Public EV charging units – how to design for accessibility

Design guidance for accessible public electric vehicle charging

19 January 2023

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Registered Charity No. 256335

Introductions

Hazel Boyd

User Experience Researcher

Keir Haines

Senior Product Designer

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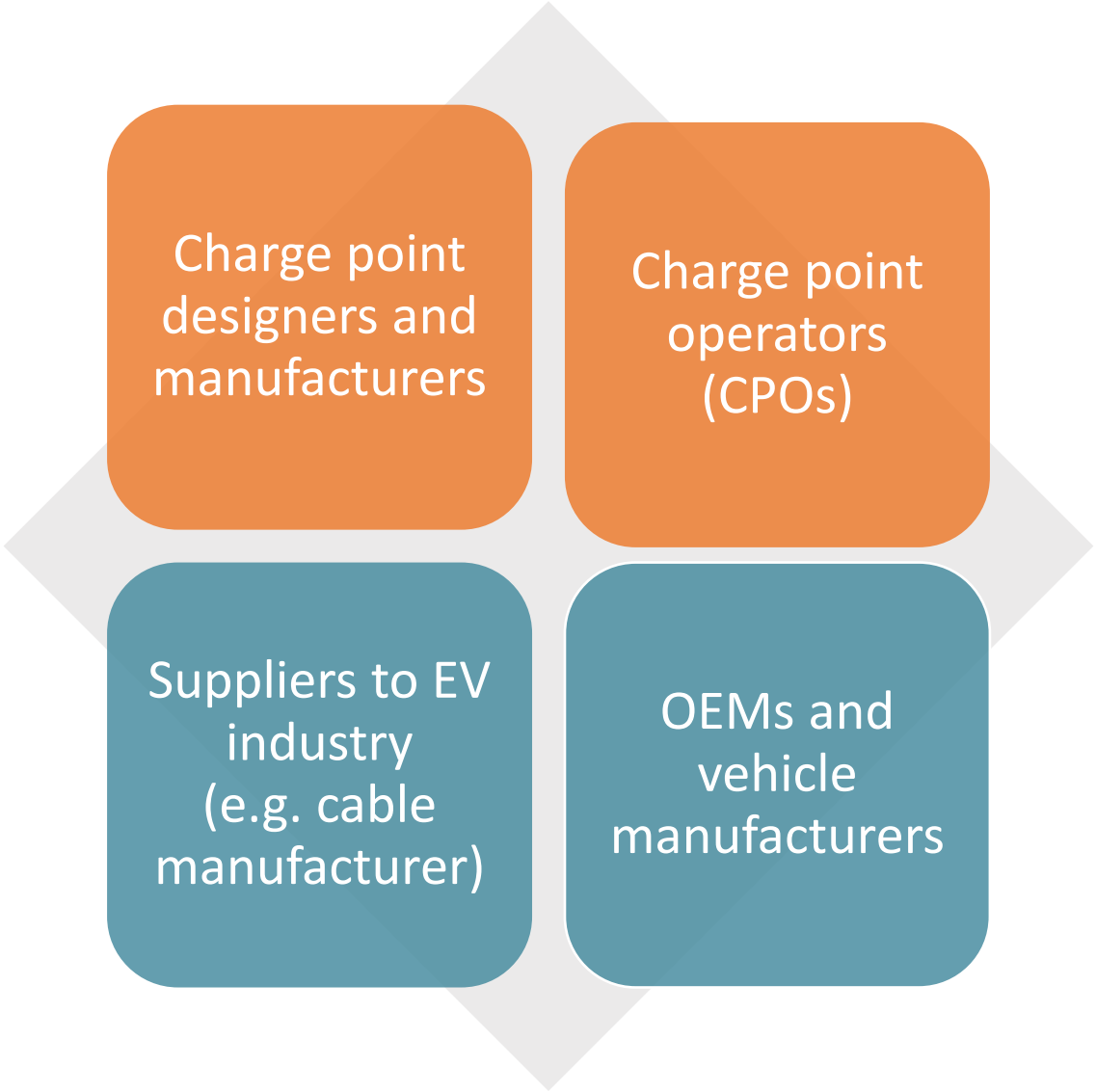
Who is this webinar for?



