

Harrow Electric Vehicle (EV) Strategy 2038



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Glossary

Acronyms	Description
BEV	Battery Electric Vehicle (BEV) is a pure electric and only use chemical energy in rechargeable battery packs, with no secondary source of propulsion.
CAZ	Clean Air Zone (CAZ) refers to dedicated areas within the UK where there is targeted action to improve air quality.
CPO	Charge Point Operator (CPO) refers to private entities that supplies, installs and operates the chargepoints.
DfT	Department for Transport
EV	Electric Vehicle (EV) is a vehicle powered by an electric motor for propulsion.
EVCP	Electric Vehicle Charge Point (EVCP), also referred to as charger, chargepoint and EV chargepoint, is the infrastructure for charging EVs. Duration to fully charge vehicles varies depending on the capacity of the EVCPs.
ICCT	The International Council on Clean Transportation (ICCT) is an independent non-profit organisation. The ICCT provides technical and scientific analysis on the environment to regulators.
LEVI	Local Electric Vehicle Infrastructure
ORCS	On-street Residential Chargepoint Scheme
OZEV	Office of Zero Emission Vehicles
PHEV	Plug-in Hybrid Electric Vehicle (PHEV) can utilise external energy sources to store power within the vehicle battery packs.
TfL	Transport for London
ULEZ	Ultra Low Emission Zone (ULEZ) in which if a vehicle does not meet certain emission standards, then they are charged a fee of £12.50 per day.
VED	Vehicle Excise Duty (VED) is an annual tax that is imposed as an excise duty for powered vehicles which are used on public roads.

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Executive Summary

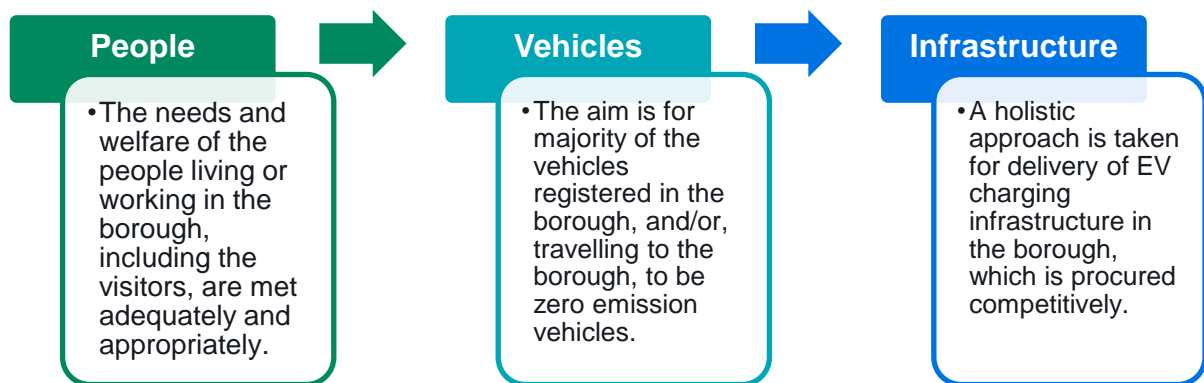
Vision for the Strategy

Harrow will achieve carbon neutrality by 2030 by encouraging greener and sustainable travel options in the borough. Whilst we promote integrated and active travel as an attractive alternative to private vehicles, our vision for those trips that require a private vehicle is that they be made by zero emission vehicles.

We will support the transition to electric vehicles by residents, businesses, and visitors by facilitating provision of a reliable, accessible, and equitable network of electric vehicle charging infrastructure throughout the borough.

Objectives

Harrow has developed 10 objectives which will underpin the achievement of its vision. These objectives are aimed at achieving three main outcomes:



Objectives for People

- ✓ Increase awareness of EVs in the borough.
- ✓ Support a smooth EV transition for residents, local businesses and visitors.
- ✓ Develop an EV charging network that flexibly meets the side range of user needs.

Objectives for Vehicles

- ✓ Lead by example, by electrifying Harrow's own fleet and developing Net Zero contracts.
- ✓ Deliver a network of EV charging infrastructure which is fit for all types of vehicles and all their various use cases.
- ✓ Promote EV adoption, while encouraging walking, cycling, and wheeling, the sharing of road transport and the reduction of private vehicle usage.

Objectives for Infrastructure

- ✓ Deliver EV charging infrastructure that is reliable, accessible, and inclusive.
- ✓ Ensure that EV charging infrastructure is fairly priced and economically sustainable.
- ✓ Ensure that EV charging infrastructure does not obstruct or disrupt the safety of pedestrians and other road users.
- ✓ Ensure that the EV charging infrastructure provided remains relevant and fit for purpose over the long run.

Context

The UK government has committed to become Net Zero by 2050 (a 100% reduction in carbon emissions compared with 1990 levels). As road transport accounts for nearly $\frac{1}{4}$ of the nation's total greenhouse gas emissions, its decarbonisation is crucial to meet the UK's commitment and electric vehicles (EVs) will play an important role.

In 2020, the UK's Prime Minister announced a ban on sales of all new petrol and diesel cars and vans by 2030 (which is extended to 2035 as of October 2023) and a ban on sales of new hybrids by 2035.

Within this policy context, we anticipate rapid expansion of EV adoption in Harrow requiring deliberate expansion Harrow's network of publicly available EV charging infrastructure.



As of April 2023, Harrow has only 64 public chargepoints¹ or just 24 per 100,000 residents, significantly behind London average of 145 per 100,000 residents. Harrow anticipates deploying a grant from the UK's On-street Residential Chargepoint Scheme (ORCS) in procuring an additional 225 chargepoints in 2023/24.

To date, EV adoption has been primarily amongst:

- Residents with access to private off-street parking (and often participating in their employers' company car or salary sacrifice programs) and
- Businesses whose fleet operations accommodate overnight charging in electrified depots.

Going forward, we anticipate EV adoption to also include those 33% of households without access to off street parking (e.g., living in flats, terraced housing, etc.)². In addition, Harrow will host increasing numbers of visiting EVs and electrically powered commercial vehicles (e.g., taxis & private hire vehicles and light commercial & heavy goods vehicles) all requiring sufficient EV chargepoint facilities.

Harrow's Electric Vehicle Strategy (the Strategy) adopts a proactive approach to delivering EV chargepoints as a function of anticipated demand, while also facilitating faster EV adoption.

¹ <https://www.zap-map.com/live/>

² [On Street Charging \(acceleratedinsightplatform.com\)](https://www.onstreetcharging.com/)

Projected EV chargepoint requirements

Our projection of the rate of adoption of EVs within Harrow reflects two driving forces:

- The rate by which OZEV's ZEV Mandate obliges manufacturers (OEMs) to incorporate EV within their new vehicle supply (for new car sales, that rate to rise from 22% in 2024 to 80% by 2030 and 100% by 2035) and
- The aging out of older incumbent diesel and petrol-powered vehicles.

We project that the number of EVs in Harrow will increase from only about 3,500 EV cars and light commercial vehicles in 2022 to nearly 9,500 EVs by 2026 and 68,000 EVs (or over 60% of total registered vehicles) by 2038.

The projection of public EV chargepoints required to serve the growing charging demand in Harrow is developed in consideration of:

- Energy consumed by the entire EV vehicle fleet
- Power consumed via off-street residential charging
- = Power consumed via public charging
- × Utilisation factors for each of standard, rapid and ultra-rapid chargepoints
- = The number of standard, rapid and ultra-rapid devices required.

However, only a portion of the public EV charging network will be located on council land. The remaining chargers will be deployed on private land by project sponsors including supermarkets, other retailers and existing diesel and petrol refuelling stations.

Based on our projections, a total of about 350 EV chargepoints will be required on council land by 2026, which will increase to 850 by 2033 and 1,250 by 2038.

	By 2026	By 2033	By 2038
Standard (<22kW)	330	775	1,116
Rapid (50kW)	25	67	108
Ultra-rapid (>150kW)	1	9	16

Principles for public EV chargepoint deployment

Our principles for public EV chargepoint deployment will be in accordance with the Draft Public Chargepoint Regulations 2023 which has mandated that all chargepoints across the UK should meet the following principles:



Key actions

We have developed a set of actions to meet the objectives of the Strategy in the short (2024-26), medium (2027-33) and long (2034-38) term. They are included in Chapter 7 of this Strategy. The targets by year and ongoing measures for the short term (2024-26) are summarised below.

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
Develop existing council website as a platform to inform and signpost users to educational information on EVs, such as different EV models including large vehicles, associated costs as well as information on existing EVCPs.	✓				£	Communications Team
Co-organise/support local engagement campaigns to encourage adoption of EVs and to understand where there is the greatest demand for charging.	✓				££	Communications Team
Deploy a dedicated EV lead for the borough, who maintain an up-to-date understanding of the EV infrastructure industry by attending industry webinars and keep the councillor and borough officers informed.	✓				££	Climate Team
Engage with other London boroughs to develop an effective EVCP procurement plan (which is scalable and with shorter timescales) and make joint applications for government funding (e.g., LEVI) to support commercialisation of EVCPs.	✓				£	Highways and Parking Team
Develop a prioritised rollout plan for the procurement of chargepoints across Harrow's car parks e.g. at leisure facilities, parks, housing estates, based on the underlying demand in the area. Where available	✓				£	Parking and Estates Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
use utilisation and charge duration data from existing chargepoints to assess demand for charging and type of chargepoints in the area.						
Almost 95% of Harrow is made of micro businesses. Work with small and high street businesses to understand their travel patterns and support them in considering EV adoption.	✓				£	Climate Team
Support increased provision of EV car clubs in the borough by offering discounted or free permits to car club operators, dedicated marked bays and EV charging facilities for EV car clubs.	✓				£	Highways Team
Conduct feasibility of introducing Mobility Hubs with EV charging, public transport, shared mobility services, and other public realm improvements in one space (e.g., town centre car parks).	✓				£	Highways and Parking Team
Organise events with EV manufacturers to allow residents to test EVs before purchasing them.		✓			££	Communications Team
Engage with taxi and PHV operators and review the evidence from existing electric taxi and PHV schemes to identify most advantageous locations where chargepoints can be installed to facilitate the usage of EVs by the drivers.		✓			£	Highways and Parking Team
Assist in the development and promotion of electric car club schemes and their use, particularly for employees to reduce congestion in the borough by considering workplace parking levies.		✓			££	Highways and Parking Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
Develop a staff travel plan to encourage sustainable travel behaviour, including the use of EVs for all trips that need to be made by car or van.		✓			£	Highways and Parking Team
Ensure EV charging bays in council car parks are clearly marked and signposted. On-street chargepoints will be at least clearly signposted.			✓		££	Highways and parking team
Develop passive connections, increase electrical capacity and complete street/ground works ahead of demand emerges throughout the borough (utilising LEVI funding).			✓		£££	Highways and parking team
Ensure at least 10 rapid (50kW) and ultra rapid (>150kW) chargepoints are deployed on council land.			✓		££	Highways and Parking Team
Deploy a mix of EVCPs (on-street fast and rapid) in strategic locations in accordance with the location assessment undertaken in Chapter 5.			✓		£££	Highways and Parking Team
Provide residents and visitors with confidence by deploying banks of rapid chargepoints in hubs, ideally in council car parks, leisure centres and parks, subject to funding availability and interests from private sector.			✓		£££	Highways and Parking Team
Ensure new contracts with third party service providers require contractors to use Zero Emission Vehicles for their operations.			✓		£	All departments
Continue to provide emission-based parking permits in the CPZs.				✓	£	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
Continue to provide the facility for residents to request chargepoints in their area and ensure that these requests are reviewed (against planned rollout, wider demand analysis) and included in subsequent chargepoint procurement rounds. We will continue to respond to local demand and install EVCPs in locations identified by residents and businesses while seeking to ensure good distribution across the borough.				✓	£	Highways and parking team
Ensure all new developments in the borough comply with London Planning Regulations of providing passive EV charging connections at 20% of parking spaces.				✓	£	Planning Team
Review periodically and ensure all the information available on the website are up to date, and provide sufficient details on available schemes, upcoming trends and developments to allow residents to make an informed decision.				✓	£	Highways and parking team
Engage with the industry to stay up to date on the latest developments in EV technologies and to pilot/trial technologies appropriate for our area.				✓	£	Climate and Nature Team
Support TfL's objective to roll-out rapid chargepoints in TfL owned sites and support joint-delivery of Hub development throughout the borough. This will be achieved through updating each other on roll-out and undertaking joint site visits and site shortlisting.				✓	££	Planning Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
Work with TfL to support phased electrification of all buses in the borough.				✓	£	Highways and Parking Team
Ensure users are able to access information on availability, costs and payment method remotely through an App or website. Ensure parking for chargepoints do not replace parking designated for people with a disability/blue badge parking spaces.				✓	£	Highways and parking team
Ensure public chargers on council land are 100% reliable.				✓	£	Highways and parking team
Ensure public chargepoints on council land are accessible 24 hours a day throughout the year and will be well lit.				✓	£	Highways and Parking Team
Ensure contactless payments is available on all chargepoints over 7kW capacity.				✓	£	Highways and parking team
Ensure all new chargepoints meet the accessibility standards set out in BSI Electric vehicles - Accessible charging - Specification (PAS 1899:2022).				✓	£	Highways and parking team
As recommended by the Competition and Markets Authority (CMA), ensure that several chargepoint providers operate in the area to allow competition and fair priced tariffs.				✓	£	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Action	2024	2025	2026	Ongoing	Indicative costs*	Delivery Lead
Conduct demand assessment periodically and facilitate delivery of chargepoints as and when demand emerge by prompt engagement with CPOs.				✓	££	Highways and parking team
Engage with UK Power Networks (UKPN) to review and address power connection constraints in the borough at early stages of planning to support planned rollout of chargepoints.				✓	£	Highways and parking team
For residential charging, look for solutions that integrate seamlessly into local streets, minimising disruption to pavement access. Where possible we will install lamp column chargepoints in clusters of at least two or three to ensure that chargepoints are easy to find.				✓	££	Highways and parking team
Develop and oversea contracts that ensure the charging network is reliable, well managed and maintained and that infrastructure is removed (and upgraded) if obsolete. Users should be able to report issues easily and these should be resolved promptly by the operator.				✓	£	Highways and parking team
Attract private sector investment into EVCP provision by guiding them on where the demand exists and emerges over time to ensure at least 60% electrification of all vehicles in Harrow by 2038.				✓	£	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

. Some of other medium to long term targets include:

- Deliver at least 500 on-street chargepoints on council land by 2030.
- Ensure 80% of the residents in the borough have access to a chargepoint within 3 mins walk from home by 2033.
- Develop a phased approach to the Council's own fleet electrification (as the existing vehicles reach end of life) and progress towards full fleet electrification by 2035.

