Royal Greenwich Transport Strategy

Electric Vehicle Policy Framework Action Plan

October 2022

ROYAL borough of GREENWICH

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Executive Summary

Background

To deliver its commitments, outlined in the Carbon Neutral Plan, the Royal Borough of Greenwich needs to reduce the carbon emissions from transport significantly. Alongside encouraging people to switch vehicle trips to walking, cycling and public transport, we need to support residents and businesses to transition to electric vehicles from their current petrol and diesel drivetrains.

There is a significant national and London level push to legislate and support this transition. The government has banned the sale of new petrol and diesel vehicles (cars and vans) from 2030, budget has been allocated to building new charging infrastructure and TfL itself is looking to roll out a network of fast charging hubs in London. One of the first opened at Woolwich Glassyard in 2021.

Current situation

Approximately 1% of vehicles in Greenwich are currently electric (~ 1,500 vehicles out of 80,000 total), supported by a network of ~300 public charging points. This can be considered a good ratio of chargers to vehicles but as more electric vehicles will circulate in the city, the number of charging points will need to grow as well. Following the predictions made by TfL, London can expect 34-49% of all vehicles to be electric by 2030 and we can expect this to apply to Greenwich. In order to support the charging requirements of these vehicles, there will need to be a mix of 1,200 – 2,700 EV charging points in Greenwich by 2030. The difference between the lowest and highest estimates are linked to the estimated vehicle adoption rate (34-49%) and to the question whether the public will prefer fast charging hubs (fewer but high-powered chargers) or on-street chargers (more widely spread but slower chargers). In any case, even with the lowest estimate, 1 charge point needs to be installed every 2 working days in the Borough for the next 8 years to match demand.

To date, the majority of EV chargers in Greenwich have been installed with the financial backing (and often direct procurement) of the Council. Whilst this was the most effective way of establishing the initial EV charge point coverage to grow confidence for people to purchase electric vehicles, the Council now needs to think of the role it wants to play in supporting the continued, and much larger, scale of electric transition that is required.

Our analysis has identified five actions that could ensure that Greenwich continues to be a Borough where residents and businesses find little or no barriers when switching to electric vehicles. These are:

Action A: The Council will be an overarching facilitator in ensuring EV transition in the Borough happens in a coordinated and optimised manner.

Focusing on the Council acting in a proactive manner, having a strong strategic oversight and making sure that collaboration amongst all major stakeholders helps to achieve a better public outcome.

Action B: The Council will focus on ensuring that transport-based emissions are minimised.

Maintaining the commitment to having 80% of all trips done by public transport or active travel is still the most effective way to get to net zero transport. Further, when looking to supporting electrification within the Borough, the focus should be first placed on key user groups like taxi drivers, private hire fleets and business fleets, as these vehicles are used the most hence emit the most CO2.

Action C: The Council will either build or facilitate the building of a broad and equitable public charging network

Whilst the Council has been involved in commissioning a lot of the EV infrastructure that is in place in Greenwich today, due to the scale of future deployment this might be impractical. The Council should investigate facilitating and encouraging private businesses to roll out charging points within the Borough. Commercialising Borough owned land might be an efficient way of doing so, as the lack of available land assets are an aspect that hold back many EV installers. The Council should then focus on using its own resources to install or commission charging points in locations that are not served by the private sector, for instance in Council owned estates or any neighbourhoods that get left behind.

Action D: The Council will review policy and regulatory measures in the Borough to encourage the use of electric vehicles and provision of accessible charging infrastructure

Planning policies, regulation of the kerbside, parking space allocation, approval of planning requests and other regulatory aspects can either help to create a charging network that is accessible to all and gets delivered at pace, or could slow deployment down and not create the type of urban environment which supports the delivery. It is therefore important to review the necessary regulatory role and processes within the Council and proactively adapt it to satisfy the objectives of a carbon neutral transport system.

Action E: The Council will lead by example with the transition of its own fleet and encourage EV uptake

The Council should electrify its own fleet, provide EV charging points within the parking assets and building stock it owns and encourage its own employees and suppliers to transition to electric vehicle use.

Introduction

ROYAL borough of GREENWICH

Introduction

The Royal Borough of Greenwich declared a climate emergency in 2019, with an ambition to achieve net zero by 2030, twenty years ahead of the national target. This also aligns with the targets and timeline set out by the Mayor of London. Climate change is one of the most important challenges of the 21st century and the coming decades will require a transformation of our society, our infrastructure and our built environment. If we respond in the right way, we can build a better future for our residents and businesses.

At a national level, the government has set out its aims to decarbonise transport and achieve net zero by 2050. As part of this objective, by 2030, no new petrol or diesel cars and vans will be sold in the UK, with the result of people transitioning to alternative technologies. The technology that will fill the void left by internal combustion engine (ICE) vehicles is going to be BEV (battery electric vehicles). Whilst hydrogen is also seen as a future source of energy for vehicles in the bid to decarbonise transport, the technology is not advanced enough today to be considered as a viable alternative. The industry looks at it primarily to work best for large specialist vehicles, therefore in our strategy the focus is solely placed on BEV and Plug-in Hybrids (vehicles that can travel some distances using their battery but also have an internal combustion engine).

Whilst the uptake of electric vehicles will contribute to reducing emissions and therefore improving local air quality, it is important to recognise that electric vehicles still create particulate emissions from brakes and tyres. As a result, it is important that the transition from internal combustion engines cars to electric vehicles does not undermine progress towards sustainable and active mode share targets, but rather focuses on enabling key user groups who perform high-mileage trips while performing an essential role, to enable everyone to switch to zero emission transport.

To support a net zero pathway in transport, the Council will have to ensure the right infrastructure is in place to achieve the forecast levels of electric vehicle use and charging demand in the Borough. The Council will also have a role to encourage behaviour change in the Borough, both from ICE cars to electric vehicles and from private vehicles to walking, cycling and public transport.

This strategy sets out the framework for implementing charging infrastructure in the Borough. It outlines how, over the next eight years, the Borough can meet the anticipated demand, providing an extensive charging network which builds on the Borough's existing public charging points.

Net zero carbon goal

As stated, the Council has agreed to the ambitious target to reach net zero carbon emissions twenty years ahead of the national target in 2030. The Borough's Carbon Neutral Plan responds to the climate emergency and net zero goal, setting the Council's ambition to be carbon neutral by 2030, in line with the scientific target necessary to limit global temperature rise to 1.5 degrees Celsius. In becoming carbon neutral, the Borough will reduce emissions arising from Royal Greenwich as far as possible, and to very low levels. In addition to reducing the amount emitted, offsetting of the residual emissions is possible by reducing emissions elsewhere, although it is recognised that offsetting is not a sustainable strategy in the long-term. These actions will also help to better the air quality for our residents, businesses and visitors.

To achieve this, the Borough has set a target to reduce car use in Greenwich by 45%, through a modal shift to public transport and active travel. In addition, the Borough will aim to achieve a 10% decrease in van and truck use relative to current projections. It is understood that not all trips undertaken in the Borough can be accommodated by public transport and active travel. The Council therefore also supports an acceleration in the uptake of zero emission vehicles and the Council's own fleet will be composed entirely of zero emission vehicles by 2030.

Our Vision

To meet our ambitious net zero carbon goal, we will act as an accelerator of EV infrastructure deployment. By 2030 we want electric vehicles to be the most attractive option for every resident and business if they need to make a private vehicle trip.

This strategy outlines the steps required to achieve this vision.

Structure of this plan

- Section 2 - Policy Context: sets out the national, regional, and local policies that are informing and influencing this document.
- Section 3 - Existing Transport Provision: sets out the existing transport provision in the Borough and the uptake of electric vehicles
- Section 4 - Future Demand and Infrastructure Provision: forecasts the future electric vehicle uptake and demand for charging points in the Borough
- Section 5 - Issues and Options: outlines the key constraints and opportunities to remove the barriers to implementing electric vehicle charging infrastructure.
- Section 6: Implementation: sets out the objectives and policies required to facilitate the shift to electric vehicles
- Section 7: Funding and Delivery Routes: sets out the different funding sources the Council will need to explore to deliver the strategy
- Section 8: Monitoring and Evaluation: sets out monitoring and evaluation to assess the success of policies, or where ongoing improvements are required and be updated to reflect local and national policy changes

Policy Context

ROYAL borough of GREENWICH

Policy Context

The Electrification Strategy must take into account the wider policy and strategic context. This covers national transport policy outlined by central government as well as strategies and policies published by the Greater London Authority (GLA) and Transport for London (TfL) and related documents from the Royal Borough of Greenwich which set the local context. The timeline presented below highlights the key policies that have been reviewed.

National Policy

In May 2019, the UK government legislated the goal of reaching net zero emissions by 2050. The transport sector is the largest contributor to domestic greenhouse gas emissions, producing 27% of UK emissions in 2019. Therefore, a step change is required to reduce transport emissions and achieve net zero. To help achieve net zero, the ban on the sale of new diesel and petrol cars and vans was brought forward ten years to 2030. As a result, the demand for electric vehicles is predicted to increase in the next decade as people look to switch to cleaner vehicles, especially as the market grows and the cost of electric vehicles becomes more competitive. The uptake of electric vehicles supports national priorities through the decarbonisation of road transport and shifting necessary car trips to cleaner energy, which cannot be undertaken by sustainable modes of transport.

The Electric Vehicles (Smart Charge Points) Regulations, November 2021

Coming into force on the 30th of June, 2022, the regulation intends to ensure new charging points have a smart functionality, allowing them to send and receive information. This will allow a control of charging rate, to help to manage grid requirements.

Net Zero Strategy: Build Back Greener, BEIS, October 2021

The Net Zero Strategy outlines how the UK will reach its goal by 2050. The relevant policies and proposals for transport in the Net Zero Strategy include, but are not limited to, the following:

- Delivering the 2030 commitment to end the sale of new petrol and diesel cars, and 2035 commitment that all cars must be fully zero emissions capable.
- Further funding of £620 million for zero emission vehicle grants and electric vehicle infrastructure, including further funding for local electric vehicle infrastructure, with a focus on local on-street residential charging.
- Allocating a further £350 million of the up to £1 billion Automotive Transformation Fund (ATF) to support the electrification of UK vehicles and their supply chains.
- Building on the success of the £20 million zero emission road freight trials, trial three further zero emission Heavy Goods Vehicles (HGV) technologies at scale on UK roads to determine their operational benefits, as well as their infrastructure needs.
- Transformation of local transport systems, with 4,000 new zero emission buses and the infrastructure to support them, and a net zero rail network by 2050.
- Significant investment in rail electrification and city rapid transit systems.

The strategy acknowledges the rising demand for electric vehicles with over 600,000 plug-in electric vehicles in the UK, the reductions in costs of an electric vehicle and the growth of the charging infrastructure market with 25,000 public charging points available in the UK. It includes a commitment to publish an electric vehicle strategy (expected in late 2021/early 2022), setting out the vision for infrastructure rollout, and roles for the public and private sectors in achieving it.

Enabling the transition to electric vehicles: The regulator's priorities for a green, fair future, Office of Gas and Electricity Markets (Ofgem), September 2021

The transition to electric vehicles will result in an increased electricity demand which will need to be accommodated by a large number of charging points. A key challenge will be ensuring there is sufficient network capacity, when and where it is needed, and at the lowest cost to consumers. Key priorities include:

- Ensuring the network is prepared for EV adoption
- Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce electric vehicle connection charges
- Enabling rapid development and maximising the uptake of smart charging and V2X technology, with the latter allowing electricity to be exported during periods of high demand and / or low electricity supply thus providing a temporary source of energy supply
- Support consumer participation and protections

It is noted domestic users, in the vast majority of cases, would not need to contribute financially for a network upgrade when they install their electric vehicle charge point, but non-domestic users may find the cost of connecting to the network a significant barrier. There are proposals to reduce the barriers to network connection and remove the costs associated with the reinforcement of shared networks. V2X could also play a significant role in the future of energy systems. The technology could contribute to managing periods of lower supply / higher demand and provide a temporary source of energy generation.

Decarbonising Transport: a better, greener Britain, DfT, June 2021 (part of the Transport decarbonisation plan)

In response to the legislation of reaching Net Zero by 2050, the DfT have made a series of commitments to decarbonise all forms of transport including zero emission buses and coaches and a zero-emission fleet of cars, vans, motorcycles and scooters. In addition, there is reference to a zero-emission freight and logistics sector and supporting car clubs. Other commitments made include ensuring the UK's charging infrastructure network meets the demands of its users and taking action to increase road vehicle occupancy by 2030.

Policy Context

Clean Air Strategy, Defra, 2019

The strategy sets out the government's plan to improve air quality and meet legally binding international targets to reduce five of the most damaging pollutants (fine particulate matter, ammonia, nitrogen oxides, sulphur dioxide, non-methane volatile organic compounds) by 2020 and 2030. It acknowledges that transport is a significant source of emissions related to air pollution and commits to cutting air pollution from all forms of transport.

The Road to Zero, DfT, 2018

In 2018, the government launched 'The Road to Zero' policy calling for all new cars and vans to be zero emission by 2040, which has since been brought forward to 2030. The strategy outlines how the government will drive the uptake of the cleanest new cars and vans, support the development of electric vehicle infrastructure networks, reduce emissions from existing vehicles and HGVs to progress to zero emission solutions.

The strategy acknowledges that looking towards 2040 it is evident more public charging points will be required and that the consumer experience also needs to be improved. It is envisioned that as electric vehicles become more mainstream, charging at home overnight or at workplaces will continue to be the most attractive options. The shift to electric vehicles will also increase the demand for electricity, with improvements to local network infrastructure to be carried out over time alongside changes to the electricity system.

To develop a leading electric vehicle charging network the following should be considered:

- Enabling electric vehicle charging at home, on residential streets and at workplaces
- Smart charging and the role of electric vehicles in a smart energy system
- Supporting the growth of the UK's public charging network
- Technological change
- Destination electric vehicle charging
- Connecting charging points to the network
- Rapid electric vehicle charging and enabling longer journeys
- Public-private financing to support the roll out
- Local levers for incentivising charging infrastructure provision
- The consumer experience of electric vehicle charging
- Delivering electric vehicles and upgrading energy infrastructure

Automated and Electric Vehicles Act, Legislation, 2018

The Act provided the government power to expand and improve the national electric charging infrastructure with the aim of creating a charging network that is convenient, easy to access and prepared for the increased adoption of electric vehicles.

Regional Policy

The Mayor of London has set an aim for London to be zero carbon by 2030, accelerating the city's response to climate change. Whilst the target to ensure 80% of all trips in London are undertaken by foot, by cycle or public transport by 2041 will help to achieve this goal, actions are required to decarbonise the remaining trips. To support a switch to cleaner vehicles, the right quantum and type of charging infrastructure is required across the city for users.

London's 2030 Electric Vehicle Infrastructure Strategy, TfL, Draft Summary October 2021

The strategy has an overarching vision to help London reach its net zero target by 2030, looking to accelerate the transition to zero emission vehicles by setting out the requirements for the provision of infrastructure, focussing on essential trips. The vision has six thematic areas - environment, sustainable mode shift, healthy streets, accessibility, social inclusion and commercial viability,

It is essential that the adoption of electric vehicles does not undermine the Mayor's target of increasing the walking, cycling and public transport mode share to 80% by 2041, but rather infrastructure is provided to ensure remaining trips can be undertaken by cleaner modes. The strategy is to target key user groups, defined as those who typically make high-mileage trips whilst performing an essential role as well as other commercial vehicles, which includes taxis, private hire vehicles, light goods vehicles, emergency vehicles, car clubs and public sector fleet vehicles.

The strategy includes modelling to forecast the likely number of charging points in 2025 and 2030 required to meet demand, building on the forecasts in the 2019 Infrastructure Delivery Plan to account for issues expressed by road users in switching to electric vehicles, the user experience, wider technological changes, recent user trends and new policies. Whilst the forecasts are based on up-to-date industry data and insights, it is important to remember that a high degree of uncertainty still exists.

Policy Context

The forecasts predict there could be between 0.3-0.6 million electric vehicles in London by 2025, equivalent to between 9-21% of London's total car and van fleet, and between 1-1.4 million electric vehicles in London by 2030, equivalent to 34-49% of London's total car and van fleet.

Table 1: Forecasts for London's EV infrastructure needs

	Scenario with majority slow to fast charging, but more drivers also favour rapid, on-the-move public charging		Scenario where drivers favour local, on-street, slower charging, with lower use of rapids	
	Slow to fast	Rapid	Slow to fast	Rapid
2025	18,500-34,500	1,600-2,600	26,000-49,500	1,100-1,600
2030	40,000-55,000	3,000-3,900	60,000-90,000	1,700-2,100

Two scenarios have been derived, with different trajectories for electric vehicles sales and changing behaviours:

- Scenario 1: A preference for faster public charging exists, with more on the go and top up charging taking place, with most people still wanting slower chargers in close proximity to their home. Rapid charging shares similarities with petrol station refuelling behaviour

- Scenario 2: A stronger preference for on-street slower, residential charging in addition to a slightly higher proportion of private at home charging on driveways. Some faster charging is still used.

