas) and therefore each ward will require on average at least 8 public charging points, leading to 152 charging points across the borough. The scenarios rest on strong policy interventions from both central and local government. Interventions such as the central and inner London ULEZ could bring the reality closer.

The demand for electric vehicle charging infrastructure

Charging technologies

Getting the infrastructure for low emission vehicles right is integral to facilitating a greater take up of EVs, as range anxiety is the most commonly cited reason dissuading potential EV users. Enabling a well-connected, up-to-date network of EVCPs can encourage potential EV users to make the switch. Having a range of charging technologies in the mix suits different users and their needs, as well as different journey types.

Charging points are primarily defined by the power (in kW) that they can produce and the speed they are capable of charging an EV. There are three main EV charging speeds:

- 3 kW: suited for overnight residential charging as a full charge would take 7-8 hours. Residential could include in homes for a single user, or on-street charging on residential roads.

- 7 – 22 kW: a full charge would take between 3 to 4 hours, meaning three or four users a day could have a full charge. These EVCPs are most common on-street or in public car parks, as well as at supermarkets and workplaces.
- 22 – 50 kW: rapid chargers suit the needs of users who need to charge their car quickly and because their cars are typically in use for many hours in the day. For example, taxis, commercial vehicles or company cars. It can give an 80 per cent charge in 20-30 minutes, allowing a greater number of charges per day. Due to their size and visual impact, they are mostly suited to off-street locations such as carparks and service stations.
 - Rapid chargers are already being deployed across the borough. The Council have proposed three locations for rapid charging: Gladstone Avenue (taxi rank) and two others in carparks.
 - TfL have their own rapid charging scheme whereby they plan to install 300 rapids over London by 2020. One of these is already in Haringey – on the A10 – and TfL plan a further two in Crouch End. Private companies procured by TfL are delivering these rapids and a rental income is delivered to the Council for the space.
- Lamp column charging: adapting existing street furniture to accommodate charging facilities reduces street clutter. The Council is investigating a trial of lamp column charging in 20 locations, with two chargers at each location. During the trial, we will monitor both electricity usage and comments for residents to gather information in order to revise or expand the trial.

Smart-capability

All new charging points in the borough will also be smart-capable, which is legally mandated in the Automated and Electric Vehicles Act 2018. A smart charger means it can receive, process and react to information or signals, such as adjusting the rate of charge or discharge; transmit, monitor and record information such as energy consumption data; comply with requirements around security; and be accessed remotely. Smart charging will be especially important to relieve added pressure to the grid; if the majority of EV users charge their cars after returning from work (during 4 – 6 pm) this could add stress to local distribution networks. Smart chargers can distribute when cars are charging (when left plugged in), and shift charging to times with lower electricity demand, thereby alleviating the risk of power shortages in local areas.

Active spaces versus passive provision

Active spaces are fully wired and connected, ready to use, charging points at parking spaces. Passive provision requires the necessary underlying infrastructure (e.g. capacity in the connection to the local electricity distribution network and electricity distribution board, as well as cabling to parking spaces) to ensure simple installation and activation of a charging point at a future date.²⁸ These standards should not exclude parking spaces for Blue Badge holders.

Vehicle sectors

Residential Vehicles

New registrations of plug-in cars rose from 3 500 in 2013 to more than 135 000 by the end of January 2018.²⁹ The shift to EVs will be further encouraged/accelerated by:

- The government's announcement of the end to sales of gas and diesel cars and vans by 2040 (July 2017).³⁰
- Almost all major vehicle manufacturers are bringing EVs to market with some announcing the complete phase out of conventional car manufacturing (e.g. all new cars launched by Volvo from 2019 onwards will be partially or completely battery powered).³¹

²⁸ [TfL, 2018](#)

²⁹ [Next Green Car, 2018](#)

³⁰ [The Guardian, 2017](#)

Taxis and private-hire vehicles

In 2017, London's black cabs announced that they would be going electric – transitioning to London's Electric Vehicle Company (LEVC). All new taxis bought from 2018 onwards are now zero-emission capable.