Monitoring and evaluation of actions

The council will review and update the strategy periodically to ensure delivery of actions and targets. This will include sharing information and knowledge with other boroughs, and implementing lessons learnt.

We will assign clear action owners to monitor the progress of each action, and will collect the evidence on:

- What actions have been delivered and with what outcome (e.g., carbon reductions);
- Who was involved in the delivery; and
- What was the impact on the vision and the objectives.

1 Background and Purpose

Introduction

- 1.1 The Draft Strategy sets out the vision, objectives and an action plan to support the transition to transport decarbonisation, namely Electric Vehicles (EVs) in Harrow in the next 15 years by 2038. This will be achieved by delivering EV chargepoints to those who live, work and visit Harrow, whilst also addressing local barriers to EV adoption as set out in the action plan in Chapter 6.
- 1.2 The development of the Draft Strategy is led by the Traffic, Highways and Asset Management team at Harrow Council, and is informed by engagement with different council stakeholders including the Council Fleet, Council Estates, Planning and Council Business Support teams and external stakeholders including chargepoint operator Char.gy, BP Pulse, Trojan Energy, the Energy Savings Trust, an independent organisation dedicated to promoting energy efficiency, low carbon transport and sustainable energy use and UK Power Networks (UKPN), a distribution network operator for electricity covering South East England, the East of England and London. The Elected Members also provided guidance to the borough officers during the development of this Draft EV Strategy.

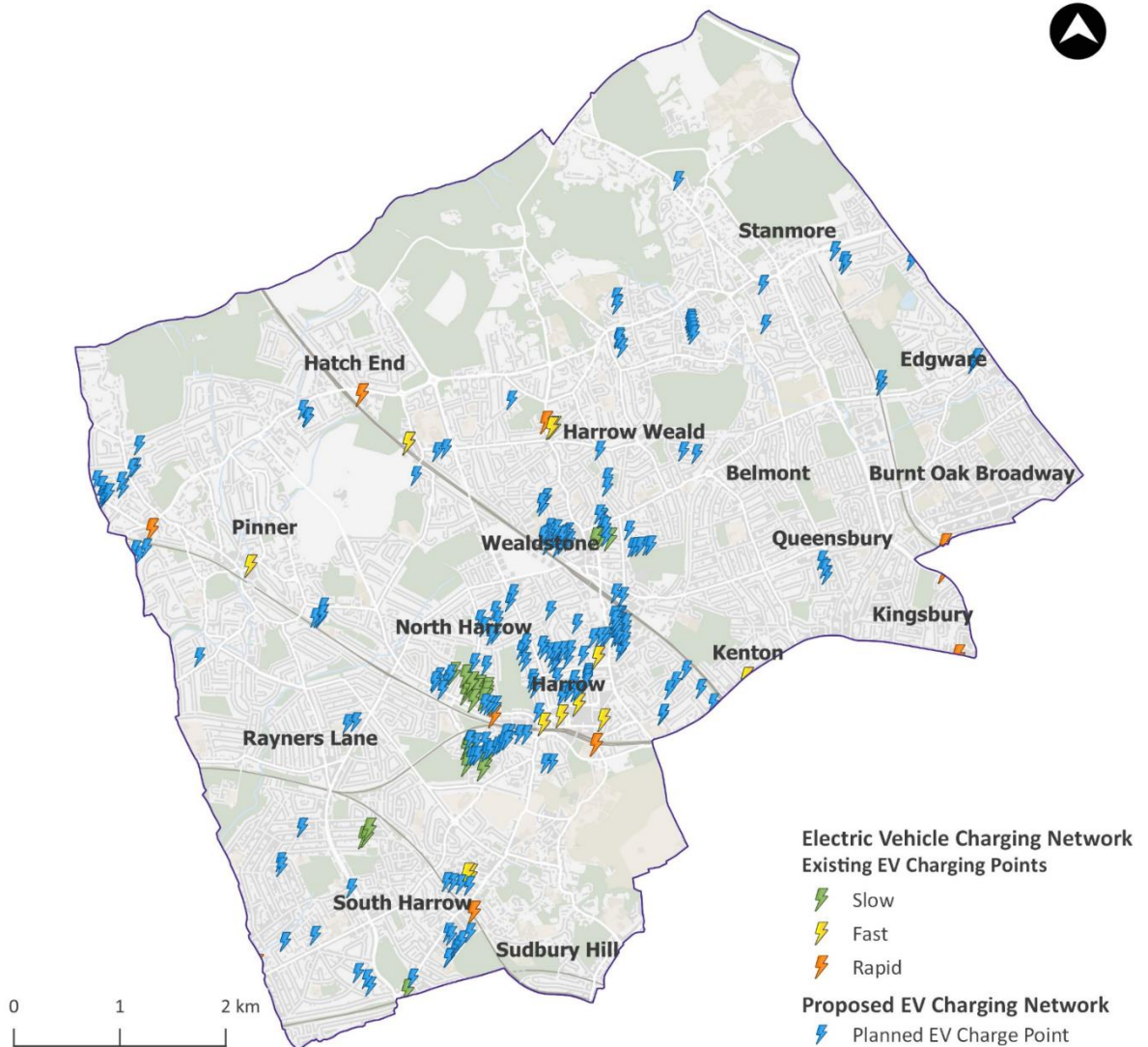
Current situation in Harrow

- 1.3 The London Borough of Harrow wants to encourage the uptake of ultra-low emission vehicles through the use of promotional activities and the introduction of EV infrastructure. The council aims to improve air quality, reduce traffic noise and reduce CO₂ emissions throughout the borough by expanding the availability of electric vehicle charging facilities to support the transition to ultra-low emission vehicles.
- 1.4 Until 2023, Harrow Council's focus has largely been providing chargepoints in locations requested by residents and/or businesses. However, Harrow Council aims to roll out more chargepoints through an ambitious approach by providing chargepoints based on underlying demand potential, alongside rapid charging hubs on the strategic road network and within town centres.
- 1.5 There are currently about 3,500 EVs in Harrow which is less than 3.4% of total registered vehicles. However, we anticipate this to increase to nearly 10% in 2026 (9,500 vehicles), over 60% in 2038 (68,000 vehicles) and approach 100% by 2050. EV penetration in Harrow currently trends with adjacent local authorities outside London. In addition, since the pandemic, EV penetration of new car sales has shown strong growth within the UK.
- 1.6 In addition to home-based charging solutions, Harrow currently has around 64 public chargepoints including 57 lamp column (3kW) and fast (7-22kW) and seven Rapid (>50kW) chargepoints at both publicly and privately owned land in Harrow. In addition, the Council plans to deploy funds secured through the On-street Residential

Chargepoint Scheme (ORCS) in delivering 225 additional lamp column chargepoints in 2023/24. Delivery of these additional chargepoints is focused on supporting residents who do not have access to off-street parking.

Figure 1.1: Current and planned distribution of EV chargepoints on council land

Note: Image prepared by Steer with data from Harrow council.



Purpose of the strategy

- 1.7 The UK Government have prohibited the sale of new diesel- and petrol-powered vehicles by 2030 and hybrid vehicles five years thereafter. In doing so, the UK Government acknowledge there is a climate emergency in mandating the adoption of electric vehicle (EV) and other alternative fuel technologies to decarbonise the transport system.
- 1.8 The UK's Office of Zero Emission Vehicles (OZEV) has cited the pivotal role local authorities have in facilitating the uptake of EV and the development of publicly available EV chargepoint infrastructure.

- 1.9 In addition, a key objective of Harrow’s Local Transport Plan 3 is to encourage the uptake of ultra-low emission vehicles through the use of promotional activities, engagement on “neighbourhoods of the future”, and expanded availability of electric vehicle charging facilities, thereby improving air quality, reducing traffic noise and reducing CO2 emissions throughout the borough.
- 1.10 To this end, Harrow’s EV strategy will facilitate the transition to EV and the provision of accessible and reliable EV chargepoints for everyone who lives, works and visits Harrow, while also meeting the long-term objectives of reducing overall car ownership and usage in the borough.

Timescales for the strategy

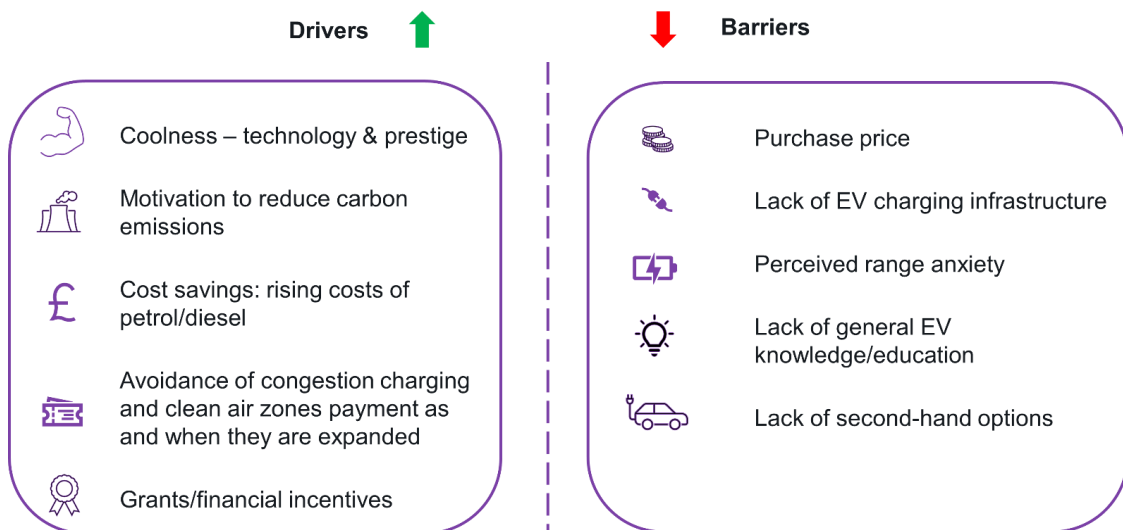
- 1.11 The Strategy looks beyond the present day to the next 15 years and up to 2038. Given the highly evolving nature of the EV industry, we recommend revisiting the planned actions in the Strategy in 2030.
- 1.12 The Strategy consists of the following chapters:
- Chapter 2: EV Market Overview
 - Chapter 3: Vision and Objectives
 - Chapter 4: Forecast for EVCPs
 - Chapter 5: EVCP Location Assessment
 - Chapter 6: EVCP Delivery Model
 - Chapter 7: Action Plan

2 EV Market Overview

Drivers and barriers to EV adoption

- 2.1 Since October 2023, Harrow has offered emission-based parking permits to eligible residents within Controlled Parking Zones (CPZs). At only £23.80, permit fees for Electric Vehicles are up to 75% lower than those for diesel or petrol vehicles,³ helping to reduce cost for EV ownership.
- 2.2 In developing the Draft Strategy, we reviewed key drivers and barriers to EV adoption, which are summarised in Figure 2.1 below.

