London’s electric vehicle charge point installation guidance

December 2019

Transport for London

Introduction

This guidance provides information to support the installation of electric vehicle (EV) infrastructure in London. The focus of the guidance is on the implementation process and considerations specific to London's streetscape.

It supersedes the previous 'Guidance for implementation of electric vehicle charging infrastructure', published by Transport for London (TfL) in April 2010. The rationale for updating it at this time is in response to the findings of the Mayor's Electric Vehicle Infrastructure Taskforce and the associated London Electric Vehicle Infrastructure Delivery Plan (June 2019). In this, up-to-date official guidance for installing the infrastructure in London was considered key to enable the levels of infrastructure expected to be needed by 2025, to ensure infrastructure would no longer be a barrier to people switching to EVs.

The Delivery Plan also sets out a future focus on rapid charge points ('rapids') in particular to suit the needs of essential, high-mileage road users such as taxis, private hire and other light commercial vehicle drivers. It explains the rationale for a focus on rapid charging hubs, and sets out a vision for at least five to be put in place, one in each sub-region of London, by 2025. To improve overall coverage, additional rapid chargers should be prioritised to serve London's town centres. This could be in the form of hubs or single rapid chargers, to primarily serve commercial needs. For slower chargers, the focus is on increasing the numbers to meet the rising demand and to plan for this strategically as opposed to an ad hoc way. In addition, the importance of minimising streetscape impact is paramount, and this guidance will help to encourage this.

Similar to the 2010 edition, the primary audiences for this document are London borough officers and private landowners looking to install EV charge points. It will also be useful for urban and landscape designers, architects, product designers, manufacturers, suppliers, operators and energy distributors as well as authorities outside London with an interest in installing EV infrastructure.

The history of London's EV charging and how it has evolved is set out in further detail in the Delivery Plan. Numbers are constantly growing and as of September 2019, London has 4,292 publicly accessible charge points spread across 2,779 locations[1]. There has recently been a huge uplift in lamp column charge points across London on residential streets as a result of the Go Ultra Low City Scheme (GULCS).

London Councils will also be setting up a coordination function to help with EV infrastructure installation. This will aim to provide a central source through which boroughs can get information and support for installing new charge points across London. When live, this will be hosted on London Council's website.

In its Road to Zero strategy, the Government has set out that from 2040 it will end the sale of petrol and diesel cars and vans. The Mayor's ambition is to accelerate this target and work towards all new cars or vans registered in London to be zero emission by 2030, meeting the aspirations of the Committee on Climate Change. This highlights the need for growth of the public charging infrastructure network, which is to be achieved with the help of private and public sector input. The focus is on extending infrastructure for high-mileage users such as

[1] *Zap-Map: Guide to EV charging*: https://www.zap-map.com/charge-points/

taxis, private hire and light goods vehicles which are essential to keep London moving while supporting all Londoners. EV infrastructure in London should complement the Mayor's other aims around encouraging more people to walk, cycle and use public transport while seeking to reduce the number of cars on London's roads. Where people do need to drive a car it should be the cleanest possible vehicle. A good EV charge point network can support this switch to cleaner vehicles.

Due to the changing nature of EV technology, both in terms of vehicles and charge point infrastructure, we will keep this guidance under review and update when necessary to ensure it continues to reflect the current state of the EV market and the technology available.

Structure of this guidance

The guidance is divided into five sections:

- **Policy context** – provides the policy context for EV infrastructure to deliver zero emission transport in London
- **Selecting the type of EV charge point** – sets out the different options and user needs for different types of charge point infrastructure
- **Design of EV charge point facilities** – provides parameters for the design of charge point facilities and considerations for all users of the street
- **Planning and consents** – sets out the possible requirements for implementing charge points
- **Implementation, operations, safety and maintenance** – details the considerations for implementation and ongoing operation and maintenance of facilities

Scope of this guidance

Not all electric vehicle charging infrastructure is covered by this guidance document. This is because the focus here is on publicly accessible infrastructure as opposed to private infrastructure. Also the technology is constantly advancing, and options such as wireless charging are not considered viable to be widespread at this point in time.

The following infrastructure is covered in the guidance:

- **Location:** On-street and off-street charging infrastructure including single and double roadside charge points as well as hubs for six or more charge points
- **Access:** Publicly accessible charge points, both on-street and off-street. The guidance does not cover private or home charging infrastructure
- **Speed:** Static posts from lamp column charging through to rapid charging (not faster than 50KW), but not wireless charging or mobile charging infrastructure
- **Vehicle type:** Charging for cars and light goods vehicles, but not heavy goods vehicles, buses or electric bikes or scooters

Home charging

Home charging is not covered in this document. There are a number of potentially significant public safety issues that can arise where the user does not have their own off-street parking and where electric cables may be trailed across the pavement.

According to the Highways Act 1980, running an electric cable across the pavement to charge a vehicle from your home or business will find you liable for any injury to people or damage to property. This is set out below.

Highways Act 1980, Section 162 - Penalty for placing rope, etc. across highway. U.K.

A person who for any purpose places any rope, wire or other apparatus across a highway in such a manner as to be likely to cause danger to persons using the highway is, unless he proves that he had taken all necessary means to give adequate warning of the danger, guilty of an offence and liable to a fine not exceeding [F1level 3 on the standard scale].

F1 Words substituted by virtue of Criminal Justice Act 1982 (c. 48, SIF 39:1), ss. 38, 46

Policy context

This chapter sets out the background and policy context for the installation of EV charge points within the framework of the London Plan, the Mayor's Transport Strategy, the Government's Road to Zero vision and the Mayor's EV Infrastructure Delivery Plan.

Strategic context

The London Plan is the statutory Spatial Development Strategy for Greater London. Following the May 2016 Mayoral election, a new London Plan is under development which will set out key statutory policy and standards for parking in London which is of relevance to the installation of EV charging infrastructure. To help facilitate the switch to EVs, the Draft London Plan (July 2019) states, under policy T6 Car Parking, that 'where car parking is provided in new developments, provision should be made for infrastructure for electric or other Ultra-Low Emission vehicles in line with policies T6.1, T6.2, T6.3 and T6.4. All operational parking should make this provision, including offering rapid charging. New or re-provided petrol filling stations should provide rapid charging hubs and/or hydrogen refuelling facilities.' Policy T6 also states car-free development should be the starting point for all developments proposed in places that are already (or are planned to be) well-connected by public transport, with development elsewhere designed to be with limited car use and the minimum necessary parking.

Reducing greenhouse gas and harmful air pollution emissions is essential for London's future as a healthy, economically successful and sustainable city. The Mayor's London Environment Strategy[2] and the Mayor's Transport Strategy set out that by 2050 London will become a 'zero carbon city' and will have the best air quality of any major world city, going beyond the legal requirements to protect human health and minimise inequalities.

At the national level, the Government has set out its aims for zero emission transport in its Road to Zero vision, in which it calls for at least 50 per cent – and as high as 70 per cent – of new car sales and up to 40 per cent of new van sales to be ultra low emission by 2030. By 2040, no new conventional petrol or diesel cars or vans will be sold in the UK.

The Mayor's ambitions for a zero carbon London by 2050 can only be achieved if all vehicles are zero emission by that date, which refers to vehicles that produce zero harmful emissions at the exhaust. The Mayor's Transport Strategy sets out a roadmap to achieving zero emission transport and to encourage the switch to ultra low and zero emission technologies.

To deliver the Mayor's ambition of zero emission transport, an increase in trips undertaken by walking, cycling and public transport will be required, with all remaining vehicle trips fully zero emissions.

Specifically, the Mayor's Transport Strategy sets out the following aims to achieve zero emission road transport by 2050:

- 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041;
- Reduction in overall traffic levels by 10-15 per cent by 2041; and
- Remaining vehicles on London's roads to be zero emission by 2050, including:

[2] Mayor of London. London Environment Strategy. Greater London Authority. May 2018.

- All licensed taxis and private hire vehicles being zero emission capable by 2033 at the latest; and
- A zero emission bus fleet by 2037 at the latest.

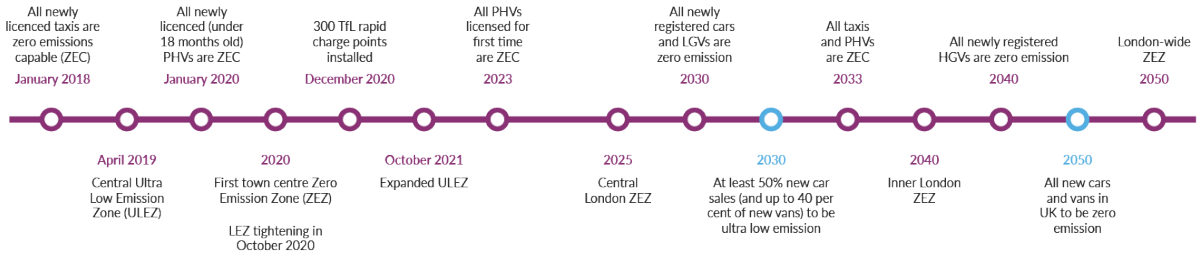
The Mayor's Transport Strategy also identifies electric vehicles as a key component to achieving zero emission transport and sets out the following proposal for EV charging infrastructure:

Proposal 34

The Mayor, through TfL and the boroughs, will work with Government to ensure that sufficient and appropriate charging and refuelling infrastructure is put in place to support the transition from diesel and petrol-powered vehicles to Ultra Low Emission Vehicles, including ensuring that London's energy-generating and supply system can accommodate and manage the increased demand associated with this transition.

The EV Infrastructure Delivery Plan summarises the timeline of policies which have recently been, or will be, enacted in London to move towards zero emissions.

Timeline of key related policies



Selecting the type of EV charge point

This section provides information on selecting the right type of EV charging infrastructure based on local needs and requirements.

Categories of charging infrastructure

It is recommended to undertake research into the different types of charging infrastructure before deciding on the most suitable for your needs.

The table below gives a brief overview on the types of charge points available. For the most recent solutions and more technical details on charging equipment see BEAMA's Guide to electric vehicle infrastructure.