The vision of the strategy is closely aligned to the first scenario. The second scenario would have implications on the streetscape and the competing demands on the kerbside whilst also requiring higher levels of public sector funding as the business case for slower chargers is usually considerably lower than rapid charging. The most desirable scenario for TfL is the first, which will require between 40-000-60,000 charging points by 2030, of which up to 4,000 will be rapid charging points.

It is anticipated that most of London's charging points will be delivered by the private sector by 2030. Around 20-30% of the rapid chargers forecast to be needed by 2025 could be delivered with support from the public sector (between 320 and 780), either through direct delivery or facilitating others. By 2030 the aim is for little or no public sector funding to be required as higher usage will make it more viable for commercial operators. At least 50% of slow-to-fast charging points are expected to be delivered primarily by private sector funding by 2025, and mostly funded by the private sector by 2030 although certain locations may still require public sector support.

It is essential a good geographical spread of charging points is provided, in particular where priority users require them. The strategy also notes that further data is required, in addition to vehicle registration, to understand where slow to fast public infrastructure is needed most.

The London Plan, Greater London Authority, March 2021

The London Plan is the strategic plan for London, setting out the economic, environmental, transport and social framework for the development of London in the next 20-25 years. Policy T6 on car parking states that where car parking is provided in new developments, provision should be made for infrastructure for electric or other Ultra Low Emission vehicles in line with:

- Residential Parking - at least 20% of spaces must provide infrastructure for electric or Ultra Low Emission vehicles, with passive provision for all remaining spaces

- Office Parking - appropriate provision for electric or Ultra Low emission vehicles should be made (including B2 General Industrial and B8 Storage and Distribution land uses). All operational parking should provide infrastructure for electric or other Ultra Low Emission vehicles, including offering rapid charging and including active charging points for taxi spaces

- Retail Parking - where car parking is provided at retail development, provision for rapid electric vehicle charging should be made

- Hotel and Leisure Parking - all operational parking must provide infrastructure for electric or other Ultra Low Emission vehicles, including active charging points for taxi spaces

New or re-provided petrol filling stations should provide rapid charging hubs and/or hydrogen refuelling facilities. The policy also notes where electric charging points are provided on-street, physical infrastructure should not negatively affect pedestrian amenity and should ideally be located off the footway. Where charging points are located on the footway, it must remain accessible to all those using it including disabled people.

London electric vehicle infrastructure delivery plan, June 2019

London is viewed as a global leader in providing electric charging points, with one charging point for every six electric vehicles. The infrastructure delivery plan outlines how the public and private sector could work together to ensure London has the right amount and right type of infrastructure to serve its needs by 2025.

The Mayor's Transport Strategy, Greater London Authority, 2018

The Mayor's Transport Strategy (MTS) focuses on reducing car ownership in London, which is supported by the Royal Borough of Greenwich, with a central aim to ensure 80% of all trips in London are undertaken on foot, by cycle or using public transport by 2041.

In relation to electric vehicles, the MTS aims for all new taxis and private hire vehicles to be zero emission capable from 2023, all new buses to be zero emission from 2025, all new cars and vans from 2030 and all other vehicles from 2040.

Policy Context

Local Policy

The Royal Borough of Greenwich declared a climate emergency in 2019, setting a target to reach net zero by 2030, 20 years ahead of the national target set by central government. Transport is the second largest source of emissions in the Borough, and if significant action is not undertaken transport emissions are only forecast to decrease by up to 10% in the period to 2030. Therefore, the Borough has outlined ambitious targets for 2030 including behaviour change and an acceleration in the uptake of zero emission vehicles.

Carbon Neutral Plan 2021-2030 Royal Borough of Greenwich, 2021

The Royal Borough of Greenwich has adopted a Carbon Neutral Plan for the period 2021-2030 in response to the climate emergency declared. The plan sets out what is required of the Borough to become carbon neutral by 2030 under seven key themes - Buildings, New Development, Transport, Energy, Circular Economy, Natural Environment and Empowering Wider Change.

Transport is the second biggest source of emissions in the Borough, behind domestic buildings, generating 31% of the Borough's emissions. In 2019, road transport contributed 216 kilotonnes of CO2 equivalents per year in the Borough and non-road transport contributed 5 kilotonnes, compared to an overall figure of 733 kilotonnes across all sectors. The Council has a fleet of 600 vehicles which are responsible for 1.5% of the total road transport emissions. Figures recorded in Dec2021 indicate the Council's fleet includes 31 electric vans and 20 electric charging points in its main operating depot.

Under a baseline scenario, whereby the Borough carries on with policies currently in place, emissions would be expected to decrease by only 14% in the ten-year period to 2030. With transport, despite the increased uptake of electric vehicles, emissions in the Borough are predicted to only decrease by less than 10% from 2019 to 2030 if significant action is not taken. To reduce emissions across the Borough, a combination of behavioural change, new technologies and new infrastructure is required. In the short-term, the Borough will need to reduce the use of cars, vans and HGVs whilst increasing the uptake of low emission vehicles, including electric vehicles.

The Borough's ambitions for 2030 are:

- A 45% reduction in car use in the Borough due to modal shift towards public transport and active travel;
- A 10% decrease in LGV and HGV use relative to current projections ;
- An acceleration in the uptake of zero emission vehicles; and
- The Council's fleet to be 100% zero emission vehicles.

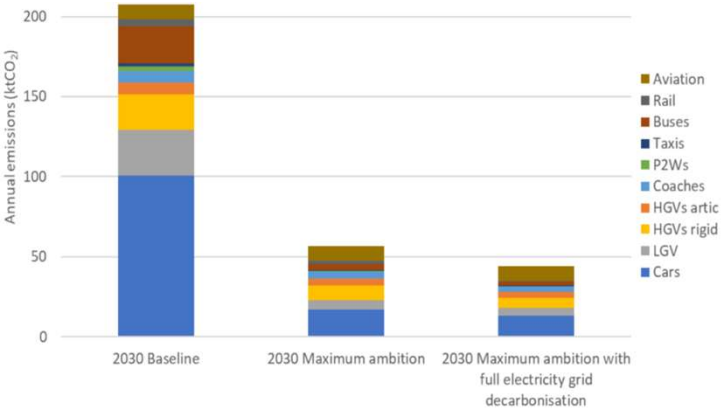
To facilitate change, numerous actions are required. With regards to electric vehicle uptake this includes increasing the number of residential electric charging points within the Borough and assessing the charging needs of local businesses.

Development of the Greenwich Carbon Neutral Plan: The Evidence Base, Royal Borough of Greenwich, 2019

The evidence base includes modelling of the Borough's GHG emissions for both a Baseline Scenario and Maximum Ambition Scenario, which includes ambitious targets to support the 2030 net zero target. To achieve the Maximum Ambition Scenario the Borough must implement a number of measures including creating zero emission zones, providing at least 2,000 additional public access charge points by 2030 and supporting and encouraging the accelerated uptake of zero emission vehicles among residents and local businesses.

In the Baseline Scenario, which is estimated from 2015, there is some uptake of hybrid and electric vehicles but this primarily occurs after 2030. The Maximum Ambition Scenario models and increased uptake of zero emission vehicles, including 51% of cars, amongst other measures such as modal shift. The transport emissions in the Baseline Scenario in 2030 are 208 ktCO2, which reduces to 57 ktCO2 in the Maximum Ambition Scenario and 44 ktCO2 in the Maximum Ambition Scenario with full grid decarbonisation.

Figure 1: Emission from transport in the Baseline and Maximum Ambition Scenarios



Source: Carbon Neutral Plan - Evidence Base

Third Local Implementation Plan (LIP3), 2019/20 to 2021/22, Royal Borough of Greenwich, 2019

The LIP3 sets out how the Royal Borough of Greenwich will implement the proposals set out in the Mayor's Transport Strategy (2018), including working towards the target for 80% of trips to be made by foot, cycle or using public transport by 2041. The vision for the Borough is to have an attractive, accessible, healthy and sustainable transport network by 2041.

Policy Context

This Plan has been developed to support the overall vision and objectives outlined within the Royal Greenwich Transport Strategy. In addition to the Transport Strategy, there are a number of additional strategies which are complementary to this Plan:

Royal Greenwich Transport Strategy (2022)

The Transport Strategy supports the wider London and Royal Greenwich ambitions through its alignment with the MTS, the Mayor's Environment Strategy as well as Royal Greenwich's Corporate Plan and the Carbon Neutral Plan. Having declared a climate emergency in June of 2019, the purpose of this strategy is to support Royal Greenwich's goal of becoming carbon neutral by 2030, and achieving a green post-pandemic recovery.

Royal Greenwich Third Local Implementation Plan (2019)

This Local Implementation Plan (LIP) is a statutory document and sets out how the Royal Borough will deliver the MTS. The document contains the Royal Borough's transport objectives which provide the context for, and help to establish, the Delivery Plan and the Performance Monitoring Plan. The LIP was published in 2019 with timescales to 2041.

The Borough has four primary objectives:

- Healthier Greenwich: creating a transport network, places and streets which encourage active travel
- Greener Greenwich: reducing transport related pollution, car ownership and single occupancy car trips
- Connected Greenwich: creating a joined up transport network that provides everyone with access to opportunities
- Growing Greenwich: getting people into 21,000 new jobs and 40,275 new homes by 2031 and ensuring good growth for existing residents

Three priorities sit under the Greener Greenwich strategic objective which is most relevant to this strategy:

- Improving air quality by reducing the levels of key pollutants that are associated with traffic and transport in the Borough
- Reducing transport's contribution to climate change, including the introduction of Green Infrastructure and Sustainable Drainage
- Promoting an innovative and future-proof transport network befitting London's leading 'Smart City' Borough

The Council is committed to encouraging the switch to Ultra Low Emission Vehicles and has the fourth highest growth rate across London for Electric Vehicle registrations (data from 2014 to 2017). A study undertaken for TfL estimated that there could be up to 6,065 ULEV in the Royal Borough of Greenwich by 2025, noting the key barrier to the uptake of Electric Vehicles being access to charging facilities. The Council will ensure electric vehicle charging provision meets the demands of residents and businesses as the uptake of electric vehicles grows.

Air Quality Action Plan 2017-2021, Royal Borough of Greenwich, 2017

An Air Quality Management Area (AQMA) has been declared for the whole Borough, with levels of Nitrogen Dioxide (NO2) exceeding the national standards. The Borough also exceeds the World Health Organisations (WHO) air quality guidance for Particulate Matter, albeit it does meet national standards. Vehicle emissions are the largest contributor to poor air quality; therefore the uptake of cleaner fuels and vehicles must be encouraged.

Local Plan Core Strategy, Royal Borough of Greenwich, 2014

The Local Plan outlines the development anticipated in the Borough over a 15-year period from 2013, with just under 40,000 new homes expected to be delivered. The 2021 London Plan set a ten-year housing target for Greenwich of 28,240 homes to be delivered. The target will primarily be delivered within the Opportunity Areas and Intensification Area identified in the London Plan. The Strategic Development Locations, identified in the Site Allocations Preferred Approach in 2019, are Charlton Riverside, Deptford Creek / Greenwich Riverside, Greenwich Peninsula / Greenwich Peninsula West, Kidbrooke, Thamesmead and Abbey Wood and Woolwich. The Borough's town centres will be a focus for localised growth, including Eltham, Greenwich, East Greenwich and Plumstead.

Existing Transport and EV Provision

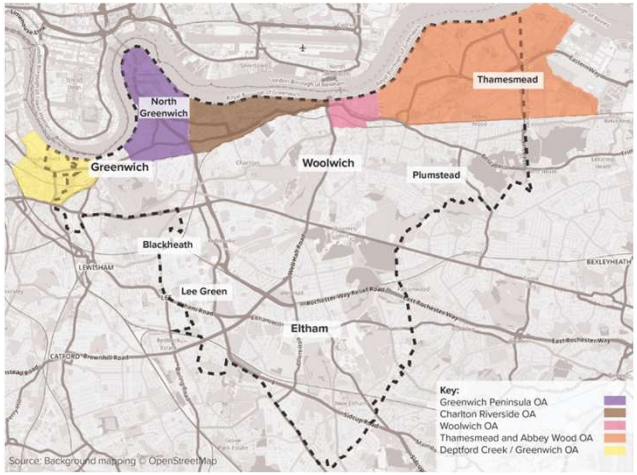
ROYAL borough of GREENWICH

Existing Transport and EV Provision

Local Context

The Royal Borough of Greenwich is located in southeast London, forming part of the Thames Gateway. It is bounded by the River Thames to the north, and by the London Boroughs of Bexley (to the east), Bromley (to the south) and Lewisham (to the west).

Figure 2: Existing key areas and Opportunity Areas for future growth in Greenwich.



There are three main town centres within the Borough - Woolwich, Eltham and Greenwich. Both Woolwich and Eltham are recognised as major centres in the Borough and are home to the Boroughs largest and second largest shopping and office-employment areas. Greenwich is a district centre within the Borough and is a key asset in terms of heritage and tourism to both the Borough and the city. In addition, Plumstead, Thamesmead, North Greenwich, Lee Green and Blackheath are designated district centres. The 2021 London Plan set a 10-year housing target for Greenwich to deliver 28,240 homes which will primarily be delivered within the Opportunity Areas in the Borough, as illustrated in Figure 2.

The land area of the Borough is 5,044 hectares and housing comprises the largest land use in the Borough, covering around 35% of the total area[1]. In 2020, the Borough had a population of around 289,000[2] with projections estimating a population of 297,00 by 2022, 339,400 by 2030 and 374,300 by 2041[3].

The Index of Multiple Deprivation 2019, which measures relative deprivation across England, indicates Greenwich is in the bottom most deprived quarter of all local authorities for average rank and in the bottom half of all local authorities based on average scores[4]. Approximately one third of residents live in neighbourhoods ranked in the 20% most income deprived in England, whilst 4% live in the neighbourhoods ranked in the 20% least income deprived.

Existing Transport

The current mode share for walking, cycling and public transport in Greenwich is 61.8%, compared to 56.7% in Outer London, with 31.2% of trips undertaken by public transport, 29% by walking and 1.6% by cycling[5]. By 2041, the Borough aims to contribute to achieving the London-wide aim for 80% of all trips to be made by foot, cycle or public transport.

There is currently one underground station in the Borough at North Greenwich, which is served by the Jubilee Line. Stations at Woolwich and Abbey Wood will be served by Crossrail which will improve public transport connections in the Borough. The Borough is also served by two Docklands Light Railway (DLR) lines, three heavy rail lines and Uber Boat by Thames Clippers services. Buses form the north to south public transport links in the Borough, connecting transport hubs to residential and opportunity areas. The Blackwall Tunnel provides cross-river connections from the Borough to the London Borough of Tower Hamlets. The A2 highway that crosses the river at Blackwall Tunnel is a major source of through traffic and pollution within the Borough.

In 2021, the Ultra Low Emission Zone (ULEZ) in London expanded to cover all areas within the North and South Circular Roads. As a result, half of the Borough is now within the zone, including Greenwich and Charlton, whilst areas including Eltham, Woolwich and Plumstead remain outside of the zone.

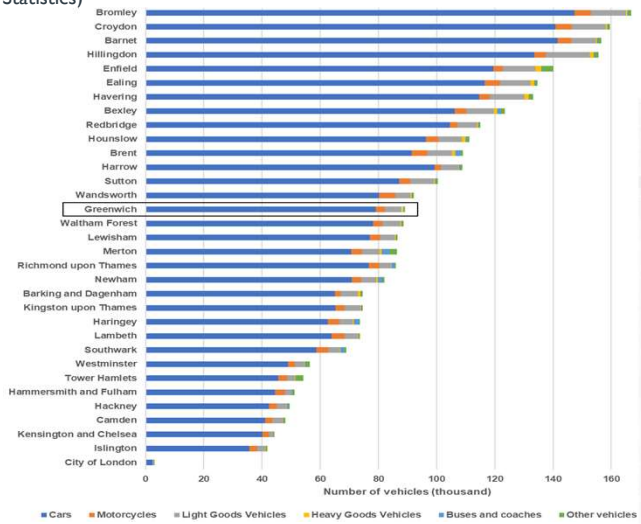
Car Ownership

Historically, car ownership has steadily increased in the Borough, with approximately 80,000 cars licensed in Greenwich at the end of 2020. This is significantly lower than many Outer London Boroughs, as shown in Figure 3, and lower than in neighbouring Boroughs Bexley and Bromley. Of the 80,000 cars licensed, approximately 20,000 are diesel cars. There are 5,625 LGVs registered in Greenwich, of which 5,252 are diesel vans. In total, there were 89,219 licensed vehicles in Greenwich in 2020.

