Haringey LONDON

Planning Advice Note

Installing electric vehicle charging points

For Highways Engineers

Transport for London

LONDON COUNCILS

SUPPORTED BY

MAYOR OF LONDON

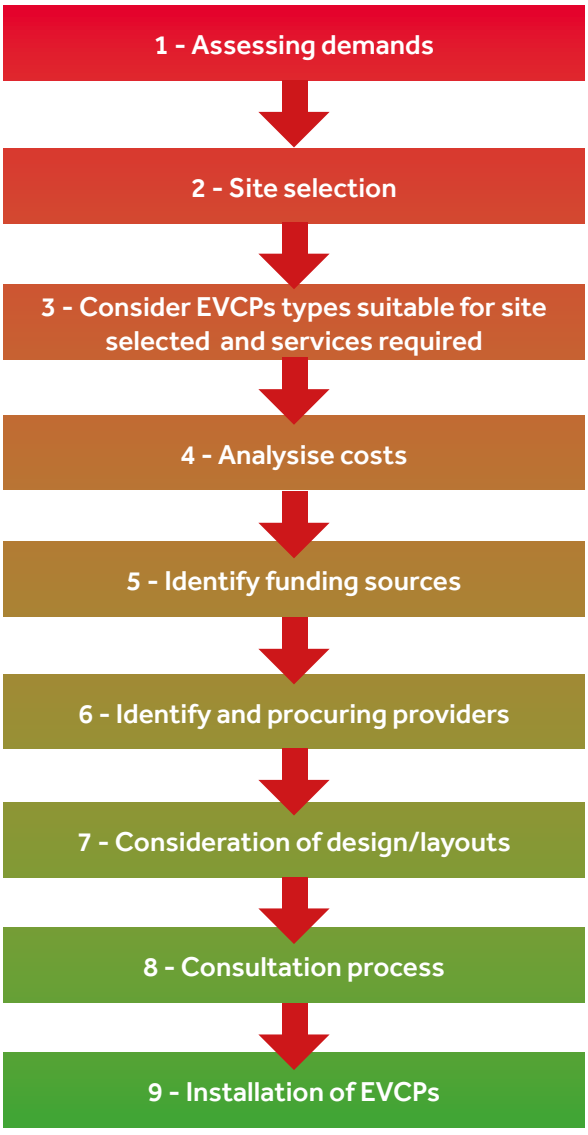
Contents

Introduction

This guide is for borough officers who are responsible for the procurement, design, installation and operation of electric vehicle charging points (EVCPs) on public highways and in public car parks.

This document provides a step-by-step guide to officers who are considering implementing EVCPs in the borough, whether on-street or off-street in public car parks. Specifically, the guide aims to simplify and make more accessible the process of EVCP provision. Unless otherwise stated, the information in this guide will relate to both on-street and off-street installations.

The overview of the overall installation process is outline below:



1. Assessing demand

Assess both current and future levels of electric vehicle (EV) demand in the borough, and identify who the user groups are. This can be done through collecting requests from residents to install a charging point on their road, or through working in partnership with local community groups, residents associations and businesses. You can work internally with your Transport Planning team, or with other local or regional authorities to determine levels of demand.

Assess which areas in the borough have a greater level of car use, electric or otherwise. The Office for Low Emission Vehicles (OLEV) publishes data quarterly on EV numbers by local authority, and can be accessed here.

Maximise economies of scale by mapping requests and carefully planning the locations of EVCPs to serve as many residents as possible. Varying user groups may charge their vehicles using different technologies and in different locations. For example, residential areas, strategic transport networks, and being in close proximity to retail locations.

To encourage EV demand, provide more charging points than current demand shows. This will encourage residents and businesses to switch to EVs. The ratio of number of EV users to charging points can be determined through looking at how much off-street parking access there is in that area.

2. Site selection

The following should be considered when selecting sites for EVCPs:

- Visibility/accessibility – highly visible, accessible and busy locations are desirable. Should also consider proximity to existing charging bays.
- Existing street furniture – prior to considering standalone type EVCPs, charging points which can be incorporated within existing street furniture i.e. lamp columns should be considered.
- Road and footway space – in residential streets a minimum of 1.8 metres footway width should be available for pedestrian access. In areas/streets with high footfall, such as shopping areas, near schools etc. a minimum of 2 metres of unobstructed footway width should be available.
- Parking space – should minimise impact on existing parking availability for residents/business and pay by phone bays and under utilised spaces should be considered.
- Other spaces – where footway spaces not sufficient, build-outs and other types of streetscape like parklets, can be considered which incorporates an EVCP.
- Lamp column charging points – can only be installed on lamp columns which are close to the kerb and cannot be installed if a lamp column sits at the back of the footway.
- Use of the charging points - determine the usage i.e. for residential use, business use, commercial use, car clubs and other user groups.