Figure 2.1: Key drivers and barriers to EV adoption



Drivers

- 2.3 Key drivers for buying an EV in the UK include consumer awareness of the environmental impact of carbon emissions from diesel- and petrol-powered vehicles (ICE) vehicles. However, a number of regulatory and cost-based drivers also apply:
- EVs feature cheaper running costs particularly related to the ongoing cost of fuel and vehicle maintenance,
 - Battery powered electric vehicles (BEVs) are not currently subject to road tax and owners of Plug-In Hybrid Electric (PHEVs) pay a reduced Vehicle Excise Duty,⁴

³ <https://www.harrow.gov.uk/parking-permits/resident-parking-permits/3>

⁴ <https://pod-point.com/guides/driver/road-tax-on-electric-cars#:~:text=Road%20tax%2C%20officially%20known%20as%20Vehicle%20Excise%20Duty,Plug-in%20hybrid%20electric%20vehicles%20%28PHEVs%29%20pay%20reduced%20VED.>

- In London, EVs can be used for free within the congestion charging zone and the ULEZ,⁵
- TfL scrappage grants will be motivating factors to encourage a shift to EVs,⁶
- Those securing their EVs through company car and salary sacrifice schemes enjoy subsidy defraying the benefit-in-kind (BIK) aspect of their vehicle access,
- Available grants can help people install residential chargepoints for OZEV eligible vehicles⁷ and programs such as On-street Residential Chargepoint Scheme (ORCS) and Local Electric Vehicle Infrastructure (LEVI) offset local authorities' costs of installing on-street residential chargepoints.⁸

2.4 In an electric vehicle survey by CTEK/YouGov of 11,100 people across six different European countries, respondents cited that their top three main reasons for purchasing an EV were:

- Lower running costs (34%),
- Better for the environment (26%) and
- Government subsidy towards cost (18%).⁹

That same study indicated that the top factors that would encourage consumers to purchase an EV included:

- Lower purchase price (51%),
- Lower running costs than an ICE (34%),
- Government subsidy/scheme to make EV more affordable (34%) and
- Better access to EV chargepoints (30%)

2.5 Finally, from 2035 it will not be possible to purchase new petrol or diesel cars and vans along with hybrids in the UK. From such date, all new cars sold will be zero emission compatible at the tailpipe.

Barriers

2.6 There are several (perceived) barriers which prohibit consumers from purchasing an EV in the UK. These include:

- Affordability,
- Concerns around range anxiety,
- Chargepoint provision,
- Lack of reliable information on EV technology,
- Lack of second-hand EV options and
- Concerns about using the chargepoint technology.

2.7 The EY Mobility Consumer Survey stated that the top three inhibitors to purchasing an EV are lack of charging stations in cities/on route (34%), range anxiety (33%) and upfront costs (27%).

⁵ [UK car market Europe's pioneer for electric-car adoption | Autovista24 \(autovistagroup.com\)](#)

⁶ <https://tfl.gov.uk/modes/driving/scrappage-schemes>

⁷ [Grants for plug-in vehicles - GOV.UK \(www.gov.uk\)](#)

⁸ [Grant schemes for electric vehicle charging infrastructure - GOV.UK \(www.gov.uk\)](#)

⁹ [CTEK - Electric Vehicle Survey 2023 EN FINAL 1.pdf](#)

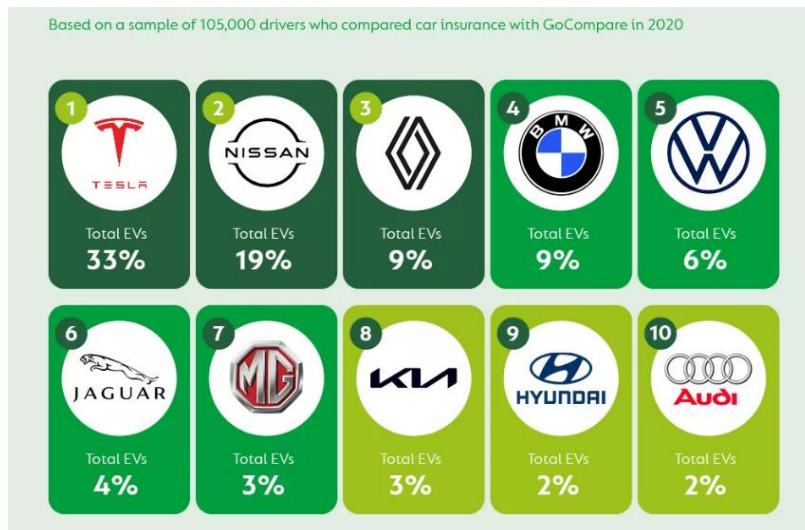
2.8 A survey by Jardine Motors Group of 2,000 consumers in the UK reported that 75% of respondents would consider switching to an EV if the high purchase price of EVs is reduced and 80% of respondents who are considering an EV are apprehensive around range anxiety and availability of public chargepoints.¹⁰

2.9 It is important to note that whilst some of these barriers may be real, in certain areas and geographies these barriers have diminished over time and are often perceived rather than reality.

Addressing the barriers

- **Purchase prices:** Upfront costs for EVs are gradually declining and are expected to be comparable to diesel and petrol vehicles from as early as 2024.
- **EV Infrastructure:** The UK government and TfL have ambitious plans to grow public EV charging infrastructure, including an objective to have EV chargepoints on 20% of public parking spaces.
- **Range anxiety:** An average EV can travel between 100 to 300 miles on a single charge, depending on the vehicle model.
- **Running cost:** EVs have on average 30% lower maintenance costs than diesel or petrol cars.
- **Negative impact:** EVs reduce carbon emissions and nitrogen dioxide levels, however they still emit particulate matter through brake and tyre wear, which negatively impacts air quality. The Council will continue to encourage reductions in car usage/ownership and promote more sustainable modes such as walking, cycling, and wheeling for shorter trips.

Figure 2.2: UK’s popular EVs



2.10 Overall, consumer confidence is growing in EV technology. A survey by EY of 13,000 people across 18 countries including the UK, Spain, Norway, Germany, and France in 2022 cited that 52% of respondents intended to buy an EV in the next two years.¹¹

¹⁰ <https://www.jardinemotors.co.uk/electric/cars/making-the-change-to-electric/>

¹¹ [EY Mobility Consumer Index 2022 study](#)

- 2.11 Whilst purchase price of an EV is typically higher than an ICE vehicle, fuel, maintenance and other running costs are generally lower. Therefore, financial incentives and reliable information on EV chargepoint and EV grants is important for addressing barriers to adoption. Moreover, EV technology will continue to develop improving vehicle efficiency and range capabilities. However, many EVs are suitable for the majority of journeys, and the Office for Zero Emission Vehicles (OZEV) states that 99% of car journeys are under 100 miles.¹² In addition, the current EV supply chain and production will increase to meet demand for mass adoption of EVs, as such the high purchase prices of EVs are expected to fall. Indeed, more EVs will likely enter the used car market, so the cost to purchase an EV will decrease.
- 2.12 London currently has the most chargepoints in the UK. The CMA Electric Vehicles Charging Market Study 2021 report cited there are 80 chargepoints per 100,000 people compared to 34 per 100,000 in the UK.¹³ Chargepoints will continue to expand in London with the ICCT Working Paper 2020-26 estimates projecting London will need 44,000 public chargepoints to meet demand in 2030.¹⁴ Indeed, to support residents, businesses and visitors within Harrow the London Borough of Harrow have developed this Strategy to set out the vision and objectives to enable an accessible transition to EVs and provide a range of chargepoint options across the borough.

Overview of EV chargepoints

- 2.13 There is a range of different types of public EV charging infrastructure available across the market, alongside emerging technologies which are being trialled and piloted across the UK. There are several chargepoint options for users as to where, how and when they want to charge their vehicles. EV charging infrastructure can be split into four categories based on speed/power output:
- Slow;
 - Fast;
 - Rapid; and
 - Ultra-rapid.
- 2.14 The range in charging times is to do with the function of the battery state charge, battery capacity and on-board charging capabilities. This means even when plugged into a 150kW ultra-rapid chargepoints the majority of EV's available on the market at this point will not be able to receive more than 100kW.
- 2.15 Harrow currently operates a mixed provision of chargepoints both on-street and in car parks. The council intends to keep a mixed provision of chargepoints for different use cases so there are a range of chargepoint options for residents.

Standard chargepoint technologies

- 2.16 Residents with off-street parking are likely to carry out the majority of their charging at home, as this is cost-effective and convenient. Private home chargepoints can be shared through chargepoint hosts whereby residents share their chargepoints with

¹² ['Common misconceptions about electric vehicles'](#)

¹³ [CMA, Electric Vehicle Charging market study 2021](#)

¹⁴ [Fulfilling electric vehicle charging infrastructure needs in Greater London and its boroughs \(theicct.org\)](#)

other EV users through schemes like Co-Charger and JustPark.¹⁵¹⁶ However, lamp column chargepoints are most common form of residential on-street charging for individuals without access to private chargepoints. They are convenient and relatively inexpensive when used overnight on an off-peak tariff, see Table 2.1 below.

Table 2.1: Slow/Fast Chargepoint examples



Chargepoint speed (and type)	Chargepoint power	Connector type	Usage location type	Charging time: 40kWh battery Nissan Leaf
Slow (e.g., backpack or lamppost) 	3.6kW – 7kW	Type 1 or 2	Home; On-street	14 hours
Fast (e.g., kerbside column or pop-up, etc) 	7kW 11-22 kW	Type 1 or 2 Type 1 or 2	Home; On-street; Destination Home; Destination.	6 hours 6 hours

Image source: Harrow council; EV Clicks

Rapid chargepoint technologies

- 2.17 Rapid and ultra rapid are the most expensive charging but can be useful for EV users who drive a lot of miles such as taxi drivers or need a top-up charge, see Table 2.2 below.

¹⁵ <https://onstreetcharging.acceleratedinsightplatform.com/>

¹⁶ <https://www.justpark.com/ev/justcharge>

Table 2.2: Rapid chargepoints example



Chargepoint speed (and type)	Chargepoint power	Connector type	Usage location type	Charging time: 40kWh battery Nissan Leaf
Rapid DC (e.g. BP Pulse local hub etc.) 	50kW	CCS or CHAdeMO	On-street; Destination; En-route; Motorways	40 minutes
Ultra-rapid DC (e.g. Instavolt, MSA, or Gridserve forecourt) 	100 – 350 kW	CCS or CHAdeMO	Destination; En-route; Motorways	N/A

Image source: EV Clicks

Emerging technologies in EV charging infrastructure

2.18 Through market engagement with chargepoint operators there are a range of upcoming chargepoint innovations being trialled and piloted including gul-e, flat and flush chargepoints and wireless charging. Harrow council will closely monitor development around these technologies and trial these innovations as appropriate to help understand what's feasible to deliver safely within the borough.

Gul-e

2.19 Gul-e is a solution that allows homeowners with on-street parking to safely pass a cable from their property to the car using a cable gully. The solution by ODS Group meets British Standards for load bearing and corrosion and keep the footpath 100% clear. Installation does not require heavy machinery and can be done by LA with the Installation Guide.

2.20 The main advantages of Gul-e charging include:

- Can utilise residents' energy supply which means cheaper tariffs;
- Cheaper installation; and
- No street clutter or trip hazards.

2.21 The main challenges of Gul-e charging include:

- New form of infrastructure will require updates to local planning policies and process;
- Requires a parking space in front of house to be available when charging required;

- Limited use for flats and other residential buildings in multiple occupancy; and
- Regular maintenance and cleaning & complex installation.

Case Study: Gul-e Trials and Pilots

Oxfordshire & Bedfordshire Gul-e Trial:

- Currently being trialed in Oxfordshire, phase 2 trials started in Spring 2023 by 1,600 volunteers.¹⁷ Previously, 30 volunteers were trialing the solution at their homes.
- Oxfordshire are due to release a report on potential business models before year end.
- There are second trials at 20 locations across Central Bedfordshire.¹⁸
- Users have reported the Gul-e is convenient and cheaper compared to commercial charging tariffs. In addition, the design is user friendly, and the cables can be plugging into their EV outside their home using their household energy supply.



Milton Keynes Gul-e Trial:

- Kerbo Charge device is being trialed in Milton Keynes.¹⁹
- Funding for the Gul-e project was awarded by the Governments Office for Zero Emission Vehicles and Innovate UK.



Images sources: EV clicks

Flat and flush charging

- 2.22 Flat and flush chargepoints are a public solution developed with Innovate UK funding for individuals without off-street parking. The chargepoints do not require permanent raised street furniture at the pavement edge, which means they do not take up any space when not in use. The charger's pop-up when the user plugs in a cable. Currently there are several trials ongoing with Urban Fox and Trojan Energy.
- 2.23 The main advantages of wireless charging include:
- No street clutter/car park clutter when not in use;
 - Can be installed in areas without lampposts for on-street charging; and
 - Disability Rights UK provided design input to improve usability.
- 2.24 The main challenges of wireless charging include:
- No commercial rollout at present;
 - Installation is costly and expensive; and
 - When in use this technology represents additional street furniture and the cable could be a trip hazard.

¹⁷ [Phase two of Go Ultra Low Oxford to start this spring | Oxford City Council](#)

¹⁸ <https://www.transportxtra.com/publications/local-transport-today/news/71759/gul-e-electric-vehicle-charging-scheme-trialled-in-central-bedfordshire/>

¹⁹ [Local authorities — Kerbo Charge](#)

Case Study: Flat and Flush Trials and Pilots

Urban Fox flat and flush trials:²⁰

- Urban Fox launched Flat and Flush trials in Oxford in 2018.
- Six on-street 7kW chargepoints were installed in pavements, which could pop up and pop down into the ground when not in use.
- The chargepoint is designed to be visible by partially sighted people. In addition, the chargepoint is integrated with Payday, which uses sensors and charging data to determine the availability of a chargepoint.