[1] LIP3, Royal Borough of Greenwich, 2019
[2] Mid-Year Population Estimates, UK, June 2020: Office for National Statistics
[3] LIP3, Royal Borough of Greenwich, 2019
[4] Indices of deprivation | Indices of Deprivation | Royal Borough of Greenwich (royalgreenwich.gov.uk)
[5] Travel in London Report 13, Transport for London, 2020

Existing Transport and EV Provision

Figure 3: Number of licensed vehicles at the end of 2020 (Source: DfT Statistics)



Census data from 2011 provides an indication of how car ownership varies across wards in the Borough. Coldharbour and New Eltham and Eltham North wards have the highest average car / van ownership per household, at 1.14 and 1.09, whilst Woolwich Riverside and Woolwich Common have the lowest levels, at 0.52 and 0.56. Figure 5 illustrates the variation in average car / van ownership per household across the wards in the Borough that is aligned to the fact that the North of the Borough has substantially more rail based public network connections than the South.

The latest data on EVs currently available is from 2021 so the information in Figure 5 and 6 relates the old ward layout, when the data transitions to reflect the new boundaries the Action Plan will reflect these changes in reporting ownership of vehicles and uptake of EVs in future years. Figure 4 reflects current ward boundaries in 2022.

Figure 4: Royal Borough of Greenwich Ward Boundaries in 2022

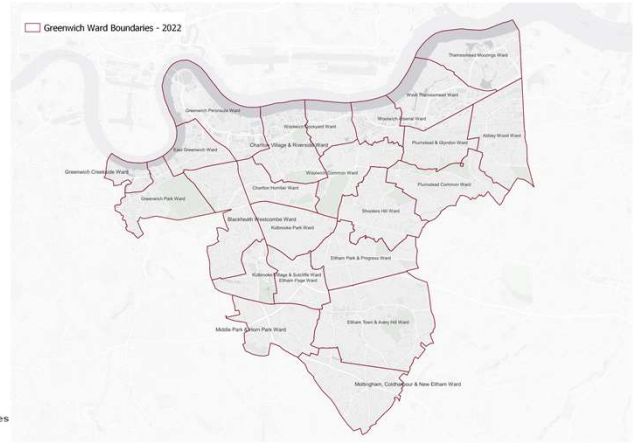
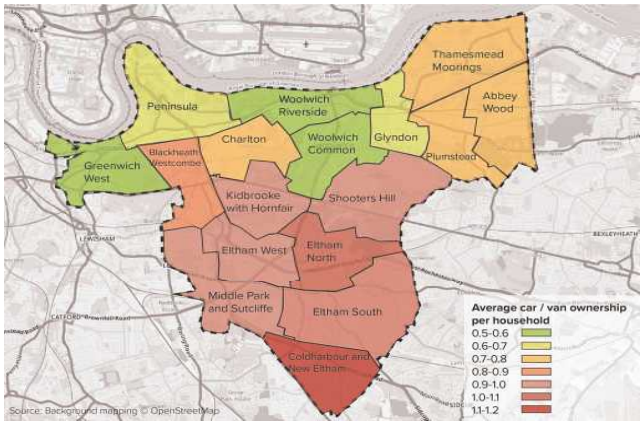


Figure 5: Average level of car / van ownership across wards in Greenwich



The Borough has a target to reduce the number of vehicles to 75,200 in 2041, despite predicted population growth. This will primarily be achieved through a modal shift to walking, cycling and public transport and the increased use of car clubs. Conversely, LGVs are forecast to grow by 30% between 2008 and 2031 as freight movements increase[6].

[6] LIP3, Royal Borough of Greenwich, 2019

Existing Transport and EV Provision

Parking Availability

Whilst residents in Greenwich may have access to a car, not all will have access to off-street parking and therefore be able to install private home charging points. London Travel Demand Survey data (LTDS) from 2016/17 provides the number of cars parked by residents in each Borough, split by those parked off-street and those parked on-street. In Greenwich, approximately 43,365 vehicles are parked on-street in the Borough and 48,500 vehicles are parked off-street[7]. Primary vehicles parked on-street in Greenwich take up 7.2% of road space and additional vehicles take up a further 2.5% making a total of 9.7%, which is lower than the inner London Borough average of 14% but higher than the outer London average of 8%.

Census data also provides a breakdown of housing types in each ward in Greenwich, as shown in Table 2. This provides some indication of parking availability across the Borough, with detached and semi-detached households more likely to have access to off-street parking, whilst terraced houses and flats are more likely to be reliant on on-street parking. There is also likely to be an element of 'self-selection' whereby those who require a car will choose to live in locations with parking available, whilst variables such as household structure and income also impact the level of car ownership across households.

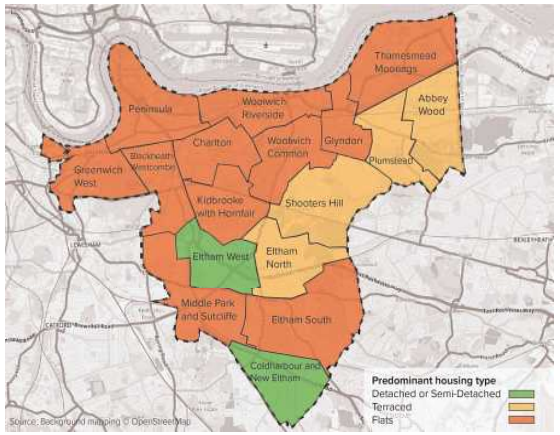
Coldharbour and New Eltham have the highest percentage of detached or semi-detached households at 61%, followed by Eltham West (47%), Eltham North (38%) and Eltham South (36%). Conversely, Woolwich Riverside (6%), Greenwich West (7%) and Peninsula (8%) had the lowest levels of detached or semi-detached housing.

Plumstead has the highest percentage of terraced housing at 52%, followed by Abbey Wood (49%) and Shooters Hill (43%). The highest percentage of flats, maisonettes or apartments in a ward is at Woolwich Riverside (78%), followed by Greenwich West (72%) and Blackheath Westcombe (66%).

Table 2: Household type in Greenwich

	House or Bungalow			Flat, maisonette or apartment			Other
Ward	Detached	Semi-detached	Terraced	Purpose built block of flats or tenement	Part of a converted or shared house	In a commercial building	Caravan / mobile temporary structure
Abbey Wood	3.1%	10.5%	48.6%	35.4%	1.8%	0.3%	0.4%
Blackheath Westcombe	7.8%	13.2%	12.8%	35.6%	29.8%	0.9%	0%
Charlton	3.0%	17.8%	31.7%	35.8%	10.9%	0.8%	0%
Coldharbour and New Eltham	5.4%	55.4%	14.6%	19.7%	4.0%	0.9%	0%
Eltham North	3.4%	34.1%	41.7%	16.1%	2.9%	1.9%	0%
Eltham South	7.1%	28.6%	19.8%	37.9%	4.8%	1.7%	0%
Eltham West	3.1%	43.9%	38.5%	12.8%	1.3%	0.4%	0%
Glyndon	3.4%	8.9%	36.2%	44.2%	6.8%	0.5%	0.1%
Greenwich West	2.0%	4.9%	21.3%	61.0%	8.6%	2.1%	0%
Kidbrooke with Hornfair	4.0%	31.0%	29.4%	30.4%	4.8%	0.5%	0%
Middle Park and Sutcliffe	8.5%	23.0%	27.0%	33.9%	7.1%	0.5%	0%
Peninsula	1.7%	5.8%	40.1%	42.1%	8.1%	2.1%	0%
Plumstead	5.4%	15.1%	51.9%	21.3%	4.7%	1.7%	0%
Shooters Hill	5.5%	27.4%	42.9%	15.9%	7.8%	0.5%	0%
Thamesmead Moorings	5.6%	14.6%	34.0%	43.8%	1.8%	0.2%	0%
Woolwich Common	3.3%	7.6%	27.0%	49.2%	12.0%	1.0%	0%
Woolwich Riverside	1.4%	4.8%	16.0%	72.1%	4.6%	1.0%	0.1%

Figure 6: Predominant housing type across wards in Greenwich. Please note the Ward Boundaries have been amended in 2022, but this plan reflects to previous Ward Boundary for the data available.



Current Electric Vehicle Uptake

Whilst the number of electric vehicles and ultra low emission vehicles on UK roads has risen, this still represents a small proportion of licensed vehicles. Table 3 indicates the number of plug-in cars and light goods vehicles licensed at the end of quarter two since 2012. In the UK, there were 543,515 electric vehicles registered in Q2 2021 of which 60,581 were in London: 24,511 in Inner London and 36,027 in Outer London.

[7] Travel in London Report 12, TfL

Existing Transport and EV Provision

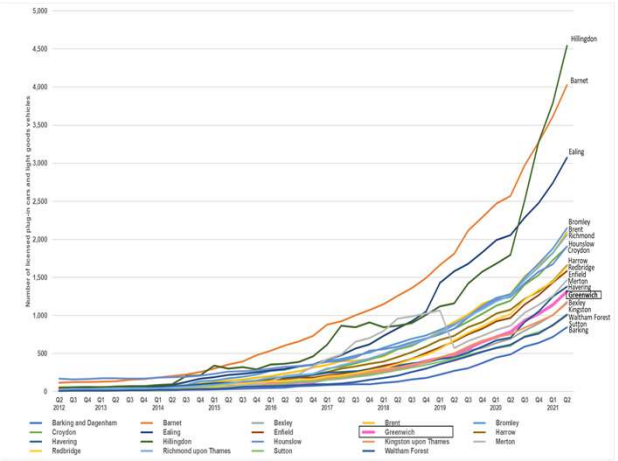
Table 3: Number of plug-in cars and light goods vehicles licensed, 2012-2021. Source: DfT Statistics, Table VEH0131

	2012 Q2	2013 Q2	2014 Q2	2015 Q2	2016 Q2	2017 Q2	2018 Q2	2019 Q2	2020 Q2	2021 Q2
RBG	12	23	32	66	112	183	305	495	783	1,317
London	1,559	1,789	2,401	4,415	7,070	11,351	16,798	25,547	37,048	60,581
UK	7,210	10,121	16,018	39,588	70,677	108,847	157,786	211,439	300,982	543,515

In Greenwich, the number of licensed plug-in cars and LGVs has increased steadily, with a notable increase in the year between 2020 Q2 and 2021 Q2 of 68%. This is slightly higher than the increase in licensed vehicles in London, which grew 64% from 2020 to 2021, but lower than the overall UK growth of 81% in the same period. In 2020, plug-in cars and LGVs in Greenwich made up 0.9% of licensed vehicles in this category, rising to 1.6% in 2021 if licensed vehicles in this category remain unchanged from 2020.

Figure 7 shows the growth in licensed plug-in cars and LGVs in Outer London Boroughs. As shown, there has been a significant increase in the past year across numerous Boroughs. Greenwich has a similar level of uptake as its neighbouring Boroughs of Bexley and Lewisham (Inner London) but lower than Bromley.

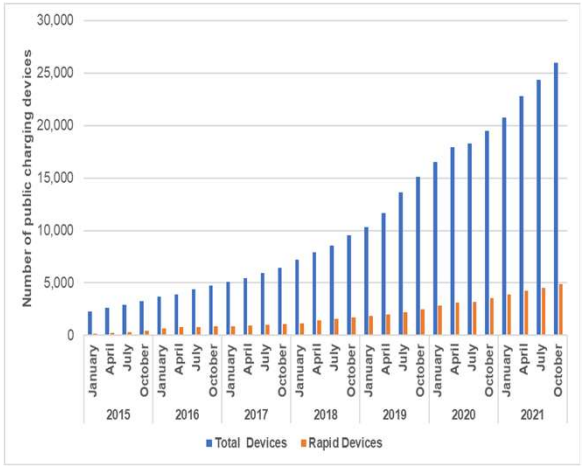
Figure 7: Number of plug-in cars and light goods vehicles licensed at the end of each quarter in Outer London Boroughs, 2012-2021. Source: DfT Statistics



Current Electric Vehicle Infrastructure

As of October 2021, there were around 26,000 electric vehicle charging devices in the UK, of which around 5,000 were rapid devices. In the Q3 period between July to September 2021, the number of available devices increased by around 1,500 - a 6% increase on the previous quarter (Q2 April to June, 2021), whilst the number of rapid charging devices increased by around 375 - an 8 % increase on the previous quarter. On average, the number of public devices has grown by 9% quarterly since 2015, whilst rapid devices have increased by 13%.

Figure 8: Number of public charging devices in the UK, 2015-2021. Source: Electric Vehicle Charging Statistics, DfT



In the Royal Borough of Greenwich, there were a total of 257 electric vehicle charging devices, of which 48 are rapid charging devices. This equates to 88.9 charging devices per 100,000 people. Between October 2019 and October 2021, the total number of devices has increased by 46%, whilst the number of rapid devices has increased by 220% in the same period.

Existing Transport and EV Provision

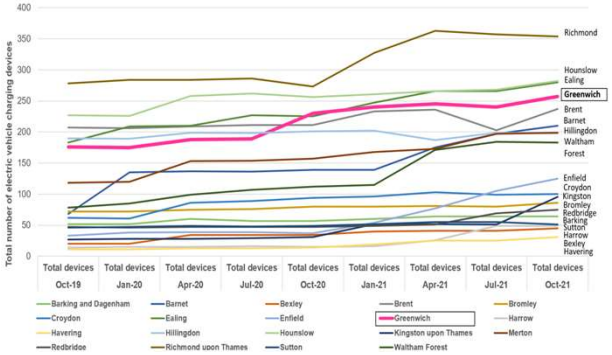
Table 4: Royal Borough of Greenwich EV Charging Statistics. Source: DfT Electric Vehicle Charging Device Statistics

	Oct-19	Jan-20	Apr-20	Jul-20	Oct-20	Jan-21	Apr-21	Jul-21	Oct-21
Total Devices	176	175	188	189	230	240	245	240	257
Rapid Devices*	15	15	28	28	30	31	32	32	48

*Note: DfT definition for 'Rapid Devices' are those whose fastest connector is rated at 25kW or above

The Borough has the fourth highest number of electric vehicle charging points in Outer London, as shown on Figure 8, and the second highest number of rapid devices in London behind Westminster.

Figure 9: Number of public charging devices in Outer London Boroughs. Source: DfT Statistics



Charging Point Utilisation

The delivery of rapid charging points in London is steadily increasing, with 298 available at the end of October 2021. Table 5 shows the overall utilisation rates across London. As shown, the utilisation of rapid charging points has increased in 2021, in particular the number of rapid chargers being used multiple times per day.

Table 5: TfL rapid charge point utilisation, 2020-2021. Source: Travel in London Report 14

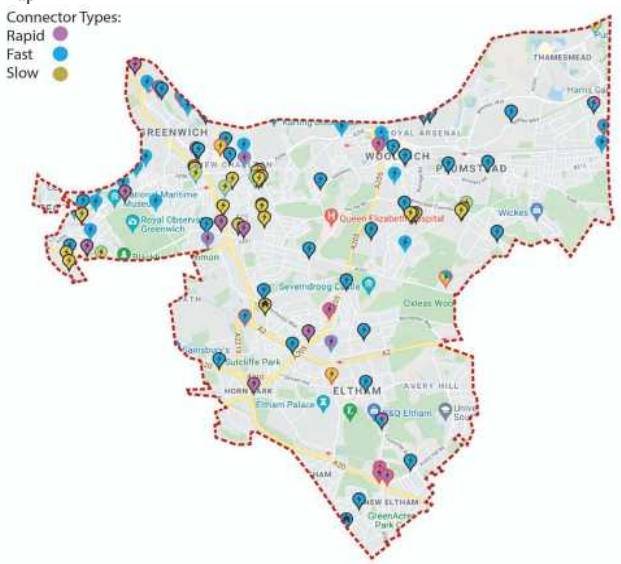
		2021 (Jan-Aug)
At least one charge a day	91%	94%
Three or more charges a day	71%	79%
Five or more charges a day	52%	69%

Data from Travel in London Report 13 indicates that charges are relatively evenly spread across days of the week in London, with an average of 40,000 charges per day from Monday to Friday, which slightly reduces on Saturdays, and reduces to 34,000 on Sundays. When disaggregated by hour to understand charging patterns during the day between January and September 2020, it is shown that most charging events take place between 09:00 and 21:00, with the busiest time for charging between 10:00 to 15:00. There is low usage between 01:00 and 07:00.

Location of charging points

Figure 10 shows the location of public charging points in the Borough with clusters of charging points located in Charlton, Greenwich and Greenwich Peninsula.

