

Guidance On Improving Electric Vehicle Charging Infrastructure

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ABRIDGED REPORT

URBAN FORESIGHT

A multidisciplinary innovation practice that is dedicated to accelerating the next generation of technologies, services and policy frameworks for cities. We work with ambitious organisations around the world on projects that improve lives, protect the environment and boost local economies.

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Executive Summary

1

This abridged report provides a summary outline of current guidance, and support to Plymouth City Council (PCC), to install EV charging infrastructure that is as accessible as possible for current & future users within a rapidly emerging market.



Access to transport underpins peoples’ well-being; it enables them to get to work, go shopping, visit friends and family. Mobility systems connect people and places, improving their quality of life, as well as the social and economic outcomes for communities.

Key to achieving this will be through growing sustainable modes of mobility, including promoting the uptake of EVs by increasing the number of public charge points across the city, with accessibility and inclusivity at their core.

To deliver a network of charge points that are as accessible as possible the following need to be fully considered:

1/ Space	6/ Location
2/ Hardware	7/ Support
3/ Signage	8/ Surfaces
4/ Shelter	9/ Lighting
5/ Street Furniture	10/ Visibility

Our report is underpinned by key learnings from our research:

- 1. The need for consistency
- 2. Universal design principles must be incorporated into each stage of development
- 3. The importance of engagement with stakeholder groups

Background



National Context

The UK Government is committed to the decarbonisation of road transport by 2050. This is backed by the ban on the sale of new petrol and diesel cars and vans by 2030 and the commitment in the 2021 Decarbonisation of Transport Plan to ‘ensure the UK’s charging infrastructure network meets the demands of its users’. Increasing the rollout of electric vehicle (EV) charge points will be vital to this.



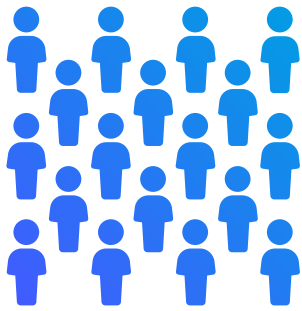
Local Context

Plymouth City Council (PCC) declared their climate emergency in 2019 and plan to achieve carbon neutrality by 2030 as well as setting ambitious targets for mobility and transport within the city.

By the end of 2024 PCC aim to have 500 public charge points across the city that are as accessible as possible for the community and visitors, comprising:



A snapshot of Plymouth's current population reveals higher than the national average percentages for people with disabilities.



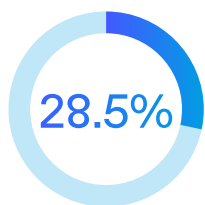
Plymouth has a current population of

264,200

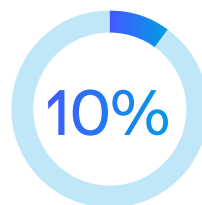
17,937

of those in Plymouth over the state pension age have a disability.

The ONS projects a rise in the percentage of Plymouth 65+ population



of those living in Plymouth (**over 31,000 people**) declare themselves as having a long-term health problem or disability (**14.1 million in the UK**)



of the Plymouth population also have their day-to-day activities limited significantly by health problems and disabilities



2.44m

Blue Badge holders in the UK (as of March 2020).

In the South-West, this is 2% of the population, an increase of the average nationally in England (1.7% of the population).

Research

This report considers three key areas to delivering accessible infrastructure that will improve the overall user journey:



Background

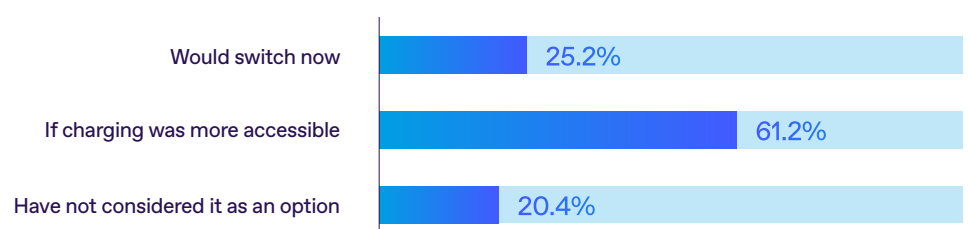
The lack of a universal design or comprehensive regulations has resulted in often complex and inaccessible charge points, leading to a growing lack of confidence and increased anxiety amongst older and disabled people in being able to access EV charging.

With 14.1 million people in the UK declaring themselves as having a long-term health problem or a disability, and 68% of those with mobility issues relying on private car transport, the deployment of EV charging infrastructure, which is accessible, reliable, safe, and convenient will be vital.

The Challenge

A survey commissioned by Urban Foresight and undertaken by the Research Institute for Disabled Consumers (RiDC), in 2021 confirmed that:

Percentage of non-EV drivers who would switch to electric



Note: Percentages do not add up to 100% as they were asked as separate questions

UK EV Accessibility Surveys

Urban Foresight/RiDC 2021

This research looked at the user journey of people accessing public EV chargers including the charge point, the space around it, and the cable.