Trojan Energy flat and flush trials:²¹

- As part of the STEP trial, there have been 10 sets of 15 chargepoints installed on six streets across Brent and four streets in Camden.
- Over 150 drivers signed up to take part in the trial which started in September 2022.
- The technology provides on-street charging solutions for users without driveways or garages, whilst also keeping streets and paths clear from obstacles and loose cables.
- The technology requires a proprietary lance to access the chargepoint, so only local residents signed up the scheme can access it.
- The Trojan Hub work also works alongside Decier Cameras which are linked to an app to alert users of availability of the chargepoint.
- The chargers utilize residents energy supply, which means there are cheaper tariffs for residents who use on-street charging.



Images sources: EV clicks

Wireless charging

2.25 Wireless charging (or induction charging) is an innovative technology solution which is being trialled in pilots globally and undergoing testing and development. The technology is not commercially or technologically ready due to EVs needing expensive retrofits to enable wireless charge.

2.26 Nottinghamshire is taking part in a wireless charging trial (launched in October 2022), which will analyse nine electric taxis fitted with wireless charging hardware to assess its commercial and technical viability.²²



2.27 The main advantages of wireless charging include:

- Eliminates the need for cables – removes concerns around street clutter and potential trip hazards; and

²⁰ [Users very happy with Urban Electric charge points in Oxford trial - Zapmap \(zap-map.com\)](#)

²¹ [Flat and flush Trojan Energy EV chargers go live across London - Trojan Energy](#)

²² [About - WiCET](#)

- Removes the requirement to plug and unplug cables – improves accessibility for disabled and elderly drivers.

2.28 The main challenges of wireless charging include:

- Low technology readiness level;
- Requires vehicles to be retrofitted; and
- Cost of installation and maintenance could be very expensive.

3 Vision and Objectives

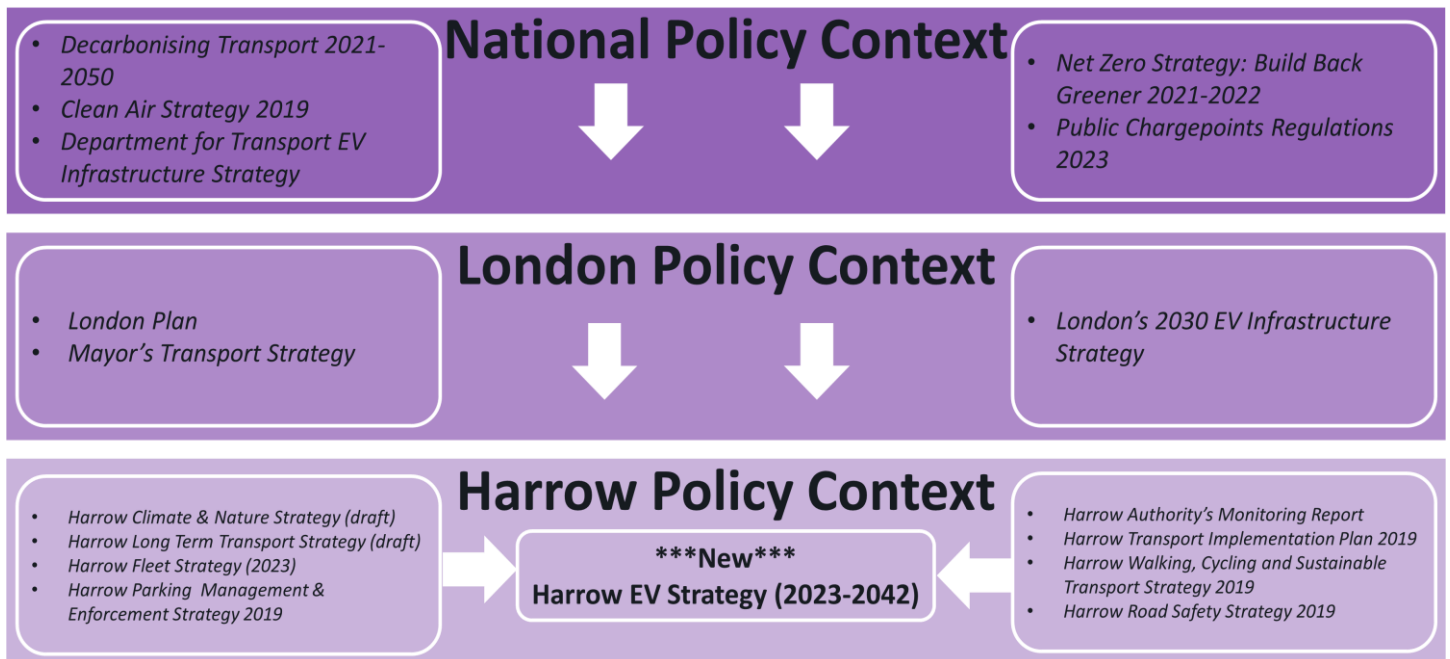
Introduction

- 3.1 The EV strategy is built around two main areas:
 - Our **vision** for residents, business and visitors in the brough; and
 - The **objectives** we need to achieve our vision.
- 3.2 The vision and objectives consider the national, London and Harrow policy objectives and a review of good practice guidance developed by the industry.

Policy context

- 3.3 A policy review was conducted to inform the vision and objectives of the Draft Strategy. The latest national, regional and local strategies and policies were reviewed, as summarised in Figure 3.1 below.

Figure 3.1: Key Policies Reviewed



- 3.4 The Draft EV Strategy supports the UK Government’s vision for 2030 that states that ‘everyone should have access to a reliable EV chargepoint through inclusively designed public charging and effortless on and off-street charging solutions.

The Strategy will support Harrows ambitions for council fleet electrification by 2030 and encourage the use of cleaner vehicles through specific facilities such as chargepoints for EVs at council owned car parks.

National commitments

- 3.5 The Department for Transport (DfT) EV Infrastructure strategy committed to:
- End the sale of new petrol, diesel petrol and diesel vehicles by 2030 or all new cars and vans to be fully zero emission at the tailpipe by 2035.
- 3.6 The Government's vision for 2030 is that:
- Everyone can find and access to a reliable public chargepoint.
 - Effortless on and off-street charging.
 - Reliable network of high powered chargepoints along major roads.
 - Fairly priced and inclusively designed public charging.
 - Market-led roll-out for the majority of chargepoints.
 - Infrastructure seamlessly integrated into a smart system.
 - Continued innovation to meet drivers' needs.
- 3.7 Draft Public Chargepoints Regulations 2023
- Public chargepoints should have a reliability standard of 99% for rapid chargers & all chargers >8 kW will need to have a contactless payment within the next year
 - Chargepoint operators will be required to be transparent with their pricing & offer 24/7 helplines.

London commitments

- 3.8 The **London Plan** committed to:
- Moving towards a zero-carbon city by 2050.
 - At least 20% of parking spaces should have active EV charging facilities.
 - Zero emission zones across London by 2050.
 - Zero emission zone in central London from 2025.
 - Introduce pricing incentives for EVs.
 - All new cars and vans zero emission by 2030.
 - From 2023 all taxis/private hire vehicles (PHV) need to be zero emission capable (ZEC).
 - Net zero by 2030.
- 3.9 Mayor's Transport Strategy identified that:
- A fully zero emission fleet could be in place by 2037.
 - Boroughs and TfL should be implementing EV charging infrastructure and supporting zero emission car clubs.
- 3.10 London's 2030 EV Infrastructure Study outlined:
- 40,000-60,000 charge points needed by 2030.
 - Public sector land could support 4,000 rapid chargers by 2030.
 - Need for five flagship rapid hubs in each sub-region by 2025.

Harrow commitments

- 3.11 Climate and Nature Strategy (draft) 2023:
- Develop a fleet decarbonisation plan that ensures the electrification of the Council's fleet by 2030.

- Support public and private vehicle decarbonisation.

3.12 Harrow Long term Transport Strategy (draft) 2023:

- Support electrification of buses in Harrow.
- Electrify council fleet by 2035.
- Trial electric van hire for businesses.
- Implement off-street EV charging infrastructure at council owned car parks.

3.13 Harrow Transport Local Implementation Plan 2019:

- Extend 20mph zones and encourage the use of cleaner vehicles through specific facilities such as chargepoints for EVs at council owned car parks.

3.14 Harrow Road Safety Strategy 2019:

- Encourage the uptake of ultra-low emission vehicles instead of fossil fuelled powered vehicles through the use of promotional activities and greater availability of EV chargepoints.

3.15 Harrow Parking Management and Enforcement Strategy 2019:

- Provide chargepoints at key locations and expand provision of EV chargepoints & permits for EVs reduced to encourage uptake.

Good practices in EVCP delivery

3.16 A good practice review was conducted to inform the development of the vision and objectives of the Draft Strategy. Key documents reviewed include:

- SMMT Plugging the Gap 2022
- ICCT Working Paper 2020-26
- Zemo Partnership/Energy Taskforce Commercial EV Fleet Charging Requirements
- Green Finance Institute Charging infrastructure
- Energy Saving Trust Procuring Electric Vehicle Chargepoints for Local Authorities
- Energy Saving Trust Minimising the costs of street work and grid connections for electric vehicle charging infrastructure 2019
- EAMA Best Practice for Future Proofing Electric Vehicle Infrastructure
- Electric Vehicle Charging Market Study 2021
- BSI Electric Vehicles – Accessible Charging Specification

3.17 Key summaries from the good practice review are presented in Table 3.1 below.

Table 3.1: Good practice review

Relevant studies	Key takeaway
SMMT - Plugging the Gap 2022	The SMMT Plugging the Gap report provides an industry update on the uptake of EV. In addition, the report outlines updates regarding the market transition and progress made on new car registrations of EVs. Information regarding public charging infrastructure expansion and improving production of EVs to increase supply chain to meet future demand.
ICCT Working Paper 2020-26	The ICCT Study outlines the targets for charging infrastructure at the borough level up to 2035. The study concludes that London will need more chargepoints to sustain its EV leadership, by 2025, 26,800 public chargepoints needed and by 2030 44,200 public chargepoints needed. Additional efforts will be needed to ensure equal charging infrastructure across London and different charging combinations to suit the diverse needs of boroughs.
Zemo Partnership/Energy Taskforce - Commercial EV Fleet Charging Requirements	The Zemo Partnership and Energy Taskforce outlines solutions and recommendations for commercial EV fleet charging requirements. Key recommendations include the government should ensure there is nationwide access to public charging networks, establish regional and local forums for data sharing, enable fleet collaboration and implement local charging hubs. In addition, the government should issue guidance on the design of public charging bays.
Green Finance Institute -Charging infrastructure.	The Green Finance Institute outline policy recommendations to accelerate the transition to EVs in their report on charging infrastructure. Policy recommendations include the importance of a planned approach to EV infrastructure roll out, national infrastructure projects, addressing planning issues relating to the grid upgrades and infrastructure rollout alongside market integration and transparency.
Energy Saving Trust -Procuring Electric Vehicle Chargepoints for Local Authorities	The Energy Saving Trust provide guidance on different ownership models for EV charging infrastructure and tips for Local authorities to consider when procuring EV chargepoint infrastructure. The document sets out key considerations including
Energy Saving Trust -Minimising the costs of street work and grid connections for electric vehicle charging infrastructure 2019	The report outlines several approaches to minimise the costs of street works and grid connections for installation EV charging infrastructure. In particular, type or equipment, location, and local energy supply needed. Approaches recommended include but are not limited to considering a range of chargepoint technologies, minimise distances between chargepoints and electricity supply, integrate street works for chargepoints with other projects, lane rental schemes, consider way/leave agreements, engage early with DNO, and consider how grid connection issues could impact procurement.
BEAMA - Best Practice for Future Proofing Electric Vehicle Infrastructure	The BEAMA Best Practice for Future Proofing Electric Vehicle Infrastructure report outlines planning considerations such as future proofing chargepoints and usability of chargepoints alongside recommendations. The key recommendations include: ensuring chargepoints are interoperable, roaming and payment systems capability, data security, smart charging, placement, installation and operation and planning and procurement of chargepoints at the street level as well as hubs.

Relevant studies	Key takeaway
CMA - Electric Vehicle Charging Market Study 2021	The CMA market study provides recommendations following a review of whether the EV sector can deliver the scale and pace investment needed and how people interact with the sector. The document outlines recommendations relation to meeting the scale of the challenge: by speeding up grid connections and investing strategically with lower connection costs. Secondly, unlocking competition along motorways and targeting rural gaps in remote areas. In addition, boosting the rollout of on-street charging and set open standards for home chargepoints. The report also outlines that consumer challenges are related to issues locating chargepoints, reliability of chargepoints, comparing costs of charging and payment methods.
BSI - Electric Vehicles – Accessible Charging Specification	The Chargepoint Accessibility Standard – BSI PAS 1899 was published in October 2022. It is important to consider the following clause 5.3.1 when the chargepoint is not in use, the cable length is supported by appropriate cable routing at the chargepoint and/or an appropriate cable management system, so that it does not present a trip hazard for users and pedestrians. When the chargepoint is in use, the unused cable length is supported either safely on the ground adjacent to a vehicle and/or by an appropriate cable management.