Figure 10: Public charging point locations in Greenwich. Source: Zap-Map



The types of charging points in the Borough can be categorised as follows:

- Home charging points: There are a few clusters of slow charging points in the Borough which are suited to residential charging, notably in Charlton.

Existing Transport and EV Provision

• Destination charging points: Retail car park charging points are located in Woolwich, at Tesco Extra, Abbey Wood, at Lidl and Asda, and in Charlton, at Riverside Place, Ikea, Asda, Greenwich Shopping Park and Brocklebank Retail Park. There are also numerous charging points located in the vicinity of the O2 arena. North Greenwich Station NCP, Old Dover Road, West Hall Road, Greenwich Equestrian Centre and Calderwood car parks also have charging facilities.

• On-route charging points: There are charging points located in the vicinity of the key roads in the Borough, such as the A102 and A2, albeit they are not specifically designed for on-route charging.

• Rapid Hub charging points: There is a TfL supported rapid hub at Glass Yard Hub located in Woolwich, providing eight charging points for electric vehicles which are capable of charging vehicles in 20-30 minutes.

Other Road-based Transport Modes

Bus

By the end of 2022, 10% of the bus network in London will be zero emission. The Mayor of London has committed to delivering a zero emission bus fleet in London, bringing the target forward three years to 2034 with government funding this could be delivered by 2030[8].

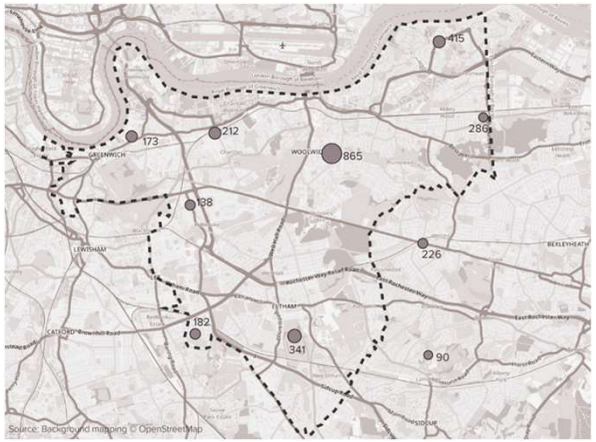
Car Clubs

Car clubs operate within the Borough providing members with access to a car on a short-term basis. Vehicles on public roads are operated by Enterprise Car Club whilst some cars parked in off-street parking bays are operated by Zipcar. The Council is working with Enterprise Car Club to trial an electric car club in the Low Emission Neighbourhood of Greenwich and the Peninsula[9] .

Taxi and Private Hire

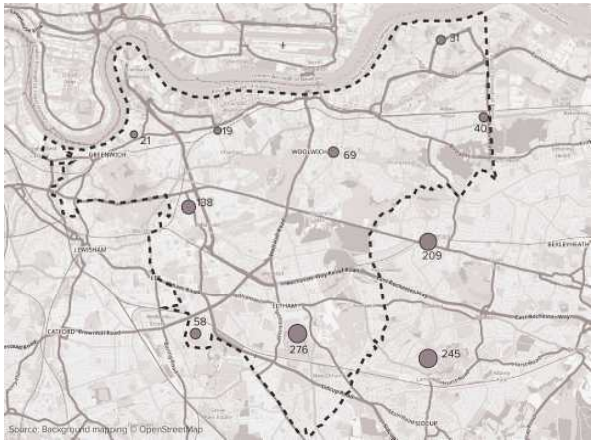
Taxi and private hire vehicles undertake high-mileage trips whilst performing an essential role within London. The number of private hire vehicle and taxi drivers registered in the Borough can be broken down to district level, as shown in Figure 11 and Figure 12. A high proportion of private hire vehicle drivers reside in the Woolwich area, with Thamesmead and Eltham also having a higher number of registered drivers than the rest of the Borough.

Figure 11: Number of private hire vehicle drivers registered in RBG



The number of taxi drivers registered in the Borough is less than the number of private hire vehicle drivers, replicating the pattern across London. Eltham has the highest number of taxi drivers in the Borough.

Figure 12: Number of taxi drivers registered in Royal Greenwich



Understanding the location of private hire and taxi fleets is important as their vehicles do a much higher mileage than average private car owners. Whilst the average mileage per year in the UK is ~7,000 miles, taxis drive ~30,000 miles. They also regularly travel within central areas, contributing to urban pollution. Providing charging options for this group of users is key to gaining quick wins towards reaching net zero targets as every one taxi/PHV electrified is the equivalent of 4-5 private vehicles in terms of their emissions.

[8] Mayor announces that all new London buses will be zero-emission | London City Hall
[9] https://www.royalgreenwich.gov.uk/info/200259/transport_and_travel/90/car_club_car_sharing_scheme

Future Demand and Infrastructure Provision

ROYAL borough of GREENWICH

Future Demand and Infrastructure Provision

As the ban on the sale of petrol and diesel vehicles in 2030 draws closer, it is expected that the number of electric vehicles owned by users will increase especially if the initial cost of electric vehicles becomes more competitive. However, there is still a level of uncertainty as to when people will change behaviour and when the transition towards electric vehicles will occur.

In addition, the uptake of electric vehicles should not be at the detriment of policies to encourage public transport and active travel. Therefore, as we look forward it is essential to target the needs of key user groups, who typically make high-mileage trips while performing an essential role, whilst at the same time encouraging everyone to switch to zero emission transport.

National and Regional Forecasts

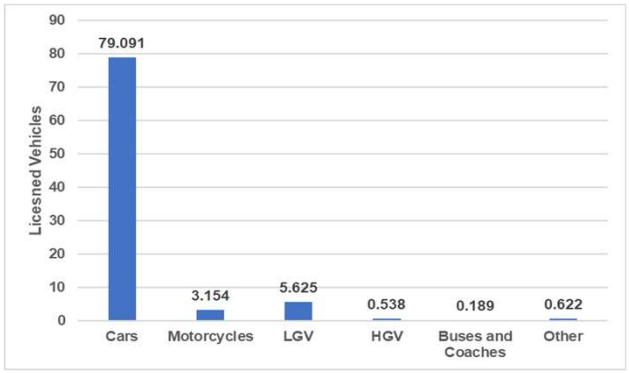
It is estimated that there could be up to 14 million electric vehicles on UK roads by 2030, with forecasts from the Climate Change Committee suggesting that 370,000 public charging points could be required by 2035 and Ofgem estimating up to 19 million home charge points may be required in the same period[10].

London's Electric Vehicle Infrastructure Strategy forecasts there could be between 0.3-0.6 million electric vehicles in London by 2025, and between 1-1.4 million by 2030. This is equivalent to 9-21% of London's total car and van fleet in 2025, and 34-49% in 2030. The estimates are based on in-depth modelling which reflect wider technological changes, recent user trends and new policies which will affect the rate at which people transition to electric vehicles. However, there is still a high degree of uncertainty and forecasts will need to be updated to account for future uncertainties and new trends (vehicle costs, electricity costs, user acceptance).

Greenwich Forecasts

To understand the electric vehicle uptake in Greenwich, a similar approach has been taken to Transport for London. In 2020, there were approximately 90,000 vehicles registered in Greenwich, of which 95% were cars and LGVs. In addition, there are approximately 650 taxi drivers and 2,600 private hire vehicle drivers registered in Greenwich.

Figure 13: Vehicles Registered in Greenwich, 2020. Source: DfT Statistics



If the number of vehicle registrations in Greenwich remain unchanged to 2030 as a worst-case scenario, given the Borough's ambitions to reduce car ownership, the proportion of cars and LGVs that are electric in 2025 and 2030 in London can be applied to Greenwich. This methodology estimates there will be between 7,620-17,790 electric vehicles in Greenwich in 2025, and between 28,800-41,150 in 2030. For reference, there were 1,317 electric vehicles in Q2 2021.

London's Electric Vehicle Infrastructure Strategy outlines two scenarios for quantifying the number of public charging points required, accounting for differences in charging behaviours. The first scenario assumes that there is a preference for faster public charging with more on-the-go, top-up charging taking place, as well as a continued mix of speeds, with most still wanting slow chargers near their home. For those using faster charging, such as rapids and ultra rapid charging, there will be more similarities to current petrol station refuelling behaviour. The second scenario assumes that, although there will be some faster charging, there will be a strong preference for more on-street, slower, residential-based charging, as well as a slightly higher proportion of private, at home charging on driveways.

The proportion of slow-to-fast and rapid charging points required for the projected number of electric vehicles in London has been calculated and applied to the projected number of electric vehicles in Greenwich to derive the level of charging infrastructure required in the Borough. As set out in Table 6, under scenario one, there would need to be between 470-1,020 slow-to-fast and 40-80 rapid charging points in 2025 and 1,150-1,630 slow-to-fast and 85-120 rapid charging points in 2030. In the second scenario, there would be a higher number of slow-to-fast charging points with 660-1,470 in 2025 and 1,725-2,670 in 2030 and lower number of rapid charging points with 25-50 in 2025 and 50-65 in 2030. For reference, Greenwich has 227 slow-to-fast charging points and 30 rapid charging points (where rapid is over 100kW).

[10] Ofgem (2021) Enabling the transition to electric vehicles: the regulator's priorities for a green, fair future

Future Demand and Infrastructure Provision

The modelling forecasts are projections and they should not be considered as targets. Instead, they provide a sense of scale of what level of charging infrastructure could be needed based on numerous variables, in particular the speed at which the uptake of electric vehicles occurs.

The amount of charging infrastructure is also dependent on the user group. Taxis and private hire vehicles will require a higher proportion of public charging, with some operators having made ambitious commitments to have electric fleets from 2025. Scenario one, with less slow-to-fast charging points, is preferred by TfL and is aligned to the Mayor's target to increase the number of sustainable trips in London to 80% by 2041. It also provides faster charging which caters to user groups who typically undertake higher mileage trips as part of their occupation, and therefore less likely to shift modes to walking, cycling or public transport.

Scenario two, with more slow-to-fast charging points, would have a greater impact on the streetscape in Greenwich, compared to scenario one, with electric charging infrastructure competing for space with pedestrians. It would also require a higher level of public sector funding to implement due to slower charges being deemed less commercially viable.

Further, Greenwich is on the A2 travel corridor and has large venues with car parks that attract visitors. Providing sufficient charging for these users is also a consideration necessary.

Table 6: **Forecasts for Greenwich's electric vehicle infrastructure needs**

	Scenario 1 with majority slow to fast charging, but more drivers also favour rapid, on-the-move public charging		**Scenario 2 where drivers favour local, on-street, slower charging, with lower use of rapids**	
	Slow to fast	Rapid	Slow to fast	Rapid
2025	470-1,025	40-80	660-1,470	25-50
2030	1,150-1,630	85-120	1,725-2,670	50-65

Issues and Solutions

ROYAL borough of GREENWICH

Issues and Solutions

Whilst the Borough has infrastructure in place to support the current levels of electric vehicle use, national and regional policies will accelerate the use of electric vehicles. However, there are many constraints to implementing the quantum of electric vehicle charging points required in the Borough to meet the anticipated level of demand. This chapter outlines the key constraints and opportunities to remove the barriers to implementing electric vehicle charging infrastructure.

Land Availability

Issue

One of the most significant barriers to implementing public charging points is the lack of availability of suitable land. This is an issue that has been flagged London-wide and is true for Greenwich as well. In order to deliver the amount of charging infrastructure required in the Borough, the Council will need to work in collaboration with partner agencies to find suitable land that is at the right places to meet charging demand.

Solutions

The unlocking of public sector land could help facilitate the delivery of charging points. The London 2030 Electric Vehicle Infrastructure Strategy indicates the unlocking of GLA Group land could accommodate up to 1,000 rapid charge points across London.

Greenwich has the opportunity to review its publicly owned land assets to understand whether they could help to facilitate EV chargepoint instals. Land can be sold, leased or used as an asset in partnerships with private operators looking to install EV charging points. The Council will have to make the procurement and delivery processes streamlined and efficient to ensure rapid yet efficient project development.

There is also an opportunity to install charging points on developable land in the short-term to meet growing demand. These hubs would need to be in strategic locations to ensure additional traffic is not generated in residential areas. In addition the Borough can also continue to deliver charging points on their land, for instance in Council housing developments, to ensure equitable distribution. Alternatively, many existing urban sites could be suitable locations for charging points. This could include the following:

- Brownfield light industrial or retail sites, which are likely to have existing grid connections with available capacity
- The periphery of town centres, which is attractive to commuters and visitors and avoids contributing to congestion
- Car parks
- Land in new developments could be allocated to charging hubs
- Along the Strategic and Major Road Network
- In residential areas without off-street parking
- Near existing local facilities.

The Council may wish to regulate or guide where private operators install charging points to ensure an equitable distribution of charging facilities is delivered across the Borough. Without this, numerous private operators may wish to install charging points in more profitable locations in the Borough, such as town centres and trip attractors, creating a surplus of charging points in these locations. Conversely, semi-rural areas and less affluent areas of the Borough may be excluded due to the foreseen lower demand and commercial benefits, which could hinder the switch to electric vehicles in these locations or result in high mileage trips across the Borough to charge vehicles.

In addition, the issue of land availability is also applicable at the micro level on the streetscape, with limited space on the pavement to install charging points. Preferably, charging points should be installed within the existing highway, so as to not reduce footway widths and negatively affect the pedestrian environment. However, this is not always possible, in which case charging points are installed on footways which reduces the amount of space for pedestrians and can result in safety issues due to trailing cables. Kerbs and the design of charging bays can also be a barrier to people with disabilities. Therefore, Councils should look to provide design standards for electric vehicle parking bays to mitigate the impact on other road users.

Energy Requirement

Issue

After space, the other key constraint to the delivery of charging point infrastructure is the available capacity on the grid network.

At present, the grid has enough capacity to accommodate the increase in demand from electric vehicles. However, the impact on the grid network in the future will be dependent on a myriad of factors including how quickly consumers transition to electric vehicles, who they are, where they charge their vehicles and how often. Forecasts from Ofgem indicate peak demand could rise by more than 20GW in 2050 which is equivalent to 35% of current demand[11]. With solutions such as smart charging which central government is looking to mandate for private charge points, this can be minimised by between 5-15GW.

Solutions

In order to ensure there is sufficient capacity, the Council will need to work with energy distributors (DNOs, primarily UKPN in Greenwich) to identify the localised grid constraints and pinch points which have limited capacity, as well as the nodes where there is abundant available capacity. The selection of charging point locations should align to grid availability today and with planned upgrades in the future.

[11] Ofgem (2021) Enabling the transition to electric vehicles: the regulator's priorities for a green, fair future

Issues and Solutions

The cost of the DNO upgrade is dependent on several factors but is usually paid by the company requesting the additional capacity, whilst network companies will need to monitor where capacity is required and ensure the cost for upgrades is both easy and fair. Network upgrade costs can be a significant and a limiting factor in providing EV charging infrastructure, therefore strategic selection of locations near available capacity will largely benefit cost efficient deployment.

By planning ahead and applying the appropriate regulatory measures, the Council can ensure the Borough is best positioned for the future and identify the level of government support and funding that may be required to support upgrades to the network. A single point of contact within the Council could be created to oversee and regulate the installation of charging points (both public and private including depots) and coordinate with the DNOs in relation to how these installations impact the grid. Investment in the network will need to be undertaken at the right time to enable the adoption of electric vehicles, whilst minimising the cost of new infrastructure. The objective is to avoid a situation where planned EV charging schemes cannot go ahead due to competing demands on the grid.

One solution to help with grid demands is to apply a degree of demand management to the grid network through smart charging. A charging point is considered 'smart' when it can send and receive information. A smart charging point, amongst other things, can be turned off if demand on the surrounding network is too high and turned back on when local demand has fallen. The adoption of smart charging practices could help to manage peak periods on the network. Smart charging technologies exist and the government is regulating all new installations to include this technology[12]. It is envisioned vehicles, in particular private cars, will be parked most of the time and therefore will not need to be charged daily. As a result, they could be charged during off-peak periods when there is less demand on the grid, at a lower cost, for instance through on-street chargers which can be used overnight.

Electric vehicles also have the potential to be beneficial to the grid network through a technology called vehicle-to-grid (V2G). V2G charging could be used to manage peak periods, in which vehicle batteries can return their power back to the grid during peak periods. There is also an opportunity to move certain user groups which require more energy, such as fleets, taxi and private hire vehicles, to less constrained areas in the Borough with available grid capacity. This agglomeration of future demand could be undertaken if it is fully understood and a proactive planning-led approach is adopted, in which vehicles with more heavy demand are charged in locations where there is more supply. This will require collaborative working between the Council, DNOs, charging providers and developers.

