

COMPETITION: Electric vehicle charging for public spaces: real-world demonstrators

PROJECT TITLE

Scaling On-Street Charging Infrastructure (SOSCI) Project No: 34290

Periodic Report

Period: Q9

'EVCP Location Planning Guidance Notes'

COMMERCIAL RESTRICTED

Date: 6th January 2022

Responsible Author – Kevin Wood

Monitoring officer – John Heywood

Circulation: All Project Partners

Monitoring Database

CONTENTS

1. Executive Summary	4
1.1. Key Findings	4
1.2. Introduction	5
2. Local Topography and Demographics	7
2.1. Accessibility of Pedestrian Routes	7
2.2. Orientation	8
2.3. Local Demographics	8
3. Local Planning Policies for EV Charging Bays Provision	9
3.1. How many EV bays should be provided as active and passive?	9
3.2. How many EV Charging bays need to be BBH accessible standard?	9
4. Implications of Space Requirements for EVCP Bays	11
4.1. EV Charging Bay Space Standards	11
4.2. Application of Alternative Charging Bay Layouts	14
5. Worked Example: Local Park and Ride Site	17
5.1. Relevant Exemplar - Saltwell Park EVCP Bay	18
6. Other Considerations for Equality of Provision	20
6.1. Accommodating Wheelchair Accessible Vehicle (WAV) Users	20
6.2. What if some people cannot access the public charging location?	20
6.3. How will parenting provision be addressed?	21
7. Recommendations Summary	22
7.1. Local Topography and Demographics:	22
7.2. Local Planning Policies for EV Charging Bays Provision	22
7.3. Implications of Space Requirements for EVCP Bays	22
7.4. Worked Example: Local Park and Ride Site	22
7.5. Other Considerations for Equality of Provision	22
7.6. Further Reference	23
7.7. Next Project Stage	23

TABLE OF FIGURES

Figure 1: Standard EV charging bays sign - used on/off highway locations for LA owned or controlled parking	10
Figure 2: Accessible BBH-EV Bays with level access cross-aisle with two front sockets	12
Figure 3: Standard bays with chargepoint in level access cross-aisle	13
Figure 4: BBH-EV bays.....	15
Figure 5: Standard EV bays	16
Figure 6: Saltwell Park Car Park.....	18
Figure 7: WAV Bay occupied by a rear-access WAV.....	19

1. EXECUTIVE SUMMARY

This report is one of a series prepared under the SOSCI project.

This report covers the planning associated with the location and layout of EVCPs suitable for use by drivers with restricted or impaired mobility.

1.1. Key Findings

- The local topography is often a major factor that can represent a difficult barrier for persons with impaired mobility.
- Judging whether a route provides for adequate and suitable access by persons with impairments requires knowledge and awareness of the likely and potential barriers that can cause problems.
- It is rare for planning officers to have the required knowledge and awareness, and highways officers may also be lacking in adequate knowledge or suitable experience to make such judgements.
- It is therefore important that someone with appropriate knowledge and experience is assigned the task. The issues they will need to consider and report on include:
 - Accessibility of routes including road crossings, raised crossings and dropped kerbs;
 - Adequacy of routes, including: width clear of obstructions from such as street furniture, including: lamp-posts / lighting columns; signposts; bollards; bus stands; bench seats; flower boxes; on-street chargepoints; drainage gulleys; tree grilles; overhanging vegetation, and signs, etc.;
 - Routes free from obstructions by on-street retailers use of A-frames signs, display stands, outdoor cafe furniture, portable barriers, and on-street queuing systems;
 - Routes free from areas of shared spaces where no provision is made for separation between vehicle route and pedestrian route;
 - Kerb heights compliant with current national standards for accessibility and to enable detection by long cane users;
 - Appropriate use of tactile surfaces, compliant with national guidance;
 - Pedestrian security on route supported by adequacy of street illumination and openness of route to support good visual surveillance of surroundings: to minimise potential of unexpected encounters with other people, animals, or potential hazards such as a change in level either within or adjacent to route.
 - Availability of alternative routes to avoid changes in level, such as ramped and stepped routes that may not be suitable for the individual's access, or to avoid other known obstructions on-route, or areas of concern for some individuals.
- When considering how many EV charging bays may need to be accessible for disabled drivers, it is important to consider relevant local demographics. This may include local data on:
 - Number and Age related statistics including retired persons living locally;
 - Number and % of people identified by impairment as disabled, and/or having Blue Badges;
 - Number and of persons currently with Plug-in or full EVs;
 - How many EV bays should be provided as active and passive and space implications

- Examples are provided of layout drawings with options and also photos of sites already installed
- Throughout the report are a number of recommendations and these are all summarised in the final Section 7.

1.2. Introduction

This project for development of guidance standards for EV charging facilities is supported by funding from OZEV via Innovate UK, and forms part of the Scaling On-Street Charging Infrastructure (SOSCI) project led by Cybermoor Services Ltd.

This report has been prepared by Access Consultancy Support.

The aim of this report is to provide appropriate guidance on issues that require consideration when planning the location of public charging facilities, and where possible to recommend actions, to support site selection and use for EV charging development to have the potential to be inclusive.

The provisions discussed are to service the needs of local residents who do not have access to off-street parking, including those residents with differing needs such as due to impairment or as parents with young children, and where EV charging cannot easily be accommodated on-street in proximity to individual residences for private use.

This report does not give consideration to the programming of EVCP development, availability of power supply from Distribution Network Operators (DNOs) or any requirement for wayleaves to support installations.

Issues around inequality of access to EV charging are now becoming more recognised by Government and local authorities. Local authorities have been advised to identify options for chargepoint locations for residents who are unable to charge at home due to lack of off-street parking; and £20m funding support was made available from the Office for Zero Emission Vehicles; to be administered by the Energy Saving Trust and Innovate UK in 2020-21.

To obtain the funding, local authorities have been required to establish that such needs exist or are anticipated, and could be met through the proposed charging infrastructure. This could involve having received multiple requests for charging infrastructure from local residents wishing to purchase plug-in vehicles, or strategic plans to promote EV ownership in a particular area.

The scheme is intended to provide reliable access to charging for local residents near their home.

Durham County Council's Response has included:

- The SOSCI (Scaling On-Street Charging Infrastructure) with funding from Innovate UK to install a minimum 100 EVCPs across rural areas of County Durham over a period of approx. 18-months;
- DOCs (Durham Own Chargepoint Sites) with funding from OZEV (Office for Zero Emission Vehicles), to install a further 50 EVCPs across Durham County;
- WEVA (Weardale Electric Vehicle Accelerator) with OZEV funding to run a trial into ways to encourage the take up of electric vehicles in rural communities.

The SOSCI and WEVA projects aim to install chargepoints so that residents have access to a chargepoint within 5 minutes' walk.

Whereas the DOCs project aims to give 50 parish councils an opportunity to invest in their areas, getting them a step ahead following the Government's ban on the sale of new petrol and diesel cars in the UK from 2030, and that all new cars and vans must be fully zero emission at the tailpipe from 2035.

If the local community wishes to assist with the fund-raising this can be managed as a social investment and has tax benefits for the investor and revenues can be shared with the community.

The following sections of this report give consideration to issues that can have implications for provision of local community facilities that should as far as possible be located and provided for use by persons with impairments affecting their mobility and also for parents with children.