Key takeaways from policy and good practice guidance review

The UK Government’s EVI (Electric Vehicle Infrastructure) strategy wants **local authorities to take on the leadership role in delivering a smooth transition to EVs**, while also encouraging walking, cycling and wheeling.



Vision

3.44 Our vision statement for the Harrow EV Strategy is:

Harrow will achieve carbon neutrality by 2030 by encouraging greener and sustainable travel options in the borough. Whilst we promote integrated and active travel as an attractive alternative to private vehicles, our vision for those trips that require a private vehicle is that they be made by zero emission vehicles.

We will support the transition to electric vehicles by residents, businesses, and visitors by facilitating provision of a reliable, accessible, and equitable network of electric vehicle charging infrastructure throughout the borough.

Objectives

3.45 A set of objectives have been identified which will underpin the achievement of this vision around three outcome targets: People, Vehicles and Infrastructure which are as following:

People: *The needs and welfare of the people living or working in the borough, including the visitors, are met adequately and appropriately.*

- ✓ Increase awareness and knowledge of EVs in the borough.
- ✓ Support a smooth transition to EVs by residents, local businesses, and visitors to the borough by providing access to appropriate EV charging infrastructure at suitable locations.
- ✓ Develop a network of EV charging infrastructure which is flexible enough to meet different user needs, at different time of the day.

Vehicles: *The needs and welfare of the people living or working in the borough, including the visitors, are at the core of our EV Infrastructure strategy.*

- ✓ Lead by example, by electrifying our own fleet of vehicles and developing Net Zero contracts.
- ✓ Deliver a network of EV charging infrastructure which is fit for all types of vehicles and all types of vehicular trips made within the borough.
- ✓ Incentivize use of EVs, while encouraging walking, cycling, and wheeling and reducing private vehicle ownership and mode share.

Infrastructure: *A holistic approach will be taken for delivery of EV charging infrastructure in the borough, which will be procured competitively.*

- ✓ Deliver a network of EV charging infrastructure which is reliable, accessible, and inclusive.
- ✓ Ensure the EV charging infrastructure is fair-priced for all users and economically sustainable.
- ✓ Ensure the EV charging infrastructure does not obstruct or disrupt the safety of pedestrians and other road users.
- ✓ Ensure the EV charging infrastructure provided in the borough remains relevant and fit for purpose in the long run.

4 Forecast for EVCPs

Introduction

- 4.1 The efficient development and funding of a network of publicly available EVCP relies on the Council’s comprehensive outlook as to:
- Where demand for EVCP will arise;
 - When it will arise; and
 - What types of charging infrastructure will be required.
- 4.2 This emerging demand for EVCP is itself a function of growing adoption of EVs in and around the borough and the patterns by which such vehicles are parked and driven. Therefore, we have projected:
- The uptake of electric cars and LCVs;
 - The amount of electricity to be consumed by EVs in Harrow both in private domestic and public settings; and
 - The number of publicly available chargepoints including those to be located on Council land.

Projection methodology

- 4.3 The Council have reviewed the recent history of EV adoption within Harrow to establish a current baseline for both Electric Cars (eCars) and Electric Light Commercial Vehicles (eLCVs). We’ve reviewed such baseline both in terms of penetration of the total registered cars and LCVs and penetration of new car sales as summarised in Table 4.1 below.

Table 4.1: Harrow and London EV Penetration

CY 2022	Harrow		London	
	Cars	LCVs	Cars	LCVs
Parc Size (thousands)	97.9	5.7	2,605.7	204.3
New Registrations	4.6	0.2	117.4	9.8
Indicated Turns	21 x	24 x	22 x	21 x
EV Penetration				
Total Parc	4%	1%	4%	2%
New Registrations	26%	8%	29%	8%

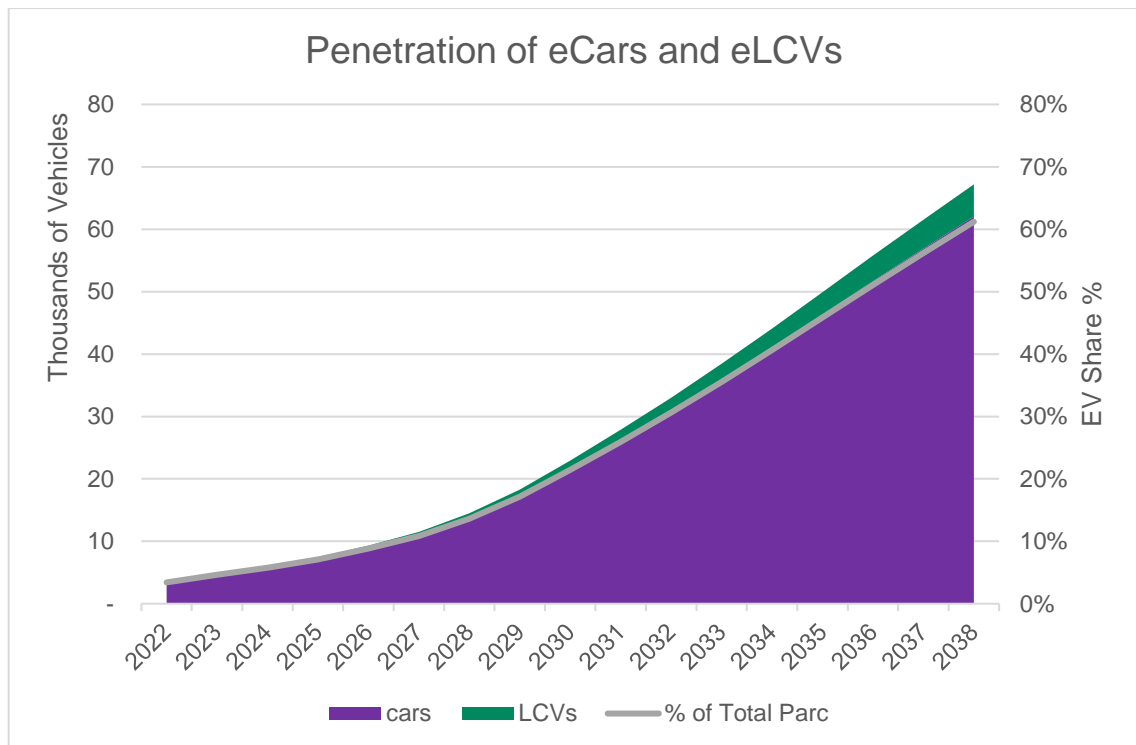
Derived from tables VEH0105, VEH0142 and VEH1154, DfT

- 4.4 In 2022, the rate at which owners registered new vehicles in Harrow 21x and 24x respectively for cars and LCVs was similar to the rates identified for the whole of inner and outer London boroughs. Such figures are relatively larger, indicating a relatively smaller number of new cars registered than is typical reflecting vehicle supply issues

associated with both Covid and Global supply scarcity throughout the automotive sector.

- 4.5 Likewise, the penetration of EVs within both the total registered cars and LCVs and new registrations in Harrow are quite similar to comparable figures for all inner and outer London boroughs. In summary, EVs comprise about 4% and 1-2% of all cars and LCVs in Harrow and Greater London, and 26-29% and 8% respectively of all new car and LCV sales.
- 4.6 Projection of EV penetration within Harrow’s parc (refers to the number of cars within Harrow) of cars and LCVs reflects:
- The penetration of EV within total new vehicle sales according to the trajectories defined in OZEV’s ZEV mandate; and
 - The rate at which older incumbent diesel- and petrol-powered vehicles age out of the parc as a function of average useful life estimates derived from DfT data.
- 4.7 Reflecting both the ZEV Mandate trajectories (rising to 100% by 2035) and an average useful life of vehicles of about 18 years, penetration of eCars and eLCVs within Harrow’s parc should reach 10% by 2026, exceeding 60% by 2038 and approach 100% by 2050. Figure 4.1 presents our projection through 2038.

Figure 4.1: Forecast EV growth and penetration in Harrow



Source: Steer analysis

- 4.8 The number of eCars and eLCVs in Harrow drives local demand for EV chargepoints and the energy supplied through such EV chargepoints.
- 4.9 The projection of public chargepoints required to serve demand in Harrow reflects:
- Energy consumed by the entire EV vehicle fleet;

- Power consumed via off-street residential charging
- = Power consumed via public charging
- × Utilisation factors for each of standard, rapid and ultra-rapid chargepoints
- = The number of standard, rapid and ultra-rapid devices required.

4.10 However, only a portion of the public charging network will be located on Council land (assumed to be 50%). The remaining EV Chargepoints will be deployed on private land by project sponsors including supermarkets, other retailers and existing diesel and petrol sellers.

4.11 The projection of energy required of the publicly available chargepoints on Council land reflects:

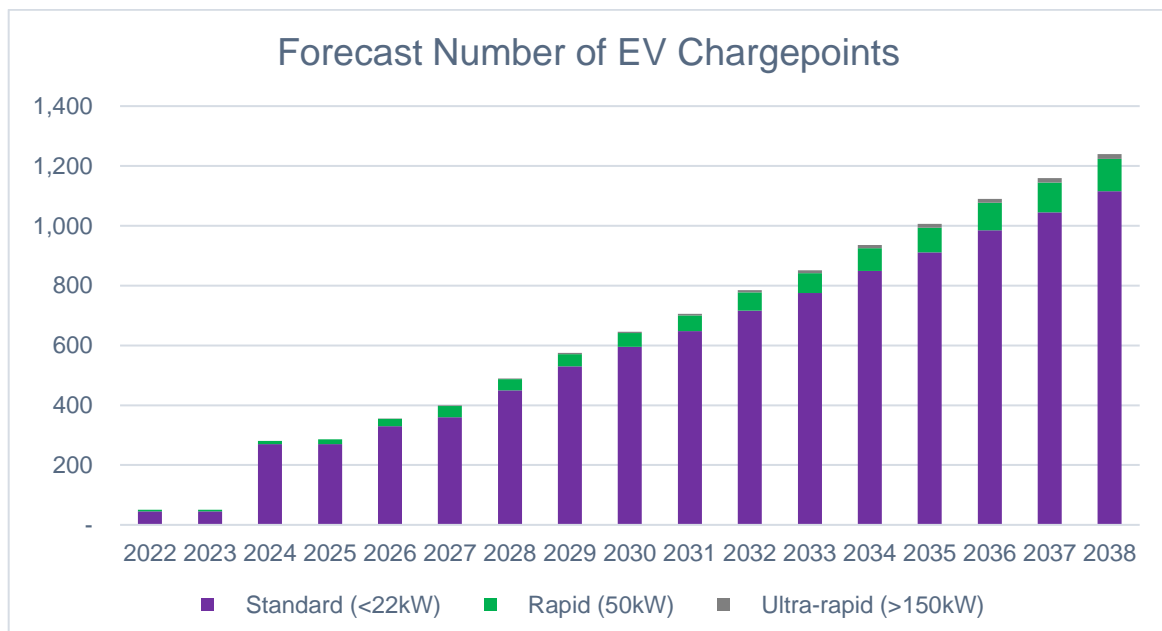
Publicly available chargepoints on public land including:

- Existing chargepoints,
- Those to be funded through the ORCS program
- Those to be impacted by LEVI capital funding and
- Those to be deployed after full distribution of LEVI funding
- × Utilisation factors for each of standard, rapid and ultra-rapid chargepoints
- = The amount of energy to be distributed via chargers on Council land

4.12 We forecast that approximately 350 EV Chargepoints will be required in council land by 2026, 850 in 2033 and up to 1,250 in 2038. Over 90% of these EV chargepoints will be standard (<22kW) chargers typically deployed on-street and some on public carparks for use by residents and local businesses, with the remaining being rapid (50kW) or ultra-rapid (>150kW) primarily for destination or top up charging.

4.13 Appendix A presents the methodology for converting projected EV adoption into projected demand for EVCI and Table 4.2 illustrates the summary results:

Table 4.2: Projected EVCP demand by type



4.14 Key considerations:

- Generally, LCVs travel longer distances with heavier loads consuming more fuel. As such, our methodology considers energy demand by LCVs separately from that

for cars and instead incorporates the projected amount of energy to be supplied via dedicated fleet depots.

- About 33%²³ of households in Harrow don't have access to off-street parking. We project that a higher proportion of early EV adopters will have access to off-street parking than the wider community. This assumption drives energy demand from the public infrastructure from 25% up to 32% by 2030.
- With the deployment of 225 standard/fast chargers to be funded via ORCS and installed throughout 2024, the percentage of public charging to be supplied from chargers on Council land will increase dramatically from the estimate for 2023.
- Utilisation factors for 2022 and 2023 reflect similar utilisation data reflected in Zap Map analyses. Due to the relatively large deployment of standard/fast chargers in 2024, we've anticipated a drop in utilisation as the charging estate grows faster than the EV parc in the short term.

Other considerations

Council fleet

- 4.15 Harrow council owns 275 fleet vehicles which are all kept at the Harrow Council Hub on Forward Drive.
- 4.16 7% of the fleet (18 vehicles) are already fully electric. Another 20 could be electrified at the next renewal cycle with vehicles currently available on the market. 40 vehicles can be electrified but the cost differential is significant, Harrow staff are actively pursuing these options.
- 4.17 58% of Harrow's fleet is made up of Special Needs Transport (SNT) vehicles, half of these 160 vehicles are then leased to and used in neighbouring Barnet. The costs of current models are prohibitive with the range and duty cycle.