Funding the Investment

Issues

In recent years, government funding has facilitated the implementation of charging infrastructure to meet demand. In London, approximately two thirds of slow to fast charging points and half of rapid charging points have been funded by the public sector (local and national governments). Conversely, the level of private sector investment has been lower than expected, partly due to the weak commercial case for on-street charging points, primarily due to land and network upgrade costs as discussed above. It is not possible for the public sector to fully fund the anticipated increase required in charging points, therefore private sector operators and investors need to significantly grow their market share. This trend is not visible today, therefore rollout of EVCPs is slow.

Solutions

The prevalence of private sector investment in the EVCP sector depends on the profitability business case that exists for electric vehicle charging. Councils can help to solve issues linked to land and energy availability to make an investment more attractive. The Council should use its land and other resources to create partnerships with the private sector, attracting investment into the Borough in the form of new installations. The Council can approach these partnerships through various mechanisms, from own-operate-leasing models all the way to forming joint ventures with private companies. The key is to scale the charging network through private investment.

Besides private investment, we can expect that ongoing public sector funding will still be required to maintain consumer confidence and accelerate the switch to electric vehicles. The Council should continue to access government grants allocated for charging infrastructure, but should use it to fill in any geographical gaps where private companies might not move into. This will help to ensure equitable charging for all residents.

Additionally, funding will be required for ongoing maintenance and upgrade of public charging points that are already in the ground. Whilst installation is often successful, many charging points are out-of-use due to poor maintenance contracts, operators going out of business or lack of funding for these activities. In future, schemes will need to consider these ongoing costs and have service performance levels agreed and monitored.

[12] The Electric Vehicles (Smart Charge Points) Regulations 2021
https://www.legislation.gov.uk/ukdsi/2021/9780348228434/contents

Issues and Solutions

Chargepoint availability

Issue

It is not sufficient to install 'many' charging points. These need to be located at the right spaces where people are looking to use them and need to be of technical characteristics that meet the needs of the user at the given location.

Solutions

A broad network of charging points in Greenwich will be required to encourage an equitable switch to electric vehicles. The demand for charging points could be met in numerous ways, from home charging points to workplace charging in the Borough. It is important to consider that prospective electric vehicle owners may not have access to charging points at their home or workplace, therefore there will also be a need for destination charging points and rapid charging hubs.

In addition, whilst there will be more attractive locations to install chargers, the Council must ensure there is funding to install chargers in less commercially viable areas to avoid creating 'charging deserts' in the network. A good geographical spread of charging points in the Borough will also reduce the risk of electric vehicle owners who do not have home charging points driving extra mileage to charge their vehicles.

There are three types of charging points the Borough should consider to create a high-quality and accessible charging network:

Residential charging points

We consider residential charging points those that are located near where people live, either at their homes (if off-street parking is available) or on-street. These chargers are the ones that people rely on heavily today and are expected to have an important role in providing charging in the future. They are generally lower cost and many do not require any grid upgrades, making their installation relatively simple.

Home chargers are an ideal option for residents with off-street parking. These devices cost between £500 and £1,000, with costs expected to further reduce. Vehicles can be plugged in overnight and charge at a slow pace, still delivering full charge to users by the morning. Integrated with smart charging, home chargers have the potential to limit peak demands, as they can be scheduled to charge at off-peak hours. Some variable tariffs already incentivise this, and more solutions are expected in the coming years from energy suppliers. Home chargers are often seen as a stepping stone for people towards transitioning their homes to become fully electric, as integration of charge points with solar panels and batteries can have clear financial benefits for users. Therefore residents with home chargers, or the potential for home charging should be encouraged to follow this route and enable their homes with appropriate infrastructure.

On-street charging points are designed to provide car owners who do not have off-street parking with a convenient charging solution. These spaces could include lamppost and low power charging points, floor mounted charging points and rapid charging points as detailed in Table 7. Their allocation has to consider the number of vehicles that might be using them, time periods when they will be in use and availability of enforceable ways of making the charger available to multiple vehicles per day. Faster chargers will also require grid upgrades.

Table 7: Types of on-street chargers

Lamp Post / Low Power Charging Points (5.5kW)	This type of charging is only suitable for overnight charging, taking 7-8 hours for a full charge. It is less expensive than other types of charging and removes the need for additional street furniture on the footway. The number of spaces that can be provided in areas is limited, due to the location and number of lamp posts in areas, which may also not be closely located to car parking spaces. These chargers also have very low utilisation as they can deliver 2-3 full charges per day in the best case. The positioning of the lamp post in the footway can also create a pedestrian hazard, depending on if it is located at the back or front of the footway, and negatively affect the pedestrian environment, in particular for vulnerable user groups. Individuals wishing to use the charging point will also need a smart cable to connect, which costs approximately £200.
Floor Mounted Charging Points (7.4kW - 22kW)	This type of charging takes 2-4 hours for a full charge and requires dedicated electric vehicle parking bays. They are more expensive than lamp post charging points and would need to be connected to the power supply. Preferably, the charging points will be located within the highway rather than on the footway so as not to restrict pedestrian movement. Additionally, a level of enforcement will be required to ensure vehicles move once charged to allow turnover.
Rapid Charging Points (43kW-50kW)	Rapid charging points provide fast charging times of about 1 hour. They require a new connection to the power supply. They also require more land than other charging points and off-street locations due to the equipment size. The chargers can service many vehicles per day but the bays need to be managed so vehicles do not overstay

Issues and Solutions

There are many challenges in implementing residential charging points. This includes managing the number of dedicated charging points and parking spaces, ensuring everyone has access to a charging point when they require it but also ensuring individuals do not use dedicated parking spaces when they are not wanting to charge their vehicle. In addition, there are challenges as to who funds and maintains these charging points and where they get allocated.

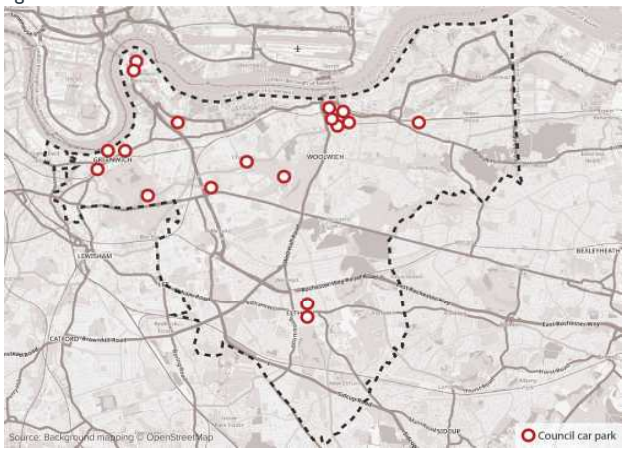
On-street chargers have been the most common solution that has helped with EV transition to-date. However, in the future they will likely not be the be all end all option for a number of reasons. For 50-100% of vehicles being electric on a street, almost all parking bays would have to have a slow charger installed. These chargers will need constant maintenance, whilst having a very low utilisation (a lamp column charger can only charge a single vehicle overnight) with low fees to create the maintenance funds. Faster chargers instead would be in high demand, and vehicles would have to be moved in and out of bays frequently. Where on-street is the residential charging option, it can be impractical (users would have to keep moving vehicles up and down the street every hour to allow for all to be charged). It is more likely that on-street charging will be available as a nice-to-have option, but not be the chargers that people depend on for every day charging. This option could also be reserved for key vehicle types (e.g commercial vehicles or taxis that need daily charging).

Destination charging points

Not all electric vehicle users will have access to charging at home, which is often difficult to guarantee without off-street parking. Further, as discussed above, on-street charging in residential areas is unlikely to provide charging for all privately owned vehicles. As a result, destination charging points will play a key role offering faster charging at locations where users park for a few hours during the day, such as workplaces and key trip attractors in the Borough, such as supermarkets, shopping centres and leisure attractions. Public car parks in the Borough can also provide charging points for users, with the location of Council car parks in the Borough shown in Figure 14. Charging speeds used at destination charging points can be rapid EVCPs of ~50kW, to ensure a significant charge is provided within 1 hour. Though a range of chargers could be suggested to meet the particular needs at each destination based on average parking times.

Event venues where visitors do not come regularly (eg. once a week) should not be considered priority, as they would be difficult to feature as a routine charging location for the public. As an example, supermarkets should be encouraged to develop a wider chargepoint offering than cinemas.

Figure 14: Council Car Parks



The key challenge in implementing destination charging points is planning and managing the installation of charging points across the Borough. Retailers and businesses in the Borough will have control of how many chargers they install, in line with planning standards, and the types of chargers they wish to install. This may lead to inconsistencies of charging points across the Borough, with regards to cost, type and ease of use. Additionally, the number of charging points installed at destinations will directly influence the number of on-street charging points required therefore the Council will need to work collaboratively with local businesses to build a high-quality and accessible charging network in the Borough.

En-route charging points

Most people will also require access chargers away from their residence, for instance when undertaking longer journeys. En-route charging points are designed to be used during such journeys and perform a similar function to petrol stations. They are likely to be used during freight journeys and long-distance leisure trips and located on key arterial routes in the Borough.

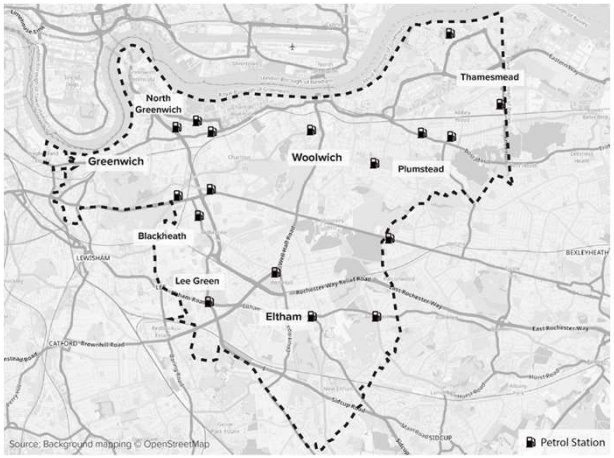
Figure 15 illustrates the location of petrol stations in the Borough which could in future accommodate electric vehicle charging points. They are located adjacent to key roads, such as the Blackwall Tunnel Southern Approach and A207, and trip attractors in town centres, such as Charlton and Plumstead High Street.

The challenges with this type of charging include ensuring charging points are strategically located throughout the Borough, as opposed to being concentrated in one location or located on unsuitable roads which may result in freight vehicles travelling on residential roads for a charging point. In addition, rapid charging requires greater grid capacity which can present challenges in areas with high demand. There may also be a need for consistency at these charging points, including mechanisms for paying and pricing structures.

Issues and Solutions

Rapid charging hubs that would be best suited for this type of charging (with chargers >100kW, to allow for charging times of less than 20-30min) offer a fast method of charging for vehicles which will require daily charging, for instance taxis, private hire vehicles, buses, and fleet vehicles as well. Apart from being located at arterial roads, they can be located in strategic locations such as taxi ranks, and key pick up areas. They also could help to reduce the need for on-street parking and should be considered in new large developments.

Figure 15: Location of petrol stations in the Borough



Policy

Issue

There are certain policies and policy enforcement missing to ensure charging points are provided at existing and new parking places and that they are used efficiently by the public.

Solutions

As the Borough grows, it is essential that policy measures are up-to-date to encourage the uptake of electric vehicles and ensure new developments include a sufficient provision of charging point infrastructure to meet both current and future demand.

As a result, Greenwich may need to review its parking policy and parking standards to ensure new developments provide enough charging points to meet expected future demand. The Council may wish to employ an electric vehicle charging infrastructure champion who oversees and coordinates applications for charging points.

The London Plan outlines the planning requirements for the quantum of electric vehicle charging points required in new developments. Central government is also working to mandate building regulations, with new homes and buildings required to install electric vehicle charge points from 2022. In addition, homes and buildings undergoing large scale renovation which have over ten parking spaces will also be required to install electric charging points.

The London Plan standards provide an indication of the number of passive and active spaces required at new developments, as shown in Table 8.

Table 8: London Parking Standards. Source: London Plan (2021)

Type of development	Active provision	Passive provision
Residential development	20% of all spaces Car clubs spaces should have charge points	Remaining 80% of spaces
Employment development	Appropriate provision for electric and low emission vehicles should be made. All operational parking should provide infrastructure, including rapid charging and active charging points for taxi spaces	Not specified
Retail development	Where car parking is provided, should be provision for rapid chargers	Not specified
Hotel and Leisure development	All operational parking should provide infrastructure, including rapid charging and active charging points for taxi spaces	Not specified

Parking policies should also include design principles of electric vehicle charging bays, in particular on-street electric vehicle parking bays. This should include guidance and design standards for installing lamppost or floor mounted charging points and their interaction with the footway. It should also include design standards for disabled electric bay provision.

Issues and Solutions

In addition, spaces will need to be regulated and enforced depending on localised parking demand and pressures and the length of stay at non-residential developments should be considered. Time restricted Traffic Regulation Orders (TROs) may be required to regulate and enforce electric vehicle charging bays, in particular if there is not an existing Residential Parking Zone (RPZ) in place. This would allow the Council to have some control on who uses the space, in this case only electric vehicles users, and length of stay. Additionally, at certain locations residential TROs could be implemented, in which only residents with a permit and an electric vehicle, or their visitors, could use a space. This will prevent non electric vehicles using spaces, and ensure local people are using the chargers.

Policy should also consider the role Council assets can play in providing electric vehicle charging infrastructure. This includes public car parks in addition to homes and estates which can be upgraded.

Hierarchy of users

Issue

The implementation of on-street electric vehicle charging points should not undermine the importance of creating healthy streets and working towards the Mayoral target to have 80% of trips undertaken by walking, cycling and public transport.

Further, certain user groups create more greenhouse gas emissions and pollution than others. It is therefore key that high-mileage users are encouraged to be electrified first, with solutions provided for them that meet their specific needs.

Solutions

The strategy needs to focus on the needs of key user groups who are identified as those who make high-mileage trips to perform an essential role, such as taxis and private hire vehicles, and commercial vehicles. It is acknowledged that not everyone will be able to adopt sustainable modes for all journeys, therefore it is still important that everyone has appropriate access to electric vehicle charging points.

Taxis and Private Hire Vehicles

London has outlined ambitions to have a zero-emission taxi and private hire vehicle fleet. These vehicles have a higher mileage than private vehicles as a result they emit more pollution. The higher mileage also means that they will require more regular charging. As a result, it is important to understand the travel patterns of these vehicles in the Borough, including key routes used, popular drop and pick up locations and where taxi and private vehicle hire drivers live to identify suitable locations for charging infrastructure. This is likely to be in the form of rapid chargers due to time constraints and the need to recharge during the day. Slow-to-fast charging points could be located near taxi and private vehicle hire drivers' homes or at taxi depots to facilitate overnight charging. There may be a need to dedicate charging bays for taxi and private vehicles in certain locations and enforce this during periods of the day.

Light Goods Vehicles

Freight vehicles will also require regular charging, likely to be overnight, due to their high mileage. Councils should support the electrifications of commercial fleet vehicles and work with delivery companies to support the transition to an electric fleet.

Car Clubs

Car clubs are often located in new developments, particularly in areas with limited car parking. Electric vehicle charging infrastructure should be encouraged in these locations to support the electrification of car club vehicles. Therefore, Councils should work with developers and car club operators to deliver optimal solutions.

Emergency Service and Public Sector Fleet Vehicles

The Council should work with emergency services and public fleets in the Borough to support the transition to electric vehicles. This includes delivering dedicated charging points, including a combination of slow-to-fast overnight chargers and rapid charging points.

RBG's Council Fleet

Greenwich itself currently operates a large fleet of mainly petrol and diesel vehicles.

To incentivise behaviour change Councils should be leading by example and electrify their own fleet vehicles. In RBG a review of the existing fleet operation is currently being undertaken, with recommendations being prepared to ready the fleet and its depot for net zero operations from 2030.

Accessibility

Issue

Electric vehicle charging is often not fully accessible both physically (charging leads being heaving, kerbs and cable proving to be trip hazards) and in terms of their ease of payment (lack of ubiquitous contactless payment).

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Issues and Solutions

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Issue

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Solutions

Currently, over 14 million people in the UK have disabilities. A survey undertaken by Urban Foresight indicated that 61% of disabled people would consider buying an electric vehicle, but only if charging was made more accessible. Key consideration must be given to ensuring appropriate design standards are applied, including the amount of space around the car and charger, minimising the potential trip hazards, and plugging in the cable. The Council should work with landowners to develop accessible charging hubs and support the design of more accessible electric vehicle chargers.

Consideration should also be given to drivers and pedestrian safety. This includes placing charging points in appropriate locations on the carriageway so to not negatively impact the pedestrian environment. Additionally, charging point locations should be located in safe, secure and well-lit locations.