Key Findings included:

Using the Chargepoint



Opening the charge flap/inserting cable



Initiating a charge



Motability

Motability concluded that current charge point infrastructure has not been designed with the needs of disabled users in mind¹. The issues they identified for a significant proportion of disabled people include:

- Heavy cables which are difficult to lift
- Connectors that require a certain amount of force to attach
- High kerbs or no dropped kerbs around the charge point
- Little consideration for the larger vehicle size of many disabled motorists

Zap-Map

In 2020, Zap-Map partnered with Motability to survey EV drivers in the UK².

- 33% of disabled people who were surveyed found it difficult to find a charge point that was suitable to their needs.
- 14% stated that the weight of the charging cables presented a specific challenge while charging.
- Users also stated they experienced problems with the force required to push the connector into the plug, the lack of dropped kerbs, and unsuitable parking arrangements such as narrow bays.

Ricardo

A report on electric vehicle charging infrastructure for people living with disabilities³ recommended:

- Develop legislation for the accessibility of charging infrastructure
- Create universal design standards/guidelines for charge points
- Support disabled users of electric vehicles
- Promote ongoing developments of wireless charging regulations and Legislation Review

Regulations and Legislation Review

There are currently no UK wide regulations or design standards specific to EV charging infrastructure that cover the hardware and space around it. However, there are several pieces of legislation that have an impact on chargers and physical environment design. This includes:

EV Charging Legislation and Guidance in the UK

The Institution of Engineering and Technology (IET) has published guidance for Local Authorities on the installation of EV charging infrastructure⁴. The 18th edition of the IET requirements for electrical installations includes guidance on the height of sockets to ensure that wheelchair users can access them⁵.

UK Equality Act 2010

Under the Equality Act 2010 failure to make reasonable adjustments is a type of discrimination. It is, therefore, appropriate to make necessary provisions now, rather than later to avoid costly retrofitting exercises.

UK Blue Badge Holder Standards

Government guidelines⁶ make recommendations for 6% of off-street parking to be allocated to disabled people unless otherwise covered by local planning regulations.

The Traffic Signs Regulations and General Directions (TSRGD) 2016 states the following dimensions for off-street and on-street bay markings for Blue Badge holders:

- **Off-street** bay markings must be a minimum length of 6m and a width of 4.8m (This includes 1.5m hatching along the bottom and sides of the bay).
- **On-street** bay markings must be a minimum length of 6.6m and a width of 2.7m (or 3m when placed in the centre of a carriageway).

Additionally, it states:

- **Parking payment machines** should be placed in the busiest areas of a parking facility and be well lit. Clear and visible signage on how and where to pay should be provided.⁷
- **All spaces for disabled people must also be clearly marked** with a 1.4m tall wheelchair logo and can include the words “DISABLED ONLY”. The appropriate sign must be displayed at the driver’s eye level on a 1m tall stand.⁸

The Americans with Disabilities Act

The Americans with Disabilities Act (ADA)⁹ became law in America in 1990 and prohibits discrimination against those with disabilities in all areas of public life. The following are specific to accessible parking design:

- Minimum numbers for accessible parking spaces
- Van-accessible parking spaces
- Shortest accessible route
- Accessible parking dimensions
- Access aisles
- Floor or ground surface
- Vertical clearance
- Identification

Awards and Accreditations

In the UK several organisations exist to promote and highlight best practices in the parking sector.

People's Parking

People's Parking is a voluntary accreditation scheme designed by disability campaigner Helen Dolphin MBE. Motorists can search for a variety of different features including “accessible parking”, “EV charging bays”, “pay by phone”, “no height restriction” or any number of combinations.

Disabled Parking Accreditation

Launched in 2014 by the Disabled Motoring Group UK (DMUK), this accreditation is designed to improve parking for disabled people and reduce abuse of disabled spaces. The current requirements can be used to inform good practice in designing accessible EV bays as the car park must include them to qualify.

Existing Guidance

This is a summary of a global review of existing guidance for accessible EV charging.

North Carolina PEV Taskforce

The North Carolina Plug-in Electric Vehicle Roadmap¹⁰ was published in 2014 to address electric vehicle adoption and identified challenges with accessible charging infrastructure. The report outlines the need for funding and state-level coordination to identify ideal locations for accessible charging infrastructure and ensure that EV charging technology is both feasible and accessible as early as possible.

EVCS Access California¹¹

California Building Code states the following requirements for van accessible, standard accessible, and ambulatory charging spaces:

- An accessible route connecting the EV space to the EV charger that serves it
- Designed so accessible routes are not obstructed by cables or other elements
- EV charge points are located on an accessible route to an accessible entrance or an accessible pedestrian entrance of the EV charging facility.