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What will this webinar cover?

- Why should you consider accessibility?
- How did we develop our guidance?
- How does this relate to the BSI standard - PAS 1899:2022?
- Share design examples to make charge points accessible
- See what our guidance also covers:
  - Signage and information
  - Built environment
- Other useful resources on the design guidance website
- What might you do next?
- Your questions

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Why should you consider accessibility?

Estimated by 2035:

- 2.7 million disabled drivers or passengers in the UK
- 1.35 million partially or fully reliant on public EV charging
- Over 600,000 Motability scheme customers will be EV users

- **Lack of accessibility** across the public EV charging infrastructure
- **Better accessibility improves the charging experience for all**

"It's the right thing to do"

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Vision for public EV charging

No one should be left behind in the transition to electric vehicles

EV charging infrastructure needs future-proofing for accessibility

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How was this design guidance developed?

- **Conducted practical research and design** activities directly with disabled drivers and passengers.
- **Understand** how charging infrastructure is failing disabled people and then **explore** what accessible design solutions might look like [human centred design process]
- **Develop and disseminate** this knowledge further with industry through *Design Guidance*

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Range of mobility needs

- **People who reported issues with;** mobility, strength, dexterity, stamina and those with the use of only one upper limb.
- **Both seated and standing users;** manual and electric wheelchair, walking stick(s), crutch(es), walking frame, prostheses and those who use no mobility aids.
- Existing **electric car users** and those who have **never charged** an electric vehicle before.

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Human centred design process

01 02 03 04 05

DISCOVERY
User research
EV charging
EVs +adaptations

IDEATION
Concept design
User feedback
Stakeholder input

ITERATION
Design development
3D mock-ups (PoC)
User testing

REALISATION
Prototyping
Design validation
Refinement

Design Guidance
Accessible EV Charging

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How does our design guidance relate to the BSI standard PAS 1899:2022?

Standard - BSI

- Publicly Accessible Specification or ‘’PAS’’ launched October 2022
- Sponsored by Motability and OZEV
- Detailed requirements and recommendations

Design guidance - Designability

- Design guidance and design examples
- Practical guidance - to help apply the requirements of the standard
- Focus on ‘the charging process’

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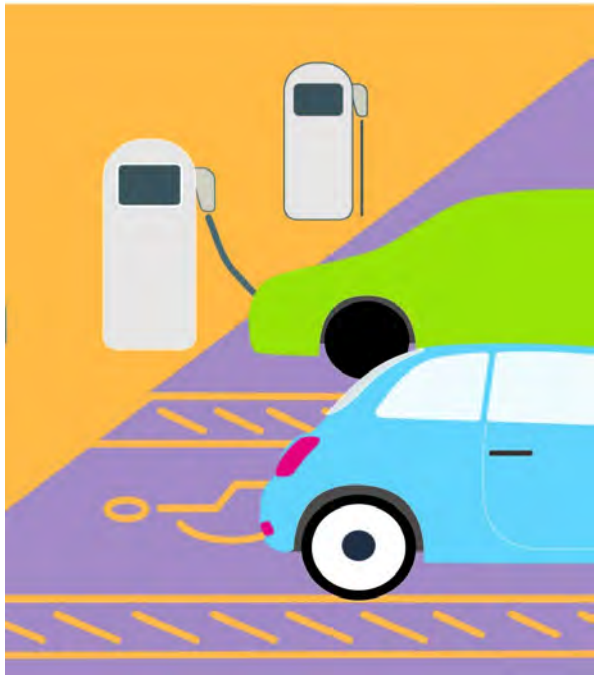
Our design guidance