Contactless payment options should also be mandated on all publicly accessible electric vehicle charging points, aligned to ambitions outlined by TfL. In addition, a clear pricing structure and consistent payment platforms and schemes would be beneficial.

Alternative Fuels

Issue

There are alternative fuels that might be relevant solutions in the future for certain use cases. Focus on these alternatives might take attention away from existing technologies and implementation needs.

Solutions

Hydrogen is seen as a future source of energy for vehicles in the bid to decarbonise transport. Fuel Cell Electric Vehicles (FCEVs), powered by pressurised hydrogen, could have the ability to run for longer distances than Battery Electric Vehicles (BEVs) and to be charged quicker. Currently, the technology is not advanced enough to fully understand how it interacts with and impacts electric vehicle charging. In the future, hydrogen could offer a viable alternative to the electrification of certain vehicles, therefore Councils may wish to consider sites for refuelling and battery storage alongside electric vehicle charging points. At this point in time however, provision of EV charging stations should take priority.

Employment Opportunities

Issue

The automobile industry has often cited that the shift from ICE vehicles to electric vehicles will reduce employment opportunities.

Solutions

The transition to electric vehicles will also present new employment opportunities. Installers and operators of EV charging points are in high demand and skills could be trained to workers in aligned sectors. Traditional car mechanics will have to retrain to be able to provide maintenance services to EVs. Businesses in general should be supported in the transition to electric vehicles, so their fleet managers are able to design and implement individual fleet transitions.

Public Communications

Issue

There are many misconceptions in the public relating to EVs. Research by The Behavioural Insights Team and Transport Research Laboratory highlights several behavioural barriers to adoption and use of electric vehicles by the public. These barriers include: a lack of awareness around the benefits of owning an electric vehicle, lack of awareness of costs of purchase and maintenance, and lack of knowledge about benefits and disbenefits of electric vehicle usage. To reach net zero targets, it will be crucial to change public attitudes towards these vehicles and speed up adoption.

Solutions

Policy and practice interventions that could support the transition include communication campaigns in which individuals are provided with reliable, accurate and informed information through the Council's website and social media campaigns. In addition, engagement could be undertaken with local businesses, residents and interest groups targeting specific user groups, for instance private hire vehicle drivers. Local authorities are an important actor for supporting their communities to transition, and therefore could support adoption through various means, including facilitating demonstration events to familiarise individuals with electric vehicles, hosting education and information sharing seminars and workshops with key groups, and actively measuring and understanding the attitudes and perceptions of local residents towards EVs.

Initial data from research with citizens who are part of the DG Cities Research community highlights several challenges that local authorities will need to overcome:

- 51.1% do not know where the nearest EV charge point is to their place of residence.

- 43.0% think improving range is the most important barrier to overcome to help them adopt EVs, followed by Improving government purchasing grants (20.3%) and installing more charge points (16.3%).

Many barriers will be specific to local contexts, therefore local authorities will need to develop insights about community demand, incentives and barriers regarding EV adoption.

Implementation

ROYAL borough of GREENWICH

Implementation

To create a high-quality and accessible electric vehicle charging network in Royal Greenwich, a number of objectives have been identified. Each objective includes a number of policies and actions which the Council should look to implement, aiming to address the specific challenges and opportunities relating to electric vehicles. Many of the policies and actions outlined cannot be delivered by Greenwich alone, and will therefore require the Council to work with other agencies.

Action A: The Council will be an overarching facilitator to ensure EV transition in the Borough happens in a coordinated and optimised manner.

A successful EV transition in Greenwich will have to be underpinned by a proactive Council that owns the overall strategy in the Borough and ensures that all stakeholders work collaboratively towards a rapid and equitable EV transition.

The key steps to achieve this objective are:

- Develop a knowledge base of where chargepoints are currently located and how they meet the existing and future demand.

- Develop a working understanding of where there is available current and future grid capacity. This will be done in close collaboration with the DNOs supporting Greenwich.

- Develop an understanding of where land assets in the Borough, from any stakeholder, are feasible to be used for EVCP instals, especially to supporting rapid charging hubs. This will be done in conjunction with other stakeholders like TfL, GLA and its companies.

- Provide proactive advice to all stakeholders looking to transition to EVs in the Borough or install charging point related infrastructure, by optimising the demand, grid capacity and land asset variables.

The above steps should be applied holistically across the full EV transition to allow the Council to ensure charging point infrastructure in the Borough is future-proofed.

Due to the high degree of uncertainty that still exists around electric vehicles, the Council will regularly monitor and evaluate the uptake of electric vehicles and take account of any changes in behaviour or trends.

- The Council will periodically review the number of electric vehicles and on-street charging points to ensure that the demand for charging points is met.

- The Council will monitor the utilisation of charging points in the Borough to ensure the location of the charging points and type of chargers installed remains suitable.

- The Council will update the electric vehicle forecasts every two to three years, aligned with TfL's monitoring, to reflect changing behaviours and trends.

Action B: The Council will focus on ensuring that transport based emissions are minimised.

To achieve the net zero targets that create the overall requirements for this strategy, the Council will have to continue reducing private vehicle trips and achieve 80% of trips by walking, cycling or public transport in 2041. All trips that still need to happen should use zero emission vehicles, where EVs are the right alternative at the moment. To achieve this, the Council will have to focus on meeting the demands of key user groups.

Key user groups are the ones who make high-mileage trips to perform an essential role, such as taxi and private hire vehicles and commercial vehicles, which will maximise the emissions saved across the Borough.

Table 9: Key user groups

Taxis and private hire	• The Council will develop an understanding of where taxi and private hire fleets would require charging in the Borough. • The Council will work with partners to provide rapid charging points in on- and off-street locations for taxis, including near taxi ranks and areas with a high number of resident taxi or private hire vehicle drivers • The Council will look to provide slow-to-fast charging points at locations in which a high number of taxi or private hire vehicle drivers reside as a priority
Freight and servicing	• The Council will survey fleets based in the Borough to understand their EV transition roadmap and requirements • The Council will work closely with fleets in the Borough to provide them with advice on how to transition to EVs. By working closely with fleets, the Council will look to facilitate chargepoint sharing agreements to ensure chargepoint use is maximised. • The Council will ensure dedicated charging points are installed across the Borough for fleet vehicles. These will have to be located at key en-route locations, therefore coordination with TfL and other agencies will be required. • The Council will build an active understanding of DNO upgrades across the Borough and leverage its holistic position to maximise the effectiveness of each upgrade. Where a grid upgrade happens, the Council will reach out to nearby businesses to gauge their interest in also using the new grid network assets or whether co-investing could be more economical for all parties.
Car Clubs	• The Council will work with car club operators to support the transition to electric vehicles by allocating dedicated bays with EVCP provision (passive or active) • The Council will work with developers to install electric vehicle charging points in dedicated car club bays

The Council will also continue to carry out actions from its Local Transport Implementation Plan to encourage active travel and public transport used across the Borough.

Implementation

Action C: The Council will either build or facilitate the building of a broad and equitable public charging network

Both for the key user groups as well as private vehicle users, the availability of a widely public charging network will be essential. To facilitate this, the Council should consider implementing different types of chargers across the Borough as outlined in Table 10. For the chargepoint rollout, the vision is to bring in private sector investment to ensure the public funding limitations are not slowing down the rollout. The Council should look at unlocking its own assets and funding to fill any gaps in the privately provisioned charging network. A more in depth discussion about funding options and delivery routes is outlined in the next chapter of this report.

Table 10: Key locations

Residential charging	Home charging • The Council will inform residents with available off-street parking on the benefits of home charging, create a list of trusted suppliers and installers and outline the potential pros and cons of variable electricity tariffs. • The Council will provide information to residents with off-street charging on how home energy improvements can further enable EV transition to be financially beneficial. On-street charging • The Council will develop an understanding of areas where off-street parking is not available and what type of charging demand exists • The Council will work with the private sector to provide a combination of charging types to meet the needs of local resident • The Council will continue to apply for government grants that can facilitate the installation of on-street charging points • The Council will look to understand current and future demand on its own housing estates and look to provide the appropriate level of charging infrastructure.
Destination charging	• The Council will work with businesses to provide public charge points at workplaces for those who need to charge during the day • The Council will work with businesses to install charging points in private car parks for customers, including at supermarkets etc • The Council will consider incentives for businesses who install charging infrastructure • The Council will install charging points on destinations it managed like Council offices and public car parks • The Council will ensure charging points are located in visible, safe locations with high footfall
On route charging	• The Council will work with partners and support opportunities to provide charging points on key corridors into Greenwich • The Council will work in partnership with TfL to deliver rapid charging points at suitable locations • The Council will identify suitable locations for rapid chargers, including town centres and on strategic routes such as A-roads • The Council will review its land assets to identify if any can support charging hubs • The Council will consider safeguarding land for the future installation of rapid charging points.

For all the above, the Council will focus on unlocking private sector funding. Public funding will be prioritised in less commercially viable locations to ensure an equitable distribution of charging points across the Borough.

Action D: The Council will review policy and regulatory measures in the Borough to encourage the use of electric vehicles and provision of accessible charging infrastructure

As the Borough grows, it is essential that policy measures are up-to-date to encourage and facilitate the uptake of electric vehicles. It is also important that all users are able to charge their vehicles.

- The Council will keep parking provision and parking standards in the Borough under review to manage the future demand for electric vehicle charging.

- The Council will keep reviewing its parking design standards for electric vehicle charging bays as technology develops.

- The Council will undertake regular reviews of parking operations and control measures to ensure that any new parking controls are provided in areas where they are needed, in particular on-street charging bays, and that existing parking controls remain appropriate.

- The Council will develop processes and procedures that allow for rapid review and approval of EV charging point instal applications in the Borough

- The Council will enforce that new developments incorporate the mandated electric vehicle charging facilities within their developments.

- The Council will consider creating a single point of contact within the Council to oversee the installation of public charging points and coordination with DNOs

It is essential that electric vehicle charging points are accessible to all users and appropriate design standards are adhered to. The location of charging points should be safe and secure and not negatively affect other road users.

- The Council supports the development of accessible charging hubs and will work with partners to ensure that charging points are inclusive and fully accessible for disabled users.

- The Council will work with partner agencies to ensure charging points are located in secure, well-lit locations for users to enhance user safety.

Implementation

● The Council will work with partners to ensure that the location of charging point infrastructure does not impede pedestrian movement. In the first instance, the Council will encourage the installation of charging points within the existing highway rather than footway to ensure suitable footway widths are maintained to encourage pedestrian movement. Where this is not feasible, the Council will ensure charging points are designed in a way which does not create hazards for pedestrians and considers safety and accessibility.

● The Council will work with partners to ensure all charging points adopt contactless payment methods

Action E: The Council will lead by example and encourage EV uptake

To incentivise behaviour change, the Council will lead by example in the transition to electric vehicles and encourage the transition to electric vehicles amongst residents and businesses in the Borough .

● The Council will transition its own fleet to fully electric by 2030 and showcase this to residents

● The Council will ensure its own facilities have charging points and will promote successes

The Council has a role to encourage the transition to electric vehicles and raise awareness of the benefits of owning electric vehicles and address any concerns users may have. Building on the successes of its own EV transition, the Council can be a trusted voice and encourage residents in the Borough to transition.

● The Council will look to engage with residents and business owners to understand attitudes and perceptions of electric vehicles and provide prospective users with reliable information about electric vehicles.

● The Council will promote the benefits of shifting to electric vehicles to residents, businesses and visitors.

● The Council will engage with businesses in the Borough to encourage the installation of workplace charging points.

● The Council will consider undertaking trials to raise public awareness of electric vehicles and promote their benefits.

● The Council will consider emerging technologies and ensure appropriate solutions are adopted in the Borough as the market evolves.

Funding and Delivery Routes

ROYAL borough of GREENWICH

Funding and Delivery Routes

To successfully deliver the actions and policies that form part of the strategy, access to adequate funding will be required. Without sufficient funding, the full aspirations of the strategy will be restricted, which will in turn hinder the Borough's efforts to become carbon neutral and achieve net zero.

Historically, electric vehicle charging infrastructure has been supported by capital grants made available to local authorities from central government. However, the level of public funding available to local authorities is expected to reduce and it alone will not be sufficient to meet the electric vehicle charging infrastructure needs in the Borough. As a result, an increase in private sector funding is required to help Councils meet the demand for charging infrastructure, which has both advantages and disadvantages. In order for the level of private sector funding to increase, an uptake in electric vehicles is required for charging points to be seen as commercially attractive and viable. A successful delivery model must ensure the owner of the charge point makes a return on their investment, in addition to providing value to end users.

There are a variety of business models and funding options available to the Council in procuring electric vehicle charge points. This section provides an overview of types of funding and delivery models that are available to Greenwich.

Local Authority Network Ownership

In this delivery model, the Council retains full ownership of electric vehicle charging points in the Borough. Often called 'own and operate', in this approach the contracting local authority publishes a tender in which suppliers submit an offer to provide and install charging point infrastructure and manage the network for an agreed period of time. The local authority provides the capital costs and following procurement, owns the charging infrastructure. The Council therefore receives the revenue from the charging infrastructure and can either pay the supplier a fee for the operation and maintenance of charging points or undertake this duty themselves.

Under this delivery model, the commercial risk lies with the local authority. As a result, this model is often utilised when grant funding is available to local authorities to cover the initial capital costs. The key benefit of this approach is that the Council is able to make decisions regarding the location of charging infrastructure in the Borough, helping to ensure an equitable distribution for residents, as opposed to locations chosen due to commercial viability as is often the case under private investment. The Council is also able to determine the charging tariffs under this delivery model.

Table 11: Own and Operate delivery model summary

Advantages	Disadvantages
The local authority retains full ownership of the charging network and receives revenue	There are limited grants available from central government and local authorities themselves may also have limited funds available
The local authority can determine the location of charging points in the Borough which helps ensure an equitable distribution of charging infrastructure for residents and businesses	Political, commercial and reputational risks. The use of public funds comes with accountability to the taxpayer whilst unexpected costs and an unreliable network increases the reputational risk
Easier, simpler and quicker procurement route which is already known to local authorities and will enable the charging network to develop faster	Local authorities may be required to cover operation, maintenance and upgrade costs which may be difficult whilst revenues are initially low
Flexibility when setting charging fares and ability to set preferential rates for different user groups	Charging infrastructure may become low value or redundant as technology develops in a rapidly developing market
Procurement frameworks are available to streamline the process and ensure confidence in suppliers	It may be more difficult to enforce missed Key Performance Indicators (KPIs) or Service Level Agreements (SLA)

Similar to the own and operate model, local authorities can adopt a leasing model in which some level of risk is transferred to the operator. In this model, the Council would lease the charging infrastructure and associated software from a charge point operator for an agreed fee over a set period of time. This reduces the level of initial capital costs required from the local authority compared to the 'own and operate' model and reduces the Council's responsibility for maintaining the infrastructure, although if the charging infrastructure is damaged during the leasing period the local authority would be accountable.

Table 12: Leasing delivery model summary

Advantages	Disadvantages
The local authority receives revenue from the charging points	The local authority does not own the charging infrastructure and returns the infrastructure at the end of the lease period
The local authority retains the ability to choose the locations of charging point locations to ensure an equitable charging network is delivered	There is a commercial risk to the local authority if network utilisation is lower than expected
Lower capital costs compared to the own and operate delivery model	The lifetime cost of the charging infrastructure is higher due to ongoing leasing costs which may fluctuate over time
If the charging infrastructure becomes redundant it can be removed from the network	The local authority is accountable for any damage to the charging infrastructure during the lease period
The cost of repairs to the charging infrastructure, due to faults, is included	

Funding and Delivery Routes

Private Sector Funding

As the uptake of electric vehicles increases and the demand for public charge points grows, the commercial attractiveness of providing charging infrastructure will also increase. As a result, the Council will have more options available when procuring charge points with differing levels of private sector involvement available. A benefit of private sector involvement for local authorities is the support to overcome capital constraints, in particular as government grants reduce.

For operators to invest in the charging network, they must be able to generate a return on their initial investment. As a result, slow-to-fast charging points have a high commercial risk due to their low utilisation and initial capital costs, whereas rapid chargers in prime locations with a high turnover, such as town centres, are more attractive and generate higher levels of profit. As such, under this delivery model alone it is hard to ensure an equitable distribution of charging points across the Borough.

Match Funding

In this delivery model, charge point operators match-fund the cost of public charging points, often alongside money provided to local authorities by government grants such as the Electric Vehicle Homecharge Scheme (EVHS). This can be agreed under a concession agreement, in which the operator takes ownership of the infrastructure and operational and maintenance costs. This approach allows greater flexibility in determining the locations of public charging points in areas with less commercial viability compared to fully funded private sector infrastructure, however there is less control than the own and operate and leasing models.