3. Types of electric vehicle charging points

The charging points you need will depend on the type of development you are building. There are three main types of charging points: standard, fast and rapid. The speed that vehicles can charge at is determined by how much electrical power (kW) the charging point delivers. A summary of charging technologies and their specification can be found in the table below.

Charge term	Standard	Fast		Rapid	
Power transfer (approx.)	< 3.6 kW	< 7 kW	< 11 or 22 kW	< 43 kW	< 50 kW
	Single phase	Single phase	Three phase	Three phase	DC
Current	16A	32A	63A	120A	
Typical charging time (full)	8 – 12 hour	3 – 4 hour	1 – 2 hour	80% in 20 – 30 min	
User group	Residents, workplaces	Destination hubs: retail outlets, visitor parking (domestic and non-domestic)		Delivery services, taxi ranks, car clubs	
Capital costs (approx.)[1]	> £500 (wall mounted)	> £6000		> £45000	
Operational costs	Electricity, rent, back office, maintenance, customer service, enforcement and lost parking revenue				

[1]It should be noted that CAPEX costs change based on the location and electricity capacity in that area. Upgrading the local electricity infrastructure, or the need for a longer cable from the electricity supply to the charge point, will increase costs. The local electricity supplier will be able to provide an accurate cost with more detail.

Standard (up to 3 kW)

Standard charging points (Figure 1) can be either wall or floor mounted, or can be integrated into a lamp column (Figure 2). As the charging time for a full battery is 8 to 12 hours, it is best suited to overnight charging at home. Where residential parking spaces are provided, they should have standard charging points, as most users will charge their vehicles overnight. The number of users in a 24 hour would be low, with only one or two people per charging point.

Figure 1. Standard 3.6 kW charging unit. (Source: EV Compare)

Figure 2. Example of a lamp column charging point. (Source: Air Quality News)

Lamp column charging points incorporate charging facilities which remove the need for additional street furniture. They should be considered for residential use in residential areas.

Fast chargers

Fast chargers are suitable for destination charging, such as at visitor parking at workplaces and retail parking, due to the charging time of 1 to 4 hours for a full charge (Figure 3). A greater number of people can charge their vehicles in a day. These are commonly free-standing charging points.

Figure 3. Fast 7 kW charging unit. (Source: Source London)

Rapid chargers

Rapid charging units can charge a car to 80 per cent capacity within 30 minutes (Figure 4). These chargers are best suited for taxis, delivery services, commercial vehicles or company cars, who will need to recharge their batteries quickly. Rapid charging bays should therefore also have restrictions in place which limit users to a 1-hour stay.

Rapid charging units are larger than standard or fast chargers, and therefore have a greater impact on the local environment. Some rapid chargers require planning permission due to height, and in some cases, installations will require power supply upgrades. Under the Town and Country Planning Act (General Permitted Development) (England) Order 2015, planning permission is not required for charging points under 1.6 metres installed more than 2 metres from a highway. However, rapid chargers are typically taller than 1.6 metres and therefore planning permission is generally required for their installation.

As these charging points are large in size, they should be considered for off-street sites first. They can be considered for on-street locations if there is sufficient space on the pavement or in the road to accommodate this type of unit. These charging points should not be considered for residential streets.

Figure 4. Rapid charger (Source: Polar Network)

What are active and passive charging points?

Active spaces are fully wired and connected, ready to use, charging points at parking spaces. Passive provision is when the necessary underlying infrastructure (e.g. capacity in the connection to the local electricity distribution network and electricity distribution board, as well as cabling to parking spaces) to ensure simple installation and activation of a charging point at a future date.

Considering active and passive charging is important when looking at the scalability of the technology and their costs. You may start with one or two chargers but as electric vehicle demand grows, you will need to install more. Installing some active and some passive charge points would allow you to be future-proof your company for future electric vehicle demand.