Signage and information

Built Environment



Charging an electric vehicle

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Charging an electric vehicle

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See, reach and use parts of the charging unit

See
recognisable, visible

Reach
horizontal and vertical

Use
grip, actions, one or two hands

This all applies to people who are seated or standing

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Cables and connectors – big challenges

Key barriers to effective use:

- Cable - length, weight, stiffness
- Connector design – limited grip options

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Our charging unit prototypes

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Rapid charging unit

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Connector design

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Holster design

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Cable management

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Cable – support weight

Support the cable weight

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Cable - flexibility

Make the cable flexible (for small spaces **and** long cables)

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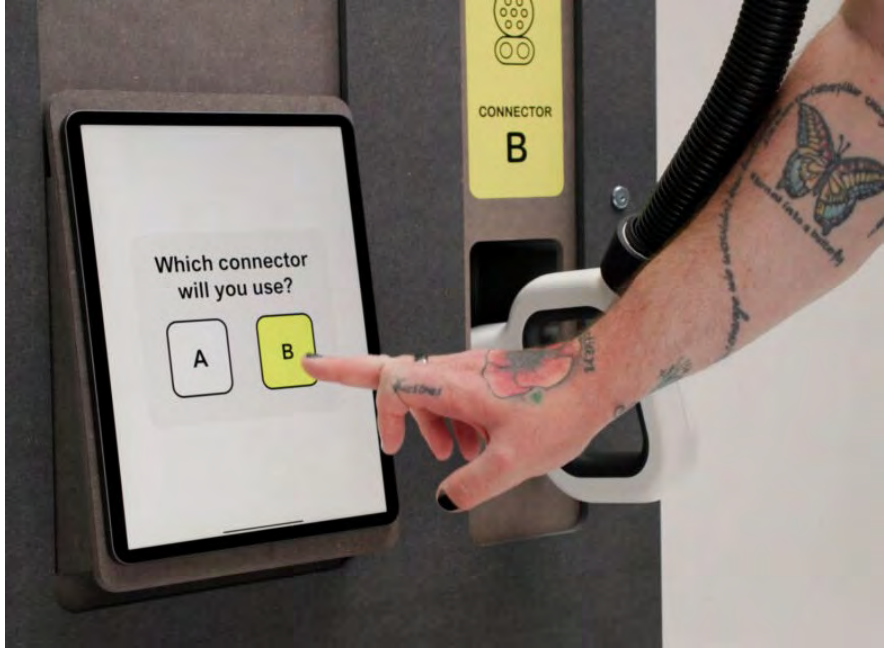
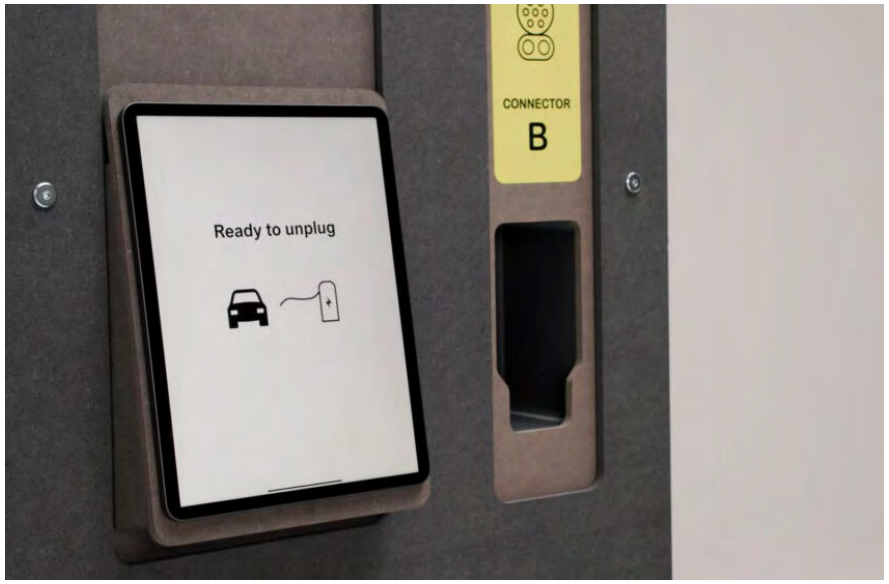
Touch screen interface

