F8 – Electric Vehicle Chargepoints

Amendments:

This factsheet has been subject to a Safety Risk Assessment to ensure the safety of the guidance provided. This does not remove the responsibility of the Designer of individual schemes to comply with their obligations under the Construction (Design and Management) Regulations for site specific assessments, including the need for a Road Safety Audit.

Designing for Electric Vehicles

Facilitating the switch to Electric Vehicles (EVs) requires designing urban environments to allow for new re-fuelling habits. EVs generally have a smaller range than vehicles powered by an internal combustion engine (ICE). The time taken to refuel depends on how powerful the chargepoint is.

Designers should consider that:

- EVs refuel more frequently.
- Refuelling takes longer, a minimum of about 30 minutes.
- The speed of charging changes, once a battery is at 80% it will charge more slowly.
- Recharging is done when the vehicle is parked.

Households with off-street parking can charge an EV by fitting a private domestic chargepoint.

This guidance focuses on battery charging for motorists who rely on publicly available chargepoints.

Drivers' needs will vary according to the distance they are driving. Which type of chargepoint(s) is appropriate needs to be based on:

- Which user groups (see page 2) will be present at different times.
- The likely dwell time of vehicles.
- The visual impact on the setting.

The most common settings for charging to take place will be:

- Residential properties.
- Destinations such as workplaces, supermarkets and retail sites.
- At charging hubs, aimed at motorists who are enroute to a destination.

Table F8.1 – Dwell time dependant on setting

Setting	Dwell time
Home	> 8 hours
Destination	45 mins - 8 hours
Charging Hub	15-45 mins

Figure F8.1 – Off-street rapid charging hub

BP Pulse

Charging hubs

A hub typically refers to an off-street facility with six or more rapid or ultra-rapid chargepoints. They are similar to petrol stations with shelter from the elements and associated amenities.

It is also used to refer to a grouping of four or more on-street EV bays, which do not have amenities co-located with them.

Designing for Electric Vehicles

Edinburgh's Electric Vehicle Action Plan divides the city into three zones to provide a general guide to the type of chargepoints required in each area.

Zone 1: Preference is for rapid charging hubs on-street and off-street to serve a mix of taxis, commercial vehicles and private vehicles.

Zone 2: Preference is for fast and standard chargers on-street focused on areas where households lack off-street parking and rapid chargers off-street.

Zone 3: Preference is for charger hubs that serve commuters and support public transport use.

Figure F8.2 – Edinburgh chargepoint zones

Base image courtesy of Google

The local context will determine exactly what is appropriate. Note that the majority of the city centre is either within the World Heritage Site or a designated Conservation Area**.**

In new developments the Transport Assessment should identify who the users of the parking/loading facilities will be and what their charging needs are.

User groups

User groups can broadly be divided into high and low mileage users.

Low mileage drivers

Often most private motorists may only need to recharge once or twice a week, with home charging being the most convenient option. The number of public charging facilities will need to be greater in areas of the city where the majority of households do not have access to off-street parking.

High mileage drivers

This includes taxi/private hire, commercial vehicles and a minority of private motorists. They will need access to rapid charging facilities to recharge vehicles during their working hours.

These rapid chargers need to be conveniently located, close to where they work. Drivers will also need access to slower public charging facilities near their homes, if they do not have off-street parking.

Car clubs

Car clubs require charge points at dedicated car club bays. Vehicles can be recharged overnight or between bookings.

Electric Vehicle Chargepoint Types

There is no universal plug socket for EVs but the Type 2, CCS and CHAdeMO are most common.

Ultra-rapid and rapid chargepoints share similar dimensions and are fitted with tethered cables. While Type 2 cables can be fitted, to discharge up to 43kW AC, they should only have CHAdeMO and CCS cables fitted to provide rapid DC charging. Rapid 50kW chargepoints are designed to charge one vehicle, but ultra-rapids can charge two simultaneously.

Fast and standard chargepoints have similar dimensions and can be wall or pole mounted. Slow chargers often utilise an existing power supply such as lamp-columns. Fast, standard and slow chargers should have sockets that accept Type 2 cables.

Figure F8.3 – Electric vehicle chargepoint types

Table F8.2 – Chargepoint types and details

Charger Type	Ultra-rapid: 100kW+	Rapid: 50kW	Standard & Fast: 7-22kW		Lamp-column: 3.5-5.5kW
			Wall unit	Pole unit	
Height (approx.)	1.9m	1.9m	575mm	1470mm	300mm (or within column)
Width (approx.)	0.9m	0.9m	320mm	400mm	140mm (or within column)
Depth (approx.)	0.7m	0.7m	155mm	250mm	85mm (or within column)
Charging time 60kWh BEV[1]	20-40 minutes	50 minutes	2 hours – 5 hours		7 hours – 10 hours
Charging time 150kW BEV[1]	50-100 minutes	120 minutes	4 hours – 13 hours		16 hours – 26 hours
Charging standards/sockets	CHAdeMO/ CCS	CHAdeMO / CCS / Type 2	Type 2		Type 2
Number of EVs served	2	1	2		1
Suitable locations	Charging hubs, service stations, taxi ranks	Charging hubs, service stations, taxi ranks	Private retail or public car parks and on-street sites		Residential areas, conservation areas

[1] Charging times are based on charging a vehicle from 20% to 80%. 60kWh EV - Hyundai Kona (258 mile range). 150kWh – Nio ET7 (600 mile range).

Feeder Pillars

Unless the EV chargepoint is utilising an existing power supply it will also require an associated feeder pillar - a metal box housing for the new power connection, similar to a domestic distribution board.

The larger the power supply, the larger the feeder pillar will need to be.

Consideration needs to be given at the earliest stages to where feeder pillars will be sited to preserve adequate footway width: 1.5m as an absolute minimum.

Minimum Footway Widths

Factsheet P3 sets out minimum footway widths. Footway clear zones (unobstructed area of the footway primarily designed for movement) should be 1.5m wide as an absolute minimum in existing streets (2m absolute minimum in new streets).