2. LOCAL TOPOGRAPHY AND DEMOGRAPHICS

2.1. Accessibility of Pedestrian Routes

The local topography is often a major factor across the UK that can represent a difficult barrier to overcome for many persons with impaired mobility.

Judging whether a route provides for adequate and suitable access by persons with impairments requires knowledge and awareness of the likely and potential barriers that can cause problems, obstruct, or exclude such access and safety.

BS 8300:2018 defines the term 'accessible' as meaning:

'capable of being independently accessed and used'

It is therefore important to recognise that, within this report or any of the other project Stage reports within this group of EVCP Guidance Document, any reference to 'inclusive' in regard to provision and / or access to the environment and facilities, will generally mean being suitably accessible for independent use by everyone, including disabled persons.

However, for many situations it is also necessary to consider the needs for assisted access, as not everyone can achieve their mobility unaided. Access routes to sites that are proposed to address residents' EV charging needs should, as far as possible, be inclusive to safely accommodate assisted access as well as independent access for residents and those persons with whom they need to travel.

2.1.1. Who decides a pedestrian route is adequately accessible?

It is rare for planning officers to have the required knowledge and awareness, and highways officers may also be lacking in adequate knowledge or suitable experience to make such judgements; although they should be aware of many issues that can and should be avoided within the highways environment for safe pedestrian access.

It is therefore important that someone with appropriate knowledge and experience is assigned the task, which may well include an Access Officer, Access Auditor, Access Consultant, or Inclusive Design Consultant; providing they have relevant experience for street audits. The issues they will need to consider and report on include:

- Accessibility of routes including road crossings, raised crossings and dropped kerbs;
- Adequacy of routes, including: width clear of obstructions from such as street furniture, including: lamp-posts / lighting columns¹; signposts; bollards; bus stands; bench seats; flower boxes; on-street chargepoints; drainage gulleys; tree grilles; overhanging vegetation, and signs, etc.;
- Routes free from obstructions by on-street retailers use of A-frames signs, display stands, outdoor cafe furniture, portable barriers, and on-street queuing systems;
- Routes free from areas of shared spaces where no provision is made for separation between vehicle route and pedestrian route;
- Kerb heights compliant with current national standards for accessibility and to enable detection by long cane users;

¹ Durham CC Street Lighting Specification, Dec 2014, identifies siting to not obstruct footpaths, with location at rear of footpath in accordance with BS5489-1:2013 + A2:2008, Code of Practice for the design of road lighting part 1.

- Appropriate use of tactile surfaces, compliant with national guidance;
- Pedestrian security on route supported by adequacy of street illumination and openness of route to support good visual surveillance of surroundings: to minimise potential of unexpected encounters with other people, animals, or potential hazards such as a change in level either within or adjacent to route.
- Availability of alternative routes to avoid changes in level, such as ramped and stepped routes that may not be suitable for the individual's access, or to avoid other known obstructions on-route, or areas of concern for some individuals.

2.2. Orientation

The orientation of the site and proposed chargepoint locations can impact on use of charging devices, such as from glare and reflection issues, which can make viewing and reading of printed information and display screens difficult at various times of day; and depending on the time of year. To address this where possible, printed information and screens may require shielding either at the charging device location or by other structures in proximity, which could include existing buildings or where overhead cover is provided to the bays; such as from a shelter or purpose built EV carport charging facility, possibly with in-built photovoltaic panels for solar power generation, that appropriately illuminates the charging bays when required.

2.3. Local Demographics

When considering how many EV charging bays may need to be accessible for disabled drivers, it is important to consider relevant local demographics. This may include local data on:

- Age related statistics including %age of retired persons living locally;
- Number and %age of people identified by impairment as disabled;
- Number and %age of persons with Blue Badges;
- Number and %age of persons currently with Plug-in EVs;
- Number, type, and location of existing local EVCPs;

The potential application of such data is discussed below in Chapter 4.

R1. Ensure accessibility to and within site is suitably assessed for safe use by disabled and elderly persons, and for parents with young children.

3. LOCAL PLANNING POLICIES FOR EV CHARGING BAYS PROVISION

3.1. How many EV bays should be provided as active and passive?

This is an issue that requires consideration and supporting evidence of local need for each local authority's policy on electric vehicle charge-point (EVCP) provision as part of their adopted Local Plan: this may be required to reflect the Local Highways Authority policy, whichever is the relevant authority.

The existing 'Parking and Accessibility Standards' for Durham County Council were under review at the time of writing. The current planning policy applying to most public car park developments in the county, requires that car parks for ten or more spaces provide at least 1 EVCP in car parks up to 20 spaces, and above that the amount expected is 5% active plus a further 10% passive bays. Active charge points are fully wired and connected, ready to use charge points at parking spaces; whereas passive spaces only require the necessary underlying infrastructure (ducting and wiring/cabling).

3.2. How many EV Charging bays need to be BBH accessible standard?

No designation is currently provided in the current DCC Parking and Accessibility Standards for the provision of any accessible EV charging bays: an issue that is expected to be addressed within the revised document.

In planning terms, 'accessibility' generally refers to the proximity of facilities to public highways and transport, so although this term appears within the document title, it fails to appear within the document text; however its use can be found in the County Durham Plan, such as within the 'Core Principles, 5.217 states:

Transport assessments should reflect the scale of the development and the extent of the transport implications of the proposal and should illustrate **accessibility** to the site by all modes of transport, and the likely modal split of journeys to and from the site.'

Examples of such use of the term 'accessibility' can be found in local plans and national planning policy documentation throughout England.

As stated above, the aim of this report is the provision of guidance and recommendations to support the planning considerations that are required for selection of locations for EV charging development that have the potential to be inclusive. Therefore, to avoid confusion to people involved with environmental and / or facility planning, it is important to be clear that any other reference to 'accessible facilities' and 'accessibility' within this report, refers to use of facilities and environments that can be accessed and used by everyone independently including disabled persons.

When considering how many EV Charging bays should be available for use by disabled drivers, it can be important to consider local demographics as well as local planning policy and national guidance on such matters; and where guidance may be limited, the current standards for accessible parking bays may also provide some indication of what can be appropriate.

However, where current local policy for provision of EV charging facilities in car parks advises minimum provision of x% as active bays and y% as passive bays (i.e. where only the infrastructure is provided such as cabling in underground ducts, but no installation of chargepoints) then it is important to recognise that it can be more cost effective to provide the x% of the total expected parking as accessible EV charging bays initially as a minimum.

The reason for this is that accessible EV charging bays require increased space over and above that required for disabled parking bays and standard EV charging bays. Setting out the provision of the larger bays for accessible EV charging as part of the initial installation of active chargepoints and passive infrastructure, will generally be easier to achieve and facilitate at this point in time than trying to fit larger vehicle bays into the car parking layout later. This strategy reduces the risk of sacrificial and abortive

works during retrofit of the additional chargepoints to the initial passive locations, and the potential need to re-route cabling to accommodate larger accessible charging bays.

Inclusive bays by definition can generally accommodate use by any private EV / Plug-in vehicle driver to park for chargepoint use, including disabled drivers, providing the bays are designed and installed to work as an accessible EV facility. Therefore, we proposed the following recommendations for initial EV charging bay provision and sustainability.