Categories of charging infrastructure

Category **Power** kW **Type of connector**	**Typical formats**	**Points to note**
Rapid DC 50+ (CCS/CHAdeMO/Supercharger) AC43+ (Type 2)	• **Rapid charge hubs** • **Fuel stations** • **Taxi rest ranks**	• **Fast charge speeds (c.22kWh in 30mins providing – 120km of range for 50 kW rapid)** • **Higher capital cost (c.£50,000) and higher prices (20p-40p/kWh)*** o Most new Battery Electric Vehicles (BEVs) can use rapid DC chargers o Maximum DC charge for majority of new BEVs is 50kW o Some models allow 100kW+ o Maximum DC charge of some Plug-in Hybrid Electric Vehicles (PHEVs) is 22kW o No DC charging for many PHEVs/older BEVs
Destination	• **Retail/public car parks**	• **Slower speeds (c.22kWh/-120km of range in 3 hours**

Slow to fast AC 3-22 (Type 2)	• **Urban centre streets** • **Leisure centres** • **Hospitality**	**for a 7kW fast charger and 6 hours for a 3.6kW slow charger)** • **Lower capital cost - £4,000-£6,000 for a fast charger and as low as £1,000 for a slow charger** • **Lower prices (9-15p/kWh)*** • **Streetscape impact will limit on-street mass deployment** • **All EVs can use a form of AC charging. However:** o Maximum AC charge of many PHEVs is 3.6kW o Maximum AC charge of many BEVs is 11kW o Some exceptions allow 22kW
Residential **Slow to fast** AC 3-22 (Type 2)	• **Charge pillars** • **Lamp columns** • **Pop-up/kerb chargers**	
Private Varies	• **Home** • **Workplace** • **Depot**	

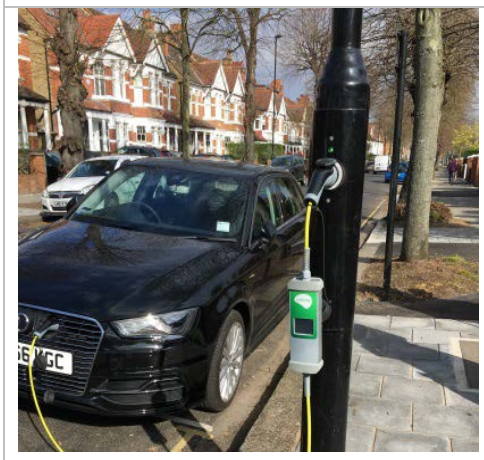
Publicly accessible

Private

***Indicative pay as you go price range**

Figure 2 shows examples of some of the most common types of charger, however there are a number of innovative variations that could also be considered now or in the future. Examples include models which features charge points that are flush with the pavement or 'armadillo' kerbside charge points which have been trialled in Southwark.

Examples of charging infrastructure

Residential slow to fast – lamp column charge point	Destination or residential slow to fast charging	Rapid charging
		

Different users and vehicles types will have different charging requirements. This will influence which type of charging infrastructure is most useful to them. The table below provides an overview of the different requirements by user type.

Requirements by user type

User category	Vehicle type	From or near home or at depot (Slow/standard charge)	While 'grazing' or at the workplace (Any charge speed)	'On-the go' or in-transit (Typically rapid charge)
Company fleet Light Goods Vehicles (LGVs)	**BEV**	**Regularly to nightly** (during working week)	**Rarely to occasionally (depending on mileage and access to depot charging)**	**Occasionally to daily** (depending on mileage)
	PHEV		**Rarely or never**	**Occasionally** (where vehicle supports)
Privately owned LGVs (including gig economy)	**BEV**	**Regularly to nightly** (during working week)	**Occasionally to regularly** (depending on nature and length of stop and access to	**Regularly** (depending on daily mileage and ability to charge from or near home)

	PHEV		home charging)	**Occasionally** (where vehicle supports)
Taxi	**Any**	**Nightly** (during working week)	**Rarely or never**	**Regularly to daily** (depending on daily mileage and ability to charge from or near home)
Private hire	**Any**	**Nightly** (during working week)	**Rarely or never**	**Regularly to daily** (depending on daily mileage and ability to charge from or near home)
Private cars	**BEV**	**Regularly**	**Occasionally** (depending on use of vehicle and ability to charge from or near home)	**Occasionally to regularly** (depending on use of vehicle and ability to charge from or near home)
	PHEV	**Regularly**	**Occasionally to regularly** (depending on use of vehicle and ability to charge from or near home)	**Occasionally** (where vehicle supports)
Shared vehicles (eg car clubs)	**BEV**	**Regularly to daily**	**Occasionally to regularly** (although dependent on business model)	**Regularly** (dependent on vehicle and business model)
	PHEV			**Regularly** (where vehicle supports)

Funding for charge points

A number of funding streams are available for the installation of charge points as shown in the table below. This is not an exhaustive list and there may be other funding sources available.

Public funding options for public EV infrastructure

Aimed at	Fund	Detail
Private/ Charge point manufacturers /Taxis & PHVs	Office for Low Emission Vehicles (OLEV) grant schemes	For the installation of electric vehicle charging infrastructure: guidance and application forms can be found on government-grants-for-low-emission-vehicles These include: • Application guidance for vehicle manufacturers • Authorised installers • Approved charge point model list • Vehicles eligible for the scheme • Minimum technical specifications • Guidance for manufacturers and installers • Guidance for customers • Grant claim forms
Residential / car clubs/ innovative local projects	London's Go Ultra Low City Scheme (GULCS)	£13.2m capital programme awarded to TfL, the Greater London Authority (GLA) and London Councils by OLEV aimed at driving the switch to ultra-low emission vehicles The programme has four main streams: residential charging, car clubs, increasing rapid chargers and Neighbourhoods of the Future (NoF) (local, innovative projects) https: //www.goultralow.com
	Local Implementation Plans (LIPs) – TfL funded	Boroughs can use LIP Corridor funding allocations for the installation of charge point infrastructure in their area.
	Mayor's Air Quality Fund (MAQF)	Funds from the MAQF can be used to support the switch to EVs, for example through funding EV parking spaces or facilities for EV delivery vehicles. MAQF funding requires boroughs to meet a number of bidding and assessment criteria, including the securing of match-funding for bids. Currently the MAQF is in its third and final round which will last for three years. Additional rounds may open in the future.
	Liveable Neighbourhoods - TfL funded	EV charge points could be included as part of a local Liveable Neighbourhoods scheme within a borough. Funding awarded as part of such a scheme could be allocated specifically for EV charge points.
Investors	EV Charging Infrastructure Investment Fund (CIIF)	This £400 million fund – up to half of which will come from the UK Government – is being privately operated and will catalyse the rollout of electric vehicle charging infrastructure. Note, this is effectively a loan rather than a grant fund.

Funding for the installation of charge points can also be obtained through Section 106 agreements (planning obligations under Section 106 of the Town and Country Planning Act

1990 focused on site specific mitigation of the impact of development) and the Community Infrastructure Levy (CIL).

New developments are required to provide charge points as set out in the GLA's Land for Industry and Transport supplementary planning guidance (SPG) and borough Development Planning Documents, masterplans and site development briefs should reflect this guidance. However, where additional site specific mitigation is required S106 funding and/or CIL may be obtained for the delivery of additional EV charge points.

Procurement options

There are a number of procurement options available for the installation of charge points. Awarding authorities should ensure charge point operators have been appointed via a competitive dialogue procurement process and that charge point operators meet certain requirements. These requirements should include, but are not limited to, the following:

- Health and safety
- Cyber security
- Finance (eg customer payments, financial reporting)
- Infrastructure (eg standards, design and functionality)
- Installation and commissioning back office and operations (eg customer service, national charge point registry, data sharing)
- Maintenance
- Accessibility for different user groups

Local authorities can access our Electric Vehicle Charging Infrastructure framework as an example for guidance and the UKEVSE Procurement Guidance.

Available frameworks

There are a number of procurement frameworks that are available, or could be useful, particularly for the public sector:

TfL's Electric Vehicle Charging Infrastructure Framework

Local authorities can access our Electric Vehicle Charging Infrastructure Framework for the supply, installation, maintenance and operation of slow – fast charge points that provide a power outage capacity of less than 22kWh. The framework can be adapted to meet local needs and can also link in with the maintenance agreement between the supplier and the borough. The framework includes seven providers and was awarded in July 2018, to run for an initial term of three years. The framework is successfully used as part of GULCS.

Rapids

For the delivery of rapid charge points local authorities can access our Rapid Charge Point Framework. As with the electric vehicle infrastructure framework, this can also be adapted to meet local needs. The framework includes five charge point providers and was awarded in May 2017, to run for up to four years.

Design of EV charge point locations

This section covers guidance on where to locate charge points and the basic design principles that should be considered when installing a charge point. It also sets out considerations relating to other users of the street space around charge point infrastructure.

Where to locate charge points

The EV Infrastructure Delivery Plan gives insights into the scale and location of charge points required.

There are four core themes that will ensure the best service for current and future EV users:

1. Identify current user demand
2. Provide for future switch
3. The right charge point in the right place
4. A good geographical spread

In 2017 we also issued a location guidance document giving an overarching view of the infrastructure and where in London it is required.

The process for installing charge points begins with site selection based on current and future demand and is often an iterative process with initial sites chosen, design solutions considered and then a series of assessments followed by planning permission, all of which can sometimes lead to a site being excluded as a suitable location.

When considering where to locate a charge point it is also important to think about the availability of the capacity in the local electrical network and whether it can support the new infrastructure. Also consider if the electricity supply installed is suitable for an upgrade as this is likely to cost more than the EV charge point installation itself. SSE and UKPN have advice on this on their respective websites: https://www.ssen.co.uk/Connections/EVconnections/ and https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point

Product design considerations

When choosing the EV charge point it is worth considering how to futureproof the equipment to reduce waste and minimise the risk of stranded assets. For the charge point you should consider whether it is:

- Upgradeable
- Easy to replace
- Modular - a modular charge point design that would allow components to be easily replaced and upgraded while keeping the same charge point housing
- Multifunctional

Please note that any future material changes to design and material, even changes to colour, could make it necessary to re-apply for planning permission (see Section 5).

BEAMA are producing their own guidance which will give further useful details on product design considerations. Guidance is due to be published in the first half of 2020 and will be available through the BEAMA website: http://www.beama.org.uk.

Design principles

Consideration needs to be given to all those using the space around an EV charge point, whether on or off-street and whether or not the charge point is being used. When selecting sites for a charge point considerations will need to ensure that they will be easy to use and users will feel safe while using them. Thought also needs to be given to other users of the street to ensure they do not experience any inconvenience caused by charge point users or find space is constrained as a result of charge point provision. The following principles can help identify potential sites for charge point provision, but also to ensure the charge point type is site-suitable. The table below sets out key points around overall design principles.