- Large, clear screen
- Clear instructions and feedback
- Large, high contrast text, symbols and buttons
- Provide choice of format or method - e.g. spoken instructions
- “Accessible” is not a single solution





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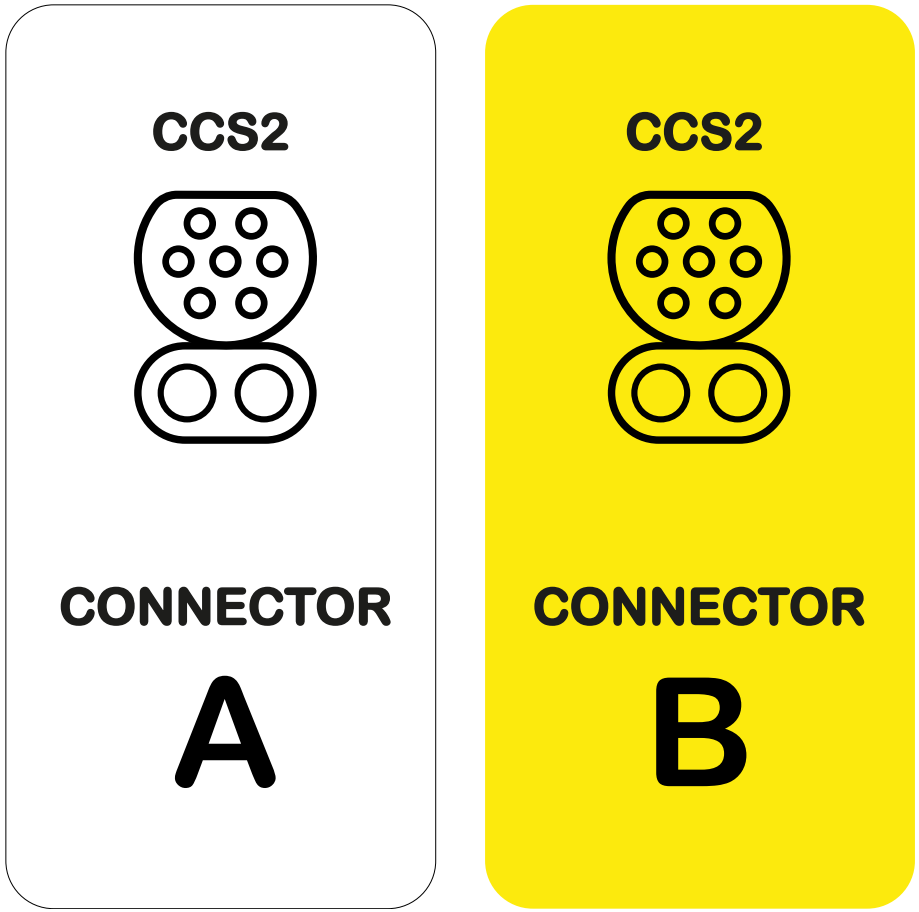
Simple clear labels

- Large and high contrast labels
- Use colour and symbols where necessary to distinguish between similar features
- A mixture of text and symbols is best practice



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Fast charging unit prototype

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Connector design

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Sockets – height

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Socket cover – single handed use

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Socket cover – single handed use

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Socket cover – single handed use

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Space to rest walking aids

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Simple display

Let users know:

- What to **do** (clear instructions)
- Whether they were **successful** (feedback)
- What is happening **now** (status)

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Signage and information

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Information about charging points

> *It’s so frustrating when I can’t tell if the charge point will be accessible when I get there – it makes me anxious about my journey.*

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Information about charging points

Before arriving at the charging point:

Accessibility

- Parking space size
- Level access
- Close to toilet
- Usable charging unit

….