- R2.** At least one ‘inclusive EV charging bay’ is provided within any car park with up to 20 parking spaces;
- R3.** In car parks with 20 or more spaces, up to 5% of all parking bays are installed as active inclusive EV charging bays and 10% are installed as passive ‘standard EV bays’, of the types described later within this report.
- R4.** Where 5 or more EV charging bays are provided, at least one inclusive EV charging bay should be designated for use by ‘Blue Badge Holders Only’

The above recommendations aim to not exclude initial use of the 5% active inclusive EV charging bays by non-disabled drivers, by the bays signed simply as ‘Electric Vehicles Only’, but not designated as BBH (Blue Badge Holder) Bays; so that they initially remain available to any driver requiring to park to recharge their vehicle, including disabled drivers who are Blue Badge Holders.

However, as the location of passive bays are upgraded to active charging bays, with the expected increase in EV drivers, there will also be an expected need to increase the number of charging bays available to Blue Badge Holders using EVs. This can easily be achieved by re-designating the existing inclusive EV bays to BBH-EV Bays, until such time as all the initially installed ‘inclusive EV bays’ equates to at least 5% of all active EV charging bays. However some sites may require a higher proportion of charging facilities for people with impairments, to ensure local needs are and continue to be satisfied.

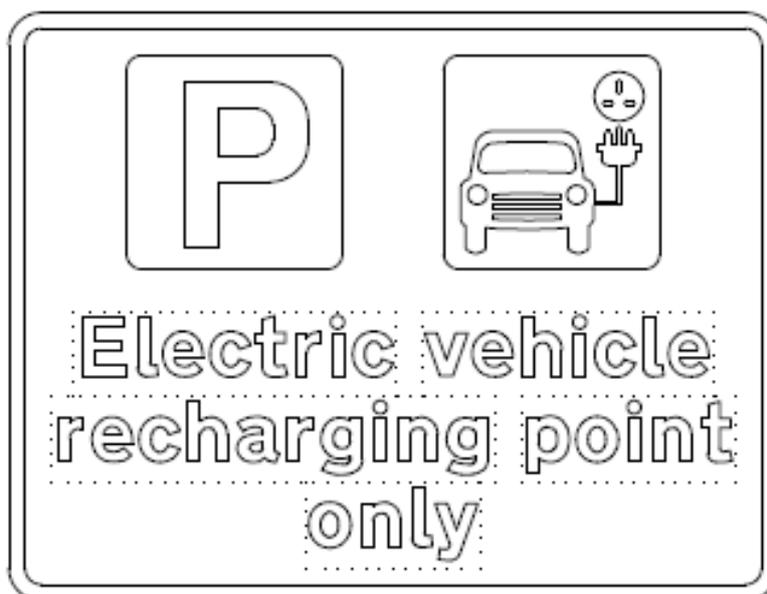


Figure 1: Standard EV charging bays sign - used on/off highway locations for LA owned or controlled parking

4. IMPLICATIONS OF SPACE REQUIREMENTS FOR EVCP BAYS

When planning provision and location of EV Charging bays either within new parking provision or existing car parks, it is important to understand the implication of the space required for such bays, and the impact on the proposed layout of vehicle bays and vehicle routes.

For sustainability of any new or existing car parks, it is important to recognise the space requirements for use of EV charging bays when planning the installation of a number of active EVCPs with additional passive provision.

Standard car park bays are generally laid out on a grid to provide 4.8 deep x 2.4m wide 'head-on' bays located at 90-degrees to the vehicle route, and with approx. 6m separation between opposite rows of bays for passage and manoeuvring of vehicle. Compare this to standard disabled parking bays that require a space per bay of at least 6m depth by 3.6m width per bay, to provide 1.2m wide aisles at the side and the rear of a 4.8m x 2.4m parking bay; with the rear aisle providing boot access clear of the vehicle route.

It becomes apparent that the parking bay layout grid had to be able to accommodate different sizes of bay, clear of the vehicle route. In recent years this has been achieved in some existing car parks and new developments by providing the 1.2m rear aisle continuous across a row, or rows of bays, including where standard bays are located alongside disabled parking bays; which in some cases has required a one-way system between rows with deeper bays, due to the vehicle route being narrowed by the rear access aisles provided as pedestrian walkways. This demonstrates, an example of how provision of facilities to accommodate the needs of disabled persons, can also result in improvement for all facility users.

However, it is too early to say whether a similar win will be possible with changes in future parking layouts to accommodate EV charging bays, when we consider the appropriate space requirements for EV charging bays. The space required for an Accessible or Inclusive EV charging bay for Blue Badge Holders requires considerably more than the usual accessible BBH parking bays provide. A similar issue also exists for standard vehicle parking bays, although to a lesser degree. Consequently, the impact of such space requirements is likely to cause concerns among some developers and local authorities where they perceive a financial and / commercial cost, due to the consequential reduction in parking density that can be accommodated.

4.1. EV Charging Bay Space Standards

The space standards applied to the following draft guidance and diagrams for accessible EVCP bays were initially based on the British Standards Publication BS8300:2018² and referenced DfT research (that is listed and applied in the development of the BS guidance), and gives consideration to the space required to avoid projection of connected cable plug and trailing cable at sides of adjacent vehicles and potential obstruction and trip hazard from such cable location. This guidance has also been informed by the results of the User Trial.

The BS 8300 principal measurements applied to accessible EVCP spatial layouts are based on:

- 1200mm clear width between adjacent vehicles accommodates passage through by wheelchair users and ambulant persons using crutches.

² BS8300-1:2018 Design of an accessible and inclusive built environment: Part 1 External Environments – Code of practice and BS8300-2:2018 Design of an accessible and inclusive built environment: Part 2 Buildings – Code of practice.

- 1600mm clear width between adjacent vehicles accommodates turning and manoeuvring through 90-degrees and 180-degrees for independent access by manual and electric wheelchair users i.e. when connecting cables at vehicle and charging equipment.