Figure 4.2: Electric Sweeper in Harrow



²³ [LAD_Table2.pdf \(racfoundation.org\)](#)

Table 4.3: Council fleet electrification goals

Vehicle electrification timeline	Number of vehicles electrified	Proportion of Fleet	Vehicle types and characteristics
Today	18	7%	Cars and 1.5t vehicles plus a road sweeper
Short-term (2026)	54	20%	3.5t and below, average 15,000 miles/annum.
Medium-term (2030)	111	40%	31 x 15 – 26t vehicles used by the Refuse team 80 x SNT vehicles used in Harrow
Long-term (2035)	91	33%	80 x SNT vehicles used in Barnet 11 x 4.6 – 7.5 t vehicles used by the Streets and Grounds team

- 4.18 The Harrow Council Hub car park is used by staff and fleet vehicles and has between 25-30, 7.4 kW chargers which were installed two years ago when the building was built. No further chargers will be required for fleet in the next 5 years.

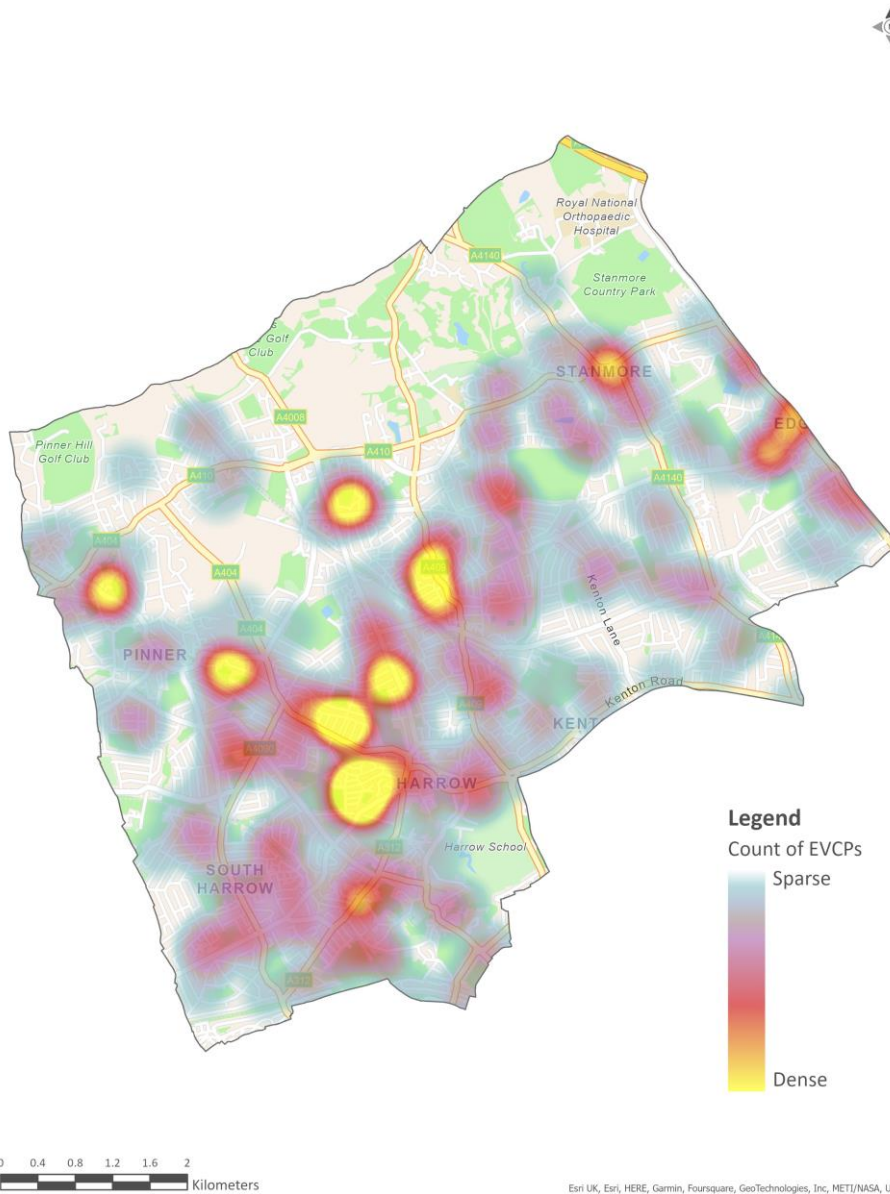
Figure 4.3: Satellite view of Harrow Council Hub, the car park for fleet and staff vehicles.


5 EVCP Location Assessment

Introduction

5.1 Further to the number of chargepoints needed, it is important to consider where they are needed. Harrow residents regularly request for chargepoints to be deployed closer to their homes to support them with EV purchase. The existing roll-out plan for on-street chargepoints across Harrow has been based on these requests.

Figure 5.1: Harrow resident chargepoint requests 2022-23



Source: Steer analysis of data from Harrow

Potential locations for slow and fast chargepoints

- 5.2 An analysis of the distribution of population and socio-economic factor across the borough was undertaken to evaluate the relative demand for EVCPs. Table 5.1 below presents the metrics used to develop a hexcell-based ranking map showcasing the distribution of EV charging demand, particularly for slow and fast chargepoints (e.g., chargepoints which are less than <22kW) charging for on-street and occasional destination charging across Harrow.

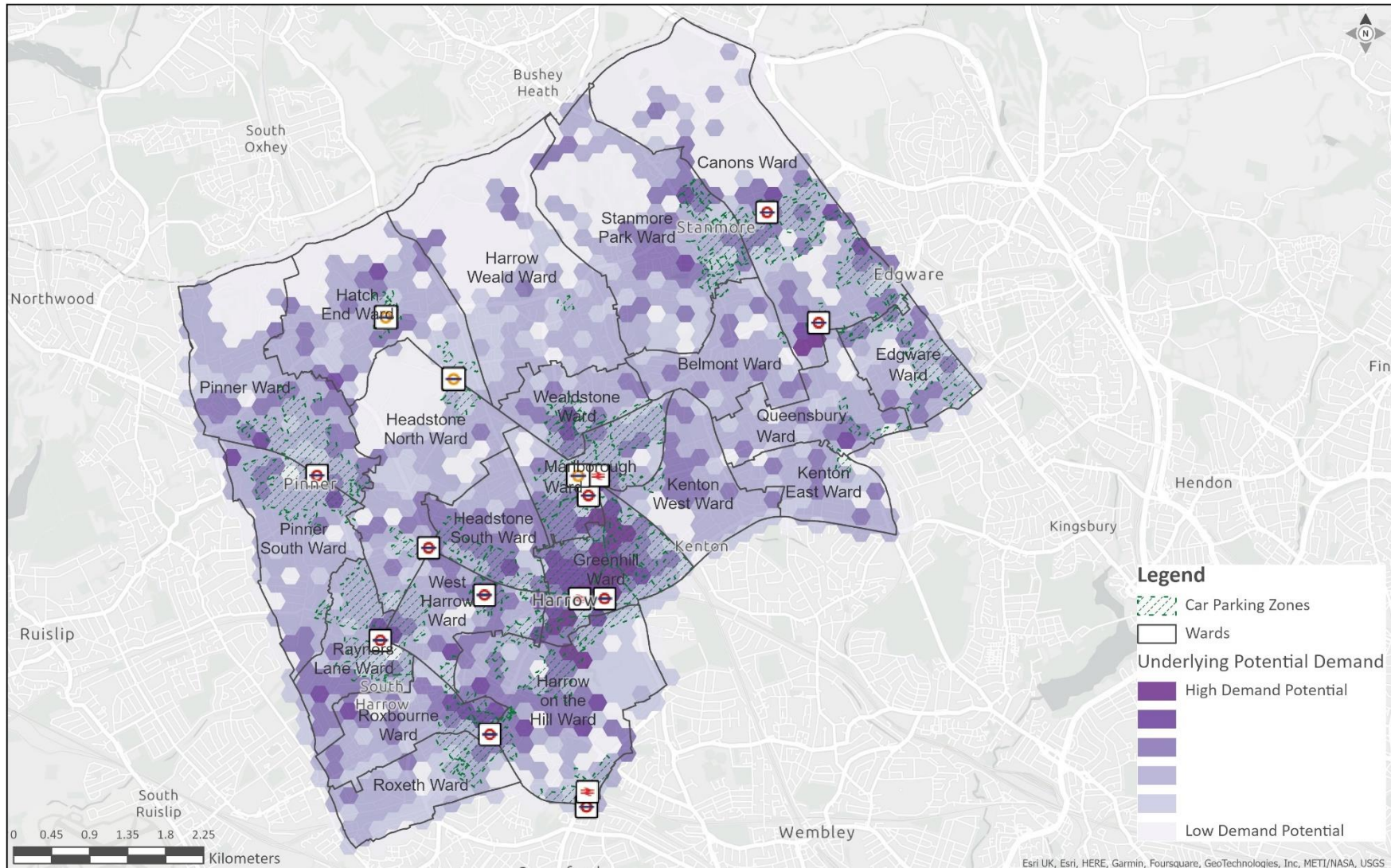
Table 5.1: Metrics considered for EVCP location assessment

Indicator	Reason for selection	Weight/ importance in ranking
Population	Higher population represents a higher potential demand	High
Household income	Higher household income represents a higher potential demand	High
Housing Type	Those without driveways (terraces / flats) are more likely to require on street charging	High
Car Ownership	Higher car ownership represent higher potential for those with cars to switch fuel type	High
Resident chargepoint requests	A resident request means there could be demand. Note all these are not feasible locations to implement, they are considered to understand where there is higher potential demand.	Medium
Employment	Higher employment represents a higher potential demand	Medium
Mosaic Population who says EV is the future of Motor Industry ²⁴	Population groups who have expressed that EV is the future of Transport	Low

- 5.3 The highest potential for on-street slow and fast chargepoints are in locations where there is high population density alongside higher car ownership, and lower access to off-street parking.
- 5.4 The map in Figure 5.2 below presents locations across Harrow with the relative demand for slow/fast chargepoints (on-street) with highest demand represented by the darkest areas and lowest by lightest areas respectively. There is highest potential around Harrow town centre in Greenhill ward, followed by Headstone South, West Harrow, Harrow on the Hill, Wealdstone ward and scattered around other wards.

²⁴ Experian's Mosaic UK profiling provides an accurate understanding of the demographics, lifestyles and behaviour of all individuals and households in the UK.

Figure 5.2: Slow/fast chargepoint potential locations



Potential locations for rapid or ultra-rapid charging

- 5.5 Furthermore, key locations for potential rapid or ultra-rapid chargepoints (50-150kW) have been identified, considering both the key destinations across Harrow (i.e., locations with higher dwell time) and the availability of space to locate rapid chargepoints (either standalone or in bunch). These locations include high opportunity areas (e.g. retail, high street car parks, industrial areas and so on). These chargepoints will help meet the need of residents for top-up charging, as well as that of visitors, small businesses, taxi and PHV drivers travelling into the borough.
- 5.6 Council car parks near town centre including St Anns Car Park, Greenhill Way Car Park, or Harrow Civic centre are good locations for Rapid/Ultra-rapid charging Hubs.