What are the benefits of smart charging?

A smart charging point can receive, process and react to information or signals, such as adjusting the rate of charge or discharge; transmit, monitor and record information such as energy consumption data; comply with requirements around security; and be accessed remotely. Smart features and automated software updates future-proofs your investment. The Automated and Electric Vehicles Act 2018 mandates out that all new charging points should be smart-capable.

Some developments will not have the electrical capacity to charge all electric vehicles at once. Power management through smart charging units means you can install more units than rated capacity and eliminate or significantly delay costly upgrades.

An increase in electric vehicle demand could increase peak demand on power distribution networks. This could require reinforcement of the local electricity grid which can be costly and time consuming. Smart charging allows you to control demand for electricity during a charging session and allows you to manage the network.

4. Costs

The costs for supply, installation and maintenance of charging points varies based on the type of charging points and services required from suppliers.

The table below shows an indicative cost for equipment and installation of EVCPs.

	Costs		
	Lamp columns (up to 3 kWh)	Standard (7 kWh /22 kWh)	Rapids (AC 43 kWh and DC 50 kWh)
Charging point equipment	£1600 – 2,500	£1600 - £5000	£20,000- £50,000
Feeder pillar	N/A	£600 – £1,200	£600 – £1,200
Charging point installation	£600 - £1300	£2500 – £12,000	£25,000 - £30,00
Operating and maintenance	£1500 - £2000**	£1,900 - £6,500**	£1500 - £2000**
Traffic order costs	*£3500 per TMO	£3500 per TMO	£3500 Per TMO

Note:
* Only if designated spaces are required
** Cost per year per unit based on 60 months service contract

[3]The Automated and Electric Vehicles Act 2018

5. Grants, funding and budget available

Look out for grants and funding opportunities to take advantage of. The Office for Low Emission Vehicles currently provides funding to local authorities seeking to install on-street residential charging points.

The Go Ultra Low City Scheme (GULCS) also provides funding to cities to increase the uptake of EVs. Both of these schemes provide funding and a framework to procure charging points.

EV providers can also meet all the costs associated with installation and maintenance, depending on the level of contract you enter.

6. Charging point providers and procurement

Contact charging suppliers to understand their technology better and what they can offer the borough. There are multiple partnership arrangements to enter:

- The Council can own and maintain the charging points.
- The Council can own the charging points and a contracted service can operate and maintain them.
- The charging point company can own, operate and maintain the charging points.

These partnerships can vary. For example, the Council can lease the public highway to charging point companies for an annual fee, or the Council can receive a percentage of the turnover made.

Other procurement criteria should consider management and maintenance options, the design of the charging point and its impact on the streetscape, and the percentage of turnover you may receive from the supplier.

7. Design consideration and layout

Design consideration

The following should be considered when installing a charging point on public highway:

- In areas of high footfall areas (such as shopping areas, outside schools and event locations) a minimum of 2 metres unobstructed width of pavement (between the point and the back of the highway) is preserved;
- In areas of reduced pedestrian movement (such as residential areas) a minimum of 1.8 metres of unobstructed width of pavement is preserved; or
- In areas of historic heritage and narrow pavements, where there are restrictions in the pavement width, may consider less pavement width than 1.8 metres as long as all health and safety, accessibility, and heritage aspects are assessed as well as if the community benefits outweigh the negatives.