The United States Access Board (USAB)

The USAB develops built environment design standards that promote equality for all disabled people, their Accessibility Standards report states the following¹²:

- If provided, accessible EV charging spaces cannot count towards the minimum requirement for accessible parking spaces at a facility.
- Provide an access aisle on both sides of the EV charging space and between the space and charge point for easier access.
- Vehicle space must be at least 3m – 4m wide with a minimum 1m wide access aisle.
- The International Symbol of Accessibility must be used on bays for disabled people.

EV Charging for Persons with Disabilities

In 2012, Sustainable Transportation Strategies published a report on the accessibility of EV charging infrastructure in the United States¹³. Their recommendations cover the following:

- Disabled car parking space design
- Using the charge point
- Turning Circle

Inclusivity and Accessibility Models

There are several models that could positively impact best practice when applied to EV charging infrastructure.

Social Model of Disability

The Social Model of Disability holds that society creates barriers – physical, communication, and attitudinal – that ‘disable’ people by creating exclusion, discrimination, and disadvantage for disabled people.

Universal Design Principles

Disabled people should be able to use buildings and places comfortably and safely, as far as possible without special assistance. A universal design approach that caters for the broadest range of users from the outset can result in buildings and places that can be used and enjoyed by everyone.

Other Sectors

This section provides a brief review of other sectors where best practice could be transferable to EV charging infrastructure.

Airports

Airports have developed facilities to help those travelling with disabilities and/or reduced mobility, for example:

- Smartphone apps that help those with visual impairments, a trained professional helps the user navigate through the airport with the use of their smartphone camera.
- Autonomous drive wheelchairs that can transport passengers with reduced mobility.

Shopping Centres/ShopMobility UK

Shopping centres in the UK have various facilities available to support disabled people, including suitable parking for easy access.

Innovations include the use of beacon style technology located throughout a shopping centre and specially designed headsets, whereby blind or partially sighted people can be guided through the centre with clear audio guides.

ShopMobility provides dedicated trained staff who can assist those who may need help.

Car Clubs

Enterprise car club in the UK has stated its commitment to providing all its customers with an accessible service¹⁴. As part of this commitment, they have the following services available:

- Vehicle Adjustments
- Surrogate drivers
- Adapted hire vehicles

ATMs

ATM accessibility features include, but are not limited to:

- Large-print, high-contrast keypad and screen text
- Braille-numbered keypad
- Talking cash machines with a headphone port for private audio and volume control
- Brightly coloured keys for 'enter' and 'error'
- Height for wheelchair users to reach the buttons
- Roll out of contactless machines

Key Groups

To understand the challenges of using EV charging infrastructure for older and disabled people, it is important to identify the key groups impacted by the current rollout of charge points.

National Findings

Blue Badge holders currently account for 4.1% of the UK population by 2035 there could be 2.93 million Blue Badge holders.¹⁵

By 2035, up to 50% (1.465 million) of all disabled drivers or passengers are expected to be partially or wholly reliant on public charging infrastructure.¹⁶

Only just over 19% of disabled people hold Blue Badges¹⁷, therefore, the number of people potentially affected is far larger than those that hold Blue Badges.

The largest groups impacted by current EV charging infrastructure are:

- People with reduced mobility
- Those over pension age
- People with long term pain
- Wheelchair/walking aid users

While these are the largest groups impacted by lack of access to current EV charging infrastructure, many other groups could potentially be adversely affected. This includes:

- People with learning difficulties
- People who are neurodiverse
- People who have vision impairments

Local Findings

Plymouth has higher percentages of disabled people than the UK average. Therefore the social and economic impact of not ensuring that all members of the community can participate in the move to EVs could exacerbate existing health and income inequalities in the city further.

The 2015 Index of Multiple Deprivation indicates that Plymouth has higher deprivation than the English average. Recent work has investigated how people with lower incomes will bear the brunt of pollution from cars while being least able to afford a clean alternative.

Inclusivity

To date, we were unable to find any research into inclusivity in the EV sector, for example in terms of gender, age, sexual orientation, or ethnicity. However, the design of the hardware, location of charge points, and cost etc. will all play a role in determining whether the move to EVs is inclusive. We recommend that further work is undertaken into this area and its potential impact on PCC's climate change ambitions.

Forecourt Fuelling

Petrol station forecourts have been in existence since the early 1900s, however, refuelling an ICE vehicle can still be a challenge for older or disabled people.

The primary way in which this need is currently met is by an attendant being available to help the driver fuel their car. This is not the most reliable service and can cause embarrassment and anxiety for users.

Physical Environment

The UK Petroleum Industry Association published guidelines for forecourts in 2004 in response to the 1995 Disability Discrimination Act. This has been superseded by the Equality Act 2010, which the industry is now working towards.