General

- Suitable – charging type
- Exact location
- Available
- Working
- How to access – app?

…

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Navigation signage

I hate it when I get to a car park entrance, and it takes me ages to find the charge points.

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Signage at the charging point

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Built environment

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Space around the vehicle

Space **beside** a vehicle to:

- Open both doors fully
- Walk and wheel
- Transfer to wheelchair

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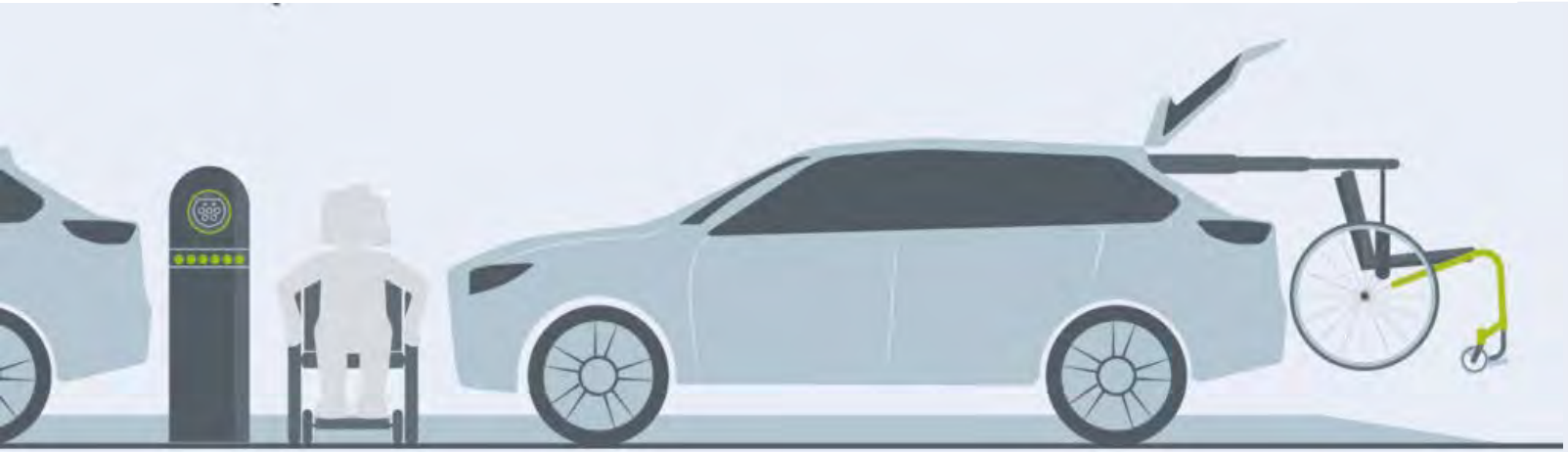
Space around the vehicle