Overall design principles

Safety	The location should be safe for a user to access the charge point at all times of day, without introducing risks to road safety or personal safety for themselves or other road and footway users. Key considerations include: - Adequate ambient street lighting and good lighting of the charge point - Chargers that are not placed close to junctions and crossings to risk obstructing the inter-visibility sightlines between motorists and pedestrians - There should be a sufficient amount of level surface around the charge point to allow easy access to the charge point by wheelchair users on the footway - Charge points should not create potential hiding places or locations for anti-social behaviour - Cables should not be run in such a way to cause an obstruction. More specifically, it would be unacceptable where this creates a trip hazard or is at body or vehicle height. Any cable obstruction will have negative implications for road safety - There should be sufficient drainage, especially near basements and in buildings to mitigate flash flooding or fire-fighting measures - Equipment installation should be in accordance with the Institution of Engineering and Technology's 'IET Code of Practice for Electric Vehicle Charging Equipment' ISBN:184919839X
Comfort	The site should have sufficient space for a user to access the charge point without negatively impacting any walking or movement around the charge point, especially for any disabled pedestrian. Footways should provide a clear zone of at least 2m width to allow two wheelchairs to pass each other comfortably, even when the charge point is in use. However, the Pedestrian Comfort Level (PCL) also plays a key role in site selection. The site need to be able to demonstrate a PCL of no less

	than B+ to avoid creating constrained space that could negatively impact pedestrian movement. Consider how usage may change throughout the day. For example: - Near bus/coach stops and taxi ranks where passengers may be boarding/alighting and mobility ramps may be deployed (unless installing rapid chargers for taxis) - AM and PM peaks in pedestrian flows, especially around bus termini, railway stations, Tube stations and other transport hubs where pedestrian flows can be particularly heavy - Forecourts that may be used for outdoor dining, displays and market stalls - Near event hosting locations such as stadiums where crowding occurs periodically
Inclusivity	The charge point should be easy to use for disabled users. This is especially so with regard to the provision of comfortable space for wheelchair users. A charge point that is orderly with well aligned equipment will be particularly beneficial for a visually impaired pedestrian to navigate around intuitively.
Coherence	The charge point should be easily identifiable so people can clearly see where they can access EV charging. Additionally, well aligned equipment that contrasts with the local environment will help increase the awareness of the existence of a charge point for pedestrians who may be visually or cognitively impaired.
Attractiveness	The charge point should not clutter the local environment either physically or visually. For example, fast and rapid charge points are unlikely to be suitable in some heritage or conservation areas. Hub locations could provide opportunities to create a new urban space with multi-functions. This could add to the location's attractiveness for users to wait while charging their vehicle. Seating in such locations would also be beneficial for disabled users of hubs and should be a consideration. It is important to avoid siting a charge point close to trees to prevent risk of damage to the canopy and tree roots. The location of the charge point should have sufficient room for maintenance with no litter traps.
Reliability	User satisfaction will depend on their confidence in charge point provision, which means charge points should have 24-hour access (Monday to Sunday), preferably with free or discounted parking charges. However, charging time limits will depend on individual boroughs as some may have local time restrictions. Maintenance is crucial for ensuring charge points are in good working order to build user trust in the facilities and also to encourage more future users. There should be a maintenance agreement between the charge point manufacturer and the borough or private customer; this will need to be agreed as part of the procurement process. A maintenance plan should include regular checks and an agreement for timely necessary repairs by maintenance crews.

Design principles specific to off-street charging hub facilities

Ideally, charge points are best in off-street hub locations. They offer greater flexibility and more space to have many charge points in a single location. The EV Infrastructure Delivery Plan defines a hub as having a minimum of six chargers enabling simultaneous charging of six or more vehicles.

Examples of hub locations could include:

- Petrol stations and motorway services
- Retail outlets such as supermarkets
- Park & Ride and station car parks
- Other publicly accessible car parks
- Private off-street spaces such as at workplaces (which are publicly accessible)

In these locations it will be important to assess entry and exit points to and from the hub to ensure safe and easy access. Specific consideration should be given to any additional needs that wheelchair users might have in relation to accessing hubs and charge points in these locations.

For rapid charging hubs in particular there are some additional points to consider in relation to where such a hub might be located. For example:

- The hub should ideally be in close proximity to roads with high traffic flow where the need for this type of hub will likely be greater
- The hub should avoid areas of conservation or listed buildings (they have a higher risk of rejection at planning)
- There should be sufficient space to accommodate an electricity sub-station, if one is not already located nearby, to feed all rapid chargers (minimum 50kW three phase each)
- For taxis, being close to major transport hubs, such as main line train stations and airports, will be beneficial

Additionally, when planning rapid charging hubs, consideration should be given to the inclusion of additional facilities for people to use while waiting for their vehicle to charge. For example:

- Protection from the weather (note that roof/weather protection will require additional planning permission)
- Toilet facilities (including accessible toilet facilities)
- Food/drink facilities
- Somewhere warm and dry to sit other than inside the vehicle
- Load balancing system to enable a better opportunity for a reliable and constant EV charge

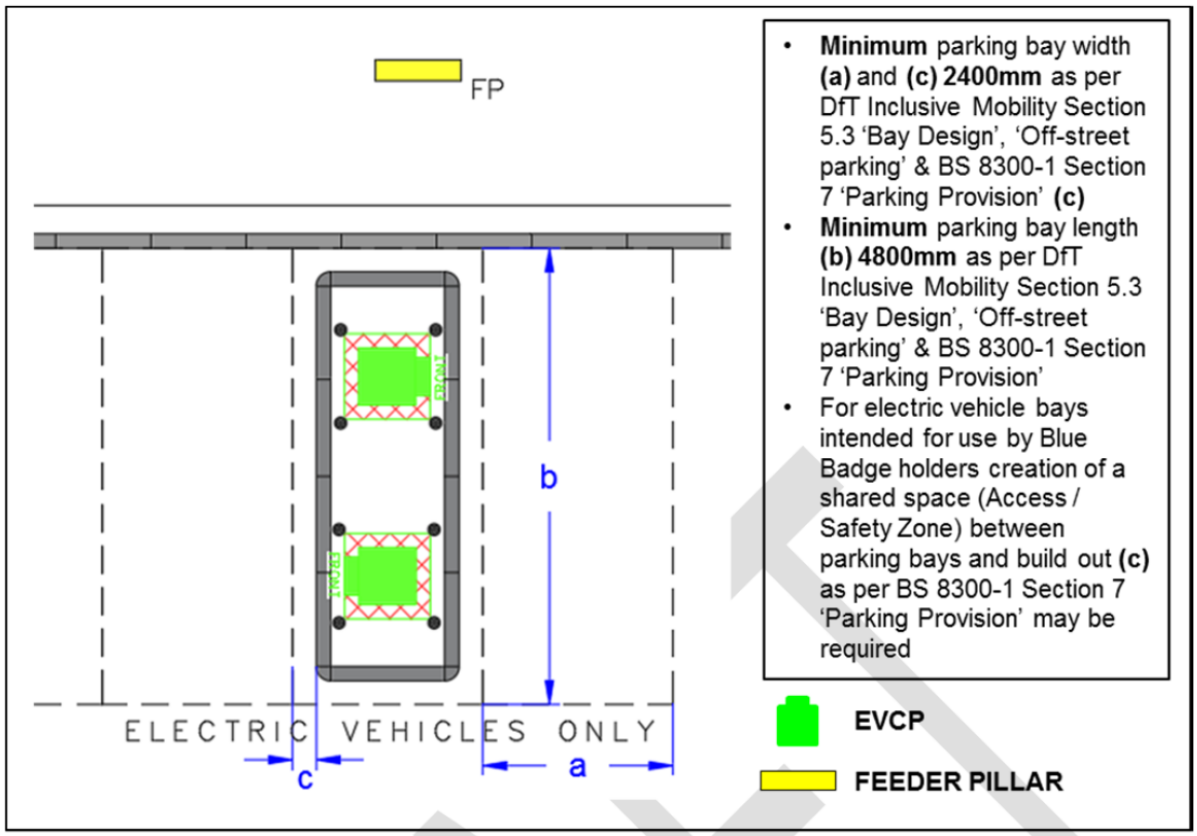
- Good quality WiFi connection

Example designs for off-street charge point infrastructure

The following technical diagrams provide examples of how specific off-street charge points might be designed, including requirements for disabled users.