If a large amount of power is required the Distribution Network Operator (DNO), SP Energy Networks, may propose that two feeder pillars are required.

Prioritise locations where power can be supplied by a single feeder pillar of suitable dimensions that minimises the streetscape impact.

Figure F8.4 shows the feeder pillars and chargepoint colour do not match the existing street furniture. The feeder pillar and chargepoint are not offset and reduce the clear footway zone.

Figure F8.5 shows the feeder pillar located in line with the furniture zone, near the kerb.

Figure F8.6 shows the feeder pillar and chargepoint are close together and reduce the clear footway zone.

Figure F8.7 shows the feeder pillar for this rapid charger is sited at the rear of a widened section of footway.

Figure F8.4 - Feeder pillar reducing footway width

Google Streetview

Figure F8.5 – Feeder pillar in the furniture zone

City of Edinburgh Council

Figure F8.6 - Feeder pillar not offset from chargepoint and reducing footway width

Google Streetview

Figure F8.7 - Feeder pillar on widened footway

City of Edinburgh Council

Relevant Factsheets:

Footways (P3) Promoting Pedestrian Movement and Activity (P2)

General Design Principles

Improvements to EV charging infrastructure will be sought in all works, routine street maintenance and new developments.

Future-proof installations

- It is currently good practice to provide a minimum of one chargepoint in new developments, if there are 10 or more parking spaces.
- 20% of parking spaces in new non-residential developments should have ducting installed (allowing for cables and chargepoints to be retro-fitted).
- All parking spaces in new residential developments should have ducting installed.
- New developments should secure sufficient electrical capacity for future EV charging needs.

Chargepoints should comply with the latest OCPP & OSCP protocols, set by the Open Charge Alliance, and which support Vehicle to Grid charging.

Smart charging

The Automated and Electric Vehicles Act 2018 requires chargepoints to be 'smart'.

Smart chargers regulate charging across a connected group of chargepoints. Without smart charging the DNO will have to provide electrical capacity on the assumption that all chargepoints will be discharging their maximum power output at the same time. This is a rare occurrence and smart charging allows a lower overall electrical capacity to be efficiently utilised across a group of chargepoints. It can also avoid peak periods so the electricity consumed is cheaper and has lower Greenhouse Gas (GHG) emissions.

Vehicle to Grid charging (V2G)

Vehicle to Grid technology allows energy stored in a battery to flow back to the grid. Mass adoption of V2G chargers will create a storage capacity large enough that it can even out mismatches between the supply and demand for energy.

EV owners can profit by selling energy to the grid at periods of peak demand and there will less need to build power generation capacity.

Asset protection

Ordinarily EV chargers are installed with protection barriers to mitigate against damage from collision (see 4.1 Accessibility Considerations). Bollards should be considered where this is not the case.

Charging infrastructure installed must contain safety devices to cut off the supply of electricity in the event of a collision.

Public Utilities

Existing public utilities should be identified during the site selection process to ensure there are no conflicts, with public utility drawings for underground and overhead services obtained. Consideration should also be given to ensure access to existing public utilities is maintained and to ensure that safe access for new utilities and EV charging infrastructure maintenance can be provided. New EV infrastructure should not be placed in close proximity to existing public utility access covers.

Further guidance:

- HSE: Avoiding danger from underground services
- HSE Guidance Note GS6: Avoiding danger from overhead power lines
- Factsheet F6 Street Lighting

Relevant Factsheets:
Street Lighting (F6)

Accessibility Considerations

Consider both the impact on people using the footway and how accessible the chargepoint is for disabled users.

Pedestrian movement/activity

Factsheet P2 emphasises the need for designers to understand existing and predicted patterns of pedestrian movement and experiences, with a focus on pedestrian desire lines and comfort.

Accessibility guidance

Publicly accessible EV charging points should cater for the wide diversity of people who may use them including wheelchair users, people with mobility issues and carers of young children. British Standards BS 8300-1 and BS 8300-2, should be reviewed.

The British Standards Institute has published comprehensive standards on creating accessible chargepoints.

- **PAS 1899:2022**: Electric vehicles – Accessible charging – Specification.

Other useful guidance to refer to includes:

- DfT guidance on **Inclusive Mobility** and
- The IET Code of Practice for **Electric Vehicle Charging Equipment Installations**

Accessing chargepoints

It is recommended that charge-points are installed so that, relative to the user:

- Socket outlets are between a height of 0.8m-0.95m.
- Display screens are between a height of 0.8m and 1.3m.
- Buttons and touchscreens are between a height of 0.8m and 1.2m.
- The bottom edge of the payment terminal is between a height of 0.8m and 1m.

Providing chargepoints on the same level surface as the user avoids introducing barriers for people using wheelchairs. Where this is not possible, dropped kerbs should be provided so the level difference is not a barrier for wheelchair users. See Factsheet G4 for further guidance on uncontrolled dropped kerb crossings and gradients.

Bollards protecting the chargepoint from vehicle strikes need to be a minimum of 1.4m apart and a maximum of 0.3m forward of the chargepoint to allow wheelchair access.

A minimum clear space of 1.2m deep from the chargepoint needs to be provided at chargepoints serving disabled bays. A clear space of 1.8m radius is desirable to provide a turning circle of 180º for wheelchairs.

Dedicated parking bays

Off-street locations generally have more space and can meet accessibility requirements.

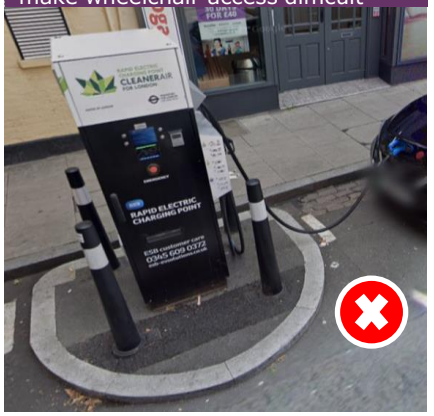
Where chargepoints are on-street, choose locations with parallel parking bays as these are easier to adapt to allow access for disabled users.