Layout

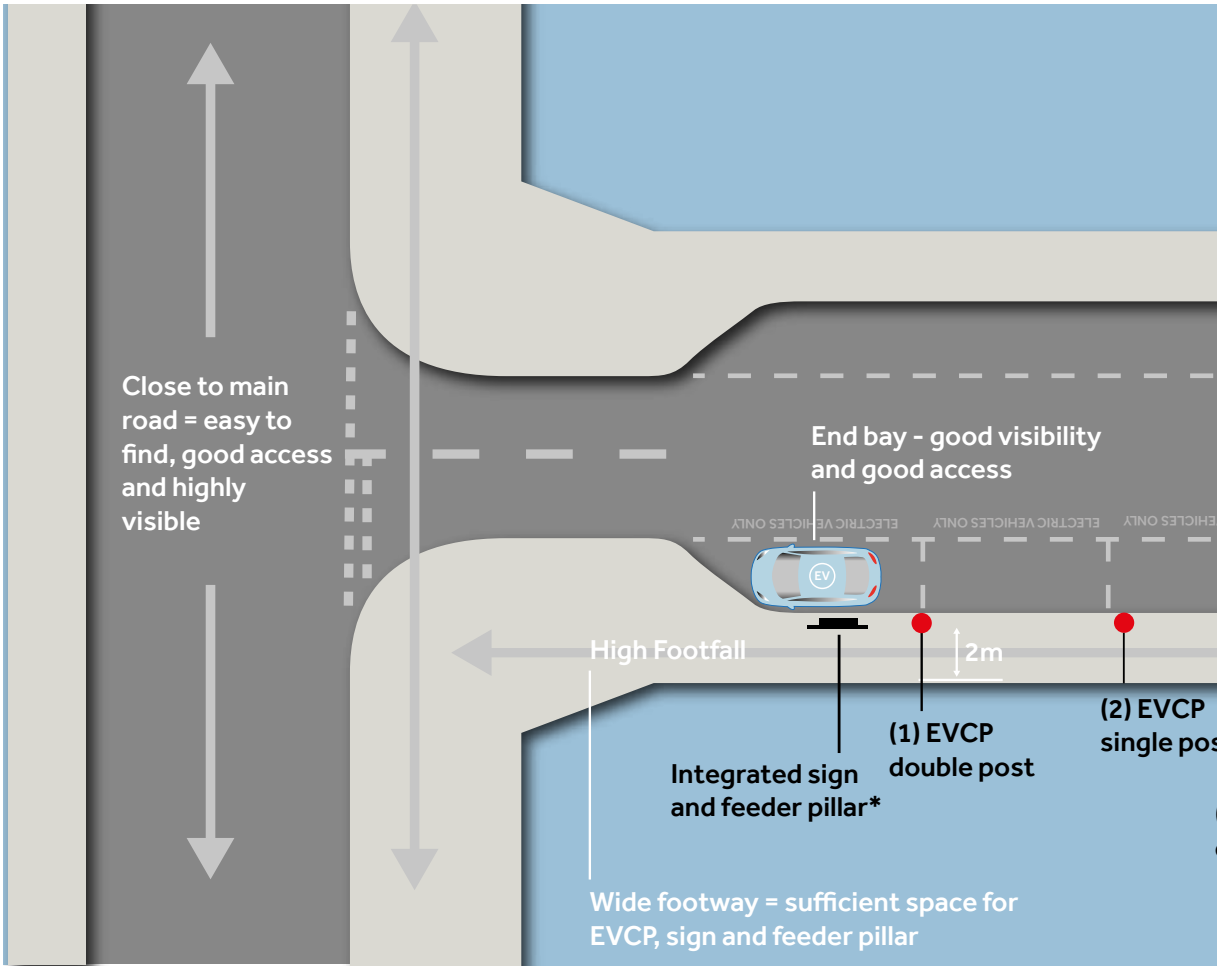


Figure 5. On-street charging options.

Option 3, the preferred approach when installing charging points is first on build-outs into the street, to maintain accessibility on the footway. The typical bay layout for this is shown in Figure 6.