The current physical environment can be difficult to navigate, and even dangerous, for disabled people, with key challenge areas including:

- Space
- Pump layout
- Access to the kiosk

Hardware

There are issues when it comes to current hardware at refuelling stations.

- Pumps can be awkward and heavy to carry
- Holding the trigger to refuel can be difficult for some users
- “Pay at Pump” options, where available, are potentially unreachable
- Signage is inconsistent

User Experience

The increasing use of “pay at pump” and unmanned fuel stations means that disabled people or those with mobility issues are finding it increasingly difficult to refuel their vehicle(s).

To avoid replicating the issues associated with the traditional fuel court design, EV manufacturers, installers, and landowners must take the opportunity to design and install accessible charging infrastructure, ensuring that barriers to charging are not inadvertently created for older drivers and disabled people.

“Lifestyle refuelling” could allow for a shift away from the standard forecourt model for most refuelling as it can take place overnight or in situations where the user is already planning to stay for a longer period.

Elements of Charging

The three main elements of any charging station are Physical Space, Hardware, and User Experience and should be considered in any good design of charge points.

Current User Journey

To begin to understand what and where the challenges and barriers are for motorists, and what the impacts might be for them, we broke the user journey of charging at a public EV charge point into separate stages. These stages are illustrated opposite.



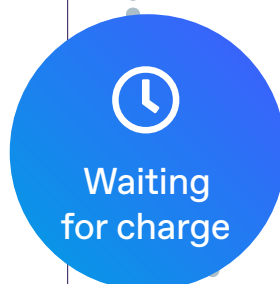