Electric buses

London's bus fleet is the cleanest in the UK, with all vehicles meeting or exceeding the Euro 4 emission standard for NO₂ and PM. A significant proportion of the oldest buses in the fleet have been upgraded and TfL are now promoting the hybrid buses as the automatic choice for London by working with bus manufacturers to bring the cost of hybrid buses in line with standard diesel counterparts.

Haringey hosts two Low Emission Bus Zones (High Road to Green Lanes and Edmonton to Seven Sisters), as shown in Figure 9. The buses on these routes are a combination of hybrid and clean buses that meet Euro 4 standards. These buses will travel further past these routes, extending benefits to the wider community and area.



Figure 9. Low Emission Bus Zone routes in Haringey

Council fleets

All vehicles in Council ownership are compliant with the requirements of the Low Emission Zone. The Council owned vehicle fleet has diminished due to outsourcing, with only a handful of Council owned vehicles remaining. Currently, the Council owns two EVs which are available for staff use.

Business vehicles

Commercial vehicles, including those that are in use most of the day, will produce significantly more emissions than a passenger car. It is therefore integral to support businesses to make their fleets more carbon and air quality friendly.

Canal boats

³¹ [CityMetric, 2017](#)

There are approximately 80 permanently moored canal boats in Haringey's stretch of the River Lea. Whilst they comprise a small percentage of Haringey's total fleets, they represent a small but significant proportion of vehicular emissions.

Objectives and actions

Outlined below is the scope of Action Plan and how its proposals will be measured in terms of cost, impact and timescales.

Scope

Within the Action Plan, the Council will target different vehicle sectors to ensure there is a greater proportion of ULEVs across all vehicle types, including private cars, SMEs, commercial fleets, buses, taxis, car clubs, and canal boats.

Cost

The cost of each action is as follows:

- £ = less than £10,000
- ££ = between £10,000 and £50,000
- £££ = above £50,000

Actions are funded through various means:

- The Council: relevant service area budgets and Section 106 agreements
- External parties: Transport for London (Go Ultra Low City Scheme, Neighbourhoods of the Future, Local Implementation Plan), private operators, the commercial sector and developers.

Haringey's Local Implementation Plan is currently being developed which will further allocate budget for different projects.

External parties will fund electric vehicle charging infrastructure, and this will generate income to the Council through the leasing of our public highways.

Impact

The impact of the action is measured in terms of how the action will lead to a greater uptake of ULEVs in the borough:

- High = contributes significantly to achievement and success of the objective
- Medium = somewhat contributes to the achievement and success of the objective
- Low = contributes a little to the achievement of the objective

Timescale

The time to deliver the action is categorised by:

- Immediately = an action that can be implemented on as soon as the Action Plan is adopted
- Short term = actions that can be implemented within 1-2 years
- Medium term = actions that can be implemented within 2-5 years
- Long term = actions that can be implemented after 6+ years

Objective 1: Increase public awareness of ultra-low emission vehicles, their benefits and charging technology through public campaigns and education

Through previous engagement activities conducted by the Council, it has been observed that many people are willing to buy an EV, but there remain questions to be answered or myths to be busted. Having an open dialogue on EV technology, charging and how adopting an EV would differ to a traditional combustion engine can help alleviate some doubts people have. The Council has conducted a series of education and engagement events, including:

- Test drives in Wood Green, allowing the local community to drive an EV for a period of time
- Longer test drives for residents and businesses to gauge whether and which EV is best suited to their needs
- Using a dongle in a traditional combustion car which collects data on driving patterns and can therefore be used to recommend which EV is best suited to the user.

The Council wants to continue and expand its educational activities, to reach a wider range of people. For example, communication with parents of schools would help parents understand the harm air pollution around schools cause to children, who are the most vulnerable to high levels of air pollution.