Where four or more parking bays are provided one should be of larger dimensions to accommodate larger vehicles and improve access for disabled drivers and passengers.

Figure F8.8 – Barriers to protect the chargepoint must not impede wheelchair access

City of Edinburgh Council

Figure F8.9 - Chargepoints on raised kerbs with poorly placed bollards make wheelchair access difficult



Google Streetview

Relevant Factsheets:

Crossings (G4) Footways (P3) Promoting Pedestrian Movement and Activity (P2)

Heritage Considerations

Visual Impact

The visual impact of chargepoints can be minimised by:

- Avoiding locations near junctions and architecturally important buildings.
- Grouping street furniture together.
- Choosing black as the default colour for chargepoints and feeder pillars.
- Matching the colour of existing street furniture if it isn't black.
- Choosing units under 1.6m in on-street locations and which have slimmer profiles.
- Using chargepoints with minimal visual impact, such as on lamp-columns where possible.
- Keeping branding to a minimum.
- Locating signage on railings and street furniture rather than introducing new posts.

Figure F8.10 - Use chargepoints with minimal visual impact where possible

Ubitricity

High quality

Ensure that installations are of a high quality by:

- Covering concrete foundations so they are not visible.
- Matching existing paving and kerb materials exactly.
- Retaining all original stone paving e.g., paving flags, setts or horonized surfaces, relaying them in the original style.

World Heritage Sites

It is advised to liaise with Edinburgh World Heritage Trust on site selection and installation of charging units within the World Heritage Site.

Good practice within the New Town area is to minimise the visual impact of chargepoints, is to locate them by the railings of private communal gardens.

Figure F8.11 - Retractable or slimline chargepoints in colours that match existing street furniture

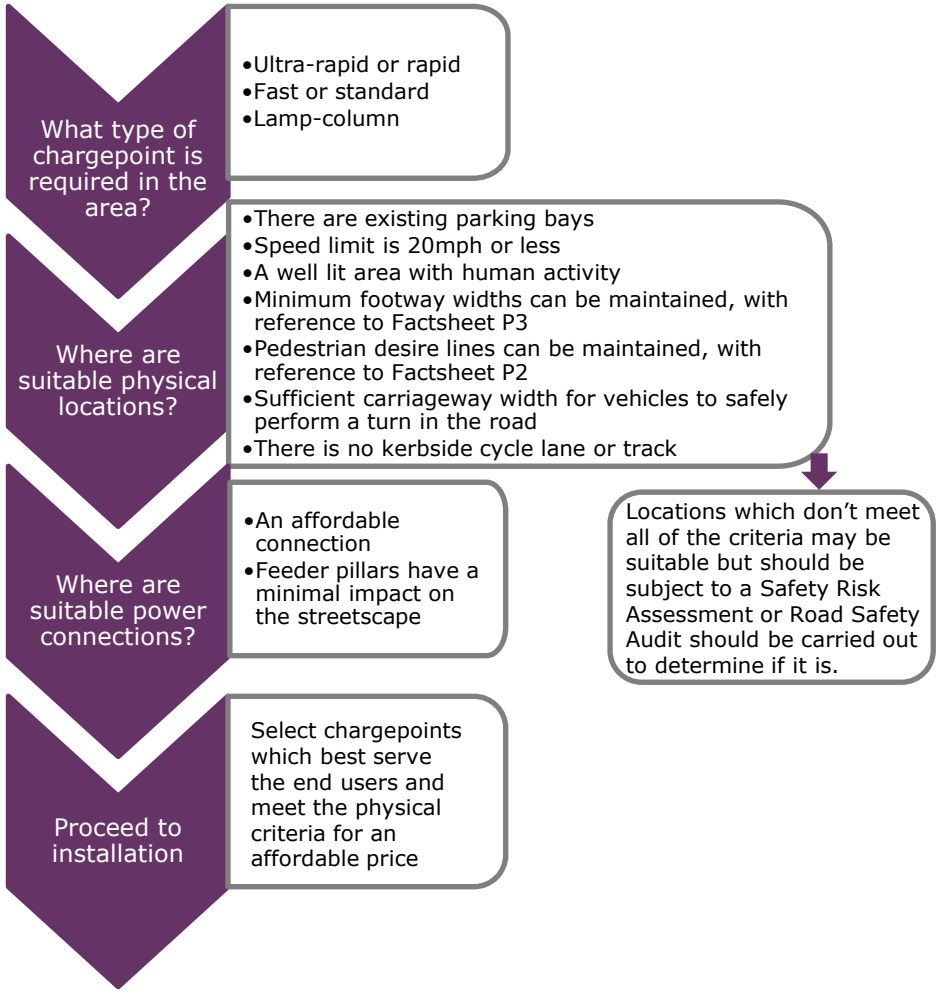
Trojan Energy Ltd.

Heritage considerations should not be at the expense of safety and accessibility. In particular the height and tonal contrast of the units should not create a trip hazard for users.

Relevant Factsheets:

Footway and surfacing material (M1) Footway paving (M3)

On-street Site Selection



Chargepoint selection

The preference is for ultra-rapid chargers rather than rapid. Ultra-rapids have similar dimensions but can serve two EVs simultaneously, so less street furniture is needed. If the power connection for an ultra-rapid charger is prohibitively expensive a rapid chargepoint may be better value; however, both types are more visually intrusive than standard or fast chargers and rely on greater power connections, so have greater streetscape and financial costs.

In predominantly residential settings standard chargers are preferable.

New and existing street lighting is generally at the rear of the footway (see Factsheet F6), where lamp-column charging will not generally be an option.

Lamp-column chargepoints should only be considered where columns are already at the kerb.

Where the site is especially sensitive to heritage considerations, a satellite bollard can be used to host the chargepoint.