4.1.1. BBH-EV Bays with level access

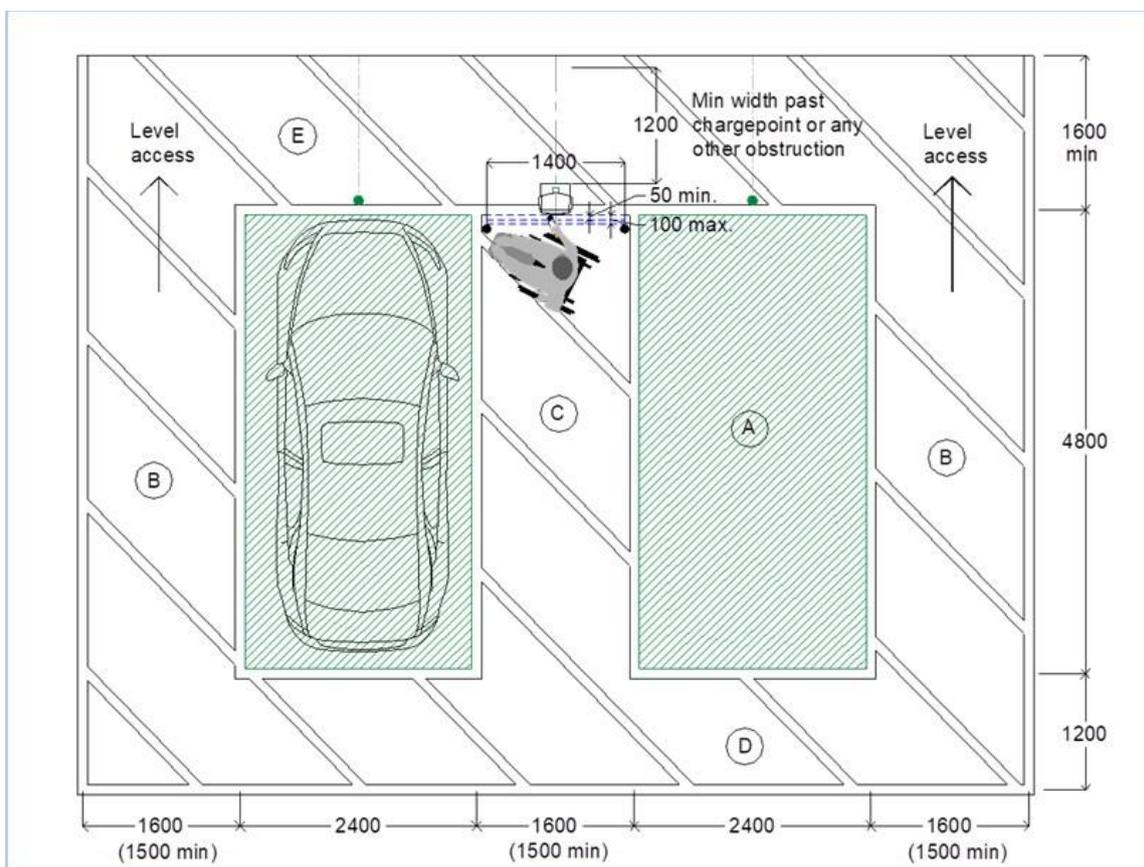


Figure 2: Accessible BBH-EV Bays with level access cross-aisle with two front sockets

For drivers with impaired mobility including ambulant persons who use walking aids, and manual or powered wheelchair users, who can travel independently, the proposed space requirements include:

- 1600mm wide access aisles to each side of the vehicle bays, to provide clear access for turning and manoeuvring to connect cable to vehicle, and for clear passage past trailing cable(s);
- Level access in front of the vehicle bays of at least 1600mm width to enable connection on vehicles with front power inlet, as well as access to the charging equipment; with
- 1200mm minimum width past any obstruction across the head of the bays such as from charging equipment, protection barriers, signposts, or bollards;
- 1200mm access aisle to the rear of all bays for movement around vehicle and boot access clear of vehicle route; and
- Dropped kerb access where the chargepoints are located at a raised level within an existing footpath.

Best practice is to have charging equipment located at the vehicle bay level, with charging equipment suitably located to be clear of potential overhang of vehicles, and where necessary to have appropriate barrier provision that does not obstruct access for people with impaired mobility including wheelchair users.

The space standards applied to the following draft guidance and diagrams for standard EVCP bays, for other than persons with impaired mobility, is based on recognised ergonomics for passage between obstructions for ambulant persons: for many years this has been accepted as a minimum of 600mm clear width. However, as considered in the development of the above guidance for accessible EVCP bays, we need to recognise the clear width can be effectively reduced by cable projections from vehicle side(s) and the need to avoid and minimise the potential obstruction and trip hazards presented by the trailing cable(s).

4.1.2. Standard EV Bays with level access

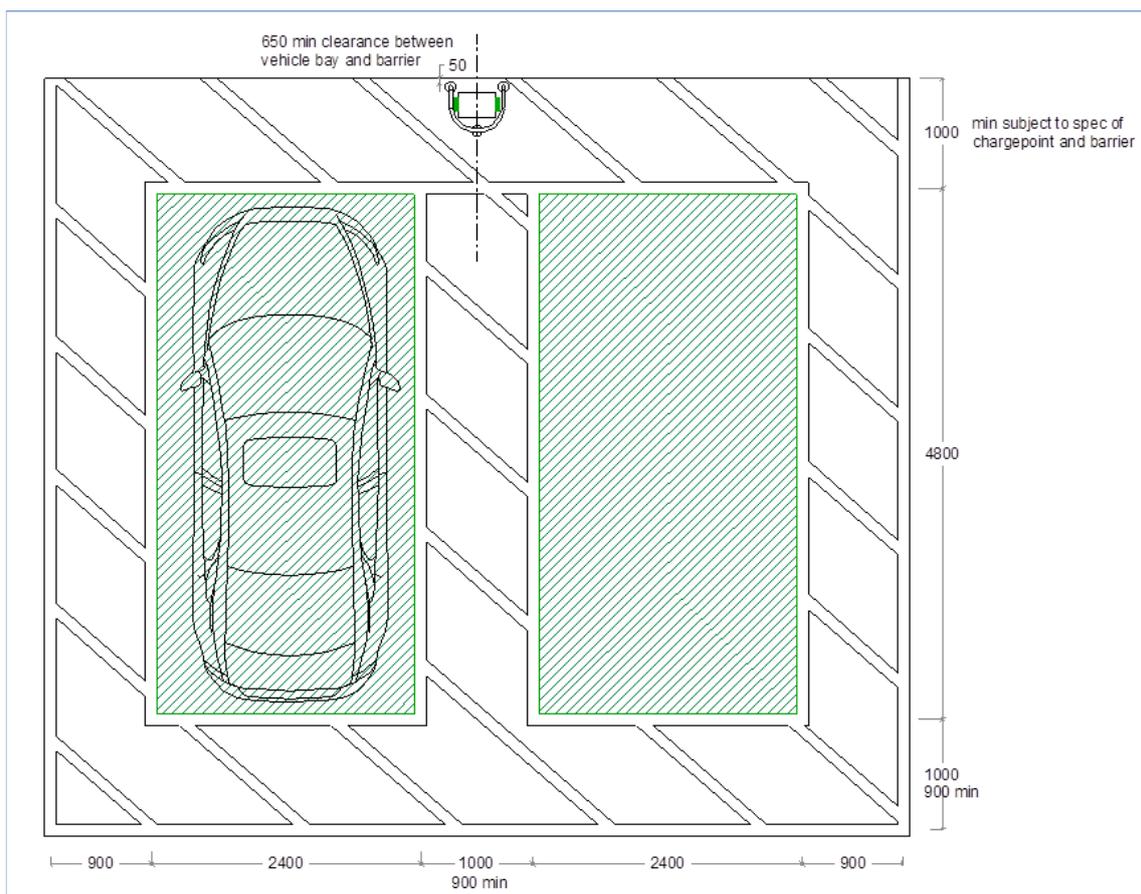


Figure 3: Standard bays with chargepoint in level access cross-aisle

For other drivers without impairments, who can normally use a standard 2.4m wide by 4.8m deep parking bay, we advise the following for standard EV charging bays, allowing additional space to have clear access past projecting and trailing cabled at sides of adjacent vehicles.

- R5.** Space Requirements for Standard EV Charging Bays (as in Figure 3 above differ to the accessible version in Figure 2 and) should preferably provide for the following access:
- a.** A 900mm (min.) wide side access aisles to accommodate access past projecting and trailing cables at sides of adjacent vehicles;
 - b.** A 1000mm (900mm min.) wide central aisle between adjacent vehicle bays, based on the proposed location of a double socket charger as shown in Development Drawing 2;
 - c.** A 1000mm wide cross aisle at head of charging bays, to enable connection on vehicles with front power inlet, as well as access to the charging equipment; with

- d. A 650 mm minimum width past any obstruction across the head of the bays, such as from charging equipment, protection barriers, signposts, or bollards.
- e. A 1000mm (900mm min.) rear access aisle for movement around vehicle and boot access to retrieve and stow charging cable and or children's buggy, clear of the vehicle route.