Figure 5.3: Rapid/ultra-rapid chargepoint potential locations

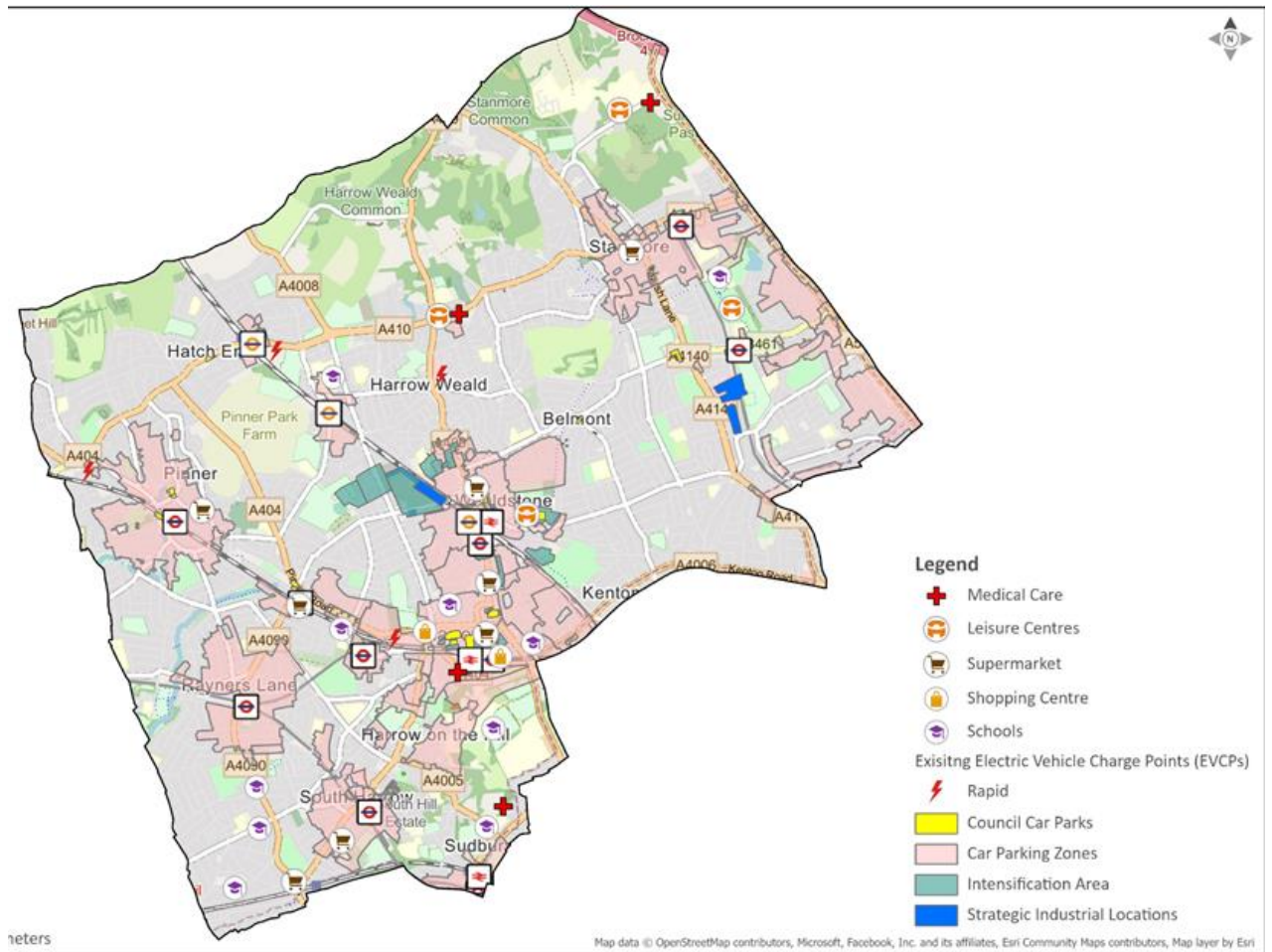
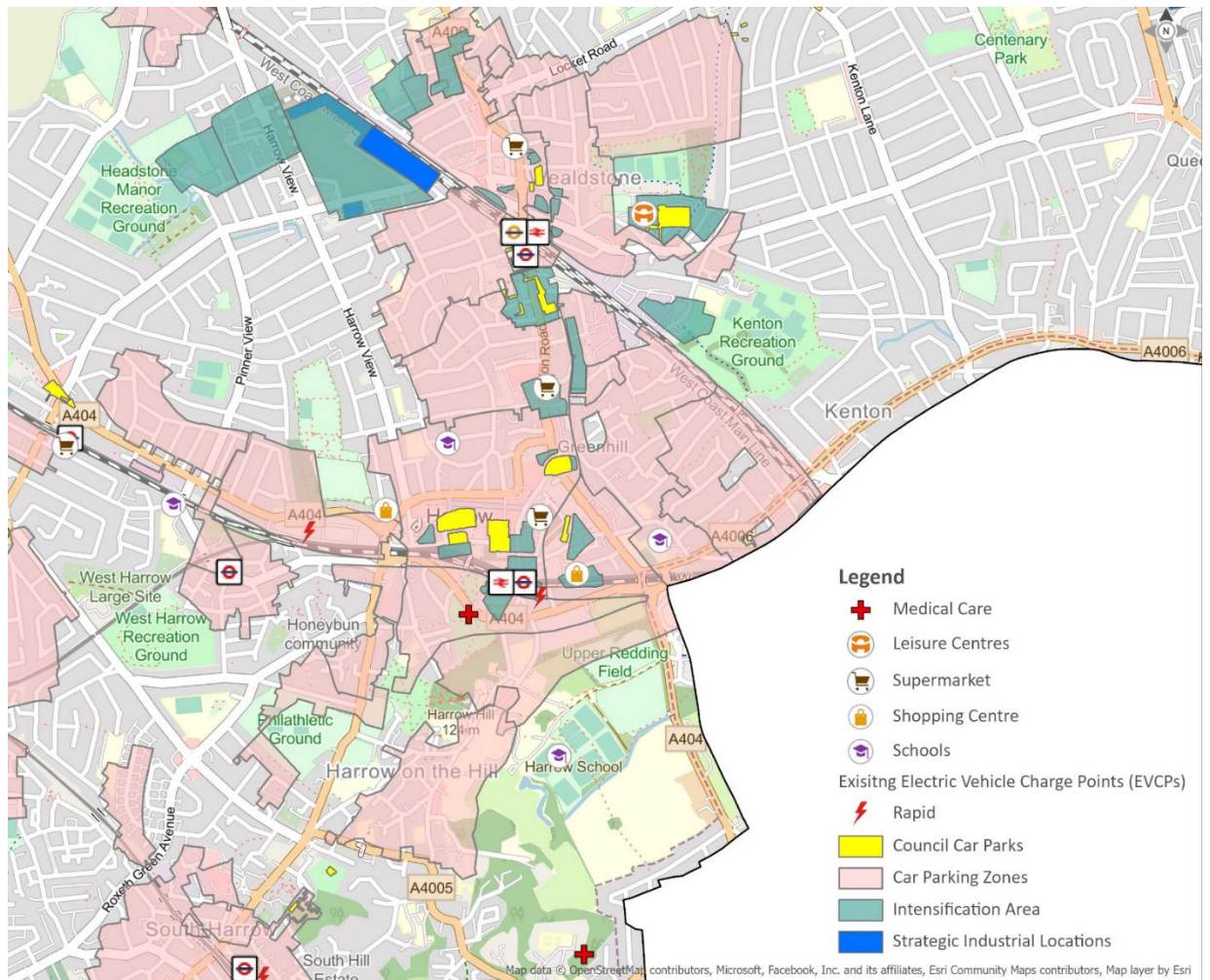
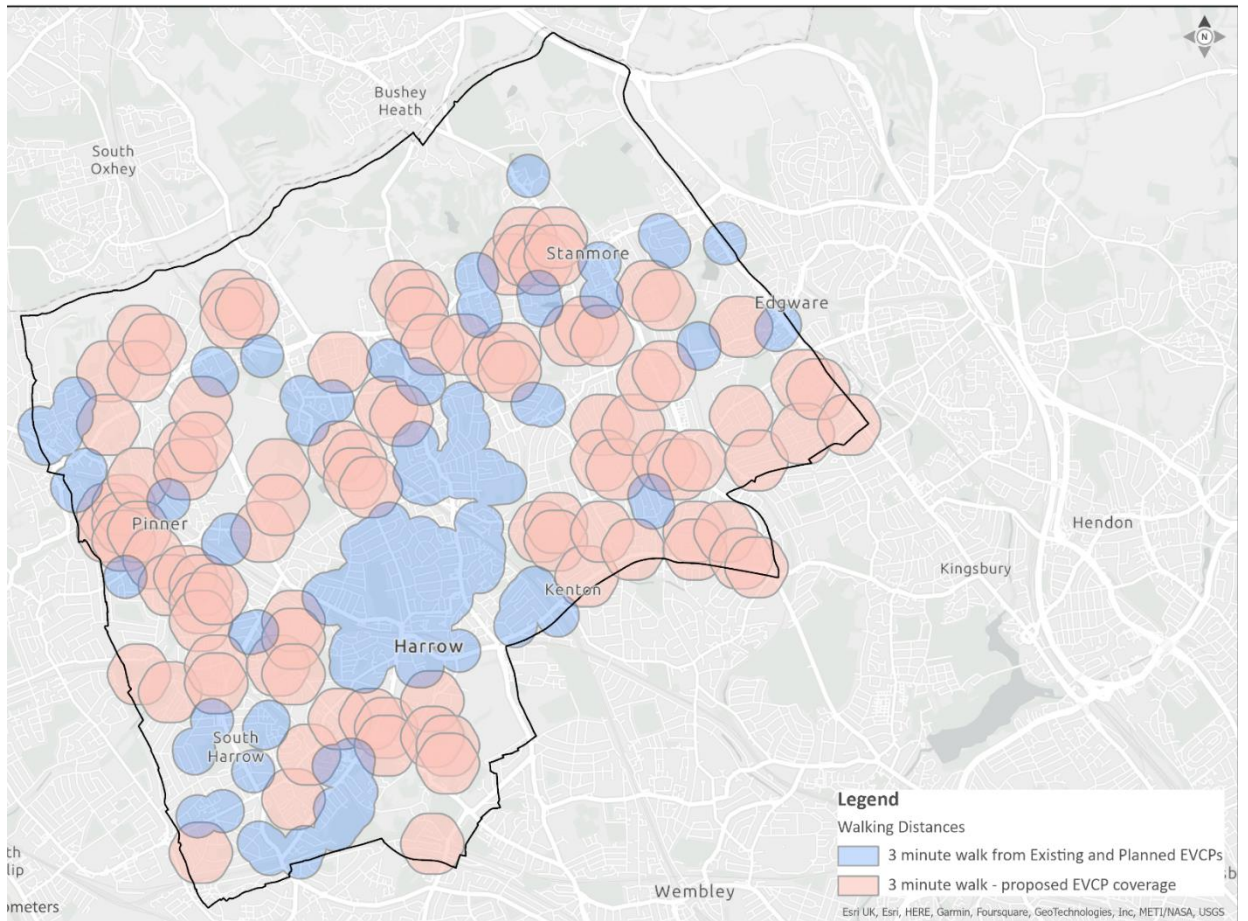


Figure 5.4: Rapid/ultra-rapid chargepoint potential locations (Harrow town centre)


Accessibility

- 5.7 Harrow is committed to ensuring equal access for all. Upon delivery of 225 additional chargepoints in 2023-24 (276 total), around 45% of population in Harrow will have access to a chargepoint within 3-mins walk.
- 5.8 In addition to underlying demand for chargepoints, the strategy also considers provision of chargepoints more equitably, to ensure more residents have access to a chargepoint within a walking distance.
- 5.9 The blue shaded areas in the map in Figure 5.5 represent areas where residents have access to a chargepoint within 3-min walk and the pink shaded areas show additional areas where a chargepoint would be needed to ensure all residents are within a 3-min walk to a chargepoints.
- 5.10 Please note, access does not ensure availability – there will be only one charger per 575 population so just considering equal access will not ensure sufficient coverage. This will be considered in addition to the relative demand assessment (Figure 5.2 and
- 5.11 Figure 5.3) while identifying potential locations for EVCPs.

Figure 5.5: 3-min walk EVCP coverage



6 EVCP Delivery Model

Introduction

- 6.1 We anticipate that nearly half of the public charging network in Harrow will be located on Council land and that the remaining chargepoints will be on private land (e.g., supermarkets etc). Development of charging infrastructure on Council land (roughly 350 chargers by 2026) will require a mix of funding from both public sources (e.g., the ORCS and LEVI programs) and private sources.
- 6.2 The sale of electricity through a public EV charging network is a commercial endeavour. The optimal commercial model to be engaged by the Council and licensed operators/investors relies on the resources each will bring to the undertaking including:

Harrow	Commercial Sector
<ul style="list-style-type: none"> - Licensing right (access to real estate and any other contributed assets) - Perspective on emerging demand - Stewardship of public money (e.g., ORCS and LEVI) 	<ul style="list-style-type: none"> - Facility for infrastructure procurement and installation - Access to private investment capital - Access to wholesale energy supply - Tech platform (customer bookings and payments, customer experience, etc.) - Back office functions (AR, AP, billing & collection, tax, regulatory)

Harrow enjoys the right to license operations on Council land, has a proprietary perspective on emerging demand for EVCP and stewards public money dispersed from the ORCS and LEVI programs. However, Harrow may elect to engage resources of the private sector including capital and certain operating expertise.

Commercial model for EVCPs

- 6.3 The array of potential commercial models are bounded by two extremes.

Table 6.1: Commercial models definition

	Council owned and operated	Licensed to a commercial CPO and private investor
Investment	Funded (and therefore owned) by the public sector via: <ul style="list-style-type: none"> • Public resources • Public subsidy 	Funded and owned by the licensee (CPO & private investor) via: <ul style="list-style-type: none"> • Private funds • Public subsidy
Installation	Undertaken by the Council	Undertaken by the Licensee (CPO)
Operations	Undertaken by the council and/or outsourced for fee	Undertaken by the licensee and/or outsourced for fee
Cash flow	Council w/ fees to suppliers	Licensee w/ fee to council

6.4 Between these two models there are an infinite number of variations by which each party contributes certain resources and enjoys a corresponding claim. The table below summarises some of the advantages and disadvantages of the two models to Harrow.