Electrical safety

Rules on electrical safety will be very important in site selection. A 2.5m earthing exclusion zone, inclusive of any vehicle plugged into a chargepoint, will rule-out bays close to existing electrical outlets. This safety requirement is explained in detail in the IET Code of Practice for Electric Vehicle Charging Equipment Installations. It is regularly updated and installers should comply with the latest edition.

SP Energy Networks will supply quotes for new power connections and the dimensions/locations of feeder pillars.

It will then be possible to make a judgement on which sites are affordable, well located for EV users and comply with the streetscape design guidance.

Relevant Factsheets:

Footways (P3) Promoting Pedestrian Movement and Activity (P2)

On-street Chargepoint Layout

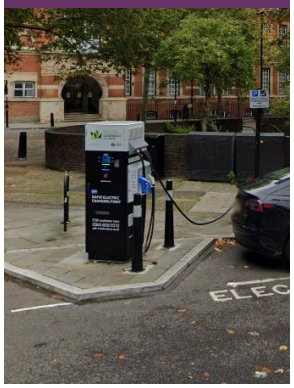
F8.12 - On road surface

City of Edinburgh Council

F8.13 - On footway

City of Edinburgh Council

F8.14 - On build-out



Google Streetview

Consider how wheelchair users will access the chargepoint controls and sockets, and how they will transition between the road and footway. Dropped kerbs in the vicinity of the above examples would improve their accessibility – see the next two pages for examples and refer to section 4.1.

On-street chargepoints can be located either:

- On the road surface.
- On the footway.
- On a footway build-out.

They must not affect driver or pedestrian visibility. Chargepoints must be at least 10m from junctions and pedestrian crossings.

Pedestrian movement/activity and minimum footway widths

In considering where to site chargers, designers should also give specific focus to Factsheets P2 and P3 to understand existing and predicted patterns of pedestrian movement, as well as absolute minimum footway widths.

Chargepoints should be placed to minimise the distance between the charging unit and any EV connecting to it.

Chargepoints designed to serve two vehicles should be sited between two parking bays.

Chargepoints designed to serve one vehicle should be sited at a corner of the associated parking bay (IET code of practice). The chargepoint should only be usable by an EV parked in an associated EV bay. End bays are therefore well suited to host chargepoints which serve one vehicle e.g 50kw rapid chargers.

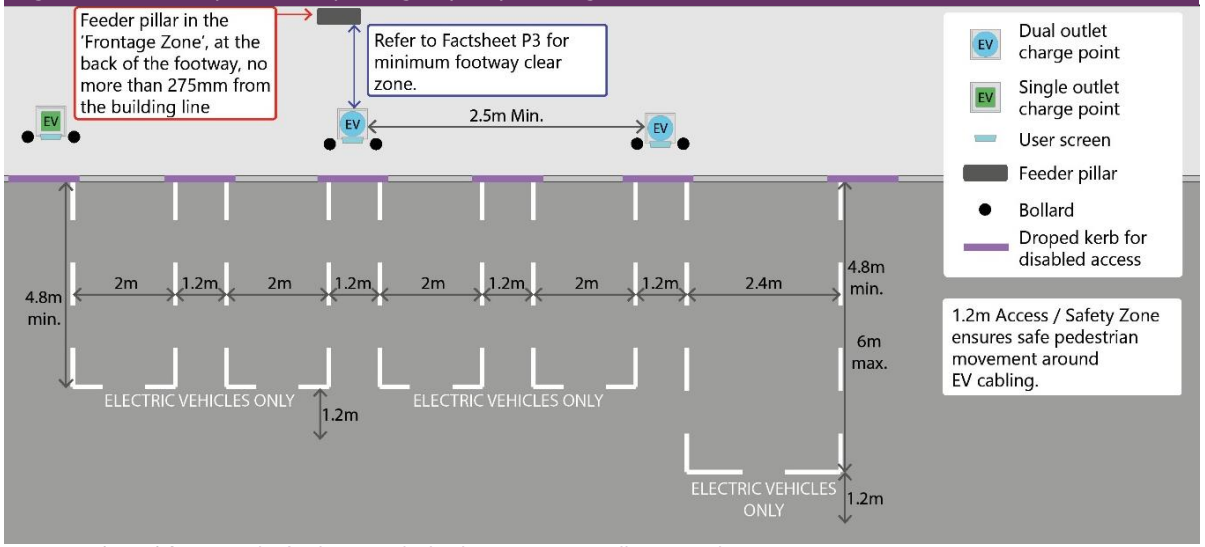
Table F8.3 – Chargepoint layouts and considerations

Layout	Pros	Required conditions	Consider
On road surface	• User controls and sockets will be at the correct height	• Camber of 2% or less • Speed limit on road 20mph or lower	• How to minimise the risk of damage from vehicle strikes • How wheelchair users will access the footway
On footway	• Reduced risk of damage from vehicle strikes	• Minimum footway widths are maintained • Ensure a dropped kerb can be provided within 10m	• Clear footway zones • Understand pedestrian needs, accommodate and strengthen pedestrian desire lines and assess to maintain or improve pedestrian comfort
On build-out	• Visual impact can be reduced within a line of parked cars	• Level access provided from footway to chargepoint	• How drainage will be affected

Footways (P3) Promoting Pedestrian Movement and Activity (P2) Crossings (G4)

Perpendicular parking bays

Figure F8.15 – Perpendicular parking bays layout diagram



Source: Adapted from London's electric vehicle charge point installation guidance

Off-street parking bays are typically perpendicular, as shown in the diagram above. This illustrates an ideal layout where space is not constrained and dropped kerbs have been provided at every chargepoint. This is not meant to imply that all chargepoints should have dropped kerbs. Where four or more parking bays are provided, one should be of larger dimensions to accommodate larger vehicles and improve access for disabled drivers.

At on-street locations, a 1.2m access zone around the general parking bays is desirable but not essential. Echelon parking bay layouts, where the chargepoints are at an angle to the kerb, can be viewed in PAS 1899:2022: Electric vehicles – Accessible charging – Specification issued by the British Standards Institute.