Objective 1: Increase public awareness of ultra-low emission vehicles, their benefits and charging technology through public campaigns and education

Action ID	Action	Description	Responsibility	Cost (£/££/£££)	Impact (L/M/H)	Timescale for implementation (S/M/L)	How implementation is monitored
1	Create promotional material on ultra-low emission vehicles and disseminate across the borough.	This material will be for various mediums: online and physical e.g. an article in the Council newsletter. This will include advertising the Government's grant schemes available.	Haringey Council (Carbon Management, Communications)	£ Funded through Transport for London – Neighbourhoods of the Future	Low	Short	Adverts disseminated across the Council's channels.
2	Make residents aware of their nearest charging point.	Upload a map of the borough's charging points to the Council website, alongside promoting use of a charging point locating app or website.	Haringey Council (Carbon Management, Communications)	£ Funded through Carbon Management budget	Medium	Short	Number of people asking for their nearest charging point reduced.
3	Host events open to the public to promote electric vehicles.	Work with partners to deliver these such as Nissan for test drives. Make aware the benefits of an ultra-low emission vehicle. Including economic benefits to the user, public health and local air pollution advantages.	Haringey Council (Carbon Management, Communications)	£ Funded through Carbon Management budget	Medium	Short	Two events per year held.
4	Issue a series of Planning Advice Notes for	This guidance aims to make the process of installing charging points easier for	Haringey Council (Carbon Management, Planning)	£ Funded through Transport for	Low	Short	Guidance uploaded to Council website.

	installing electric vehicle charging points for different user groups.	developers, highway engineers, residents and businesses.		London 'Neighbourhoods of the Future: Wood Green'			
5	Lead a media campaign aimed at changing boating culture. Share good practice to help boaters avoid diesel engines.	Through articles in the local press, which are known to be read by boaters. Promote and support blogs, vlogs and podcasts on the Council's social media platforms. The content of this would include helping boaters avoid diesel engine through better design, maintenance and planning of time.	Haringey Council (Carbon Management, Communications) Partners (Canal and River Trust)	£ Funded through Carbon Management budget and Canal and River Trust	Low	Short	Media campaign completed.
6	Raise awareness through our social media platforms and hold open sessions on the inner London ULEZ.	Communicate the impact of the ULEZ and the options residents have to circumnavigate daily charges.	Haringey Council (Carbon Management, Communications)	£ Funded through Transport for London – Neighbourhoods of the Future	Medium	Short	Social media platforms utilised to convey messages on the ULEZ. At least 1 open house session on the ULEZ for residents and 1 for businesses.
7	To lobby for a single universal connection for all vehicles.	Work with Office for Low Emission Vehicles to mandate a universal connection.	Haringey Council (Carbon Management)	£ Funded through Carbon Management budget	Low	Short	Continued dialogue with Government bodies and EV manufacturers.

Objective 2: For the Council fleet to lead by example and have an all ultra-low emission fleet by 2030

The Council aims to lead by example and electrify its fleet, which encompasses a wide range of vehicles. The Council's fleet is currently undergoing a review in able to determine where electric vehicles are best suited, and to what timescales this could be achieved.

The up-front cost of EVs is coming down, and by 2030, these could be cost-comparable to that of a traditional combustion vehicle. Furthermore, EVs are cheaper to run in the long-term, and this price parity could be achieved earlier as the up-front cost of the vehicle decreases. Therefore, electrifying the Council fleet would save the Council in running costs.

Objective 2 aligns with Haringey's Air Quality Action Plan, and further information is referenced in that document.