Table 6.2: Pros and cons of different commercial models for Harrow

Model	Council Owned		Council Licensed	
	Advantages	Disadvantages	Advantages	Disadvantages
Funding, ownership and installation	<ul style="list-style-type: none"> Greater control over distribution: <ul style="list-style-type: none"> Where and when devices are installed, What types of devices are installed 	<ul style="list-style-type: none"> Deployment limited to availability of public funds Vendor management obligation Commercial & tech risk Liability 	<ul style="list-style-type: none"> Access to private capital (supplement with public) affords wider distribution of public network 	<ul style="list-style-type: none"> Obligation to supplement investment opportunities to commercial viability Exposure to buy-out obligation: <ul style="list-style-type: none"> Early term End of term
Operations	<ul style="list-style-type: none"> Ownership of the customer experience and tariff management 	<ul style="list-style-type: none"> Burden on public resources to engage and manage retail-focussed business functions 	<ul style="list-style-type: none"> Turnkey operation Access to best-in-class resources Limited draw on council resources 	<ul style="list-style-type: none"> Longer-term commitment Exposure to license's operating and financial performance and Performance monitoring obligation
Value share	<ul style="list-style-type: none"> Prospectively higher (as a function of the greater amount of resources committed), but exposed to multiple commercial and technical risks 		<ul style="list-style-type: none"> Prospectively lower, but far more predictable and with far lighter burden on public resources 	

Preferred operating model for EVCPs

6.5 In establishing existing EV chargepoints and planning for the roughly 225 chargers to be deployed with ORCS funding, Harrow has already established a precedent in favour of the licensee-based commercial model. While Harrow has and will continue to subsidise at least some of the installed infrastructure cost, the Council is unlikely to suffer exposure to operating costs or risks and may enjoy some form of licensing fee.

6.6 On new deployments going forward, the Council will aim to secure both:

- A license fee from the operator and
- A yield on some or all of the funding invested by the Council (e.g., with proceeds secured from the LEVI fund) in new infrastructure.

6.7 With key resources in hand including:

- The right to license operating permissions for opportunities on Council land to private operators;
- Primary perspective on the emergence of demand for charging infrastructure throughout the borough; and
- Stewardship over public funds such as ORCS and LEVI..

Harrow is in a strong position to negotiate with prospective licensees for a commercial arrangement that fairly compensates the Council for resources contributed to the undertaking.

7 Action Plan

Introduction

- 7.1 A list of actions and interventions have been identified to support achievement of the key objectives and realisation of the vision of the EV Strategy. The proposed actions alongside a high-level implementation timeline are included in the following pages.

Monitoring and evaluation

- 7.2 We will review and update the strategy periodically to ensure delivery of actions and targets. This will include sharing information and knowledge with other boroughs, and implementing lessons learnt.
- 7.3 We will assign clear action owners to monitor the progress of each action, and will collect the evidence on:
- What actions have been delivered and with what outcome (e.g., carbon reductions);
 - Who was involved in the delivery; and
 - What was the impact on the vision and the objectives.



Targets and actions

Table 7.1: EV Strategy action plan

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
Outcome 1 - People: The needs and welfare of the people living or working in the borough, including the visitors, are met adequately and appropriately.						
Facilitate increased awareness of the benefits of EVs throughout the borough.	Continue to use existing council website as a platform to inform and signpost users to educational information on EVs, such as different EV models including large vehicles, associated costs as well as key facilities around EVs in the borough such as information on existing EVCPs.				£	Communications Team
	Review periodically and ensure all the information available on the website are up to date, and provide sufficient details on available schemes, upcoming trends and developments to allow residents to make an informed decision.				£	Communications Team
	Co-organise/support local engagement campaigns to encourage adoption of EVs and to understand where there is the greatest demand for charging.				££	Communications Team
Support the smooth transition to EVs	Almost 95% of Harrow is made of micro businesses. Work with small and high street businesses to understand their travel patterns and support them in considering EV adoption.				£	Climate Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
by residents, local businesses, and visitors.	Organise events with EV manufacturers to allow residents to test EVs before purchasing them.				££	Communications Team
	Continue to provide emission-based parking permits in the CPZs.				£	Highways and parking team
	Ensure EV charging bays in council car parks are clearly marked and signposted. On-street chargepoints will be at least clearly signposted.				££	Highways and parking team
	Continue to provide the facility for residents to request chargepoints in their area and ensure that these requests are reviewed (against planned rollout, wider demand analysis) and included in subsequent chargepoint procurement rounds. We will continue to respond to local demand and install EVCPs in locations identified by residents and businesses while seeking to ensure good distribution across the borough.				£	Highways and parking team
	Ensure all new developments in the borough comply with London Planning Regulations of providing passive EV charging connections at 20% of parking spaces.				££	Planning Team
	Attract private sector investment into EVCP provision by guiding them on where the demand exists and emerges over time to ensure over 60% electrification of all vehicles in Harrow by 2038.				£	Highways and parking team

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
Develop a network of EV charging infrastructure which is flexible enough to meet different user needs, at different time of day	Deliver 500 on-street chargepoints on council land by 2030.				££	Highways and Parking Team
	Ensure at least 10 rapid (50kW) and ultra rapid (>150kW) chargepoints are deployed on council land by 2026.				££	Highways and Parking Team
	Provide residents and visitors with confidence by deploying banks of rapid chargepoints in hubs, ideally in council car parks, leisure centres and parks, subject to funding availability and interests from private sector.				££	Highways and Parking Team
	Develop a prioritised rollout plan for the procurement of chargepoints across Harrow's car parks e.g. at leisure facilities, parks, housing estates, based on the underlying demand in the area. Where available use utilisation and charge duration data from existing chargepoints to assess demand for charging and type of chargepoints in the area.				£	Parking and Estates Team
	Support TfL's objective to roll-out rapid chargepoints in TfL owned sites and support joint-delivery of Hub development throughout the borough. This will be achieved through updating each other on roll-out and undertaking joint site visits and site shortlisting.				£	Planning Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
	Ensure public chargepoints on council land are accessible 24 hours a day throughout the year and will be well lit.				£	Highways and Parking Team

Outcome 2 - Vehicles: The aim is for the majority of the vehicles registered in the borough or travelling to the borough, to be zero emission vehicles.

Deliver a network of EV charging infrastructure which is fit for all types of vehicles and all types of vehicular trips made within the borough.	Deploy a mix of EVCPs (on-street fast and rapid) in strategic locations in accordance with the location assessment undertaken in Chapter 5.				£££	Highways and Parking Team
	Work in partnership with taxi and PHV operators and other stakeholders and review the evidence from existing electric taxi and PHV schemes to identify most advantageous locations where chargepoints can be installed to facilitate the usage of EVs by the drivers.				£	Highways and Parking Team
	Engage with other London boroughs to develop an effective EVCP procurement plan (which is scalable and with shorter timescales) and make joint applications for government funding (e.g. LEVI) to support commercialisation of EVCPs.				£	Highways and Parking Team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
	Engage with the industry to stay up to date on the latest developments in EV technologies and to pilot/trial technologies appropriate for our area.				£	Climate and Nature Team
Lead by example, by electrifying our own fleet of vehicles and developing Net Zero contracts.	Deploy a dedicated EV lead for the borough, who maintain an up-to-date understanding of the EV infrastructure industry by attending industry webinars and keep the councillor and borough officers informed.				££	Climate Team
	Develop a phased approach to council's own fleet electrification (as the existing vehicles reach end of life) and progress towards full fleet electrification by 2035.				£££	Fleet Team
	Periodically engage with CPOs to evaluate the market interests in deploying EV chargepoints at council estates, including review of electrical constraints.				£	Estates Team
	Develop a staff travel plan to encourage sustainable travel behaviour, including the use of EVs for all trips that need to be made by car or van.				££	Highways and Parking Team
	Ensure new contracts with third party service providers require contractors to use Zero Emission Vehicles for their operations.				£	All departments

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
Encourage use of EVs, while also promoting active travel (e.g., walking and cycling) and public transportation to reducing private vehicle ownership.	Support increased provision of EV car clubs in the borough by offering discounted permits to car club operators, dedicated marked bays and EV charging facilities for EV car clubs.				££	Highways Team
	Assist in the development and promotion of electric car club schemes and their use, particularly for employees to reduce congestion in the borough by considering workplace parking levies.				££	Highways and Parking Team
	Conduct feasibility of introducing Mobility Hubs with EV charging, public transport, shared mobility services, and other public realm improvements in one space (e.g., town centre car parks)				£	Highways and Parking Team
	Work with TfL to support phased electrification of all buses in the borough.				£	Highways and Parking Team

Outcome 3 - Infrastructure: A holistic approach is taken for delivery of EV charging infrastructure in the borough, which is procured competitively.

Ensure the EV charging infrastructure is reliable,	Ensure 80% of the residents in the borough have access to a chargepoint within 3 mins walk from home.				£££	Highways and parking team
	Ensure public chargers on council land are 100% reliable.				£	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
accessible, and inclusive.	Ensure contactless payments is available on all chargepoints over 7kW capacity.				£	Highways and parking team
	Ensure users are able to access information on availability, costs and payment method remotely through an App or website.				£	Highways and parking team
	Ensure all new chargepoints meet the accessibility standards set out in BSI Electric vehicles - Accessible charging - Specification (PAS 1899:2022).				£	Highways and parking team
Ensure that charging through the public EV infrastructure is fairly priced and economically sustainable.	As recommended by the Competition and Markets Authority (CMA), ensure that several chargepoint providers operate in the area to allow competition and fair priced tariffs.				£	Highways and parking team
	Conduct demand assessment periodically and facilitate delivery of chargepoints as and when demand emerge by prompt engagement with CPOs.				££	Highways and parking team
	Engage with UK Power Networks (UKPN) to review and address power connection constraints in the borough at early stages of planning to support planned rollout of chargepoints.				£	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

Objective	Action	Short (2026)	Medium (2033)	Long (2038)	Indicative costs*	Delivery Lead
Ensure the EV charging infrastructure does not obstruct or disrupt the safety of pedestrians and other road users.	For residential charging, look for solutions that integrate seamlessly into local streets, minimising disruption to pavement access. Where possible we will install lamp column chargepoints in clusters of at least two or three to ensure that chargepoints are easy to find.				££	Highways and parking team
	Ensure parking for chargepoints do not replace parking designated for people with a disability/blue badge parking spaces.				£	Highways and parking team
Ensure the EV charging infrastructure provided in the borough remains relevant and fit for purpose.	Develop passive connections, increase electrical capacity and complete street/ground works ahead of demand emerges throughout the borough (utilising LEVI funding).				£££	Highways and parking team
	Develop and oversee contracts that ensure the charging networks is reliable, well managed and maintained and that infrastructure is removed (and upgraded) if obsolete. Users should be able to report issues easily and these should be resolved promptly by the operator.				££	Highways and parking team

*Indicative costs: £ – <£50,000; ££ – £50-200,000 and £££ - >£200,000

A Methodology to forecast number of EV Chargepoints

Demand for EV Charging Infrastructure is a function of the adoption of electric vehicles. The following illustrates Steer's methodology for converting projected EV adoption into projected demand for EVCP:

Table A.1: Forecasting methodology for EV Chargepoints

	Total Forecast Number of EVs	"total parc"
(-)	EVs with access to off-street parking	"off-street parc"
	Number of EVs 100% reliant on public charging resources	"on-street parc"
	Number of EVs 100% reliant on public charging resources	"on-street parc"
(x)	Energy consumption factor (annual mileage divided by fuel efficiency)	"energy factor"
	On-street parc from public chargepoints	"on-street/public"
	Off-street parc	"off-street parc"
(x)	energy consumption factor (annual mileage divided by fuel efficiency)	"energy factor"
	total fuel consumption of off-street parc	"off-street/total"
(x)	percent of charge taken away-from-home	"roaming factor"
	Off-street from public chargepoints	"off-street/public"
	On-street/public	"on-street/public"
(+)	Off-street/public	"off-street public"
	Total power demand from public chargepoints	"total public"
(x)	Channel allocation	"channel allocation"
	Demand for public charging via channel (i.e., fast, rapid, ultra)	"public by channel"
(x)	Utilization factors for standard/fast, rapid and ultra-rapid devices	"utilization factors"
	Number of standard/fast, rapid and ultra-rapid devices required	"public devices"

Figure A.1: Results for forecast EV Chargepoints

	2022	2023	2024	2025	2026	2029	2031	2033	2035	2037	2038
EV Parc (cars and LCVs)	3,535	4,829	6,024	7,467	9,312	18,298	27,854	38,432	49,946	61,524	67,192
% of Total Parc	3%	5%	6%	7%	9%	17%	26%	36%	46%	56%	61%
Total Energy Demand (mWh)	6,907	9,898	12,898	16,156	20,263	40,677	63,789	90,481	119,864	150,271	165,256
% of Total via Public	25%	26%	27%	28%	28%	31%	32%	33%	35%	36%	36%
% of Total via Public on Public Land	6%	8%	11%	13%	15%	16%	14%	13%	12%	12%	12%
% of Public on Public Land	24%	29%	41%	48%	51%	53%	43%	39%	36%	34%	33%
Utilization Factors											
Standard/Fast	14%	15%	10%	9%	11%	13%	14%	15%	15%	16%	16%
Rapid	11%	13%	12%	11%	11%	13%	14%	14%	15%	16%	16%
Ultra-rapid	12%	15%	11%	10%	11%	13%	12%	13%	13%	14%	14%
Devices on Council Land											
Standard (<22kW)	45	45	270	270	330	530	648	775	911	1,045	1,116
Rapid (50kW)	6	6	11	16	25	41	52	67	83	99	108
Ultra-rapid (>150kW)	0	-	-	-	1	4	6	9	12	15	16

Control Information

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