1 / Car parked



7 / Start charge



6 / Plug in



8 / Removing cable from the chargepoint



2 / Removing the cable from the car



3 / Carrying the cable to the chargepoint



5 / Plugging the cable into the chargepoint socket



4 / Choose charger



9 / Return the cable to the car

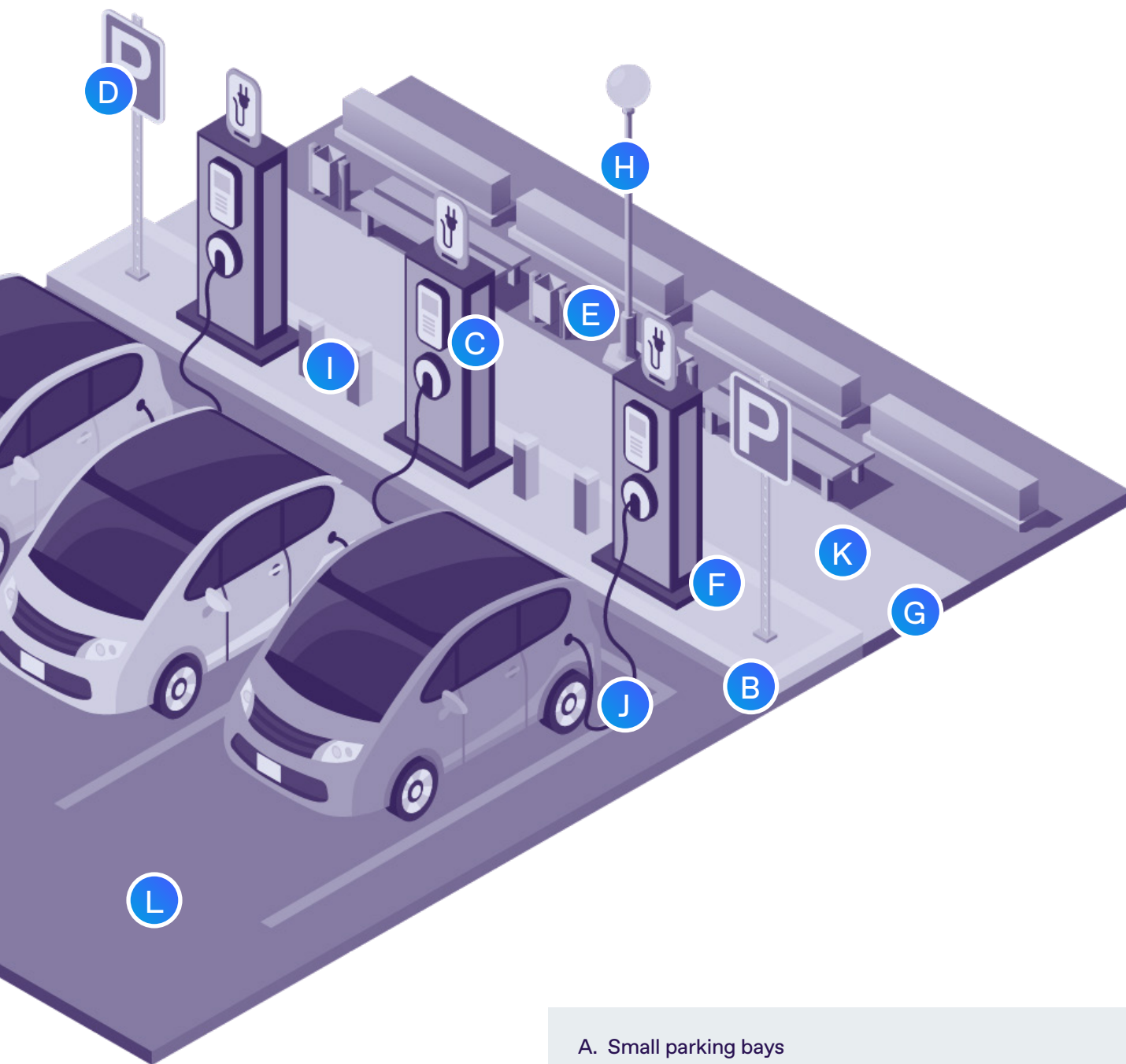


10 / Drive away

A user's experience of a charge point will depend on all three of the elements, and therefore they should be considered carefully when designing and installing EV charge points, whether on-street, off-street or at charging hubs.

Failure to do so can create barriers to people being able to charge. Some of the most common barriers are illustrated in the diagram opposite.



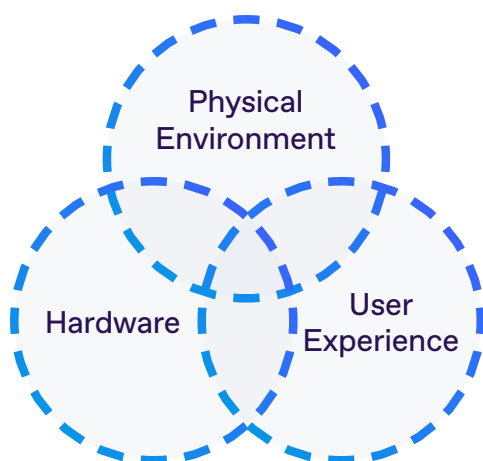


- A. Small parking bays
- B. Raised kerbs
- C. Height and orientation of sockets and screens
- D. Poor inconsistent signage
- E. Street clutter
- F. Insufficient space around charge point
- G. Distance to destination or facilities
- H. Poor lighting
- I. Bollards prevent access to charge points
- J. Trailing cables
- K. Ease of pedestrian access and proximity to exit
- L. Inappropriate surface materials and gradients

Recommendations

A Local Authority influences the three key areas of public EV charging infrastructure, the physical environment, hardware i.e., the chargers themselves, and the user experience.

These three elements overlap and determine the accessibility of charging infrastructure.



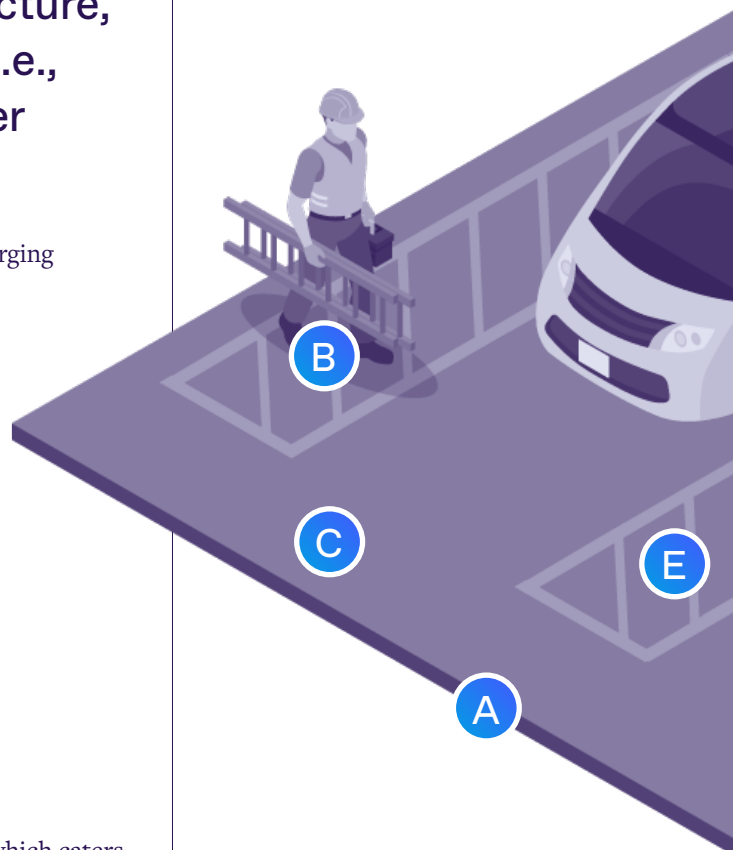
Given the diversity of the population, a universal design approach, which caters for the broadest range of users from the outset, will result in EV charging infrastructure being as accessible as possible.