Disabled EV users

Bay dimensions of 4.8m x 2.4m are the minimum recommended for off-street perpendicular bays in the DfT guidance on Inclusive Mobility and BS 8300-1. Where space allows, and it is safe to do so, larger bays should be provided for use by Blue Badge holders. Where bays are intended for use by Blue Badge holders a 1.2m access zone around the parking space is required.

Where minimum footway widths can be achieved, and where pedestrian desire lines and comfort are not compromised, chargepoints could be sited on the footway or path, with access for disabled users enabled by dropped kerb provision. Siting chargepoints so they are aligned with the 1.2m access space helps ensure that there is adequate space for wheelchair users to access them.

Where space does not allow chargepoints to be located on the footway, a build-out can host the chargepoints (see examples overleaf). Build-outs should provide level access for wheelchair users.

For further guidance refer to:

1. PAS 1899:2022
2. DfT Inclusive Mobility Section 5.3.
3. London's electric vehicle charge point installation guidance.
4. BS 8300-1 Section 7 Parking Provisions.

Relevant Factsheets:

Street Furniture Layout (F1) Promoting Pedestrian Movement and Activity (P2) Footways (P3)

Parallel Parking Bays

Most on-street parking will be parallel to the kerb. Three different layouts are shown on this page, with installations in the road. Page 13 shows the layout for a row of four bays, where the chargepoints are sited on the footway.

Rapid chargepoints, which can only recharge one EV, should be positioned so that a second car cannot physically access it, as in the upper diagram. If a chargepoint serving two EVs is being installed it must be located between two bays, as in the two lower diagrams. Installations could be on a kerb build out as in the lower left diagram, or directly onto the road surface as in the lower right diagram.

Disabled EV users

Where minimum footway widths can be achieved, and where pedestrian desire lines and comfort are not compromised, chargepoints could be sited on the footway or path, with access for disabled users enabled by dropped kerb provision. Where space allows, and it is safe to do so, larger parallel parking bays should be provided that are suitable for use by Blue Badge holders and oversized vehicles.

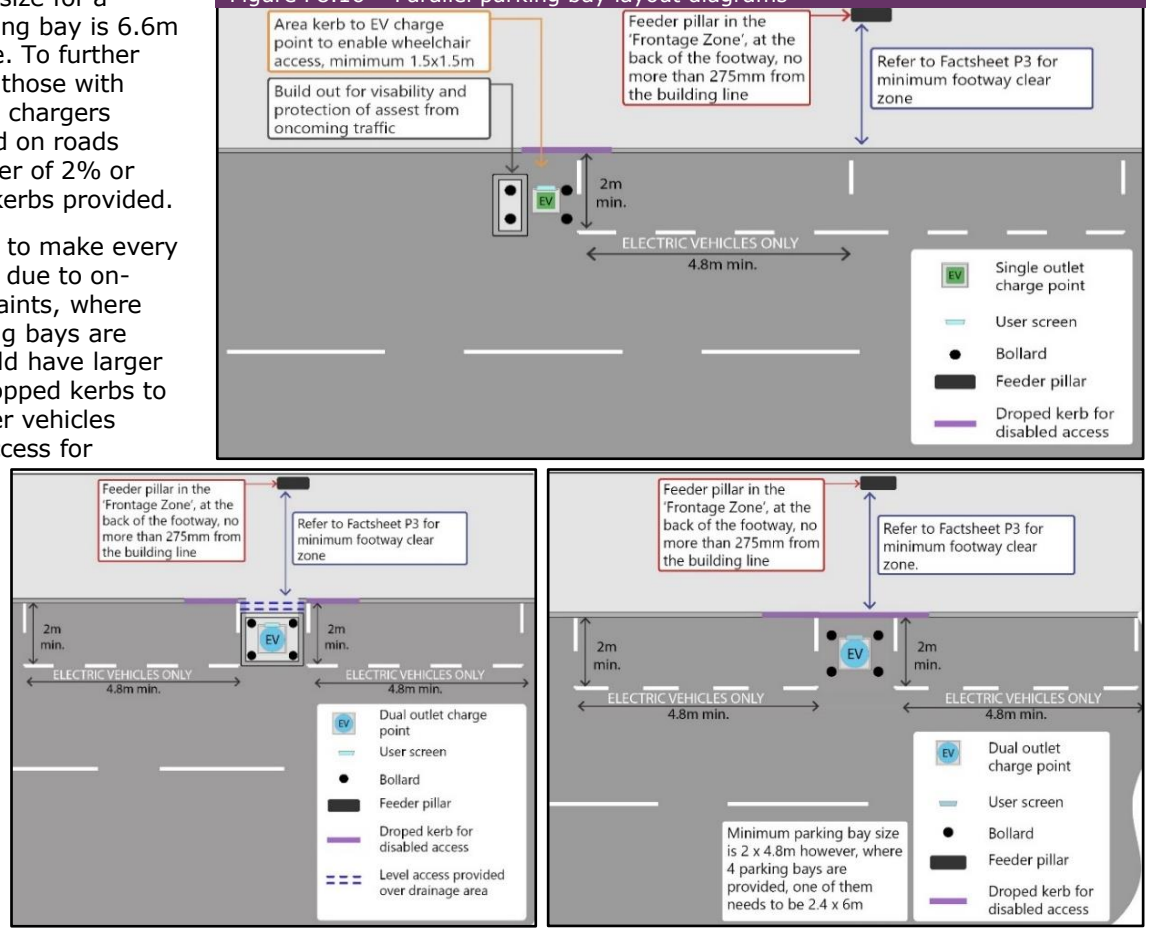
The recommended size for a larger parallel parking bay is 6.6m long and 2.7m wide. To further improve access for those with mobility difficulties, chargers should only be sited on roads which have a camber of 2% or less, and dropped kerbs provided.

As it is not possible to make every bay fully accessible due to on-street space constraints, where four or more parking bays are provided, one should have larger dimensions and dropped kerbs to accommodate larger vehicles whilst improving access for disabled users.