Rapid electric vehicle charge point installation in an off-street car park

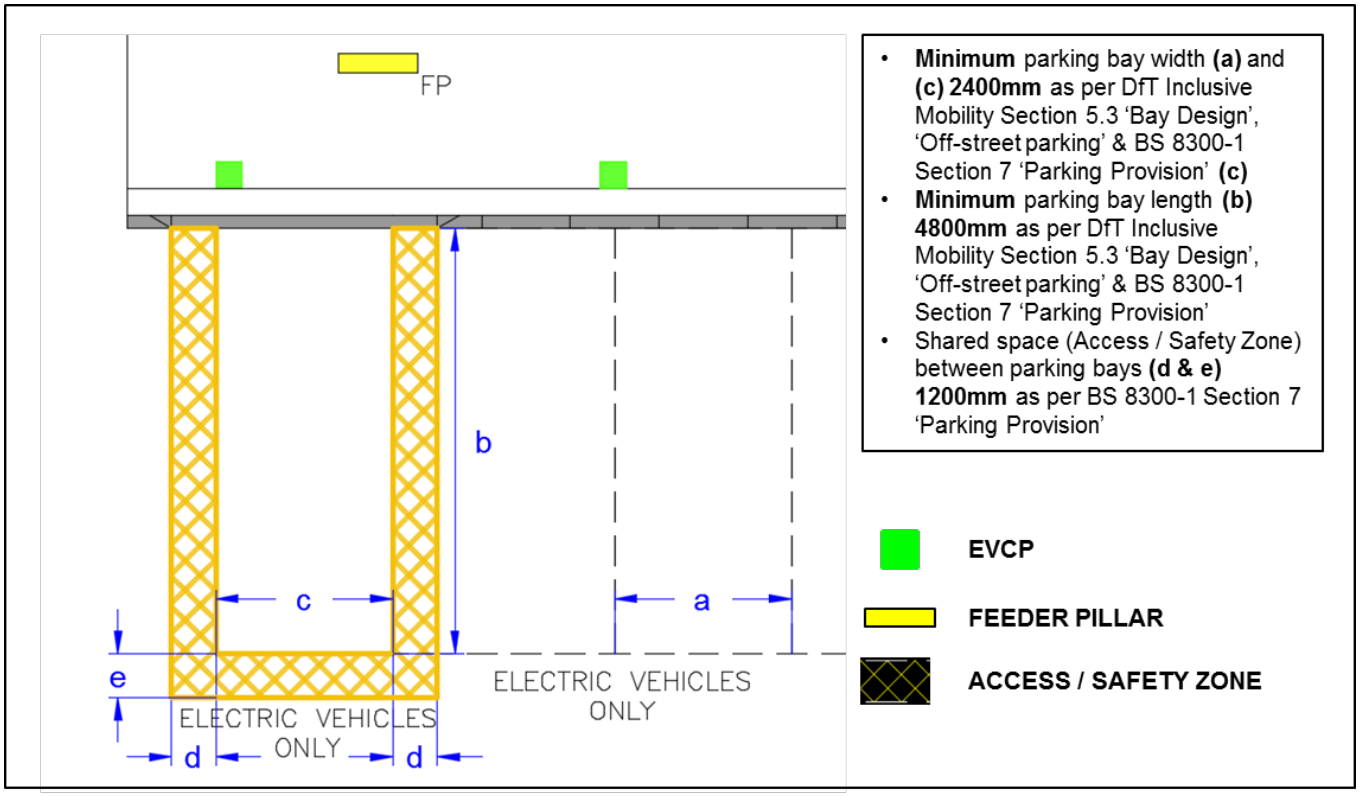
The diagram below shows a general perpendicular arrangement for two charge points on a perpendicular island in an off-street car park. The charge point should have a distance of at least 2.5m from each other and the feeder pillar.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Electric vehicle charge point installation in an off-street car park

The diagram below shows the general arrangement for providing two charge points in an off-street environment for disabled users. The space width minimum (a) should be 2700mm, preferably 3600mm (c) to allow for access around the vehicle. The minimum vehicle length (b) is 6600mm. The charge points are set back at the standard of 450mm from the kerb edge, and should have a distance of at least 2.5m from each other and the feeder pillar.



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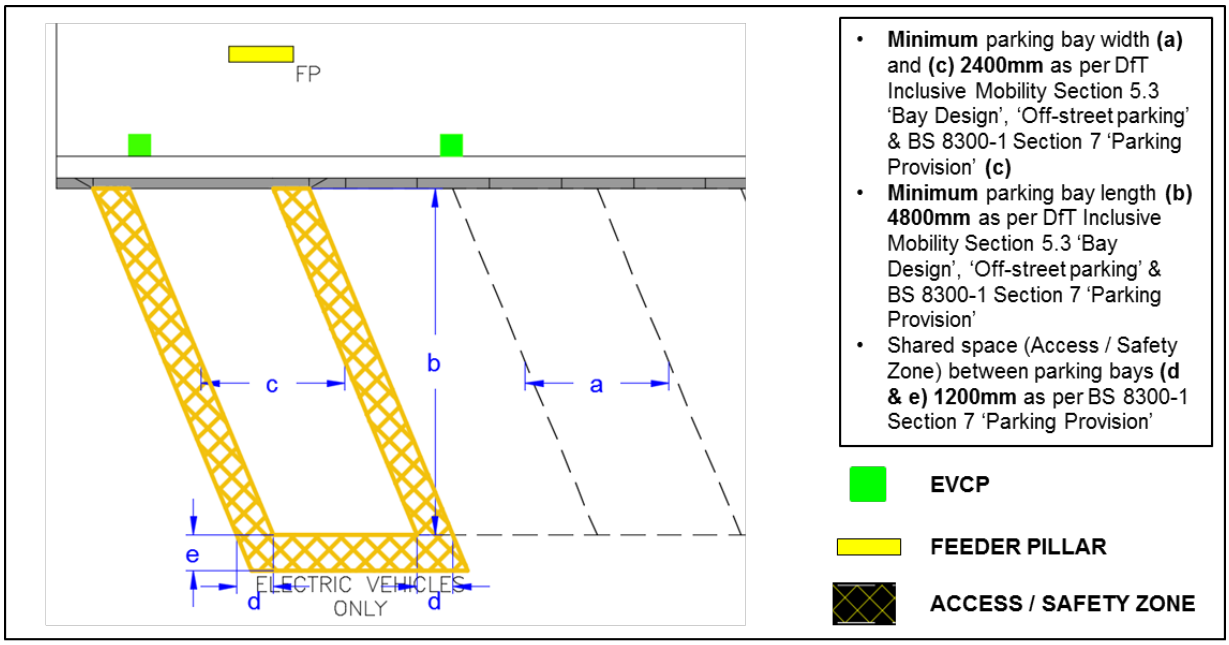
Electric vehicle charge point installation in an off-street car park

The diagram below shows the general arrangement at an angle for providing two charge points in an off-street car park for disabled users. The space width minimum (a) should be 2700mm, preferably 3600mm (c) to allow for access around the vehicle. The minimum vehicle (perpendicular) length (b) is 4200mm. The charge points are set back at the standard of 450mm from the kerb edge, and should have a distance of at least 2.5m from each other and the feeder pillar.



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Design principles specific to on-street charge points

Providing an on-street charge point requires additional considerations and it will largely depend on the type of street and space available to ensure the overall design principles are met.

Many of the design principles can be adhered to by following our Streetscape Guidance, which now includes a section on electric vehicle charge points. It is essential that any on-street charge point can provide a clear zone of at least 2m width for two wheelchair users to pass each other comfortably, even when the charge point is in use. It will be particularly important to ensure an outcome of no lower than a B+ pedestrian comfort level (PCL).

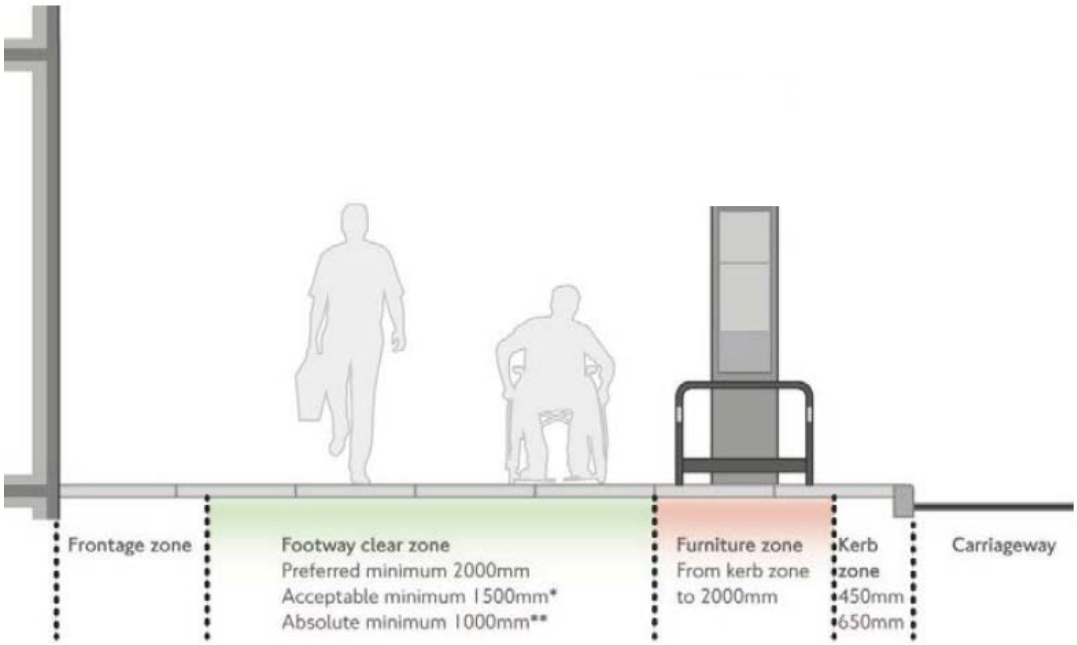
This means enough space for people walking and for choosing a route and to access buildings. Importantly, this allows space for two wheelchair users to pass each other. It also accommodates space for building frontages; this will depend on the street use but there should be at least 2000mm of clear footway (see the PCG for further detail). However, it may be acceptable to allow a C+ PCL where there is a transport interchange or office and retail provision.

To achieve this, the design of the facility should avoid creating pinch points and restricting pedestrian movement. The easiest way to achieve this is to provide the facility in the carriageway. Ideally, this should be on a footway build-out and designed with the following considerations:

- Carriageway width should be sufficient to allow safe manoeuvring into and out of the bay with a 'buffer zone' to protect drivers accessing their vehicles and charge points, while other traffic can pass by safely. The buffer zone should be at least 1m depth for space of a standard body width (based on PCG standard body ellipse of 600mm) moving around the vehicle, with some accessible for wheelchair users.
- Build-outs may encourage pedestrians to cross the road where it is unsafe due to restricted inter-visibility sightlines with motorists. Therefore, additional safety measures may be required
- A charge unit should ideally be provided on both sides of a build-out in order to retain more space for pedestrians on the footway where necessary
- Streets where traffic speed is low to medium will make it easier and safer for drivers to use the charge point
- Where charge points are located within existing parking bays (excluding 'Clearway' bays that need to be kept clear of parking at particular times of day) the following should be considered:
    - Loading bays should be retained and should incorporate chargers for commercial vehicles
    - Disabled bays should be retained and incorporate chargers
    - If designated bays, such as loading bays, are relocated they should only be moved to within a practical distance and not be removed from the immediate area without Traffic Authority approval
- EV charge point bays should not be introduced in locations where they will reduce kerbside access for essential servicing activity of nearby buildings

The EV charge point should only be located on the footway that can provide at least 2m width for a footway clear zone and no less than a B+ PCL. The charge point should be placed in the furniture zone at least 450mm from the kerb edge (shown in the illustration (below).

'Furniture zone design standards' – Streetscape Guidance (page 205)



The location of the electricity supply will need to be considered as it needs to be close enough to allow the feeder pillar to be connected. Always consult an electrical engineer when locating and specifying a feeder pillar unit. Where the nearest supply source is not accessible, additional isolating pillars may be necessary. Refer to our Streetscape Guidance (section 12.7) for further information.