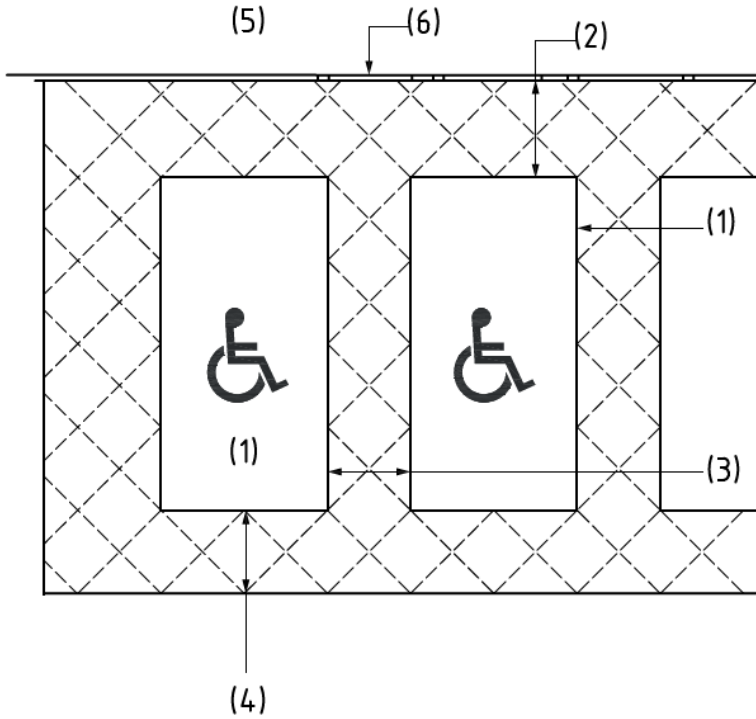
Space at **both ends** of vehicle enables:



access to charger

choice of vehicle position

protection from traffic, access to boot hoist or ramp



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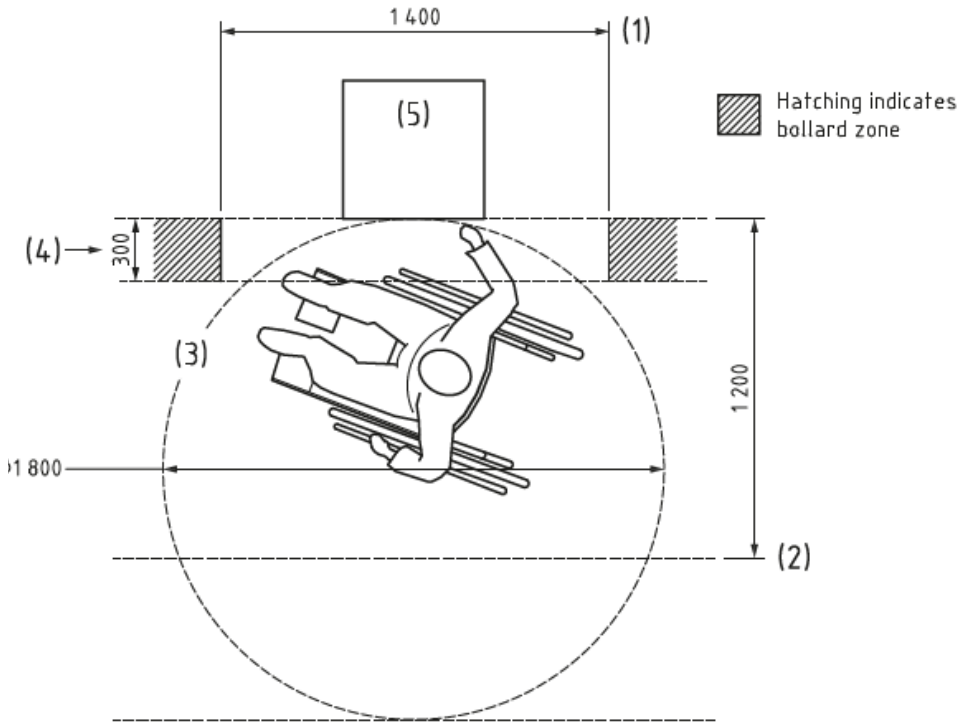
Charging unit position

Kerbs and obstructions can prevent access to well-designed units



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Charging unit location and environment

Lighting and shelter

No shrubs or trees

Level access

Toilets

Cafe

Flat, smooth ground

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In summary

- Why you should consider accessibility
- How we developed the design guidance
- Importance of engaging people with a range of different needs in the design process including product testing