When the chargepoint is in the carriageway, the user interface should be facing the footway so that users will be positioned away from moving vehicles.

For national guidance/best practice links see the previous page.

Figure F8.16 – Parallel parking bay layout diagrams



Source: Adapted from London's electric vehicle charge point installation guidance

Relevant Factsheets:

Street Furniture Layout (F1) Promoting Pedestrian Movement and Activity (P2) Footways (P3)

Rapid and Ultra-rapid Chargepoints

On-street

Rapid chargers may be sited on or off-street. If installed on-street then, so long as minimum footway width requirements are met, chargers should be sited in the furniture zone of the footway, alongside the kerb.

The feeder pillars for rapid chargers can be sizeable. While they can be located at the frontage zone or furniture zone, locating them in the frontage zone will reduce their visual impact. A clear footway zone must be maintained as set out in Factsheet P3 and Factsheet P2 for pedestrian comfort.

If pedestrian comfort would be impacted by locating chargepoints on the footway then they should be placed on carriageway buildouts.

While it is more cost effective to install rapid chargers in groups which will serve multiple bays this will need to be balanced against the space available for the feeder pillar.

Charger hubs

The power required for a hub site means that a new power supply will be needed. SP Energy Networks will be responsible for providing this connection. Connection costs vary greatly and can be so high that sites are unfeasible. Hubs should ideally be located off-street to reduce their impact on the street-scene.

Case Study: Glass Yard

F8.17 – Glass Yard off-street charging hub

The Glass Yard rapid hub in Woolwich opened in September 2021. Guidance for local authorities and landowners on the process and lessons learned has been created by the Cross River Partnership.

Location

Rapid hubs should be:

- Sited alongside strategic/trunk roads or at destinations which serve high mileage users (logistic parks, petrol stations).
- Sited off-street in conservation areas, heritage sites and primarily residential areas.
- Close to a DNO connection and suitable substation.
- Developed in consultation with high mileage end-user groups.
- Near shops and amenities if these are not provided as part of the hub.
- Accessible to large vehicles.
- On the same level as the pedestrian exit, if within a car park.

Layout

- Provide pedestrian access to and from the chargepoints.
- Each hub should have a minimum of one bay with larger dimensions, as set out on page 13, to accommodate disabled drivers and oversized vehicles.

Figure F8.18 - Bulky rapid chargers are better suited to off-street locations

TfL

Charging units

- Cables should be long enough to reach the furthest point of the associated parking bay as the inlet can be anywhere on an EV.
- Tethered cables should be retractable, so they cannot be left on the ground.
- Finding space and sufficient power capacity for an on-street rapid hub is challenging. Individual rapid or ultra-rapid chargepoints on-street are likely to be better value for money.

Fast and Standard Chargepoints

Fast and standard chargers

Fast and standard chargers may be sited on or off-street. If installed on-street then, so long as minimum footway width requirements are met, chargers should be sited in the furniture zone of the footway, alongside the kerb.

Both fast and standard chargers will require a new power supply and dedicated feeder pillar. This can be located at the frontage zone or furniture zone to ensure that a clear footway zone is maintained as set out in Factsheet P3 and Factsheet P2 for pedestrian comfort.

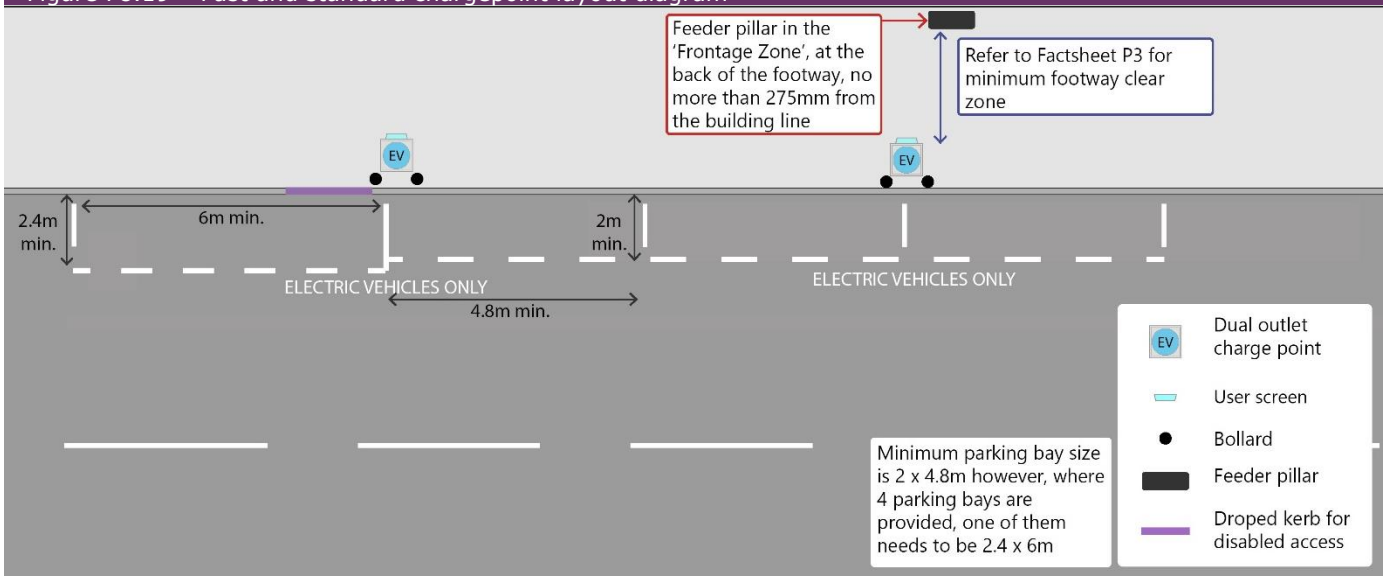
If pedestrian comfort would be impacted by locating chargepoints on the footway then they should be placed on carriageway buildouts.