Lastly, as recommended in our Electric Vehicle Infrastructure Delivery Plan, reducing the streetscape impact of chargers is of utmost importance. Consideration should be given to the surrounding environment and the physical dimensions of the charge point to make an assessment of whether it is a suitable choice for the area. This should take into account whether or not the location is a conservation area, or close to a heritage site. It should also consider whether the charge point is likely to detract from the look and feel of the surrounding streets. The photographs on page 9 set out some examples of the different types of charge that could be considered, including low-profile charge points that are incorporated into lamp columns or bollards, while at the same time ensuring they do not become trip hazards and are accessible for all.

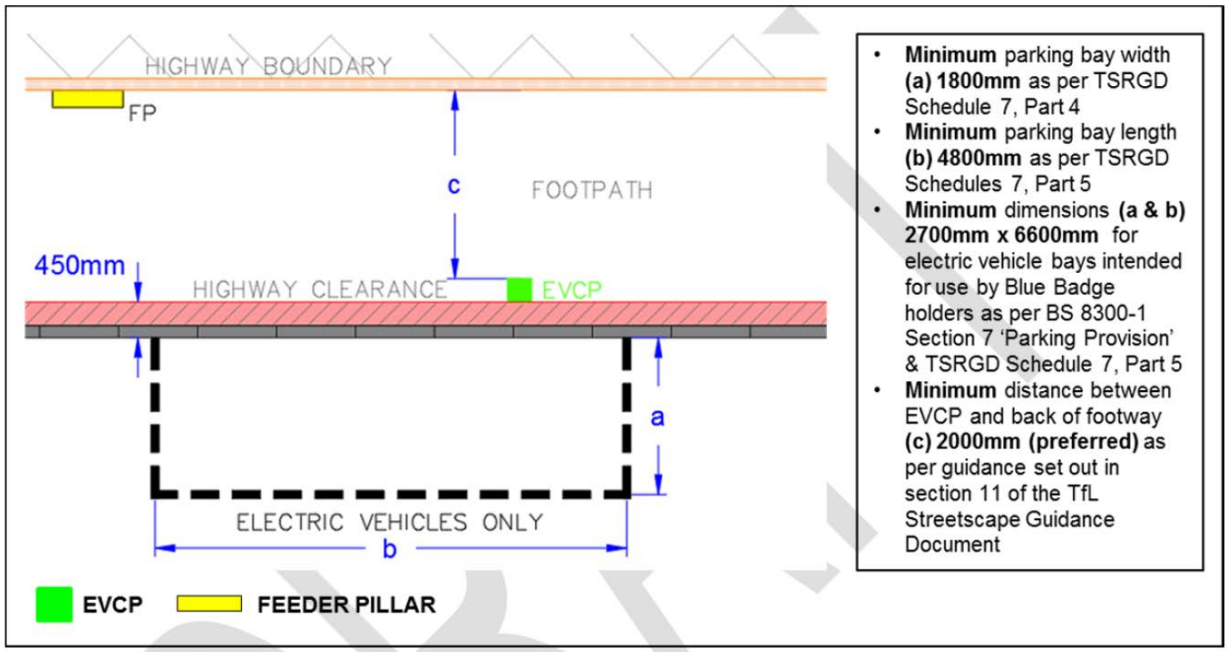
Examples of designs for on-street charge point infrastructure

The following examples show different designs for on-street facilities of all types of charge points (including Rapid Charge Points).

Electric vehicle charge point installation on the footway

The diagram below shows a general arrangement for providing charge points on the footway. The minimum footway width of 2m (c) should allow comfortable user access and

walking route. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle. The 450mm space is the standard for vehicle overhang to protect on-street furniture.

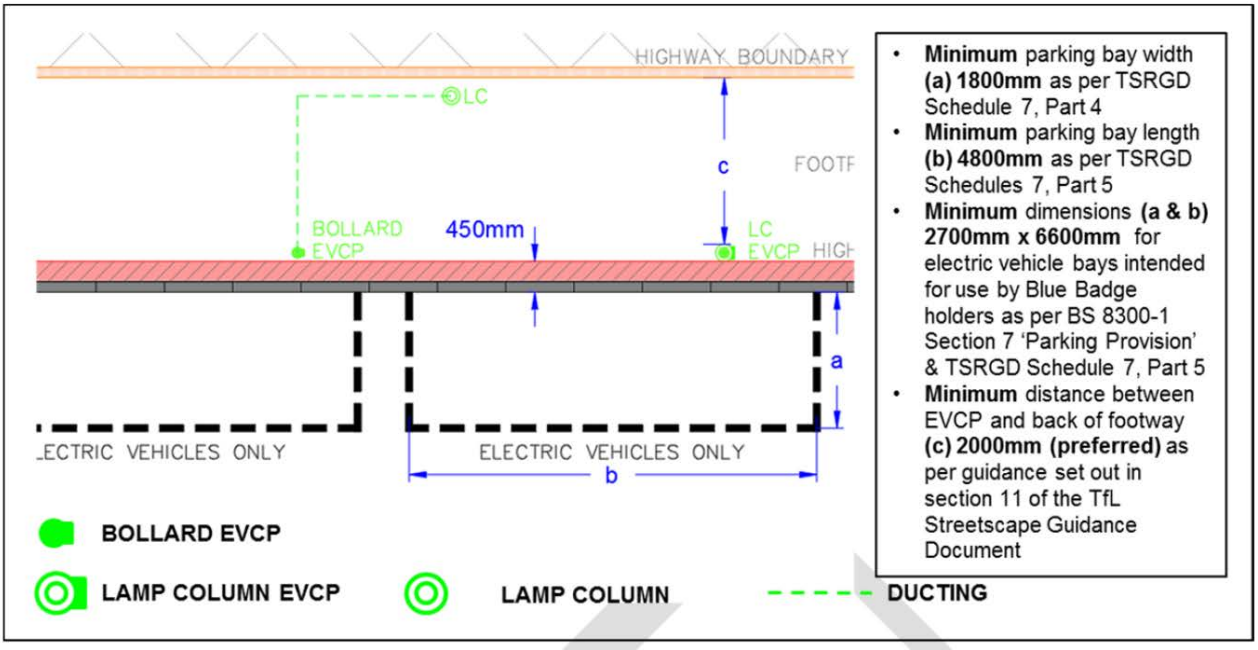


TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Lamp column electric vehicle charge point installation on the footway

The diagram below shows a general arrangement for providing two charge points on the footway with one for connection to a bollard and another to a lamp column. The minimum footway width of 2m (c) should allow comfortable user access and walking route. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle.

The 450mm space is the standard for vehicle overhang to protect on-street furniture.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

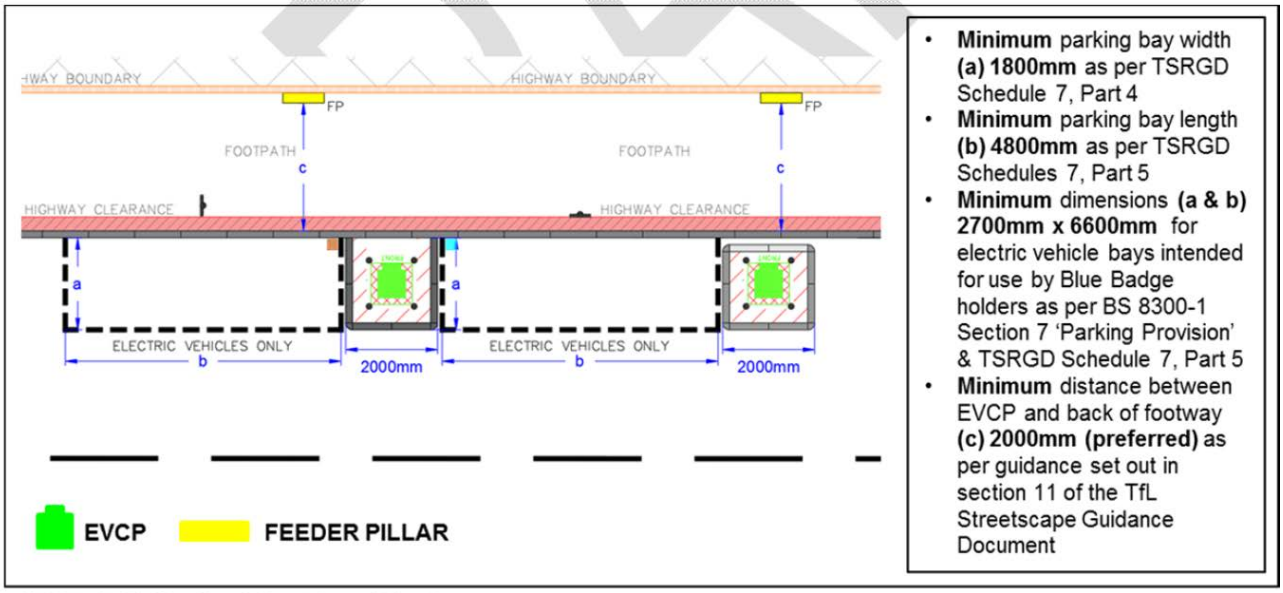
Given the increased size and energy provision for rapid chargers on-street, the following issues need to be considered:

- Review local planning policies with design standards
- Avoid locations resulting in many utilities around the proposed charging bay
- Avoid locations within the root protection zone of a tree, unless appropriate tree protection measures have been agreed by an arboriculture expert from the Highway Authority
- Ensure at least 2500mm clearance between feeder pillar, charge point unit, charge bay and any other powered street furniture eg lamp columns, existing electrical supply pillars, unless otherwise approved by the Highway Authority's electrical engineers
- Use polymer-based bollards and offset at least 120mm from the corners of the charge points adjacent to the kerb edge to protect the rapid charge point from vehicle impacts

The two following diagrams provide more detail on designing for a rapid charge point.

Rapid electric vehicle charge point installation in the carriageway - example 1

The diagram below shows the general arrangement for providing two rapid charge points on separate build-outs. The minimum footway width of 2.5m (c) should allow comfortable user access and walking route. The charging bay - width (a) and length (b) -needs to be sufficient for a driver to have safe access around their vehicle. Where a bay is between build-outs, consideration should be given to increasing the bay length.