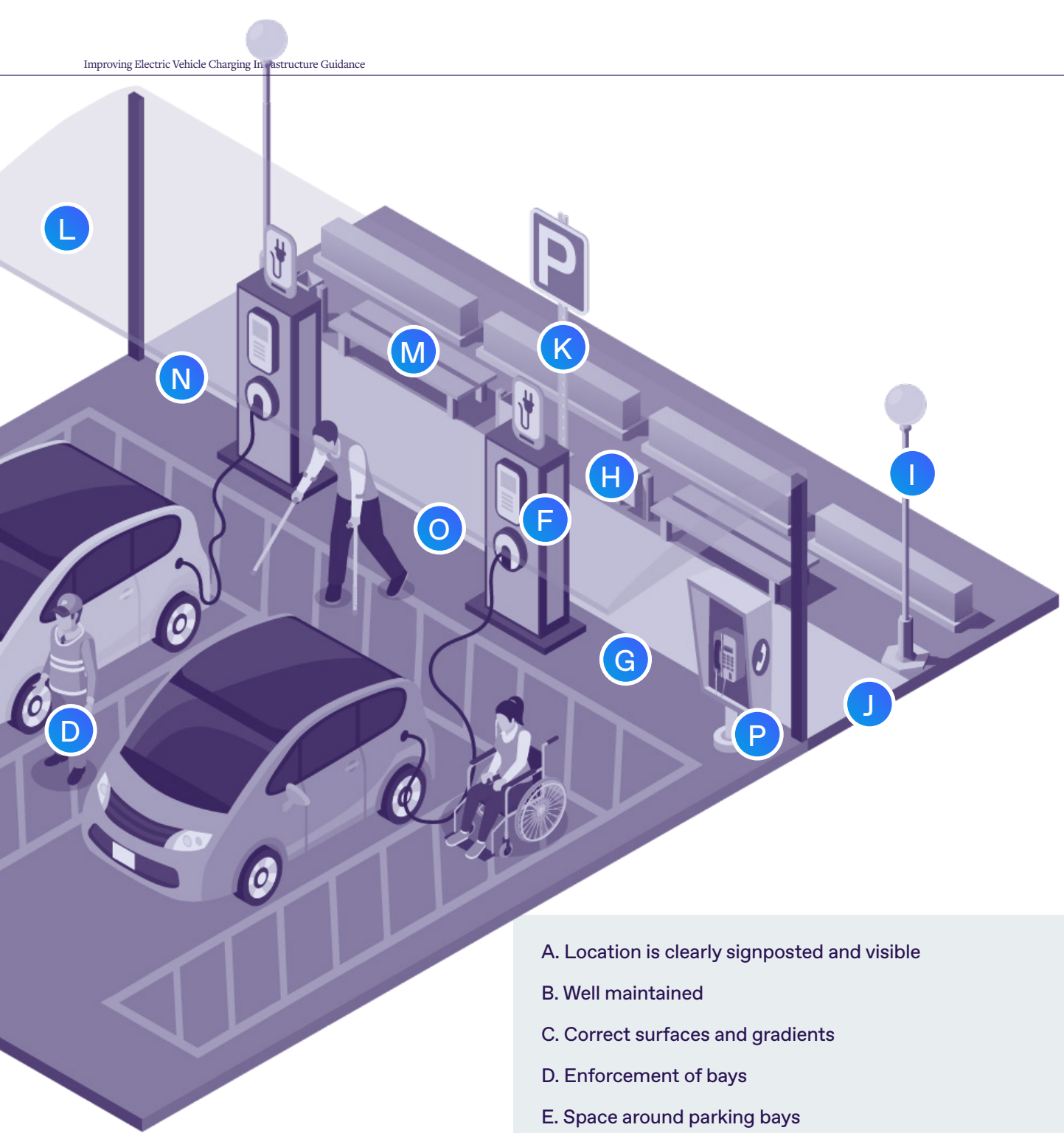
Collaboration between different sectors, groups and organisations will be required to deliver EV charging infrastructure that provides a range of accessibility options to meet user needs, this will include organisations such as:

- English Heritage (Conservation Areas)
- Local Authorities
- Landowners
- Local and national charities
- Residents
- Vehicle manufacturers
- Charge point manufacturers

We recommend that during the early stage of planning EV charge point design and installation, a thorough Diversity Impact Assessment (DIA) is undertaken.

The diagram below illustrates some of the ways in which charge points can become more accessible to a wider number of people.





- A. Location is clearly signposted and visible
- B. Well maintained
- C. Correct surfaces and gradients
- D. Enforcement of bays
- E. Space around parking bays
- F. Height of sockets, instruction and payment screens
- G. Plenty of space around charge points
- H. Minimal Street clutter
- I. Carefully considered lighting at appropriate levels
- J. Location that is well used
- K. Consistent, accessible signage
- L. Shelter
- M. Rest points
- N. No Kerbs
- O. No bollards or raised plinths
- P. Support and service priority lines

Physical Environment

Parking bay sizes

These should reflect the Blue Badge off-street parking bay requirements of 6m long and 4.8m wide.