Table 13: Match funding summary

Advantages	Disadvantages
The local authority has to provide less capital investment	The local authority receives less revenue from the charge point infrastructure compared to full ownership
The local authority retains some control to determine the locations of charging point locations, depending on the level of capital investment provided	The local authority has less control to determine the locations of charging point locations compared to the own and operate and leasing delivery models
	An agreement will be needed as to who is responsible for maintenance and upgrade costs.

Fully Funded Concessionary Model

Under this delivery model, a concessionary agreement is agreed between the Council and operator, in which the charge point operator instals charging equipment on Council owned land or the public highway at no cost to the local authority. The role of the Council under this model is as a facilitator as opposed to being actively involved in the delivery and operation of the charging network.

As a result, this model reduces the level of risk to the local authority, which is transferred to the charge point operator. The Council receives a fee from the charge point operator for the use of their land regardless of whether the charging point infrastructure is heavily utilised or not. Consequently, charge point operators are likely to only install chargers in locations with an expected high demand to ensure they make a return on their investment and receive ongoing profit. This model is therefore often market-led and may be currently suited to the delivery of rapid charging points which are currently seen as more commercially attractive. The challenge under this model is ensuring charging points are installed in areas with low demand.

The profit share between the Council and charge point operator and length of the contract will also need to be set within the agreement. They are typically long-term agreements to enable charge point operators to maximise their profitability and ensure a return on their investment. Under the agreement, the operator owns infrastructure and has control over the location of charging points, the type of charging points installed and the associated fares. They also have more incentive to maintain the charging network, as opposed to the own and operate and leasing models, and adapt to technological changes as this directly impacts their profit.

Table 14: Concession framework summary

Advantages	Disadvantages
The local authority does not have to pay any capital costs	Less income for the Council than maintaining full or partial ownership of the charging network
Some income is shared with the local authority by the concessionaire	Newer procurement model which may take longer to agree and delay the development of the charging network
Charge point operators are incentivised to maintain the network producing a better service for end users	The charging network will be dependent on utilisation at the onset which may delay the roll out of infrastructure to begin with
There is a reduced risk for local authorities in terms of maintenance and ensuring that revenue covers the ongoing maintenance and operational costs	Some charge point operators may not agree to a concession model which reduces the choice of suppliers
The Council may maintain ownership of the charging infrastructure, or the connections to the grid network, depending on the agreement	More focus on delivering infrastructure in profitable locations may hinder attempts to create an equitable network
The charge point operator may be responsible for updating the network as technology develops and future proofing the network, depending on the agreement	Long term contracts

Funding and Delivery Routes

Central Government Grants

A summary of the types of Government grants that are either on-going, or will be available soon, is provided below broken down by the funding government organisation.

Government grants regularly evolve to meet government objectives, therefore there is limited forward visibility on the main sources of grant funding that will be available. There are also challenges in securing government grants, which frequently form part of a competitive bidding process which creates uncertainty and irregularity in funding opportunities.

Grants do not constitute any debt to local authorities and are often capital investment for specific infrastructure projects. Specific criteria can be outlined in the bid process which must be adhered to, such as timescales, and some grants may require match-funding, often from the private sector.

Office for Zero Emission Vehicles

The Electric Vehicle Homecharge Scheme (EVHS) provides grant funding of up to 75% towards the cost of installing electric vehicle smart charge points at domestic properties across the UK. From April 2022, the EVHS is no longer available to homeowners who live in single-unit properties, such as bungalows and detached, semi-detached or terraced housing. The scheme will remain open to homeowners who live in flats and people in rental accommodation.

The Workplace Charging Scheme (WCS) is a voucher-based scheme that provides support towards the up-front costs of the purchase and installation of electric vehicle charge-points, for eligible businesses, charities and public sector organisations.

The On-Street Residential Chargepoint Scheme (ORCS) provides grant funding for local authorities towards the cost of installing on-street residential charge points for plug-in electric vehicles. The scheme intends to increase the availability of on-street charge points in residential streets where off-street parking is not available, ensuring that on-street parking is not a barrier to realising the benefits of owning an electric vehicle. The scheme can be used to part-fund the procurement and installation of on-street electric vehicle charge point infrastructure to residential needs, in line with the minimum technical specifications.

The Rapid Charging Fund (RCF) is a £950m fund to future-proof electrical capacity at motorway and major A road service areas to prepare the network for 100% zero emissions vehicles (ZEV) uptake. The fund is not yet open to applications.

Department for Environment, Food and Rural Affairs (Defra)

Defra's air quality grant scheme provides funding to eligible local authorities to help improve local air quality and to meet their statutory duties under the Environment Act 1995. Since its inception in 1997, nearly £70m has been funded over a variety of projects.

Regional Funding

TfL would like to see a national successor funding scheme to support the roll out of on-street and rapid chargers, which London could bid for, to build on the success of the Go Ultra Low City Scheme (GULCS) and the On-Street Residential Charge Point Scheme (ORCS).

The GULCS bid awarded £13m in capital funding to drive the uptake of ultra-low emission vehicles in the period 2015/16 - 2019/20. The joint scheme between TfL, GLA and Boroughs installed more than 4,000 on-street electric charge points for residents. LoCITY is an industry-led programme to help the freight and fleet sector lead the way in improving air quality and reducing carbon emissions.

Private Sector Contributions

There are existing mechanisms for securing private sector contributions to deliver improvements to transport provision. Private sector developments are assessed on a case-by-case basis and can generate additional transport trips, in which case transport mitigation is required.

Developer Contributions

Through the planning process and the Town and Country Planning Act 1990, Local Planning Authorities can develop agreements (S106) with landowners / developers to pay contributions towards infrastructure if deemed as necessary for a development to gain planning approval.

Developer contributions from some of the major developments expected in the Boroughs opportunity areas may provide significant funding for improvements to support the roll out of electric vehicle charging infrastructure. For instance, contributions could form part of the cost of on-street charging points in areas with limited off-street parking.

Community Infrastructure Levy

The Community Infrastructure Levy allows local authorities in England and Wales to raise funds from developers undertaking new building projects in their area. The money collected can be used to fund infrastructure that is needed as a result of development, including transport provision.

Monitoring and Evaluation

ROYAL borough of GREENWICH

Monitoring and Evaluation

Why is monitoring important?

The Council has a responsibility to support the transport network in the Borough to help the movement of residents, workers and visitors. On-going monitoring of the progress of the strategy will enable the constant review and refinement of the objectives, aims, policies and measures. It will also provide an evidence base which is important to demonstrate to Council members, funding agencies and the public to make informed decisions and illustrate the direction of travel for the Borough. It will highlight successful policies and demonstrate where further intervention is required to meet the aims of the strategy.

Monitoring Approach

At a strategic level, the approach to monitoring will focus on key indicators that reflect the aims and objectives of the strategy. There are already a range of monitoring activities that are undertaken by organisations such as DfT that can be utilised by the Council in the monitoring process.

There are many uncertainties that can influence the uptake of electric vehicles in the Borough. As a result, no targets have been set in this strategy and the electric vehicle uptake and level of charging infrastructure forecasted for the Borough should be used as a guide. The Council should regularly monitor and review the uptake of electric vehicles in the Borough and subsequent demand for charging points to reflect changing behaviours and user trends. This will ensure the objectives and measures identified within this strategy remain relevant to the changing context.

It is important to establish baseline metrics for each of the objectives to establish a reference case against which to monitor change. Progress should be regularly reported over the lifespan of the strategy to enable an understanding of the overall success of the strategy. The table below outlines the planned outcomes associated with each objective and identifies a series of indicators that could be utilised to monitor change. They should be refined and reviewed as part of the monitoring process.

Table 15: Monitoring of the strategy objectives

Actions	Planned Outcome	Indicators
A: The Council will be an overarching facilitator to ensure EV transition in the Borough happens in a coordinated and optimised manner.	The charging network in the Borough is efficient and is developed in a timely manner.	• Number of upgrades required is minimised • Number of charging points delivered • Utilisation of charging points
B: The Council will focus on ensuring that transport based emissions are minimised.	The uptake of electric vehicles is predominantly by key user groups in the Borough and does not undermine the modal shift to walking, cycling and public transport	• Mode share for walking, cycling and public transport • Number of rapid charging points dedicated to key user groups, including taxis and private hire vehicles, fleet vehicles • Number of charging points near home locations of taxi and private hire vehicle drivers • Location of fleet depots • Number of car club bays with charging points
C: The Council will either build or facilitate the building of a broad and equitable public charging network	An equitable charging network that is accessible for all residents in the Borough	• Proportion of on-street charging points on the highway and on the pavement • Proportion of charging points in low-income neighbourhoods • Number and location of charging points delivered by the public sector • Number and location of charging points derived by the private sector • Successful bids for government grants
D: The Council will review policy and regulatory measures in the Borough to encourage the use of electric vehicles and provision of accessible charging infrastructure	A charging network which is accessible for all user groups and does not inhibit pedestrian movement. Charging point applications are reviewed at pace and regulations are enforced.	• Proportion of accessible charging points • Proportion of charging points offering contactless payment • Quantum of electric vehicle parking spaces in standards for land uses • Number of traffic regulation orders for electric vehicle bays • Number of electric vehicle charging points provided in new developments
E: The Council will lead by example and encourage EV uptake	The Council's fleet is fully electrified. A successful communications campaign which encourages behaviour change and the transition to electric vehicles	• Proportion of Council fleet that is electric • Number of residents and businesses engaged • Number of engagement events • Number of trials to increase public awareness • Number of registered electric vehicles • Number of vehicles registered • Utilisation of charging points

Policy Framework Action Plan

ROYAL borough of GREENWICH

Policy Framework Action Plan

EV Infrastructure Options

The Royal Borough of Greenwich has several options when it comes to approaching the electric vehicle infrastructure deployment across the Borough. RBG can either be:

• A controlling Council

• A proactive Council

• A passive Council

A Controlling Council

The Royal Borough of Greenwich can take control of the majority of electric vehicle infrastructure deployment across the Royal Borough which would include commissioning and paying for assets, as well as potentially creating a revenue stream from their use. This type of approach would require large amounts of capital investment as well as increased capability, internal resource and capacity within the transportation teams.

A Proactive Council

The Royal Borough of Greenwich can encourage the private sector to roll out electric vehicle infrastructure throughout the Borough, whilst filling in the gaps using its own resources. This approach will have the benefits of drawing on private capital and resources but also ensuring equitable EV distribution across the Borough. This approach will still require a level of capital investment from the Council and some capacity building within the relevant teams.

A Passive Council

An alternative approach the Council can take is to take a step back and allow the market to deploy electric vehicle infrastructure. This approach would allow the Council to use and allocate their resources elsewhere, however this would likely mean that certain areas in the Borough will lack charging infrastructure which would ultimately lead to slowing the overall electric vehicle adoption in the Borough.

Recommendation

It is recommended that The Royal Borough of Greenwich take a proactive approach to roll out electric vehicle infrastructure throughout the Borough, allowing and encouraging the private sector to take the lead, whilst identifying and filling in the gaps where necessary.

Policy Framework Action Plan

Action A: The Council will be an overarching facilitator in ensuring electric vehicle transition in the Borough happens in a coordinated and optimised manner.

This section identifies the targets and associated actions that will allow the Council to be an overarching facilitator in ensuring EV transition in the Borough happens in a coordinated and optimised manner.

Having A Proactive Approach To Charge Point Installations

The Council will act as a facilitator and take a proactive approach to the installation of charge points. With this approach, the Council will allow the private sector to take the lead with rolling out charging infrastructure, whilst having a strong strategic oversight, providing encouragement and assistance when it is necessary. The Council will undertake discussions with interested members of the private sector to encourage and assist the roll out of charge points. The Council will facilitate an affordable and reliable public charging network in partnership with private sector partners.

To assist with a proactive approach, the Council is producing for adoption an Electric Vehicle Infrastructure Strategy. The strategy sets out the framework for implementing charging infrastructure in the Borough. It outlines how the Borough can meet the anticipated demand, providing an extensive charging network which builds on the Borough's existing public charging points.

The Council is also creating this document - an Electric Vehicle Action Plan to be read in conjunction with the strategy. The Action Plan sets out a clear set of aligned actions to be undertaken in the coming years that deliver against each objective identified in the Electric Vehicle Infrastructure Strategy. The Council will establish an individual or small team to oversee this work as these two documents both need to be monitored and updated over time.

Having A Clear Understanding Of Asset Locations, Needs And Future Rollout Requirements

Early in the process the Council will identify and evaluate the key locations where charge points will be most valuable across the Borough, to allow for quick and easy deployment of new infrastructure. However, it is vital that the Council will also identify areas that are likely to be left behind when installing charge points. This will allow the Council to be proactive and ensure that there is a fair deployment across the Borough.

The Council will prioritise charging provision for exiting restricted parking bays such as disabled, taxi and car club bays which address community benefit. This ensures that those parking in restricted bays will also have access to charging infrastructure without the need to park elsewhere.

Coordinating Infrastructure Investment With Blue Light Services, Fleet Operators And Businesses In The Borough

To ensure infrastructure is deployed in an optimised manner across the Borough, the Council will coordinate investment with blue light services, fleet operators and businesses and set up a working group of key stakeholders. The Council will engage with these stakeholders to discuss their needs to enable a smoother transition to electric vehicles. Fleets such as blue light services require special consideration due to the nature of their work, and the electrification of their fleet without adequate infrastructure would cause serious issues. These discussions will allow the Council to be aware of what these large fleets and businesses require and when they are planning to transition their fleet to electric. The Council would then be able to share this information with key stakeholders such as UK Power Networks and charge point operators.

The Council will also coordinate infrastructure investment with businesses across the Borough. RBG will engage with businesses to discuss any concerns or opportunities regarding electric vehicle infrastructure and provide support and advice where necessary. Where there is opportunity to do so, businesses could be encouraged to invest in infrastructure collaboratively with other local businesses. They could plan between themselves when each fleet is scheduled to charge.

The Council will engage and coordinate with important stakeholders and provide full cooperation with public and private sector fleet operators.

Coordinating Infrastructure Investment With UK Power Networks

The Council will also engage with UK Power Networks to identify and discuss grid capacity across the Borough. In some areas, grid capacity may be limited meaning that electrical infrastructure may need upgrading before installing high-rated charging infrastructure. Discussions with UKPN may also identify areas within the Borough which have significant levels of excess grid capacity. This would help the Council to identify potential suitable locations for electric vehicle charging hubs, with the additional draw on the network fast charging requires. Electrical power upgrades are also relevant for the implementation of heat pumps across the Borough, which is another element that answers a cornerstone of net zero transition. The Council has to be an active player who coordinates across these sectors.

Actions

1: Develop a prioritisation matrix of key locations for EV charging

2: Work with providers and other stakeholders to develop our implementation approach further
3: Facilitate an affordable and reliable public charging network in partnership with private sector partners

4. Prioritise charging provision for established 'restricted' parking bays such disabled parking bays, car clubs and taxi bays
5: Cooperate with private and public sector fleet operators to optimise charge point infrastructure
6: Set up a working group of key stakeholders for electrification within the Borough
7: Proactive engagement and information sharing with relevant stakeholders/the public to enable a smoother transition to electric vehicles
8: Secure resources to undertake this work

Policy Framework Action Plan

Action B:

The Council will focus on ensuring that transport-based emissions are minimised.

This section identifies the targets and associated actions that will allow the Council to focus on ensuring that transport-based emissions are minimised through focusing on key user groups with high mileage first.

Focus On Supporting Key User Groups With High Mileage Footprints To Transition To Electric Vehicles

The Council will focus on supporting key user groups with high mileage such as taxis, fleets, car clubs and public transport vehicles to transition to electric vehicles. By supporting these key user groups with the transition, it helps to ensure that transport-based emissions are minimised as these vehicles have the highest mileage, and hence have the highest carbon emissions.

The Council will provide support to key user groups with high mileage by implementing or facilitating the implementation of charging infrastructure at key locations beneficial to these user groups. By providing charging points at convenient locations (overnight charging near drivers' homes and ultra-fast hubs at urban centres and traffic corridors), it will help encourage key users to shift to electric vehicles as it makes charging simpler and more accessible. As more high mileage users transition to electric vehicle, it will minimise the transport-based emissions produced.

The Council will also provide support for car dependent individuals. Some users are reliant on personal vehicles due to accessibility needs so it is essential to provide support to these users to assist their transition to electric vehicles. The Council will implement or facilitate the implementation of charging infrastructure at disabled bays across the Borough. This will ensure that those reliant on cars and park at restricted disabled parking bays will still have access to charging points. By providing charge points at these locations, it will help encourage car dependent users to make the switch to an electric vehicle as they can be confident there are charging facilities available to them. Furthermore, the Council will ensure that the charging infrastructure implemented is accessible for these users. The Council will work with infrastructure providers to promote Motobility's accessibility guidelines for charge points.