Where rows of vehicle bays are proposed with chargepoints located to service two adjacent vehicles, the relevant space for a single pair of EVCP bays approximately equates to:

- For Accessible (BBH) EVCP Bays: 9.6m width x 7.60m depth (minimum space requirements) for two adjacent bays, or 8.0m width x 7.60m depth per pair of adjacent bays for multiple pairs within a row of accessible EVCP bays.
- For Standard EVCP Bays: 7.60m width x 6.8m depth (minimum space requirements) for two adjacent bays, or 6.6m width x 6.8m depth per pair of adjacent bays for multiple pairs within a row of standard EVCP bays.

Similarly, where several chargepoints are shared between two adjacent vehicle bays, the relevant space per pair of bays will approximately equate to:

- 7.6m depth x 8.0m width multiplied by the number of pairs, plus a 1.6m end side-aisle for Accessible (BBH) EVCP bays; and
- 6.8m depth x 6.7m width multiplied by the number of pairs, plus a 0.9m end side-aisle for Standard EVCP bays.

The above diagrams are Development Drawings and the identified space requirements are based on similar drawings that have been developed for access and use of Fast Charge equipment. Rapid charge equipment will require adjustment to the layouts and space requirements due to their physical size and design of such charging equipment, which can be more restrictive to use by persons with mobility impairments.

The above proposed parameters for standard and BBH EV charging bays require careful consideration when planning to provide new installations for Active EVCPs and Passive EV provision for new or existing car parks.

It is important to recognise that if any existing or new parking bays are to be identified as passive EV spaces with cable infrastructure provided within the initial installation period, to support future charger installation, there will be an impact on parking capacity when the passive bays are required to become active EV bays.

For sustainability of such new or existing car parks, where standard BBH parking bays are already a recognised expectation for disabled persons, it is also now an expectation that EVCP facilities are also available and provided to be accessible to disabled persons and parents with children, and in regard to facilities benefiting from OZEV funding it is stated as an expected provision.

4.2. Application of Alternative Charging Bay Layouts

A number of alternative bay layouts have been developed for Accessible EV Charging bays for Blue Badge Holders as part of this project development during Stage 1 and Stage 2; see examples below:

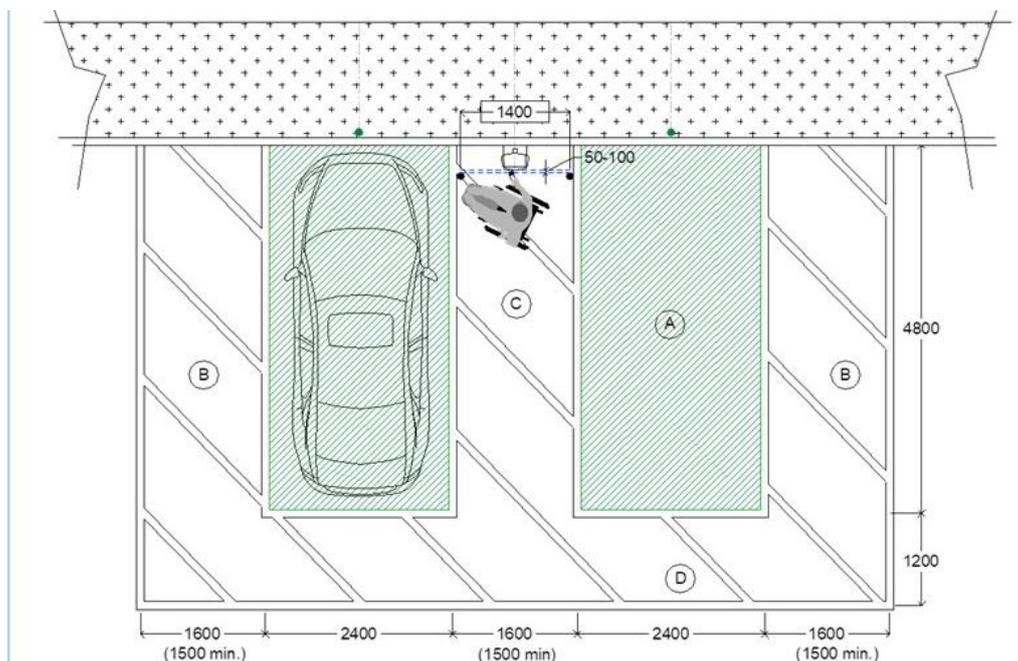
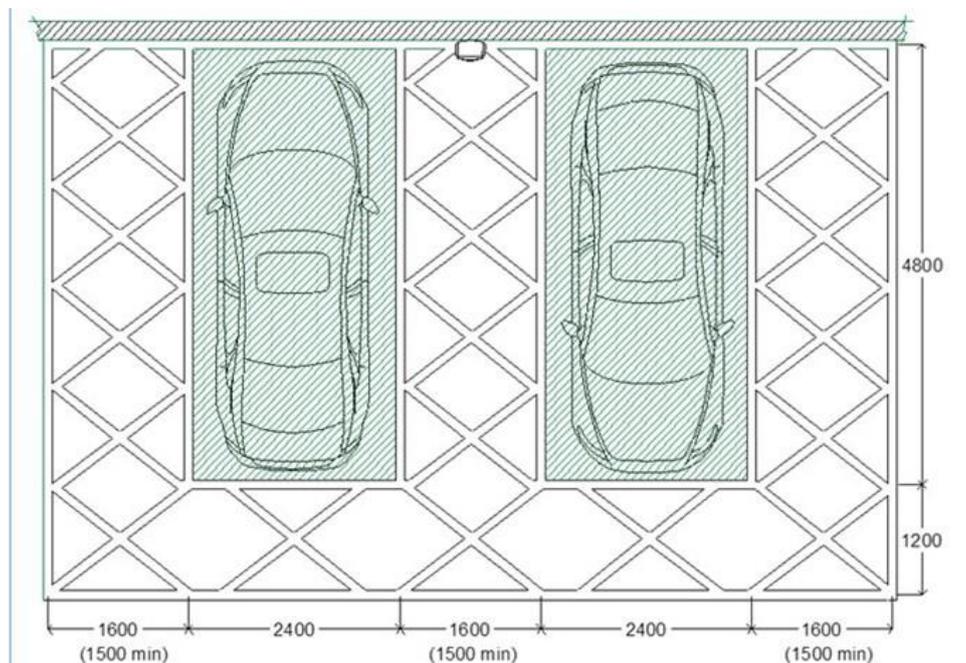


Figure 4: BBH-EV bays

(above) in front of border and kerb with CP in centre aisle and (below) in front of a wall-mounted CP



The first example (top) shows the chargepoint located in the centre aisle between the vehicle bays in front of a border with kerb edging. As can be seen, there is no provision of a cross-aisle at the head of the charging bays: this reflects the case where a front cross-aisle may not be possible in some sites where chargepoint facilities are required with vehicles parked in front of a kerb. This will result in some drivers with power inlet sockets on front of vehicle needing to reverse into the charging bay.

Figure 4 (bottom) demonstrates how a similar bay layout with a chargepoint for accessible BBH-EV bays could be applied to locations where the charging device is required to be wall-mounted.

Following this, for further comparison, example layouts are also provided for the proposed Standard EV Bays for non-disabled persons in Figure 5. The first example on page 18 shows the layout with level access including the cross-aisle at head of the bays, and the example layout below is for a wall-mounted charging device in the centre aisle between the Standard EV bays.