Objective 2: For the Council fleet to lead by example in ultra-low emission vehicles and an all ultra-low emission fleet by 2030							
Action ID	Action	Description	Responsibility	Cost (£/££/£££)	Impact (L/M/H)	Timescale for implementation (S/M/L)	How implementation is monitored
8	Increase the number of electric, hydrogen, hybrid and cleaner vehicles in the boroughs' fleet	Review Council fleet to identify possible vehicles that could be replaced by cleaner vehicles	Haringey Council (Client and Commissioning, Pollution Team, Procurement, Transport Planning)	Unknown Further work to analyse cost savings to Council (cost of vehicles and running costs)	Low	Short to medium	Number of ULEVs in Council fleet Review and investigation outcomes.
9	Review use of staff car club cars and investigate viability of buying more	The Council can use two electric hybrid Toyota Prius vehicles, provided by Zipcar	Haringey Council (Client and Commissioning, Pollution Team, Procurement, Transport Planning)	Unknown Further work to analyse cost savings to Council (cost of vehicles and running costs)	Low	Short to medium	Review and investigation outcomes.
10	Review Staff Travel Plan and staff travel payments to incentivise use of cleaner vehicles	Investigate tax benefits of electric vehicles – consider incorporation in travel plan	Haringey Council (Client and Commissioning, Pollution Team, Procurement, Transport Planning)	Unknown Further work to analyse cost savings to Council (cost of vehicles and running costs)	Low	Short to medium	Review and investigation outcomes.
11	Increase the number of ULEVs in partner fleets through procurement process	Work with Veolia, passenger transport and other partners To incentivise providers to use ULEVs	Haringey Council (Client and Commissioning, Pollution Team, Procurement, Transport Planning)	£	Medium	Short to medium	Number of ULEVs in partner fleets.

Objective 3: Collaboration with partners to ensure all commercial fleets operating in the borough use only ultra-low emission vehicles by 2040

Collaborating with partners will be important to encourage the public sector and private developers to provide EV charging infrastructure.

Different vehicle sectors to target/collaborate with include:

Buses

- Whilst buses operate separately to the Council, we can still work closely with bus fleet operators to ensure there is a smooth transition in the electrification of buses – in line with the Mayor of London’s ambitions.
- TfL and bus operators are working closely to deliver electric buses and routes. There are currently five routes that have fully electric buses, with two more to electrify in 2018.
- Haringey hosts two of twelve Low Emission Bus Zones. Only hybrid or zero-emission double decker buses have been procured from 2018 onwards.

Taxis and private hire vehicles

- In line with the Mayor of London’s ambition to electrify the taxi fleet, the Council aims to also work with taxis to identify strategic locations to deploy rapid charging infrastructure. As the new electric taxis are only zero emission capable (they have a battery range of 70 miles, before switching to a petrol engine, which can go up to 400 miles), having a hub of rapid chargers in strategic locations will encourage taxi drivers to operate in electric rather than petrol.

Car clubs

- Car clubs provide an alternative to car ownership. The Council is working with Car clubs to decrease the number of privately owned cars in the borough. Electric car club fleets serve both the purpose of reducing the number of cars in the borough, but also decreasing emissions through less number of cars, and having them be electric.
- The Council will give prioritisation for car clubs which operate ULEVs within their fleet in Haringey. Any new permits will prioritise ULEVs. Furthermore, when existing permits for fleets are up for renewal it is expected that fleet operators will increase the number of ULEVs within their fleet. This will be enforced where the Council or its providers have installed EVCPs in bays.

Businesses

- The Council will work with businesses in Wood Green’s Business Improvement District, Crouch End’s Liveable Neighbourhood scheme, as well as make efforts with SMEs across the borough. We will also seek to install charging points on our industrial land for the use of businesses.

Service stations, meanwhile spaces and car parks

- Utilising meanwhile spaces and implementing EVCPs provides a good alternative to off-street parking. Users can leave their cars parked overnight in a nearby carpark.
- Service stations are gearing up for the switch to electric powertrains and are increasingly implementing EVCPs on their forecourts.
- Support the planning process for installing EVCPs in service stations and private car parks.