It is more cost effective to install fast/standard chargers in small groups which will serve four, six or eight parking bays. It also ensures that if one chargepoint is faulty, alternatives exist at the same location.

Where four or more EV bays are positioned together one larger bay should be provided, as shown in the example below. This can accommodate larger vehicles and, while not designated as a disabled bay, will allow easier access for disabled users.

Provide a dropped kerb to facilitate access for wheelchair users at the larger bay.

Figure F8.19 – Fast and standard chargepoint layout diagram



Relevant Factsheets:

Street Furniture Layout (F1) Footways (P3) Promoting Pedestrian Movement and Activity (P2)

Lamp-column Chargepoints

Lamp-columns chargepoints do not require a dedicated power supply. Where columns are at the front of the footway they can be the cheapest way of providing EV charging infrastructure with minimal civil works and reduced street clutter but require private vehicle owners to use their own charging cable.

The charging socket on the columns should be located towards the carriageway or parallel to the parked vehicle, not inwards towards the footway.

Avoid columns alongside yellow lines, where parking bays have been dedicated for specific uses (such as disabled parking), and where kerbside activity is high.

Parking bays for residential use are suitable. Ideal locations are those where competition for space is low, alongside property side walls, rather than house frontages for example. This reduces the risk of access to the chargepoint being blocked by a non-EV.

If lamp-columns are at the back of the footway, or otherwise unsuitable for mounting chargepoints, it is possible to install a satellite bollard, which still makes use of the lamp-column's power supply. The use of a satellite bollard introduces a new piece of street furniture so it is generally preferable to install a dual outlet fast or standard charger. Satellite bollards would only be suitable at particularly sensitive locations within the World Heritage Site.

Where chargepoints are within a Controlled Parking Zone (CPZ), it is acceptable to restrict their use to permit holders to maintain the integrity of the CPZ.

Refer to Factsheet (P3) on Footways and Factsheet (F6) on Street Lighting for general layout principles.

UK Power Networks Getting electric vehicles moving and London Council's Residential EV Charging Infrastructure provide guidance and information on lamp column charging.

Figure F8.20 – Lamp-column chargepoints diagram

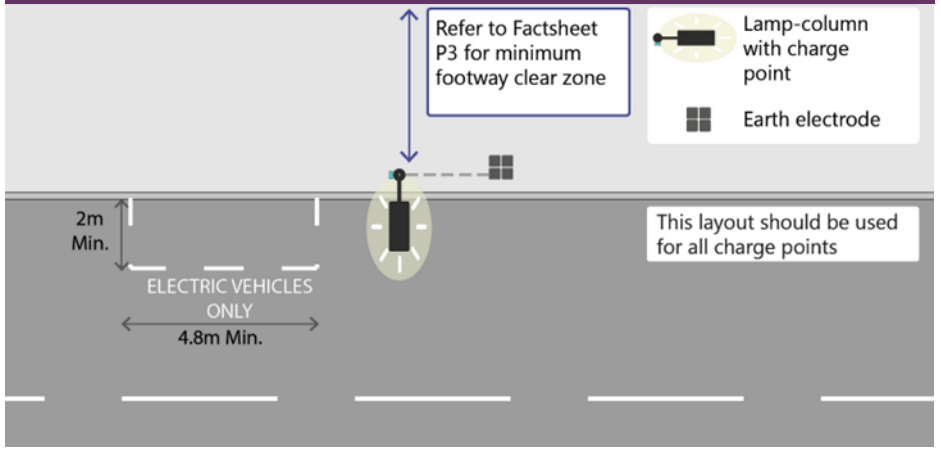
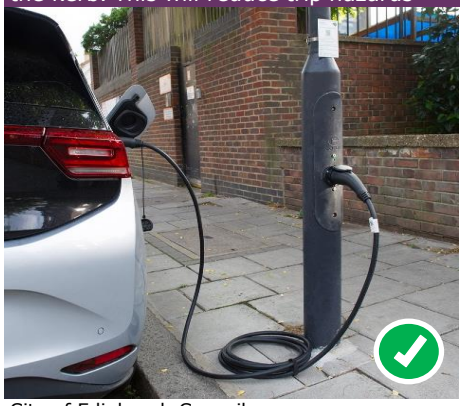


Figure F8.21 - Satellite bollard positioned between two bays

Ubitricity

Figure F8.22 - Charging socket parallel to the kerb. This will reduce trip hazards



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Consider how wheelchair users will access the chargepoint controls and sockets and transition between the road and footway, with reference to section 4.1.

Relevant Factsheets:

Street Furniture Layout (F1)
Footways (P3)
Street Lighting (F6)
Locating Street Lighting: Options (F6)

Prohibited Charging

The Council does not allow cables to be laid across the footway to recharge EVs.

Where properties have off-street parking, a charger should be fitted to serve the parking space(s) for that dwelling.

Running cables across the footway creates a trip hazard and makes it more difficult to use, especially for those with reduced mobility.

While solutions do exist to reduce trip hazards, no solution which carries the cable across the footway is approved as a standard solution in Edinburgh.

For any potential solutions being proposed by developers, the onus should be on demonstrating the safety and maintenance requirements of their chosen solution and how it meets Edinburgh's Street Design Guide principles.

Figure F8.23 - Cable running across the footway, creating a trip hazard

City of Edinburgh Council

Figure F8.24 - Even with matting over the cable there is an unacceptable trip hazard

City of Edinburgh Council

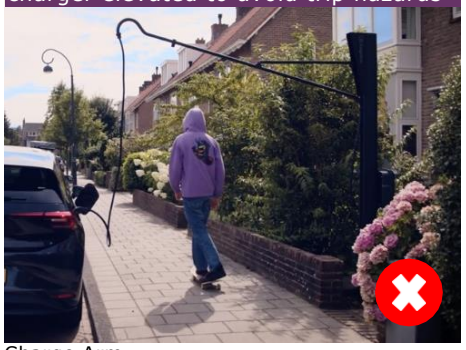
On roads adopted and maintained by the Council, any unrestricted kerbside space is available for all to use, therefore the Council would not support the designation of a particular section of kerbside space for exclusive use by a householder with a power connection from their property. In addition, the ad-hoc fitting of such cables would be extremely hard to control and manage in order to ensure all were fitted in a safe and uniform manner.