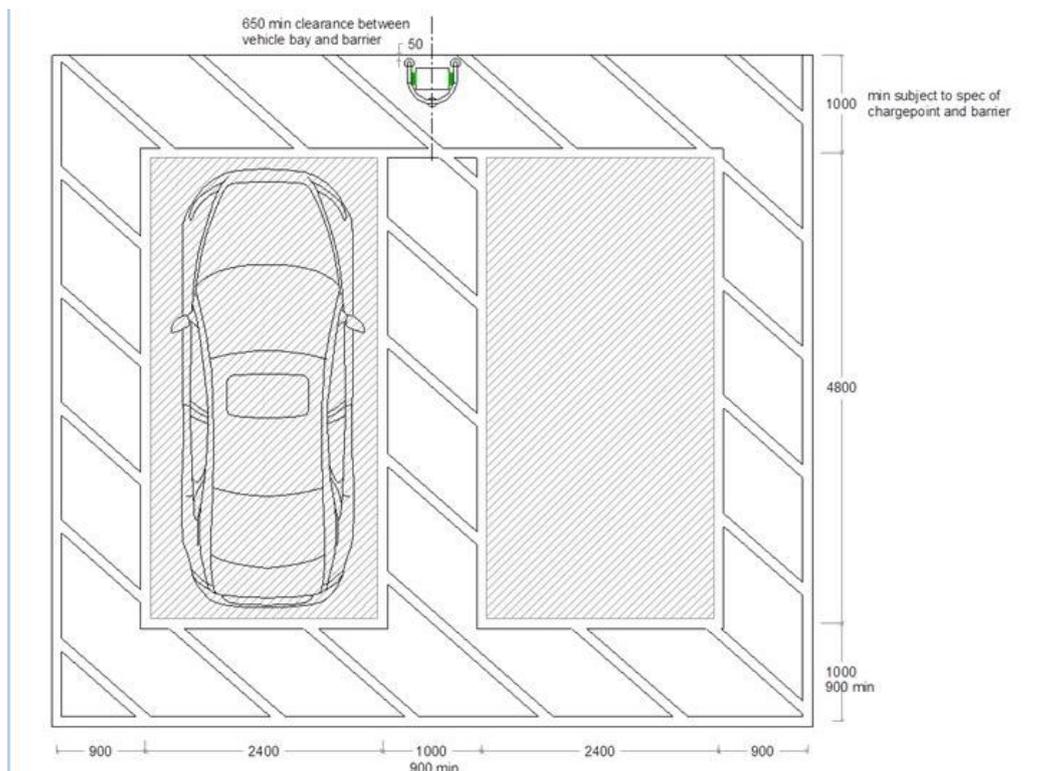
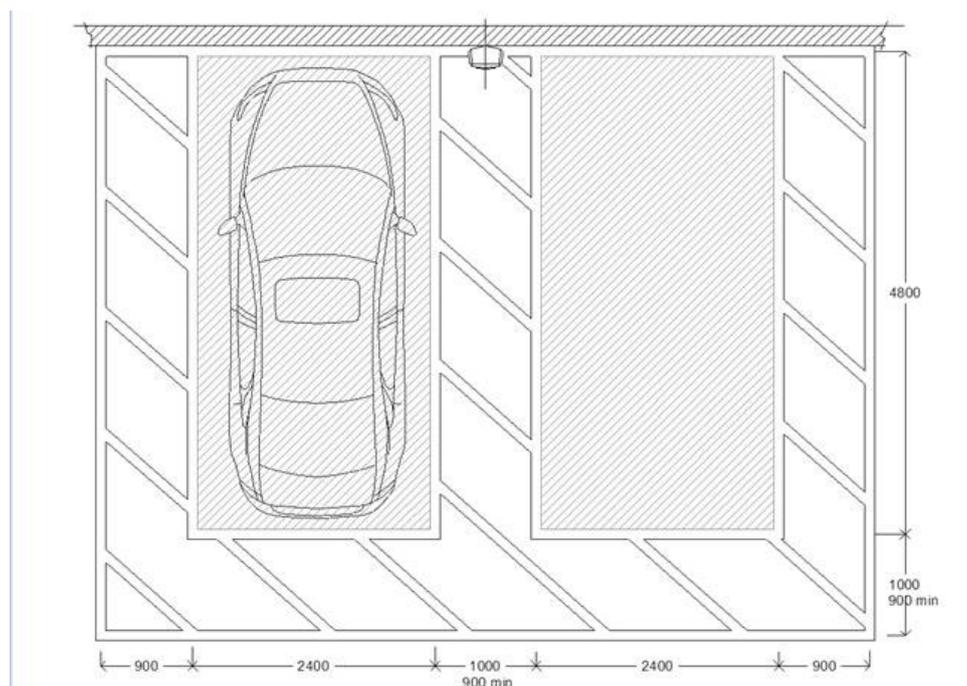


Figure 5: Standard EV bays

(above) with CP in level access cross aisle and (below) in front of a wall-mounted CP



5. WORKED EXAMPLE: LOCAL PARK AND RIDE SITE

Client proposes to install a new Park and Ride (P+R) site with approx. 425 spaces, to include:

- EV chargers at 10% of the overall number of bays,
- 5% of the overall bays are to be disabled bays situated as close to the boarding area as possible.

Advice is required on how many EV charge points should be installed within the proposed disabled bays?

After explaining the additional space requirements that EV Charging bays require compared to standard parking bays, and disabled parking bays, the following advice was provided on how many disabled EV charging bays should be provided based on the current proposed total parking capacity and active EVCP provision of 10% of bays overall.

Based on these figures, the following could be estimated:

- 10% of the total capacity of 425 bays = the provision of 42 EV bays;
- 5% of the total no. of bays = 22 BBH bays and 10% of this would equate to 2 BBH-EV bays.

Assuming the installed chargers each have two sockets, the above provision would therefore equate to 20 EV chargers for 40 standard bays plus 1 EV charger installation to serve 2 BBH bays.

The BS 8300:2018 guidance for the percentage of 'accessible parking' bays for disabled persons is 5% of overall parking provision at transport facilities. However, there is currently no guidance on accessible EV bay provision, other than that where such provision is made, then accessible EVCP bays should also be provided for disabled persons.

However in regard to the provision of accessible parking spaces, the existing BS guidance advises consideration of local need and changing needs. The BS 8300 also advises provision of enlarged bays, based on the size of the disabled parking bays, such as to accommodate additional provision for certain larger vehicle types, parenting needs, and where additional accessible bays are required above the standard percentage: on the basis that the enlarged spaces can be used as part of the general parking provision, and easily adapted to provide additional BBH bays where increased need has been recognised. Therefore a similar approach is advisable in regard to EV charging bay provision.

In regard to local needs in the Durham area, local demographic statistics can aid recognition of relevant needs, including:

- the relative percentage of over 65s resident in the County;
- number of Blue Badge Holders within the County;
- percentage of Motability vehicles used by residents in Durham County; and
- the current percentage of Motability vehicles available as plug-in vehicles.

The above type of statistics can be useful pointers to potential local needs.