Objective 3: Collaboration with partners to ensure all commercial fleets operating in the borough use only ultra-low emission vehicles by 2040

Action ID	Action	Description	Responsibility	Cost (£/££/£££)	Impact (L/M/H)	Timescale for implementation (S/M/L)	How implementation is monitored
12	Car clubs:	The Council will give prioritisation	Haringey Council	£	Medium	Long	By 2020 - at least 50% of all permits

	Prescribe a timeline whereby any car clubs operating in the borough will have to have a percentage of their fleets ULEV.	for car clubs, which operate ULEVs within their fleet in Haringey. Any new permits will be prioritising ULEVs. Furthermore, when existing permits for fleets are up for renewal it is expected that fleet operators will increase the number of ULEVs within their fleet. This will be enforced where the Council or its providers have installed Electric Vehicle Charging Points into bays.	(Carbon Management, Transport Planning, Operations)	Funded through Transport for London - Local Implementation Plan			given out to car clubs will be for ULEVs. By 2023 - at least 70% of all permits given out to car clubs will be for ULEVs. By 2026 - at least 90% of all permits given out to car clubs will be for ULEVs. By 2030 - 100% of permits given out to car clubs will be for ULEVs.
13	Car clubs: Work with car clubs to identify opportunities to access charging points.	Investigate designating bays for electric car clubs.	Haringey Council (Carbon Management, Operations)	£ Funded through Transport for London – Local Implementation Plan Infrastructure funded by car clubs	Low	Medium	Investigation complete.
14	Buses: Investigate potential locations for bus recharging hubs, electric bus needs, and electric bus charging patterns.	Work with bus operators to deliver electric bus routes and support vehicles.	Haringey Council (Carbon Management) Partners (UK Power Networks, Arriva, Transport for London)	£££ Funded through Transport for London (joint work between UKPN and Transport for London)	High	Medium	Investigation complete.
15	Taxis and private hire vehicles: Install rapid charging points in suitable locations for use of this sector.	To encourage taxi and private hire vehicles to shift to an ultra-low emission vehicle	Haringey Council (Carbon Management, Operations) Partners (TfL, LEVC)	£££ Funded through Transport for London	Medium	Medium	Number of rapid charging units available for taxis and private-hire vehicles.
16	Service stations: Work with service stations to identify opportunities and deliver public charging points.	Service stations are a good location for rapid charging points as it would mimic current refuelling behaviours.	Haringey Council (Carbon Management, Planning, Development Management)	£ Funded through commercial sector	High	Medium	Number of planning applications with electric vehicle charge points at service stations approved.
17	Canal boats:	Look for	Haringey	£	Low	Medium	Number of

	Support the transfer to cleaner technologies.	opportunities to achieve scrappage schemes, or through bulk buying environmentally friendly products that could be offered at a discount to boaters, thus designing out emissions. Work with partners.	Council (Carbon Management) Partners (Canal and River Trust)	Funded through Carbon Management budget and Canal and River Trust			permanently moored canal boats in Haringey that have switched to cleaner technologies.
18	SMEs: Develop a package of measures to support SMEs to switch to electric vehicles.	Work with Wood Green Business Improvement District and Crouch End Liveable Neighbourhoods. Provide business advice note on EVs and charging infrastructure. Conduct EV trials for the use of businesses. Install charging points on Council industrial land. Source funding to support SMEs switch to cleaner technologies.	Haringey Council (Carbon Management, Economic Development, Property)	£££ Funded through Carbon Management budget and Transport for London - Neighbourhoods of the Future	High	Medium	Number of SMEs with electric fleets.
19	Work with the biggest commercial fleet operators in the borough.	The Council will identify the top 10 biggest fleet operators based in Haringey. We will work with them to phase out conventional fleets.	Haringey Council (Carbon Management, Economic Development)	£ Funded through Carbon Management budget	High	Medium	Number of top 10 largest commercial fleets with electric fleets.

Objective 4: To develop an electric vehicle charging network in line with expected demand over the next 10 years

A network of well-located EVCPs, encompassing a diverse range of technologies, overcomes range anxiety and people's doubts over if they will be able to charge their car or not. This instils faith in current EV users and will help to encourage those considering an EV to make the switch.