To support key user groups transition to electric, the Council will also deliver, or facilitate the delivery of, estate mobility hubs at five pilot sites across the Borough. A mobility hub brings together public, shared and active travel modes to one place. A mobility hub often contains a mix of transit shelters, shared micro mobility services, long and short-term secure bicycle parking, electric vehicle charging infrastructure and dedicated car share parking. Based on the success of the pilot sites this will be a mobility solution that can be rolled out across the Borough. These hubs will not only help to transition petrol/diesel vehicles to electric but also help to shift people away from private car use; an even better outcome when considering the travel behaviour objectives of both Greenwich and London.

The Council will work with the private sector to adopt an optimised approach when rolling out electric vehicle charging infrastructure to ensure Borough-wide coverage to help support key user groups in the transition to electric vehicles and reduce transport-based emissions. The Council will work alongside the private sector and encourage charge point operators to distribute charging infrastructure in key locations that would benefit high mileage users.

The Council will also work with the private sector to ensure the charging network is transparent, affordable, reliable and accessible. This step is extremely important in encouraging public buy-in and promoting the transition to electric vehicles.

Actions

9: Deliver estate mobility hubs on pilot sites

10: Work with the private sector to adopt an optimised approach when rolling out electric vehicle infrastructure to ensure Borough-wide coverage

11: Ensure the charging network's development is transparent and affordable, reliable and accessible

12: Provide support for fleet users and high mileage individuals

13 :Provide support for car dependent individuals

Policy Framework Action Plan

Action C:

The Council will either build or facilitate the building of a broad and equitable public charging network.

This section identifies the targets and associated actions that will allow the Council to build or help facilitate the building of a broad and equitable public charging network across the Borough.

Encouraging And Facilitating The Installation Of ~200 Charge Points Per Year Until The End Of The Decade.

The Council will facilitate the implementation of a minimum of 200 publicly available electric vehicle charge points per year until the end of the decade. The Council will work with charge point operators and through the planning process to expedite the roll out of charging infrastructure across the Borough. It is important to install at least 200 charge points each year to ensure the Borough is prepared for the transition to electric vehicles. By the end of the decade, the Borough should expect to see a significant rise of electric vehicles and the Council will ensure that there is a fit and appropriate charging network capable of supporting the Borough.

The Council will encourage and support charge point operators to install charge points across the Borough to provide a wide range of charging infrastructure to residents, businesses and fleet operators. The Council will consider, where appropriate, the commercialisation of Borough owned land as charging locations, as the lack of available land is an identified barrier to the implementation of electric vehicle infrastructure.

The Council will continue to support the development of rapid charging hubs in the Borough. Rapid charging hubs are an important element of charging infrastructure as they allow users to charge their vehicle quickly and efficiently and are particularly beneficial for high-mileage users. Rapid charging infrastructure allows more consumers (whose vehicles are able to accommodate faster charging) to access charge point, and with their much faster charge times act in a similar fashion to a petrol station.

Undertaking Proactive Engagement To Facilitate The Optimisation Of Borough Coverage In A Managed Way

The Council, working with partners and providers, will identify optimal locations to help support the development and installation of hubs across the Borough.

To ensure charging infrastructure is implemented in a broad and equitable manner; the Council will undertake proactive engagement with the various charge point operators to discuss their plans for installing chargers throughout the Borough, and ensure an overview of provision is managed.

Prior to discussions with charge point operators, the Council will identify and evaluate the key locations where charge points of different types will be most valuable. These key locations will be where the Council believe will be most beneficial to the Borough's residents and businesses. The Council will also identify locations within the Borough that have the potential of being 'left behind' in the implementation of charging infrastructure. These are potentially less commercially attractive locations which may be predicted to see lower utilisation rates if a charge point was installed. Charge point operators are less likely to install charge points in these locations however it is important to ensure the distribution of charge points is equal throughout the Borough.

During conversations with charge point operators, the Council will provide a list of locations of where local indicators show charge points need to be implemented. This will help ensure a broad and equitable charging network.

The Council will maintain an ongoing oversight of the charging infrastructure deployed across the Borough, ensuring that charge point operators are meeting their service level agreements. The Council will monitor the pricing, accessibility and safety of charge points across the Borough to ensure that the charging infrastructure is widely accessible to residents, businesses and fleets.

The Council will monitor the implementation of charge points within the Borough to ensure an equitable distribution of infrastructure, and if gaps begin to present themselves, the Council will focus on encouraging operators to invest in these areas or ultimately consider using its own resources to install or commission charging points. This is particularly relevant for areas such as Council-owned housing estates and car parks where the Council is the landlord. This will ensure an optimised coverage of infrastructure across the Borough. The Council will continue to identify available national and regional funding schemes for electric vehicle charging infrastructure such as the On-street Residential Charge Point Scheme and apply for funding when appropriate.

Actions

14: Identify and evaluate the key locations where charge points will be most valuable to inform negotiations with charge point operators

15: Facilitate the implementation of around 200 publicly available charge points per year for the next five years

16: Support the development of rapid charging hubs in the Borough

Policy Framework Action Plan

Action D:

The Council will review policy and regulatory measures in the Borough to encourage the use of electric vehicles and the provision of accessible charging infrastructure.

This section identifies the targets and associated actions that will allow the Council to utilise policy and regulatory measures to encourage the use of electric vehicles and the provision of accessible charging infrastructure in the Borough.

Providing A Clear And Simple Electric Vehicle Charge Point Approval Process

The Council will review policy and regulatory measures to provide a clear and simple approval process for implementing electric vehicle charging points. By ensuring this process is clear and simple, it will allow for faster deployment and ultimately an increased number of charging point applications. The Council will review and amend development conditions as required to support the delivery of electric vehicle infrastructure. EVCPs are required in conformity with the Mayor's Transport Plan in all new developments. This is to ensure that when a redevelopment or new development occurs within the Borough there is significant and adequate charging infrastructure provided. The Council will also, where appropriate, look to optimise public access to this new Infrastructure.

To ensure the charge point approval process is made clear and simple, the Council will review parking controls and Traffic Management Order (TMO) requirements and set out clear instruction on what is necessary to implement on-street charge points, therefore speeding up the process.

The Council will also review existing Section 106 agreements to identify any available funding which could be allocated to support the roll out of charging infrastructure. Under S106 of the Town and Country Planning Act 1990, contributions can be sought from developers towards the costs of providing certain community and social infrastructure locally, the need for which has arisen as a result of a new development taking place. The Council will also give consideration to the prioritisation of supporting EV Infrastructure as part of any new S106 agreements.

Enforcing Ongoing Provision As Part Of New Development Conditions

The Council will enforce ongoing charging provision as part of new development conditions. UK planning laws dictate that new developments must make provisions for electric vehicle charging. London planning laws require any developments or major refurbishments that require planning to provide the following:

Parking for	Percentage of bays with "active" charge point provision	Percentage of bays with "passive" charge point provision
Residential development	20%	20%
Retail development	10%	10%
Employment uses	20%	10%

The Council will ensure and enforce infrastructure is being put in place and maintained as part of new developments through its monitoring and inspection processes.

Providing Guidance On EVCP Deployment In Line With Streetscape And Accessibility Best Practice

The Council will provide guidance on electric vehicle charge point deployment to ensure infrastructure is implemented in line with the streetscape and follows accessibility best practice defined by Motability. It is important that consideration is given to street design principles when charging infrastructure is implemented in order to minimise street clutter and mitigate any negative impact on road users. For example when installing on-street charge points, a 'pedestrian clear zone' should be maintained to follow accessibility best practice.

Incentivising Council Employees To Switch To Electric Vehicles

The Council encourages Council employees to move to active and sustainable travel through schemes such as the Cycle to Work programme, many however, even if they don't use it for their work commute, still own a private car. RBG will encourage them to switch their personal vehicle to electric though various incentives and measures. As part of these measures, the Council will consider the implementation of an electric vehicle salary sacrifice scheme for its' employees. Like the Cycle to Work scheme this salary sacrifice option is a way to deliver a tax-efficient benefit to employees, at little or no cost to the Council. In this case, an electric vehicle salary sacrifice scheme allows an employee to pay for an electric car each month using their gross salary, before deductions are made for tax and other contributions. By implementing an incentive like this, the Council can encourage the switch to electric vehicle amongst its employees.

Actions

17: Review and amend development conditions as required to support electric vehicle infrastructure delivery

18: Review existing S106 conditions/funds to identify support funding

19: Review parking controls and TMO requirements to manage kerbside charging

20: Consider the implementation of an electric vehicle purchase salary sacrifice scheme for RBG staff

Policy Framework Action Plan

Action E:

The Council will lead by example with the transition of its own fleet and encourage EV uptake.

This section identifies the targets and associated actions that will allow the Council to lead by example with the transition of its own vehicle fleet and encourage the uptake of electric vehicles across the Borough.

Undertaking A Planned, Phased Transition Of The Borough Fleet To Electric Vehicles

In order to lead by example, the Council will follow plans to undertake a planned, phased transition of the Borough's vehicle fleet to electric. The Council will set out a roadmap for phased electrification of their own vehicles, with the end goal of operating a fully electric fleet. The Council will follow plans to evaluate their current fleet and each vehicles' estimated replacement year to identify when each vehicle can be transitioned to electric. Some vehicle types, such as refuse collection vehicles, do not have a wide array of electric alternatives, so will be transitioned towards the end of the phased process to allow more models to become available. Vehicles such as cars and vans already have a wide range of electric models available, so the Council will prioritise the electrification of these vehicles within their fleet.

To assist with the transition of the vehicle fleet to electric, the Council will follow plans to undertake and produce a depot electrification plan. In order to sustain and operate an electric fleet, the Council will be required to install electric vehicle charging points at the main depots where the vehicle fleet is based. It is important that the Council fleet has sufficient charging infrastructure available to ensure a smooth operation across Council services. As part of the depot electrification plan, the Council will evaluate the number and type of chargers required by analysing the current fleet and trip data. It will also be necessary for the Council to liaise with the distribution network operator to identify the available grid capacity at the depot, and also discuss potential costs for electrical upgrades at the site if required. For the number of chargers and amount of power required to sustain the Council fleet, it may be required to upgrade the electrical power supply to the depot. To enable plans to electrify the depot, funding will need to be allocated. This funding will also allow a wider remodelling of the Birchmere depot.

The Council will also evaluate the potential use of public charging infrastructure for a proportion of the vehicle fleet. Some vehicles within the fleet currently make longer stops at jobs during their shift, the Council will evaluate the feasibility of these vehicles charging at public charging infrastructure during these stops. This would shift some reliance away from the depot, reducing the number of chargers needed to be installed.

Furthermore, the Council will follow plans to undertake a home charging study for the vehicle fleet. Currently, there are approximately 109 vehicles within the Council fleet that have a home agreement. This allows the driver to take the vehicle home overnight. The Council will evaluate the potential charging options for these vehicles when they are transitioned to electric. If the vehicles have access to off-street parking, there will be the option of installing a home charger to charge the vehicle overnight. However, if there is no access to off-street parking, the Council will evaluate alternative charging solutions such as on-street public charging infrastructure, rapid public chargers, or depot charging.

Facilitating The Installation Of Chargepoints In Council Carparks

The Council will work with charge point operators to facilitate the installation of charge points in Council car parks across the Borough. This will assist with the electrification of the Council's vehicle fleet as there will be more infrastructure across the Borough available for fleet drivers to use during their shift.

The installation of charge points in Council owned car parks across the Borough will also help encourage the uptake of electric vehicles as residents will have access to more charging infrastructure.

Encouraging The Borough's Residents And Businesses Through Example

By transitioning the Council's vehicle fleet to electric, it will help set an example and encourage residents and businesses within the Borough to make the switch to an electric vehicle.

When residents and businesses start to observe the Council vehicle fleet transition to electric, it will help promote and encourage the use of electric vehicles across the Borough.

Actions

21: Set out a roadmap for phased electrification of Council vehicles

22: Undertake and produce a depot electrification plan

23: Undertake a home charging study for the vehicle fleet

Policy Framework Action Plan

#	Action	Timescales	Funding Source	Cost	Responsibility / Delivery Partner(s)
The Council will be an overarching facilitator in ensuring electric vehicle transition in the Borough happens in a coordinated and optimised manner					
1	Develop a prioritisation matrix of key locations for EV charging	Short Term	Internally Funded by RBG		RBG Transportation
2	Work with providers and other stakeholders to develop our implementation approach further	Short Term	Internally Funded by RBG		Inter-Departmental
3	Facilitate an affordable and reliable public charging network in partnership with private sector partners	Short, Medium and Long Term	RBG Staff Time	Nil Part of policy review and implementation	RBG Transportation as partnership managers/brokers
4	Prioritise charging provision for established 'restricted' parking bays such disabled parking bays, car clubs and taxi bays	Short – Medium Term	S106, grant and TfL funding	Phased annual delivery dependent on defining funding availability/prioritisation	RBG Transportation
5	Cooperate with private and public sector fleet operators to optimise charge point infrastructure	Long Term	RBG Staff Time	No capital cost	RBG Transportation as partnership managers
6	Set up a working group of key internal and external stakeholders for electrification within the Borough	Short – Medium Term	RBG Staff Time	No capital cost	RBG Transportation as facilitators

Policy Framework Action Plan

#	Action	Timescales	Funding Source	Cost	Responsibility / Delivery Partner(s)
7	Proactive engagement and information sharing with relevant stakeholders/the public to enable a smoother transition to electric vehicles	Long Term	RBG Staff Time	Dissemination budget TBC	RBG Sustainability
8	Recruit or allocate resources to undertake this work	Short Term	Internal/LIP/BSP/TfL funding	Dependent on reallocation of existing resources or agreeing additional capacity requirement	RBG Transportation
The Council will focus on ensuring that transport-based emissions are minimised.					
9	Deliver estate mobility hubs on pilot sites	Short/Medium Term	Internally Funded by Housing	TBC – currently awaiting approval process	RBG Housing
10	Work with the private sector to adopt an optimised approach when rolling out electric vehicle infrastructure to ensure Borough-wide coverage	Short/Medium/Long Term	RBG Staff Time and future funding sources	No capital costs	RBG Transportation
11	Ensure the local charging network's development is transparent and affordable, reliable and accessible	Short/Medium/Long Term	RBG Staff Time	No capital costs	RBG Transportation
12	Provide support for fleet users and high mileage individuals	Medium – Long Term	Potential use of S106 and future grant funding	TBC	RBG Transportation

Policy Framework Action Plan

#	Action	Timescales	Funding Source	Cost	Responsibility / Delivery Partner(s)
13	Provide support for car dependent individuals	Medium – Long Term	Potential use of planning conditions, S106 and future grant funding	TBC	RBG Transportation and Planning
The Council will either build or facilitate the building of a broad and equitable public charging network.					
14	Identify and evaluate the key locations where charge points will be most valuable to inform negotiations with charge point operators	Short – Medium Term	RBG Staff Time/LIP/BSP funding	No capital costs	RBG Transportation
15	Facilitate the implementation of around 200 publicly available charge points per year for the next five years	Long Term	RBG Staff Time /future grant funding/planning condition/Private Sector	Capital costs to be met by 3rd party funding	RBG Transportation and Planning
16	Support the development of rapid charging hubs in the Borough	Long Term	RBG Staff Time / Private Sector	Nil capital cost – policy review	RBG Transportation and Planning
The Council will review policy and regulatory measures in the Borough to encourage the use of electric vehicles and the provision of accessible charging infrastructure.					
17	Review and amend development conditions as required to support electric vehicle infrastructure delivery	Medium – Long Term	RBG Staff Time	Part of policy review process	RBG Transportation and Planning

Policy Framework Action Plan

#	Action	Timescales	Funding Source	Cost	Responsibility / Delivery Partner(s)
18	Review existing S106 conditions/funds to identify support funding	Short – Medium Term	RBG Staff Time	Part of policy review process	RBG DRES and Transportation
19	Review parking controls and TMO requirements to manage kerbside charging	Short – Medium Term	RBG Staff Time	Part of policy review process/modernisation	RBG Transportation
20	Consider the implementation of an electric vehicle purchase salary sacrifice scheme for RBG staff	Short – Medium Term	Recouped through salary based repayments	Zero cost to RBG	RBG Inter-Departmental/Human Resources
The Council will lead by example with the transition of its own fleet and encourage EV uptake.					
21	Set out a roadmap for phased electrification of Council vehicles and commence transition	Short Term/Medium/Long term	RBG Fleet Replacement Programme	TBA	Fleet & Waste Services
22	Undertake and produce a depot electrification plan	Short Term	Internally Funded by RBG		Fleet & Waste Services
23	Undertake a home charging study for the vehicle fleet	Short Term	Internally Funded by RBG		Fleet & Waste Services