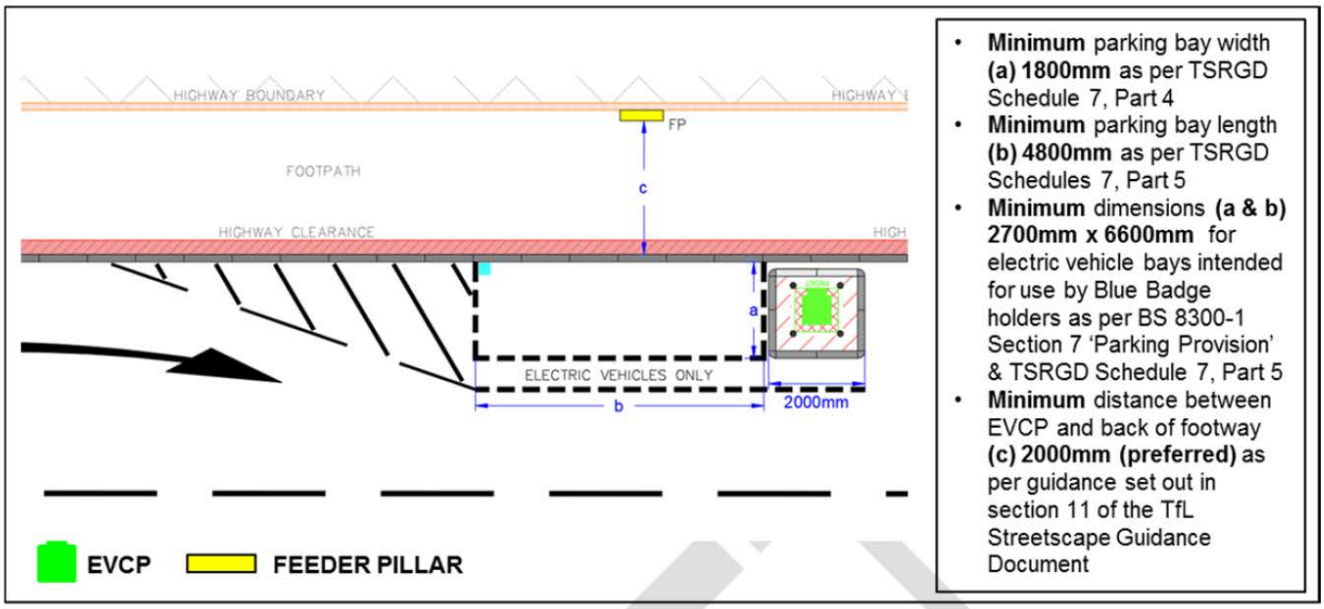


TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Impact on footway and carriageway draining must be considered when installing charge points on build-outs.

Rapid electric vehicle charge point installation in the carriageway - example 2

The diagram below shows the general arrangement for providing a rapid charge point on a build-out. The minimum footway width of 2.5m (c) should allow comfortable user access and walking route. The width includes the standard 450mm from the kerb for vehicle overhang to protect on-street furniture. The charging bay - width (a) and length (b) - needs to be sufficient for a driver to have safe access around their vehicle. The hatch marking helps deflect main route traffic away from the charge point bay with additional space for driver access. In heavily trafficked areas, hatching is to be provided to provide a 0.5m buffer zone between the bay and the running lane.



TSRGD – Traffic Signs Regulations & General Directions
BS 8300-1 – Design of an Accessible and Inclusive Built Environment, Part 1: External Environment – Code of Practice

Impact on footway and carriageway draining must be considered when installing charge points on build-outs.

Exclusion zones between electrical street furniture

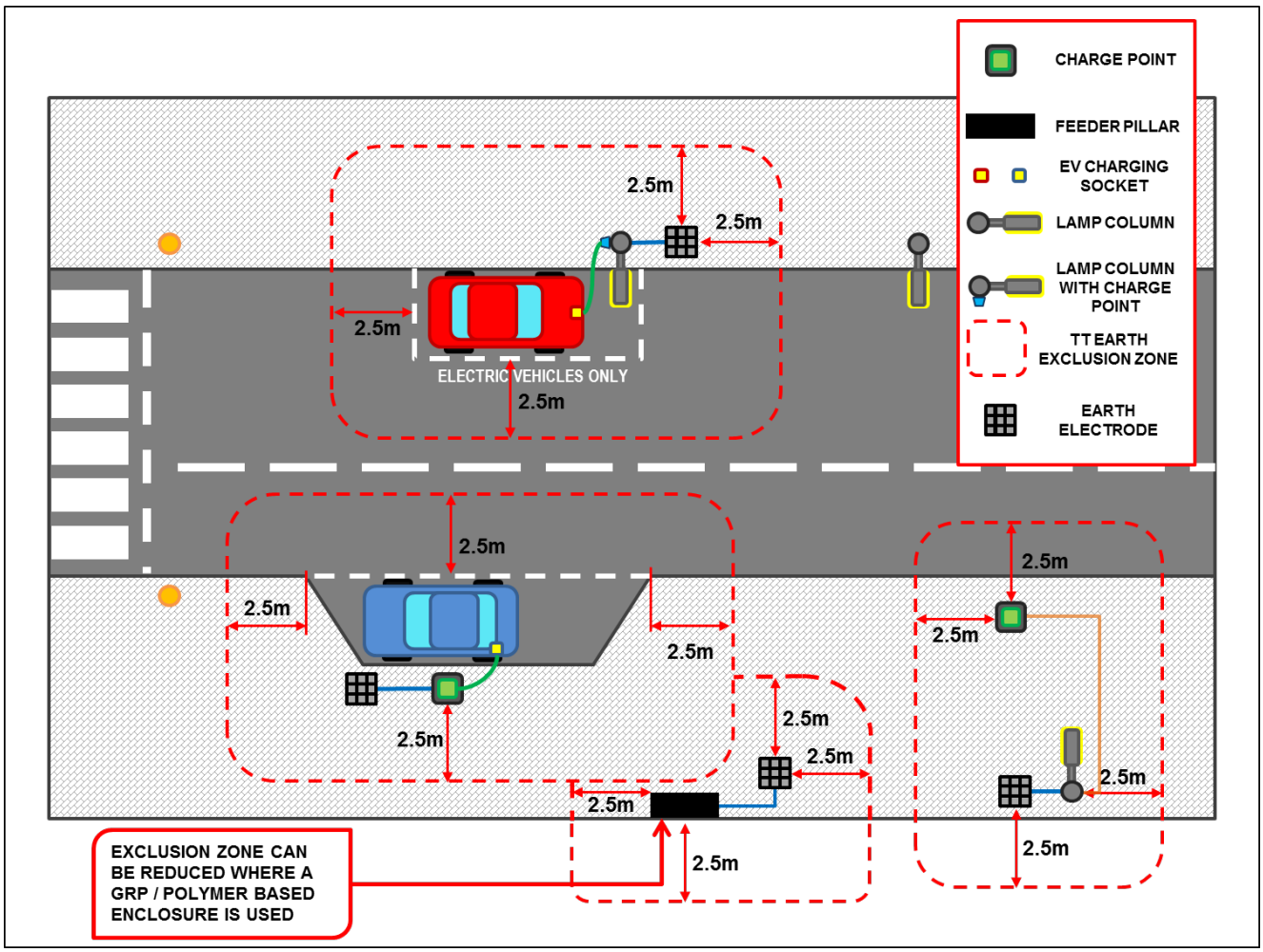
Charge points installed on the highway are required to have a TT earthing system in accordance with Energy Networks Association (ENA) Engineering Recommendation G12, Issue 4, Amendment 1 (2015) and UK Power Networks (UKPN) Engineering Design.

Standard EDS 06-0017 'Customer LV Installation Earthing Design'

This earthing system is different from that used on most other electrical street furniture (street lights, traffics signals, etc.). In line with the IET code of practice for electric vehicle charging equipment installations, any charge point installations (including earth electrode(s)) must be situated at least 2.5m, 'arms reach', away from any point of any other type of electrical earthing system. This is to prevent the risk of dangerous touch voltages between adjacent electrical street furniture on different earthing systems. This earthing exclusion zone must also consider the area where the electric vehicle will reside for the duration of a charging session. An illustration of this exclusion zone can be seen in the diagram below.

Electric vehicle charge point – TT earthing exclusion zone

The diagram below shows the general electrical earthing distance needed between adjacent electrical earthing equipment that may be on different electrical earthing systems.



Signs and road markings

For signs and road markings refer to Traffic Signs Regulations and Directions (TSRGD) for appropriate signing and carriageway markings.

For taxi charging bays, yellow lines are included and are marked as 'E- TAXIS'. For other vehicles, bays have white lines and are marked as 'ELECTRIC VEHICLES' or 'ELECTRIC VEHS'.

With regard to road signs, they should be of appropriate size, within the furniture zone, orientated as required by the Traffic Signs Manual (Chapters 3 and 5) and their poles should be consistent with the Highway Authority's streetscape palette.

Planning and Consents

This section sets out the considerations for installing charge point infrastructure in relation to the necessary planning and consents requirements.

Planning permission

Local authorities benefit from permitted development (PD) rights in relation to the installation of EV charge points. PD rights allow certain changes to be made without the need to apply for planning permission. (See the Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2011, Town and Country Planning (General Permitted Development) (England) Order 2015 and Town and Country Planning Regulations SI 2019 No 907 for further information).

For EV charge points being installed on the highway, Class A, (art 12, Schedule 2 is the relevant section of the General Permitted Development Order (GPDO). This allows local authorities to install charge points on the borough highway.

For charge points being installed on private land, Class D& E, Part 2, Schedule 2 of the GPDO applies.

Class D focuses on electrical outlets mounted on a wall for recharging electric vehicles. To benefit from permitted development rights the units have to be less than 0.2 cubic metres; over 2m from the highway and not within a designated scheduled monument or the curtilage of a listed building.

Class E deals with electrical upstands for charging vehicles in off-street parking locations. These can be up to 1.6m in height in residential grounds or 2.3m in height in all other cases. They must be over 2m from the highway and not within a designated scheduled monument or the curtilage of a listed building. In addition there can only be one upstand provided per parking space.

If these conditions cannot be met, planning permission will be required.

Third parties looking to install a charge point on the highway (eg anyone other than the local authority) may need to obtain planning permission. Early engagement with the relevant highway and planning authorities should be undertaken regarding any site being considered.