Given that only 19% of disabled people in the UK hold Blue Badges¹⁸, it is recommended that up to 24% of the total capacity (in addition to Blue Badge spaces) is given to accessible EV bays.

The provision of Blue Badge spaces with EV charge points would only accommodate a relatively small percentage of the population with a disability, and while ICE cars are still dominant it could reduce available parking for Blue Badge holders.

Where possible, accessible on-street bays must be a minimum length of 6.6m and a width of 2.7m (or 3m when placed in the centre of a carriageway). Where this is not possible PCC should consider where build-outs, angled bays and dropped kerbs could improve the accessibility and safety of EV bays.

Space Around the Charge point

The space around the charge point needs to accommodate the approach and turning circle for wheelchair users. We recommend that this aligns with current Building Regulations for the Access to and Use of Buildings for Wheelchair Users.¹⁹

It is important that vehicles are prevented from encroaching on turning spaces and approaches. Wheel stops and bollards can create barriers, however, careful use can help to create safe spaces for people to manoeuvre.

When planning a charge point location, the potential for trailing cables across access ways should be considered and minimised to reduce obstacles and trip hazards. Cable management systems such as overhead server arms could be considered at some sites. Furthermore, the impact of the behaviours of other motorists should not be underestimated, PCC should consider the use

and promotion of a 'charge point etiquette' to encourage considerate behaviour.

Street Furniture

Avoid positioning street furniture within the 1.5m turning circle or where it encroaches on any access routes between the charge point and car or route to exit/destination.

However, careful location of rest stops should be considered to allow users with reduced mobility, stamina, and strength to safely rest.

Kerbs, Bollards, and Plinths

A wheelchair user has an average reach of 1.2m, any barrier that prevents a wheelchair user from getting within 25cm of a charge point dramatically reduces their reach and ability to connect/remove a plug from the charge point.

Wherever possible kerbs and plinths should be removed, and where bollards are essential, there must be adequate space to access the charge point.

Signage

There is a need for consistent signage and signposting to indicate the location of accessible EV charge points that, at a minimum, meet DfT guidance. Ensure consistent use of:

- Colours
- Fonts
- Recommended font sizes
- Symbols and imagery combined with text
- Layout across signage
- Height and size of signage
- Concise text in plain English
- Embossed letters
- Anti-glare matt finish to avoid reflections.
- Signposting

In addition, we would recommend engaging with groups representing people with cognitive impairments such as dyslexia or autism.

Location

The following factors should be considered when planning EV charge point locations, whether these are on-street hubs, larger hubs or in car parks:

- Accessibility to a destination should be possible via the shortest, safest route
- Distance from charge point to car park exit should be minimised
- Safety
- The local provision of a variety of amenities

Lighting

Good levels of lighting will be of benefit to everyone who uses transport and pedestrian facilities, bright, well-lit premises will encourage location use and give a greater feeling of security.

A layered approach using consistent, ‘warm lighting’ reduces glare and contrast; creating an environment where people feel safer, with natural light being the preferred option.

Surfaces and Gradients

Surfaces should be firm, slip-resistant in wet and dry conditions, and should not be made of reflective material.

EV charge points should also not be positioned on a surface with a gradient greater than 2% in any direction to ensure wheelchair users and those with mobility issues can manoeuvre.

Line markings and hatchings should be consistent while meeting standards set out by relevant guidance and codes of practice. Where possible, coloured hatchings or block colours could be used to provide contrast to the black charging cables and reduce the potential for trip hazards.

Hardware

Height of chargers

Current regulations state a minimum height of 0.75m and a max of 1.2m for socket height. However, a wheelchair user has an average reach of 1.2m, any barrier that prevents a wheelchair user from getting within 25cm of an object dramatically reduces someone’s reach and ability to access the charge point. Therefore, ensuring bollards and plinths do not create unnecessarily increased reach will be essential.

Payment and Charge Initiation

Wherever possible and relevant, varied heights should be offered as options for payment and instructions screens at EV charge points.

Screens must:

- Be large enough to ensure text is legible to people with vision impairments
- Provide an appropriate level of backlight and clear contrasts
- Have anti-glare surfaces
- Offer adjustable angles

Instructions must be in plain English and avoid jargon. The use of commonly recognised symbols and images alongside text is recommended. Adequate time must be allowed by App providers and manufacturers to enable people to initiate charges.

Consideration should also be given to providing users with alternative means of payment.

A key point for all motorists is a clear indication that a charge has successfully been initiated. Screens and indicator lights must be clearly visible even in bright conditions.

Ensuring consistency across the network of available charge points will make it easier, to become familiar with payments systems and initiation processes.