Objective 4: To develop an electric vehicle charging network in line with expected demand over the next 10 years							
Action ID	Action Description	Further Information	Responsibility	Cost (£/££/£££)	Impact (H/M/L)	Timescale for implementation (S/M/L)	How implementation is monitored
20	Deliver charging infrastructure in line with electric vehicle registrations in the borough and TfL electric vehicle demand data.	Work with TfL and charging point companies to identify hotspots and EV growth rates to be able to allocate EVCPs accordingly.	Haringey Council (Carbon Management, Operations) Partners (Transport for London)	£££ Funded through Transport for London - Go Ultra Low City Scheme and Local Implementation Plan, operators, commercial sector, S106 agreements	High	Medium	Review Transport for London's predictions in 5 years. Have a publically accessible charging point no more than a 5-minute walk away from an EV user. For Blue Badge holders this would be as close as possible.
21	Deliver on-street charging points in residential areas for those without private parking facilities.	A range of on-street charging is needed so residents without off-street parking can charge their cars with ease.	Haringey Council (Carbon Management, Operations)	£££ Funded through Transport for London: Go Ultra Low City Scheme and Local Implementation Plan, operators, S106 agreements	High	Medium	Number of on-street electric vehicle charging points.
22	Have a webpage on the Council website for residents to request an electric vehicle charging point.	Allowing residents to request an EVCP near their home allows the Council to collect data on where hubs of EV demand are.	Haringey Council (Carbon Management)	£ Funded through Carbon Management budget	Low	Short	Webpage completed.
23	Deliver 3 rapid charging units in suitable locations in short term and deploy more in line with demand	Rapid charging is ideal for fleets that need to be on the move. Rapid charging units will allow businesses to charge their fleets with confidence that their fleets will not be recharging for	Haringey Council (Carbon Management, Planning, Development Control, Operations) Partners (Transport for London)	£££ Funded through Transport for London – Go Ultra Low City Scheme and operators	Medium	Short-medium	Number of rapid charging hubs.

		too long.					
24	To open up the tender process to many suppliers to ensure best-value charging for users is achieved.	Having a range of charging operators allows for competition and better prices to the customer.	Haringey Council (Carbon Management)	£ Funded through Transport Planning budget	Low	Short	Number of charging point operators in tender process.
25	Ensure that new developments deliver the required number of recharging points in line with policy.	Policy requires that 40% of all new parking spaces having recharging infrastructure in place. In Wood Green this is 100%.	Haringey Council (Planning)	£ Funded by developers. If policy requirements are not fulfilled, charging points will be installed in the vicinity, funded through S106 agreements	Medium	Immediately	Number of electric vehicle charging points.
26	Prioritise electric vehicle charging bays when delivering new parking bays on the public highway and public car parks.	All new parking bays will be electric where possible, and will come with standard chargers at the minimum.	Haringey Council (Operations, Planning)	£ Funded through Carbon Management budget	Medium	Long	Number of electric vehicle charging bays.
27	Ensure every new charging point in the borough is smart-capable.	This is in line with OLEV's Automated and Electric Vehicle Act 2018, which legally mandates all new chargers are smart.	Haringey Council (Planning, Operations)	£ Funded through private operators	Low	Immediately	Percentage of new points that are smart-capable.
28	Minimise impact on the streetscape when installing charging points.	Ensure there is less street clutter through integrated feeder pillars. Charging points should not impede the footway and should ensure there is clear access for wheelchair users and pushchairs. Where necessary and feasible, charging points will be installed on the carriageway. For rapid charging points,	Haringey Council (Operations, Planning)	£ Funded through Operations budget	Low	Short	A minimum of 1.8 m wide space on the footway is maintained.