Submitting a planning application

All planning applications being submitted for a charge point will require:

- Location plan (1:1250)
- Existing and proposed site plans (to scale) showing street features such as street furniture, signage, trees, equipment, etc
- Justification for installing the charger in the proposed location
- Elevation drawings of the charger and feeder pillar
- Foundation drawings for charger

If the site is in a flood risk area, conservation area, near a listed building or close to a tree, these issues will need to be addressed and the application demonstrate that the charge point will not have a detrimental impact. Further advice on the level of information required can be obtained from the relevant planning authority.

Consents

The following highlights the typical consents required to deliver EV charge points. Relevant specialists within the local highway authority should be engaged as different sites require different consents.

Highway and traffic consent

For any construction works on the highway to be carried out, including on privately owned roadways and pavements, it may be necessary to acquire highways and traffic related powers, consents or agreements from the relevant borough(s) or third parties. The following is a high level summary of the main consents potentially required for the installation and operation of charge points:

Section 278 Agreement (Highways Act 1980)

A section 278 agreement is a legal agreement between the relevant highway authority and any person, for example a developer, for works which the highway authority believes will be of benefit to the public. This is usually on the terms that the person or developer pays the costs of the works as specified in the agreement. The agreement may also provide for making payments to the highway authority in respect of the maintenance of the works to which the agreement relates.

Section 8 Agreement (Highways Act 1980)

A Section 8 agreement allows a local authority or ourselves to construct, reconstruct, alter, improve or maintain the highways of another local authority and vice versa. Ideally detailed designs should be completed prior to entering into the agreement. However, the agreement can also be an ’in-principle‘ agreement based on concept design.

Permanent Traffic Management Orders - Section 6 (Road Traffic Regulation Act (RTRA) 1984)

A Permanent Traffic Management Order (PTMO) is the statutory instrument used to control moving or stationary traffic on the highway. We will draft, advertise and process the PTMOs if on the Transport for London Road Network (TLRN), and the relevant London borough will process it if it is on a borough road. If we are processing PTMOs on borough highways then a Section 101 agreement under the Local Government Act (LGA) 1972 with the borough will need to be completed (or vice versa).

Section 17 Notice (London Local Authorities and Transport for London Act 2013)

The Section 17 process refers to the public notification requirements stipulated by the London Local Authorities and Transport for London Act 2013. It dictates that a notice be posted on/near the site to inform the public of the authority’s intention to place a charge point in this location and that materially impacted property owners be notified. A notification period is to be no less than 28 days, during which public representations may be made. A London authority cannot exercise their powers to which the notice relates until they have considered all representations made to them in connection with the proposal within the period specified in the notice.

Section 50 Street Works Licence (NRSWA 1991)

This must be applied for in situations where a scheme promoter may wish to place or retain apparatus in the street and thereafter to inspect, maintain, adjust, repair, alter or renew the apparatus, change its position or remove it. The licence may be issued by the relevant highway authority with such conditions as it deems necessary.

London Permit Scheme (LoPS) – Traffic Management Act 2004, Traffic Management Permit Schemes (England) Regulations 2007

This scheme, designed to control the carrying out of specified works in specified streets in a specified area whereby utility companies inform highway authorities of their intentions to carry out works in their areas. Permits are required under the LoPS in respect of all registerable activities as referred to in the Code of Practice for Permits and Statutory Guidance, both dated March 2008.

In addition, a Road Safety Audit (RSA) may be required. RSAs are essential in assessing the operational road safety impact of a new street scheme where there is a physical change that will impact on road user behaviour.

Undertaken by a team of independent and specially trained auditors, RSAs consider the safety implications of design interventions, including the impact of the overall layout on the network under all anticipated operating conditions and the potential implications for all road users, especially the most vulnerable.

The process for completing RSAs on our road network is specified in TfL Procedure SQA-0170. Local authorities may have their own RSA procedure; if not, the use of our Procedure is commended, or the National Standard for Road Safety Audit (Design Manual for Roads and Bridges Standard GG-119) may be followed.

The highway authority can request the removal or relocation of third- party street furniture to accommodate the delivery of schemes. In some cases, planning or listed building consent may be required. The relocation of listed street furniture should be avoided if possible.

Communication and consultation

Communicating the benefits of EV charge points will be key for implementation as charge points are often installed in the public realm. All relevant stakeholders should be informed of the rationale for installing charge points, how they are likely to benefit the local community and the governance processes/when they can provide feedback.

Potential stakeholders, particularly for public and/or on-street charge points, include:

- Planning and highway authorities
- Disability groups
- Emergency services
- Energy providers
- Landlords
- Property developers
- Local politicians and/or Members of Parliament

- Local residents/Londoners and resident groups/community or conservation groups
- Transport for London
- Freight and small business stakeholders (eg the FTA, Federation of Small Businesses)
- Business Improvement Districts

Some of these will be formally consulted if planning permission is sought and early engagement will avoid abortive work and speed up the overall process.

Implementation, operations, safety and maintenance

This section covers the key aspects of installing an EV charge point and what should be considered in terms of operation, safety and ongoing maintenance.

Implementation

Electrical guidance

London Councils, the GLA and ourselves have produced Electrical Guidance to assist London boroughs in the delivery of residential EV charge points. The guidance includes clarification of roles and responsibilities between the charge point operators and London boroughs (or Private finance initiative contractors).

Electrical standards for installation

The Institution of Engineering and Technology (IET) published under their IET Standards a Code of Practice for Electric Vehicle Charging Equipment Installation (3rd edition). The scope of the document covers the installation of conductive electrical vehicle charging equipment in all locations, eg on-street, commercial and industrial (in or adjacent to business premises, single level or multi-storey public and private car parks and filling stations) and domestic installations (in or adjacent to houses and associated garages). The 3rd edition has been fully updated to BS 7671:2018.

Power supply

Energy connections can take time to deliver and may require an update to grid connections where sufficient power does not exist; this mainly applies to rapid chargers or hubs where energy requirements are greater. UK Power Networks (UKPN) has produced a constraints map available at the following link: https://innovation.ukpowernetworks.co.uk/2019/06/10/ev-network-impact/ . UKPN also have further relevant guidance on their website: https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point and SSEN also have guidance available online: https://www.ssen.co.uk/Connections/EVconnections/

To help with requesting a power supply the Energy Networks Association has published combined Guidance on Heat Pump and Electric Vehicle Charging Infrastructure Installation. It details the process and forms to be completed for submission to the local Distribution Network Operator (DNO). Currently, installers need to complete a range of different forms and meet different requirements but a streamlined process with minimal paperwork is being established.

The UK electricity network is split into regions, each with a local distribution company. For London there are two:

UK Power Networks (UKPN) - 0800 029 4285; https://www.ukpowernetworks.co.uk/
Scottish and Southern Electricity Networks (SSEN) - 0800 048 3516; https://www.ssen.co.uk

Temporary traffic management handbook - keeping people safe at roadworks

Our temporary traffic management handbook sets out good practice to those involved with roadworks and other construction related activities on London's roads. London's road network has changed in recent years, with far more people choosing to travel on foot, by cycle or by bus, and this guidance specifically focuses on these travel choices. It supplements existing national standards, and it is expected that the guidance is followed by

all those involved with the design, planning, implementation and inspection of temporary traffic management on the TLRN.

Timescales

Timescales can vary between different projects due to many factors, for example, planning, consents and power connections. The planning application validation and determination by the planning authorities takes approximately 8-12 weeks. On the TLRN, for example, it has taken an average of 38 weeks to install rapid chargers on private land and where wayleaves are required this can take considerably longer. Charging points themselves can be installed within 6-8 weeks, but these other issues can mean deployment must be planned at least six months in advance.

Hubs can also take longer to install than single or double charge points, due to their added complexity and the number of charge points being installed. Gaining a connection to the power network also varies depending on the size and number of charge points. UKPN provide information on this on their EV charge point webpages (https://www.ukpowernetworks.co.uk/electricity/electric-vehicle-charging-point). Typically, for a smaller connection (1-3 fast charge points or one rapid) it will take 8-12 weeks for a connection. For a large connection (multiple fast/rapid charge points in, say, a hub) it can take six or more months. SSEN provide information on their webpages as well, which can be found here: https://www.ssen.co.uk/Connections/EVconnections/

Operations

From a user perspective, it would be ideal for charge points to be available to customers at all times. However, there are some cases where this is not operationally possible - for example, where the 'shared private infrastructure' model is adopted. This is discussed further in the EV Infrastructure Delivery Plan, but it broadly consists of a private entity opening up its charge points for public use at certain times of day.

Charge points should be open to all as much as possible (as set out in the EV Infrastructure Delivery Plan), but there are instances where specific user needs justify dedicating the charger to the user type. Examples of this include London taxis, particularly in central London. In the early phases of delivery for rapid charge points it was important to cater for taxis as new licensing requirements meant that they were likely to be early adopters of EVs with a significant need to charge in central London. Consideration should also be given to electric commercial/logistics vehicles, including small businesses, which may require/benefit from charge point access if they are undertaking local servicing and trades activities.

To facilitate ease of use, a 'pay as you go' model should be adopted where possible, with simple cost plans. Over the summer, the Government announced that it expects all newly installed rapid or higher-powered charge points to provide 'pay as you go' debit or credit card payment options by April 2020. They also signalled they expect industry to develop a roaming solution across the charging network, allowing electric vehicle drivers to use any public charge point through a single payment method without needing multiple smartphone apps or membership cards.

Some operators are considering differential charging for different users which may help with charger availability for those who have a higher operational need.

Booking systems could be considered in some instances. This would allow people to book a charge point for a certain time, providing greater reassurance that they will be able to secure parking at a charge point to recharge their vehicle. Some operators have implemented queuing systems to mitigate missed booking slots.

Interoperability

Interoperability among charging networks is a key enabler for use. Private service roaming platforms which act as a clearing house for charging transactions could be a future solution. Open Charge Point Protocol (OCPP) is another step toward interoperability of stations providing a common means of communication between themselves and among networks. A standards organisation, eMI3, is advancing OCCP to create the ability to roam among networks. BEAMA is working on a guide covering interoperability and we recommend checking their website for updates on progress.

Design life of charge point

At the end of the operational contract, all charging apparatus and cabling must be removed and any groundworks made good, returning it to the previous status unless the assets are taken over by another service provider. Consideration should also be given to how the charge point infrastructure might be disposed of if it is no longer required. Recycling options should be considered as much as possible. If the charge point is taken over by another provider then consideration needs to be given to this.