Roads (Scotland) Act 1984,

101: Placing rope, wire or other apparatus in road without adequate warning.

A person who, for any purpose, places or causes to be placed in a road rope, wire or other apparatus in such manner as endangers road users and who fails to take all necessary steps to give adequate warning of the danger, commits an offence.

Figure F8.25 - Charge arm: home charger elevated to avoid trip hazards



Charge Arm

Figure F8.26 - Cable gully: home charger slotted into gully provided in the footway

ODS

Relevant Factsheets:

Footways (P3)

Parking and Signage

Maximum stay periods

Suitable maximum stay periods at EV bays will generally depend on the charger type and local parking restrictions. EV bays are for charging not parking. So maximum stay periods should not be longer than nearby Pay and Display bays or they could be used as longer stay parking bays.

The objective in setting maximum stay periods is to ensure that chargepoints are adequately utilised and occupancy rates are high.

Implementing a no return period will also ensure a high occupancy rate i.e. increased of unique charging events per EV bay.

Table F8.4 Charger type and restrictions

Charger Type	Max Stay	No Return
Up to 7kW	4-12 Hrs	4 hrs
8-22kW	3 hrs	4 hrs
50kW +	30 mins	4 hrs

Signage

Signage provisions for EV bays should be limited to enforcing the parking restrictions.

Additional sign plates to promote the existence of the chargepoint will increase street clutter and must be avoided.

Mount the sign plates on existing poles, lamp columns or walls where possible.

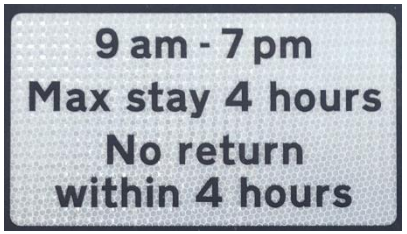
Parking bay signage can be spaced no more than 30m apart. One sign will be sufficient for up to six standard EV parking bays.

User information can be integrated on to the charging units instead of using sign plates.

Where chargepoints have been installed within a CPZ, it is acceptable to restrict the chargers and sign them accordingly for use by permit holders only, to maintain the integrity of the CPZ. Maximum stay and no return periods should be specified.

Figure F8.27 – Approved signage for residential EV parking bays for permit holders

Figure F8.28 – Approved signage for maximum stay and no return periods



Road markings

Road markings should be used in conjunction with appropriate vertical EV signage.

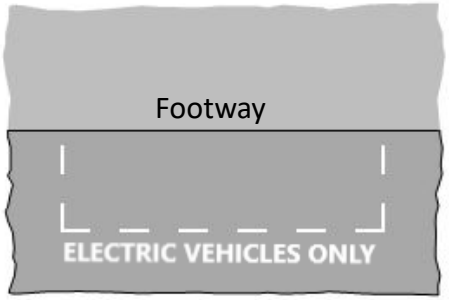
White dashed markings are required to delineate EV bays.

The following legend shall be used for EV bays:

ELECTRIC VEHICLES ONLY

See Traffic Sign Manual Chapter 3 for further information.

Figure F8.29 – EV bay legends



Adapted from Traffic Signs Manual Chapter 3

Relevant Factsheets:
Signage (F3)

Image References

Designing for electric vehicles
F8.1 - Off-street rapid charging hub: BP Pulse
F8.2 – Edinburgh chargepoint zones: City of Edinburgh Council (Base image courtesy of Google Maps)

Electric vehicle chargepoint types
F8.3 – Electric vehicle chargepoint types: City of Edinburgh Council

Feeder pillars
F8.4 - Feeder pillar reducing footway width: Google Streetview
F8.5 - Feeder pillar in the furniture zone: Google Streetview
F8.6 - Feeder pillar not offset from chargepoint and reducing footway width: Google Streetview
F8.7 - Feeder pillar on widened footway: Google Streetview

General design principles – Accessibility considerations
F8.8 - Off-street chargepoint with level access: BP Chargemaster
F8.9 - Chargepoint on build-out: Google Streetview

General design principles – Heritage considerations
F8.10 - Lamp-column chargepoint: Ubitricity
F8.11 - Retractable chargepoint which sits under the pavement when not in use: Trojan Energy Ltd

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F8.12 - On road surface: Google Streetview
F8.13 - On footway: Google Streetview
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Perpendicular parking bays
F8.15 – Perpendicular parking bays layout diagram: City of Edinburgh Council

Parallel parking bays
F8.16 – Parallel parking bay layout diagrams: City of Edinburgh Council

Rapid and ultra-rapid chargepoints
F8.17 - Glass Yard off-street charging hub: TfL
F8.18 - Stratford off-street charging hub: TfL

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Lamp-column chargepoints
F8.20 – Lamp-column chargepoints diagram: City of Edinburgh Council
F8.21 - Satellite charging column: Ubitricity
F8.22 - Lamp-column chargepoint: City of Edinburgh Council

Prohibited charging
F8.23 - Cable across footway: City of Edinburgh Council
F8.24 - Cable across footway with matting: City of Edinburgh Council
F8.25 - Charge arm over footway: Charge Arm
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Parking and signage
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F8.29 – EV bay legends: City of Edinburgh Council

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Glossary

BEV	Battery Electric Vehicles
CCS	Combined Charging System
CPZ	Control Parking Zone
DC	Direct Current
DfT	Department for Transport
DNO	Distribution Network Operator
EV	Electric Vehicles
ICE	Internal Combustion Engine
IET	Institution of Engineering and Technology
GHG	Greenhouse Gas
OCPP	Open Charge Point Protocol
OSCP	Open Smart Charging Protocol
V2G	Vehicle to Grid