It may not always be possible to have all the answers to all such parameters, but some should be available from local authorities if not from the Gov.uk website. The following details were currently available earlier this year:

Latest published Department for Transport (DfT) Blue Badge Statistics Data Tables DIS0105, DIS0108ii, and DIS0109, based on local authority figures March 2020, published Jan 2021³:

³ Reference: <https://www.gov.uk/government/collections/disabled-parking-badges-statistics>

- The region of England with the highest proportion of the population holding Blue Badges was the North East, with 5.2% of the population.
- Sunderland was the second highest authority in England with 6.8% of population holding Blue Badges.
- Durham County had 5.4% of population holding Blue Badges.
- Total number of BBs held in Sunderland was 18,942.
- Total number of BBs held in Durham County was 28,748.
- Retired population claiming state pension in Durham County was 104,800 and 19.8% of population
- Ratio of retired people to BBHs in Durham County was 3.6:1
- Retired population claiming state pension in Sunderland was 53,000 and 19.1% of population
- Ratio of retired people to BBHs in Sunderland was 2.8:1

It was also possible to confirm: Approximately 5% of all vehicles available on the Motability Scheme at March 2021 were plug-in vehicles (from online review of Motability Scheme Vehicle listings, excluding WAVs, March 2021).

Such vehicles are available for lease by anyone in receipt of the higher level of mobility allowance from DWP for either Personal Independence Payments (PIP) or Disability Living Allowance (DLA) payments, which are used towards funding the whole or majority of the vehicle lease, with some more expensive vehicles requiring an additional ‘advance payment’ from the disabled person or family in the case of a disabled child.

Considering that it may be retired persons who have more time available for visits into Durham City and who might wish to use a Park and Ride facilities, which may similarly apply to a percentage of Blue Badge Holders and Motability vehicle drivers, it may be appropriate to consider whether it would be prudent to provide additional BBH-EV bays, such as providing a total of 4 active BBH-EV Bays for the Park and Ride Site, equating to approx. 1% of total of bays and 20% of the proposed BBH parking bays.

5.1. Relevant Exemplar - Saltwell Park EVCP Bay

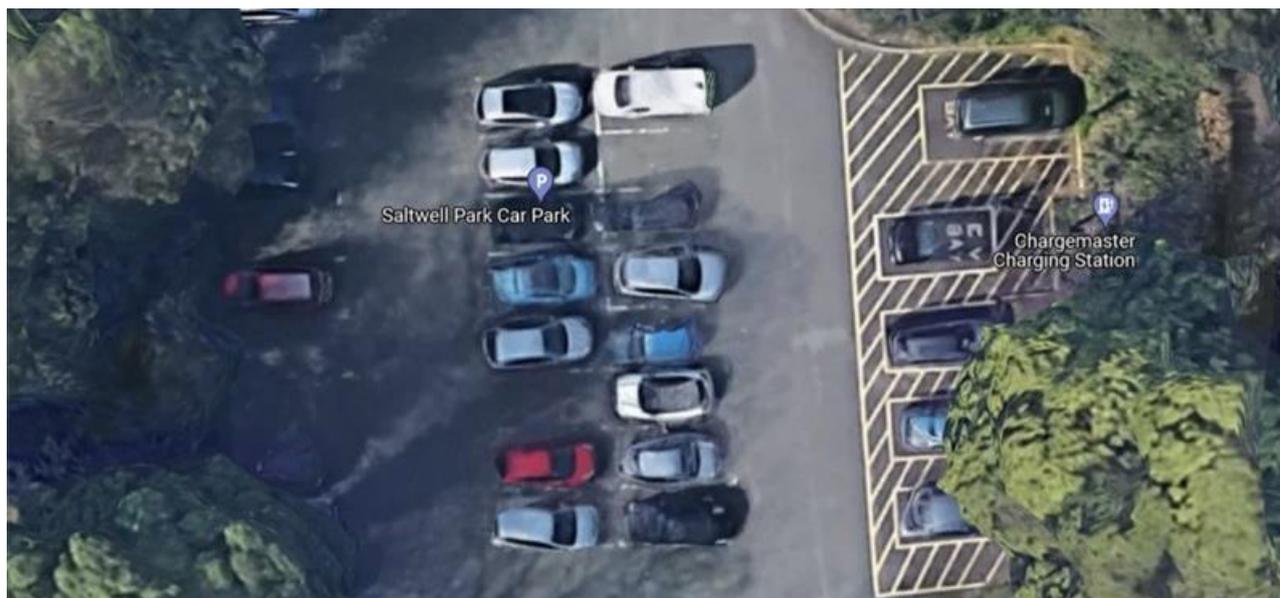


Figure 6: Saltwell Park Car Park

- with row of 3 standard BBH Bays and a WAV Bay at top

The EV Bay provided level access all around the vehicle bay and charging equipment, and was signed as ‘This space reserved for electric vehicles’. Consequently the facility was accessible to use by anyone with a plug-in vehicle including BBHs but not reserved as a BBH bay.

This compromise solution previously advised on other projects, and first achieved in Saltwell Park Car Park, Gateshead in July 2014, was the provision of a Universally Accessible EV Charging Bay within a row of Accessible BBH Bays; as shown in the images.

This chargepoint could also potentially be used by any plug-in vehicle in the adjacent enlarged parking space, reserved for WAV (Wheelchair Accessible Vehicle) parking, which also meant that any future Electric WAV could also plug-in to the twin socket charge-point.



Figure 7: WAV Bay occupied by a rear-access WAV

The dimensions and layout discussed above in Chapter 3 for an Inclusive Access EV Charging Bay for Blue Badge Holders, represents the current guidance development of this project, which have been developed and updated from the earlier Gateshead design model; that was previously based on the application of the existing BS 8300:2009 guidance and the incorporated research data at that time.

The Saltwell Park’s Universally Accessible EV Charging Bay can be used by any EV car driver, representing sustainable provision that can easily be re-designated as a BBH-EV Bay in response to changing needs. The application of currently proposed model layouts for accessible BBH-EV bays as ‘inclusive active EV bays’ can offer sustainable solutions for initial car park development for EV charging; such as where percentages of the overall parking provision are to be converted to active and passive bays.

- R6.** Where local policy requires installation of x% active EV bays and y% passive bays, install at least 5% of all bays as active EV bays designed as ‘Inclusive Active Bays’ for use by all EV users, with at least one or 5% of the inclusive active bays signed as a BBH-EV Bay whichever is greater; unless relevant demographics or local knowledge and experience indicates a higher level of provision is required to be accessible for disabled persons, such as may be the case for some healthcare facilities.

6. OTHER CONSIDERATIONS FOR EQUALITY OF PROVISION

6.1. Accommodating Wheelchair Accessible Vehicle (WAV) Users

It is important to note that suitable parking provision, both on-highway and off-highway is rarely adequately provided for WAV users, who need to board and alight from their vehicle using an on-board ramp or lifting device at rear or side of their vehicle; depending on vehicle model and required adaptation.

The Saltwell Park WAV Bay (located alongside the EV Bay) was just one of many purpose-designed bays that have been provided around Gateshead since 2010 at sport and leisure facilities, schools and other public buildings, and within the basement car park of the Trinity Square Retail Development. Where possible WAV bays were sited to avoid or minimise the potential for conflict and risk from passing vehicles; to enable transfers in and out of the vehicles with ramps and lifting platforms clear of the vehicle route.

Awareness of the potential need to consider WAV-BBH bay provision, has continued to be lacking over the past decade, as has the need for EV charging bays to be appropriately designed and sized to accommodate disabled drivers. These provisions are likely to be more easily achieved within new parking external facility developments, such as the proposed new P+R facility discussed earlier in the Chapter 4 Worked Example of this report.