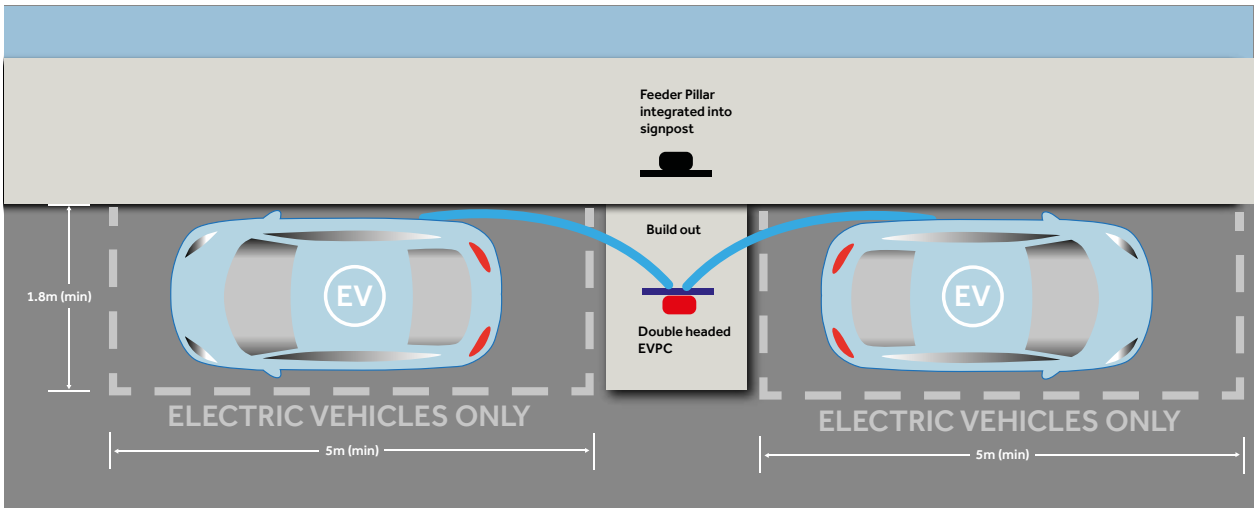


Figure 6. Bay layout and design for a build-out.

Figure 7 shows the layout for installing a charging point on the pavement. The preferred approach is to install a feeder pillar integrated into the signpost to reduce street clutter. Charging points should be installed kerb-side to minimise trip hazards.

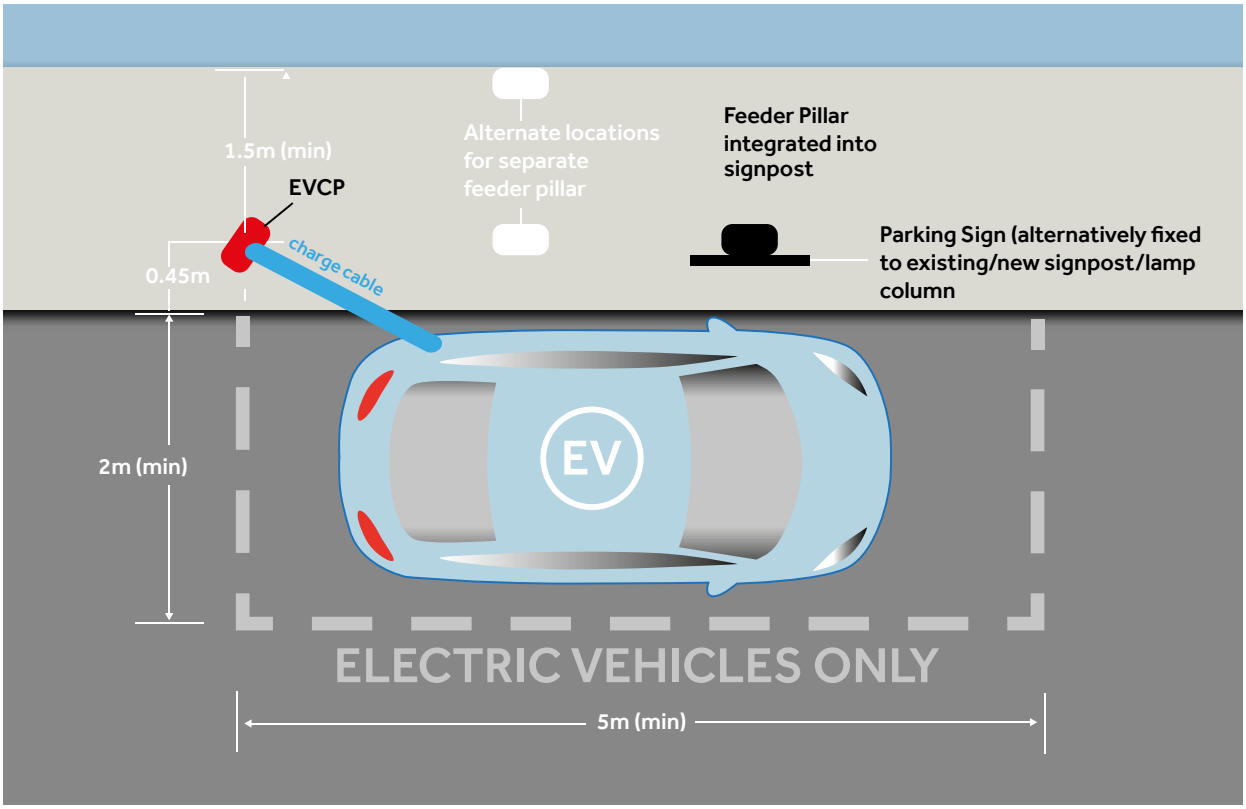


Figure 7. Charging point layout and design on pavement.