User experience

Serviced Hubs

There are potentially going to be some users that are going to find it impossible to use an EV charge point, adequate support through serviced hubs or services that enable users to book support and assistance ahead of a visit should be provided at strategic locations.

Priority Call Lines

A priority call line or help button service to allow vulnerable and disabled people to get help quickly in case of an equipment breakdown or an emergency should be considered at larger and remote sites.

Payments

The provision of screens must accommodate a variety of heights, from someone seated in a wheelchair to someone standing. A range of payment options should be offered, and all digital services required to meet the best practice guidance for built-in accessibility features.

Digital platforms should include multiple sensory channels, such as sound and sight, and allow for additional means of site navigation and interactivity beyond point-and-click, such as voice-based navigation.

Communication

At medium and larger hubs access to short information videos on how to charge, what to do if you encounter a problem, or if there's an emergency, would support building confidence amongst older, disabled and less tech-savvy groups.

A dedicated web page could host videos and information for users to access before visiting a charge point or hub.

PCC is working with EV dealerships to provide potential users with support, training and information that will enable more people to confidently make the switch to electric.

Visibility

Good visibility of charge points will make it easier for users to identify them quickly and easily. The safety of visually impaired pedestrians is equally as important and good, contrasting design/colours will make charge points easier to identify for both drivers and pedestrians.

Consistency of location and space around the charge point will further aid people in navigating public spaces. Locating charging hubs and charge points in busy areas, avoiding quiet remote sites will increase confidence in the ability to be able to safely charge for everyone.

Shelter and rest points

Shelters should be provided where there is space to do so to prevent people from being exposed to the elements while charging.

Where space allows, the addition of seating and rest points should be located close to the charge points.

Where the development of local hubs allows, the integration of other forms of charging for disabled people should also be considered, such as mobility scooters and electric wheelchairs.

Enforcement

Regular enforcement of EV charging bays will be important to ensure the turnover of vehicles and guarantee reasonable access to charge points for all users.

Maintenance

Regular maintenance of charge points and the surrounding landscape is important to encourage use and provide a sense of security.



Future Technology

EV hardware technology is advancing quickly as the uptake of EVs around the world gathers momentum and governments look increasingly to EVs to meet climate change ambitions.

Physical Environment

OZEV/Motability

In June 2021, the UK Government's Office for Zero-Emission Vehicles (OZEV) and Motability partnered to set standards for electric vehicle charge points and provide the industry with guidance on how to make charge points more accessible by the summer of 2022.²⁰

With assistance from the British Standards Institute (BSI) and the Department of Transport, the standards will help to ensure charging infrastructure is accessible for all and provide a new, clear definition, of "accessible" public charge points – rating them either "fully accessible", "partially accessible", or "not-accessible".

Department for Transport

As part of a new initiative, the Department for Transport is developing a national strategy to boost accessibility for disabled passengers²¹, by removing barriers and improving confidence for disabled travellers.

Hardware

Wireless Charging

Wireless charging can answer a number of the current challenges around accessibility as it removes the need for cables and the requirement to navigate the barriers at many current EV charge points.

However, this technology is still in the early stages of trial in the UK and comes with the following challenges:

- Not yet standard in any vehicles
- Not possible to retrofit to the existing EV charging network
- More expensive due to fitting equipment to a vehicle

Charge Point Developments

New charge points are being developed that may be beneficial to people with impairments, these include chargers that are crash resistant and do away with the need for barriers, have height-adjustable sockets or cables, cable management systems and offer a variety of options

for payments.

Tools that will support motorists to charge at existing EV infrastructure are also being developed, these products look to help the user to carry and store cables more easily.

Motability are working to provide an understanding for industry and Government of what accessibility means and what best practice could look like for EV charge points.

DfT launched a design competition in summer 2021 to design an ‘iconic’ charge point. This design will be launched at COP26 in November.

Charging Robots

Several technology companies are developing and trialling charging robots that will be able to operate in car parks and charge multiple vehicles without the need for charge points within each space.

UK Competitions and Market Authority

A recent report by the UK Competitions and Market Authority (CMA) has stated that charging should be accessible and interoperable. For example, all charge points should be usable by all drivers and follow inclusive design principles.

The report also highlighted that it is not just disabled drivers and passengers who could be impacted, but people who do not consider themselves “tech-savvy”.

User Experience

Apps

There are a growing number of apps available to help disabled people to travel, these include:

- Shell FuelService App – helps users find a nearby fuel station that has staff available to assist with refuelling.
- Otojoy.com – Providing solutions for those who are affected by hearing loss.
- Goodmaps.com – An accessible indoor and outdoor navigation map.
- threshold360.com – a visual platform with virtual tours of a location.
- You. Smart. Thing. – A travel assistance tool that helps users navigate to venues and events.
- WelcoMe - enables people to book support and assistance ahead of a visit.

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