Unfortunately, it appears that many designers of indoor or covered parking provision have yet to adequately address how they accommodate EV Charging Bays for disabled peoples use, or even how to accommodate WAV parking; largely due to lack of awareness.

One further point to note: the above development guidance and layouts only represent a two-dimensional representation of the issues for accessibility of EV Charging facilities, and although reach requirements to operate charging equipment by persons with limited reach ability have been considered during development of EV bay layouts, additional issues also require consideration in respect of the equipment height. These issues are outlined in the User Trial report, and discussed further in the Stage 3 Report, where recommendations are provided for the future inclusive design and manufacture of EV charging equipment.

Spatial requirements for WAV parking and WAV-EV charging bays are discussed further in the Stage 5 Report, reflecting on the model layout developed for the Saltwell Park installation, and applications today.

6.2. What if some people cannot access the public charging location?

Whereas a 5-minute walk to a proposed EVCP site may be acceptable to Planners and Local Policies, it does not automatically confer accessibility for disabled persons; as that 5-minute route may be difficult and even a potential barrier for some disabled and elderly persons. Options to mitigate such situations are discussed below.

Where either no continuous accessible pedestrian route exists or can realistically be achieved; or

Where an individual resident with impairment affecting their mobility, is unable to:

Reliably reach the location safely, without considerable difficulty, and within a reasonable time period;

Then mitigation of such barriers for the disabled person requires further consideration by the responsible authority / authorities, such as:

Provision of an H-bar marking with appropriate on-street designation, such as 'Disabled Parking' or 'Permit Holder Parking', or 'Permit Holder EV Parking' adjacent to the disabled person's residence, where they do not have or not able to have any proximate off-street parking; with accompanying provision of, or at least permission for, an on-street chargepoint for their use.

To ensure availability of the chargepoint to the resident, there may need to be provision of a resident's permit designation for such an on-street charging bay location, which may possibly be supported by designated times when it may be used by the relevant permit holder and only made available to other residents outside of the designated times; providing the designated times can be agreed with the disabled permit holder. Such provision may also require either the local highways authority enforcement supported by regular monitoring by Police, or Traffic Officers such as where a TRO (Traffic Regulation Order) or ETRO (Experimental Traffic Regulation Order) is employed to restrict use, depending on local designation and / or deregulation for Local Authority Highways.

A further alternative may be for chargepoint to be supplied from residents' own power supply, with power to the chargepoint isolated by the resident at times when they are not using the chargepoint. To ensure there are no trailing cables across public footways, cables between the residents' home and the chargepoint will need to be ducted; with any surface access to the ducting made level with the footway to avoid trip and obstruction hazards.

6.3. How will parenting provision be addressed?

Although provision of parenting bays may not be included in local authority policies, parking bays for parenting have become a common provision at many supermarkets and some other types of commercial and retail facilities.

When providing EV charging facilities there is an expectation under current EV charging infrastructure standards⁴, and OZEV funding under the On-Street Residential Chargepoint Scheme including where such installation is in local authority owned / managed car parks, that facilities should also be accessible by parents with children.

Until such times as there is evidence to indicate otherwise, the current use of parking bays for parenting provision based on the standard for disabled parking bays, as advised in BS8300-1:2018 in reference to provision of 'enlarged bays' with 1200mm side access aisles and rear access aisle, is expected to provided adequate space for parents access around their vehicle; both when transferring young children and infants in and out of the vehicle, and when connecting to an EV chargepoint.

- R7.** Provide at least one passive WAV bay that can accommodate an EV chargepoint installation or at least access an adjacent EV chargepoint.
- R8.** For every 10 BBH designated EV charging bays provided at least one as an enlarged active WAV-EV charging bay.
- R9.** Ensure the Local Plan and its supporting policies (i.e. Supplementary Planning Documents and Neighbourhood Plans) for EV Charging provision, adequately supports equality of provision for disabled persons, disabled residents, and parents with young children.
- R10.** Consider provision of parenting EV Charging Bays with layouts similar to proposed layouts for Standard EV Bays, but with 1200mm wide side and rear access aisles, and where chargepoint is installed between two adjacent bays, a central aisle width of 1200mm is also proposed.

⁴ IET Code of Practice- Electric Vehicle Charging Equipment Installation 4th Edition, 2020

7. RECOMMENDATIONS SUMMARY

7.1. Local Topography and Demographics:

- R1.** Ensure accessibility to and within site is suitably assessed for safe use by disabled and elderly persons, and for parents with young children.

7.2. Local Planning Policies for EV Charging Bays Provision

- R2.** At least one 'inclusive EV charging bay' is provided within any car park with up to 20 parking spaces;
- R3.** In car parks with 20 or more spaces, up to 5% of all parking bays are installed as active inclusive EV charging bays and 10% are installed as passive 'standard EV bays', of the types described later within this report.
- R4.** Where 5 or more EV charging bays are provided, at least one inclusive EV charging bay should be designated for use by 'Blue Badge Holders Only'

7.3. Implications of Space Requirements for EVCP Bays

- R5.** Space Requirements for Standard EV Charging Bays (not disabled version) should preferably provide for the following access:
- a.** A 900mm (min.) wide side access aisles to accommodate access past projecting and trailing cables at sides of adjacent vehicles;
 - b.** A 1000mm (900mm min.) wide central aisle between adjacent vehicle bays, based on the proposed location of a double socket charger as shown in Development Drawing 2;
 - c.** A 1000mm wide cross aisle at head of charging bays, to enable connection on vehicles with front power inlet, as well as access to the charging equipment; with
 - d.** A 1200mm minimum width past any obstruction across the head of the bays, such as from charging equipment, protection barriers, signposts, or bollards.
 - e.** A 1000mm (900mm min.) rear access aisle for movement around vehicle and boot access to retrieve and stow charging cable and or children's buggy, clear of the vehicle route.

7.4. Worked Example: Local Park and Ride Site

- R6.** Where local policy requires installation of x% active EV bays and y% passive bays, install at least 5% of all bays as active EV bays designed as 'Inclusive Active Bays' for use by all EV users, with at least one or 5% of the inclusive active bays signed as a BBH-EV Bay whichever is greater; unless relevant demographics or local knowledge and experience indicates a higher level of provision is required to be accessible for disabled persons, such as may be the case for some healthcare facilities.

7.5. Other Considerations for Equality of Provision

- R7.** Provide at least one passive WAV bay that can accommodate or at least access an adjacent EV chargepoint.
- R8.** For every 10 BBH designated EV charging bays provided at least one active WAV charging bay.
- R9.** Ensure the Local Plan and its supporting policies (i.e. SPDs) for EV Charging provision, adequately supports equality of provision for disabled persons, disabled residents, and parents with young children.
- R10.** Consider provision of parenting EV Charging Bays with layouts similar to proposed layouts for Standard EV Bays, but with 1200mm wide side and rear access aisles, and where the chargepoint is installed between two adjacent bays, a central aisle width of 1200mm is also proposed.

7.6. Further Reference

Reference is advised to this project's Stage 2 Report and the User Trial Report for guidance on inclusive EV bay provision and layout options for potential application to different sites, and to the Stage 3 Report for guidance and recommendations for the inclusive design of EV equipment for use by persons both when standing and when sitting such as in wheelchairs.

7.7. Next Project Stage

Stage 5 considers existing practices of EV chargepoint and vehicle bay installation and what exemplars currently exist from which lessons have been or may be learned for future developments.