Safety

Consideration needs to be given to the safety of charging infrastructure, particularly in relation to the electrical elements of the charge point and what precautions need to be taken should the charge point be damaged or struck in an accident, for example. This is particularly important in relation to the feeder pillar infrastructure.

Parking controls and enforcement consideration

It is important to make sure that parking spaces next to charge points can be accessed easily by EV drivers, ensuring this could be done through local parking enforcement and providing dedicated EV bays where possible.

Controlled parking zones (CPZs) are in place in boroughs to reduce traffic congestion, improve road safety and promote other forms of transport as part of a London-wide transport strategy. The key objective of a CPZ is to reduce and control non-essential parking and assist residents, short-term visitors and local businesses. Within any CPZ, only those residents or businesses within the zone are entitled to permits. An incremental pricing structure for second and subsequent permits also assists in minimising the number of permits issued to individual residents and helps discourage multiple car ownership.

CPZs comprise various types of parking bay such as: permit holder bays (for use by resident or business permit holders and those with visitor permits); shared use bays (for permit holders and pay and display parking); and pay and display only bays (where permits are not valid). In a CPZ, hours and parking tariffs vary and signs indicate the hours of operation within the zone, during which time parking restrictions apply. Any parked vehicle that does not display a valid permit or voucher during operational hours may be issued with a Penalty Charge Notice (PCN). Local authorities are responsible for the enforcement of parking, usually carried out by Civil Enforcement Officers (CEOs) and through the use of CCTV cameras. CEOs adhere to two Codes of Practice which have been agreed with London Councils for on-street parking enforcement and the use of CCTV. More information is published on the London Councils' website.

New parking bays and changes to restrictions require a Traffic Regulation Order (TRO).

Boroughs may wish to consider introducing dedicated parking bays solely for the use of electric vehicles. A benefit of doing so means that local residents and businesses with electric vehicles will find it easier to secure parking next to a charge point. Non-dedicated bays located next to charge points may be used by all vehicle types, and this means non-EVs could take up parking spaces that could otherwise be used by an EV for charging.

Disabled parking

It will be important to provide designated charge points that are accessible spaces for disabled users, especially as there is already a lack of accessible parking in London. Alongside the general design principles, charge points for disabled users will require specific considerations to include users with reduced manual dexterity. Please refer to the DfT's Inclusive Mobility and British Standard BS 8300 to meet the needs of disabled people.The previous section titled 'Design of EV charge point locations' outlines in more detail some of these requirements, including diagrams of suggested designs.

Maintenance

Public trust in the availability of existing charging infrastructure is a large factor in realising the switch to EVs.

Fault reporting

Operators of charge points should clearly display who to contact in the event of a fault, and in many cases it will be the operator themselves who will be the main point of contact. A process for the reporting of faulty charge points should be in place, addressing any faults within a timely fashion and customers should be notified if possible with advice of alternative nearby charge points. Contracts could include penalties or fines to ensure charge points are fixed within an acceptable timeframe.

Crime and disorder

An agreement should be reached to address the following points:

- Agree approach to securing all charge points (including through production and delivery phases) and assets used in relation to the agreement
- Security precautions (including charge point design and on-street payment methods) employed to prevent misuse and theft of card details and other personal information
- Approach to data sharing with regard to data being stolen, for example through a cyber attack
- Strategy to be implemented when crime occurs, including at on-street locations
- Approach to monitoring internal security matters including but not limited to access control
- Reporting of incidents

Security

As part of the bidding process for procuring EV charge points, bid responses should outline how the provider will meet applicable UK security legislation including complying with the Data Protection Act 1998 and Counter-Terrorism Act 2008. A draft security policy should identify where responsibility for security lies for the services. The draft security policy should cover, as a minimum, the following:

- A security plan of how the operator will manage and protect confidential information including personal data, service systems integration and availability. The plan should indicate activities where it is expected the customer or other third parties should be involved
- Security measures for the services and service systems provided as well as the testing approach to demonstrate this
- Description of the approach for managing security breaches
- Communication links from the service system(s) to third parties
- Security measures for the removal of any customer and third-party data and security and/or related configuration information in the event of disposal of equipment or surplus equipment being resold or donated to another party

Data

Building up a picture of where charging infrastructure exists can be helpful for users to identify the location of available charge points, but also to help plan for the future and to identify gaps in the charging network across London. A final step in the process of installing a charge point should be to register it in the following ways:

Zap-Map

Zap-Map is a UK-wide map of EV charge points and aims to help EV drivers locate and navigate to available charge points. You can register new charge points through their website: https://www.zap-map.com/add-a-charge-point/

National Chargepoint Registry

The National Chargepoint Registry (NCR) was established by the UK government in 2011 to provide a public database of publicly-funded charge points across the UK. This was created in support of the government's objective to promote the use and sales of ultra- low emission vehicles. The government's Office for Low Emission Vehicles (OLEV) requires that all publicly funded charge points are registered on the NCR. OLEV is currently exploring options and engaging with industry on the best approach to making accurate data on all publicly accessible charge points freely available.

Collecting usage data

Where possible, usage data should be collected. This provides information on the level of use at charge points, how long they are being used for and for what types of vehicle. This can help to plan for the future expansion of charge points and detail where there is higher demand.

Appendix A - Glossary

BEAMA	British Electrotechnical and Allied Manufacturers – UK trade association for manufacturers and providers of energy infrastructure technologies and systems.
BEV	Battery Electric Vehicle. A vehicle powered by a battery, which can be plugged into an electricity source to recharge. Also know as 'pure' or '100 per cent' EVs, they have zero tailpipe emissions.
CEO	Civil Enforcement Officers. CEOs are responsible for enforcing parking, traffic and other restrictions and laws in England and Wales.
CIL	Community Infrastructure Levy. A planning charge introduced by the Planning Act 2008 as a tool for local authorities in England and Wales to help deliver infrastructure to support the development of their area.
CPZ	Controlled Parking Zone. An area where parking is restricted during certain hours of the day.
DNO	Distribution Network Operator. A company licensed to distribute electricity in the UK. They are responsible for distributing energy and maintaining the electrical supply system. In the London region there are two DNOs: UK Power Networks and Scottish & Southern Energy.
DPD	Development Plan Document**.** DPDs are planning policy documents which make up the Local Plan. They help to guide development within a local planning authority area by setting out the detailed planning policies, which planning officers use to make their decisions on planning applications.
Electricity supplier	Electricity company to whom the user pays their electricity bill. In the UK there are six companies which are the predominant electricity suppliers (British Gas, EDF, E.ON, npower, Scottish Power and SSE). There are also many smaller suppliers, some with a green energy focus such as Ecotricity and Octopus.
ENA	Energy Networks Association. The industry body funded by the UK gas and electricity transmission and distribution licence holders.
EV	Electric vehicle. A vehicle that uses an electric motor for propulsion, comprising ones that run solely on batteries, as well as plug-in hybrids (PHEVs) that have an attached petrol or diesel engine to power the battery engine.
EVCP	Electric vehicle charging point. This is the infrastructure provided to enable electric vehicles to recharge batteries. They come in a number of forms ranging from small charge points contained within existing infrastructure such as lamp columns, to larger rapid chargers which provide a quicker charge for vehicles such as taxis through hubs, which are locations with six or more charge points grouped together.
Feeder pillar	Controls electricity outputs to devices and buildings, including lighting, signalling and charge points. Charge points will need to be connected to a feeder pillar in order provide an electric charge.
Fast charge point	A charge point that provides power from 7kW to 22kW AC, and typically fully charges an EV with a 22 kWh battery in three to four hours. Common fast connectors are a tethered Type 1 or a Type 2 socket (via a connector cable supplied with the vehicle).
GULCS	Go Ultra Low City Scheme. A programme by the Office for Low Emission Vehicles within the Department for Transport. It aims to provide funding for local authorities in the UK that encourages people to consider switching to an electric car.
ICE	Internal combustion engine. An engine that generates motive power by burning petrol, diesel, oil, or other fuel with air inside the engine, the hot gases produced being used to drive a piston or do other work as they expand.
kW	Kilowatt. A measure of one thousand watts of electrical power.
LIP	Local Implementation Plan. A statutory transport plan produced by London boroughs which brings together transport proposals to implement the strategy at a local level.
LGV	Light Goods Vehicle. A motor vehicle (such as a van) with a gross vehicle weight of less than 3.5 tonnes.
MAQF	Mayor's Air Quality Fund. A £22 million fund over 10 years to support projects by London boroughs to improve air quality.

Mobile Charging Units	Charging unites that are either attached to another vehicle or moveable from charge position to the vehicle; often applied in roadside assistance to provide charge to an EV vehicle with a low battery.
Open access	Charging point which all users can access (ie not restricted access).
OLEV	Office of Low Emission Vehicles. OLEV works across government to support the early market for ultra-low emission vehicles. It is part of the Department for Transport and the Department for Business, Energy & Industrial Strategy.
PCN	Penalty Charge Notice. PCNs are mainly associated with parking and issued when a driver parks a vehicle in contravention of the regulations. A PCN can also be issued for breaking some traffic rules or for not paying the fee for the congestion charge or low emission zone on time.
PHEV	Plug-in hybrid electric vehicle. An EV that combines a small plug-in battery with an internal combustion engine (ICE). These typically use the battery to drive the wheels at low speeds, or for a limited range, with the petrol- or diesel-fuelled ICE used for greater speeds and longer distances.
Restricted access	Charging point usage restricted to subscribers.
RFID	Radio Frequency Identification. A system that transmits the identity (in the form of a unique serial number) of an object or person wirelessly by using radio waves.
SLA	Service Level Agreement. A SLA is a contract between a service provider and its internal or external customers that documents what services the provider will furnish and defines the service standards the provider is obligated to meet.
SSEN	Scottish and Southern Electricity Networks**.** A distribution network operator for electricity covering parts of Scotland as well as central southern England and parts of London.
TfL	Transport for London. One of the Greater London Authority functional bodies, accountable to the Mayor, with responsibility for delivering an integrated transport strategy for London.
TMO	Traffic Management Order. TMOs are legal documents drafted and made by the local highway authority, usually under the Road Traffic Regulation Act 1984. They regulate the use of highways for movement and parking and also off-street parking areas by drivers of vehicles and/or pedestrians within the local authority area.
UKPN	UK Power Networks**.** A distribution network operator for electricity covering South East England, East of England and London.