		the Council will first seek to install them in car parks, and if not possible, then build out the footway to ensure accessibility of the streetscape is maintained.					
29	Ensure there is adequate electricity supply to support electric vehicle charging points and charging needs.	Work with UK Power Networks to understand the electricity infrastructure network in the borough.	Haringey Council (Carbon Management) Partners (UK Power Networks)	££ Funded through Carbon Management budget	Low	Short	No power shortages due to too many EVCPs.
30	Investigate the potential of towpath charging infrastructure for canal boats.	There is a lack of charging infrastructure for canal boats, inhibiting the shift to electric engines. Work with partners to identify electricity needs and infrastructure.	Haringey Council (Carbon Management) Partners (UK Power Networks, Canal and River Trust)	£ Funded through Carbon Management, Air Quality and Canal and River Trust	Low	Short	Analyses of towpath infrastructure complete.
31	Review planning policy with ambition to move to 100% active across the borough in all new developments.	Where not feasible or viable, the Council will seek to claim remuneration and re-invest it into electric vehicle infrastructure through Section 106.	Haringey Council (Carbon Management, Planning)	£ Funded through Carbon Management budget	High	Long	Review and consultation on this policy.
32	Ensure all charging points are income generating and low-cost to the Council.	Income generated will be reinvested into sustainable transport schemes.	Haringey Council (Carbon Management, Operations)	Income-generating	Low	Short	Added economic benefit to Council.

Objective 5: To be a leader in innovation for carbon-friendly and cost-efficient charging technology

Haringey Council is committed to staying up-to-date with carbon-friendly and cost-efficient technology. Technologies such as lamp column charging provide an alternative to EVCPs. Lamp columns are easy to retrofit and already have the electricity capacity available to charge an EV. The Council is trialling lamp column charging in suitable wards to gather how best to roll this out across the borough.

While there is a move towards the development of wireless or induction charging, the technology is not yet mature enough for the Council to be confident in it and roll it out across the borough. Induction charging is less efficient as it incurs a 10 per cent energy loss during energy transfer.

Objective 5: To be a leader in innovation for carbon-friendly and cost-efficient charging technology							
Action ID	Action	Description	Responsibility	Cost (£/££/£££)	Impact (L/M/H)	Timescale for implementation (S/M/L)	How implementation will be monitored
33	Retrofit or replace existing electrical street furniture to accommodate charging, including 2 lamp column chargers at 10 locations.	Lamp column charging provides immediate access to the electricity supply. The Council will conduct a lamp column charging trial. This will be trialled in a suitable ward over a period of 1 year with aim to further adapt existing street infrastructure and to reduce localised parking pressures, depending on results.	Haringey Council (Carbon Management, Operations)	£ Funded through Transport for London - Go Ultra Low City Scheme and Local Implementation Plan	Medium	Short	Number of street furniture retrofitted or replaced. 20 lamp column chargers delivered.
34	Install a solar-powered charging station.	To encourage the relationship between low carbon power and clean transport for public awareness.	Haringey Council (Carbon Management, Planning, Wood Green Regeneration, Tottenham Regeneration)	£££ Funded through Transport for London - Neighbourhoods of the Future: Wood Green	High	Short	1 solar canopy charging station installed in the borough.
35	Investigate the hydrogen refuelling needs and opportunities to deliver this infrastructure.	Research shows hydrogen fuel is most suited to power heavy-duty vehicles due to power needs and range. This action seeks to identify the opportunities and requirements to develop a hydrogen-refuelling network. Work with our contractor fleets to identify if hydrogen vehicles are	Haringey Council (Carbon Management)	££ Funded through Carbon Management budget	Low	Short-Medium	Investigation and report complete.

		necessary, and what their needs are. Keep up-to-date with research, academia and technology to stay ahead of hydrogen developments.					
36	Investigate the potential for a North London hydrogen depot on industrial land in the borough.	Conduct a feasibility assessment and develop a business case.	Haringey Council (Carbon Management) Partners (North London Transport Partnership, Transport for London)	£ Funded through Carbon Management budget	Low	Medium	Investigation complete.
37	Trial a new and emerging charging technology.	This could be either on the public highway or in private car parks and could include vehicle to grid technology.	Haringey Council (Carbon Management, Operations, Economic Development)	Unknown Funding options: Transport for London – Go Ultra Low City Scheme/Local Implementation Plan; OLEV; private operators	Unknown	Medium	Trial and analysis of at least one new technology complete.

Monitoring and review

The Action Plan will be reviewed and assessed on an annual basis. This is to ensure that the Council is still on the right track to deliver a borough with clean transport options, as well as to re-align with regional and national progress on ULEVs.