8. Consultation and approval

When sites for EVCPs have been confirmed, locations should be advertised through statutory consultation as part of the TMO process. Local residents and businesses, as well as ward councilors should be notified.

To get a comprehensive idea of people's views, the design of each bay should be included in the consultation process.

Any objections received during the statutory consultation must be considered and approved by a Delegated Authority prior to proceeding to the installation process.

9. Installation and maintenance

Instalation process

The installation process for charging points is relatively straightforward. However, it is important to understand the roles which parties are undertake the various tasks and these need to be outlined agreed in the contract with the EVCP provider. The installation process includes:

- Installation of feeder pillar and associated works
- Connection of mains power supply by a DNO
- Installation of charging units and associated civil works
- Signage and bay marking – this can be carried out by the council contactor or by the EVCP provider

Maintenance

The contract with an EVCP supplier must include a maintenance agreement to ensure that there is regular maintenance of the charging points and should include:

- Making the charge points visible to and accessible by all EV drivers
- First line support through a 24/7 fault and maintenance helpline
- Advertising the EVCP on a charging point map. For example, Zap Map

10. Parking controls for EV points

Parking controls for charging bays can vary depending on where they are located and can have a restricted operational time period where EV users are allowed to park and charge for a certain period of the day or can be provided without time limits.

The signs and bay markings for EVCPs are contained and are as per the Traffic Signs Regulations and General Directions (TSRGD) 2016.

EV bays should be clearly signed and marked for EV charging only. Ensure there is effective signage for the bays as per the regulation.

Appendices

Appendix A – Design checklist

Bay Layout	
Maintain 2m wide space on the footway	Where possible, install charging points in the road. This eliminates disruption to pedestrian movement. Charging points should not impede the footway when being provided for on-street parking as shown in Figure 9. The footpath is to retain a minimum of 2 metres wide to ensure pedestrians, including wheelchair users, those visually impaired and pushchairs, can access the street with ease[3].

Bay Layout	
Consider integrated feeder pillars	There are two types of pillar: external and internal within a sign post housing (Figure 10). Internal feeder pillars are expected in order to minimise street clutter.

[3]Manual for Streets, 2007

Bay Layout		
Accessibility for people with disabilities	The design of the EVCPs should comply with the Equality Act 2010, Disability Discrimination Act (DDA) 1995 guidelines and Department for Transport (DfT) Inclusive Mobility – a guide on best practice on access to pedestrian and transport infrastructure (May 2002) guidelines (p. 35 of 115). The design of the EVCPs shall permit compliance with the requirements of BS 8300:2009 and A1:2010 – Design of Buildings and their approaches to meet the needs of disabled people code of practice. EVCP units serving disabled bays should be positioned at a height and angle to allow wheelchair users access. Adequate space should be available on any footway for wheelchair users to navigate around the charging unit.	
Eliminate trip hazards	Care should be taken to prevent trip hazards from the charging cables (i.e. place the charging unit no more than 0.45 m from the kerb rather than at the back of the footpath). Avoid wall-mounted units where there is a pathway in between the charging point and the vehicle.	
Signage	EV bays should be clearly signed and marked for EV charging only. Ensure there is effective signage for the bays. You do not necessarily have to state a maximum time allowed.	

Appendix B – Useful links

- Quarterly data on electric vehicle take up, Office for Low Emission Vehicles: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01
- Electric vehicle charging infrastructure: Local guidance for London, Transport for London (2015): http://content.tfl.gov.uk/electric-vehicle-charging-infrastructure-location-guidance-for-london.pdf
- On-street Residential Chargepoint Scheme, Office for Low Emission Vehicles: https://www.gov.uk/government/publications/grants-for-local-authorities-to-provide-residential-on-street-chargepoints

Appendix C – Important contacts

Charging point infrastructure and operations:

- Bethlehem Girma, Project Engineer – 0208 489 1763
- Ben Jackson, Project Engineer – 0208 489 2618

Electric vehicle strategy and policy:

- Joe Baker, Head of Carbon Management - 0208 489 3976
- Neil Goldberg, Transport Planning Officer – 0208 489 4255
- Zahrah Ali, Electric Vehicle Officer – 0208 489 4509