Charging unit prototypes and design guidance

- Signage and information
- Built environment

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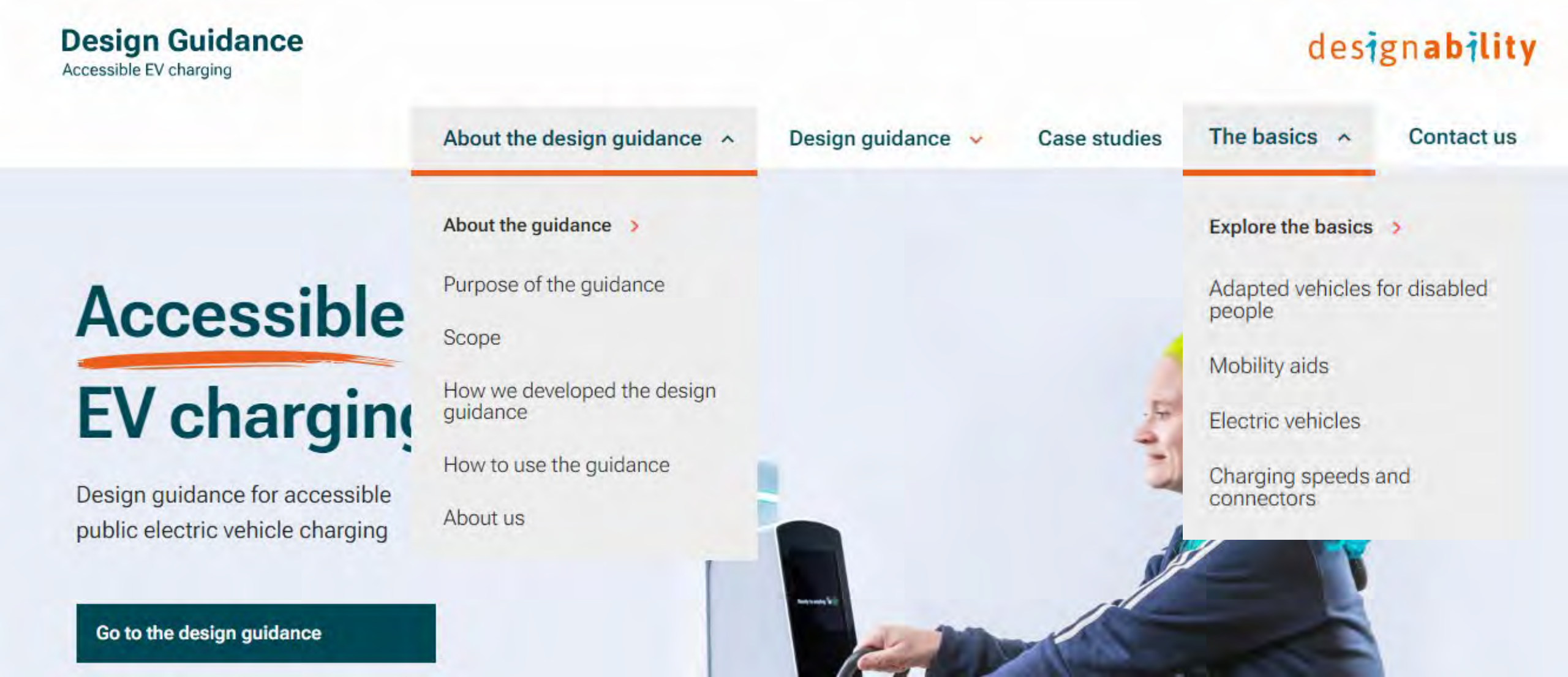
Also on the Design Guidance website…



Also on the Design Guidance website…

Design Guidance
Accessible EV charging

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About the design guidance | Design guidance | Case studies | The basics | Contact us

Explore the design guidance ›

Signage and information

Information about charging points

Signage

Built environment

Space around the vehicle

Charging unit position and location

Charging an electric vehicle

See, reach and use parts of the charging unit

Start, stop and pay for charging

Connectors

Cables

Sockets

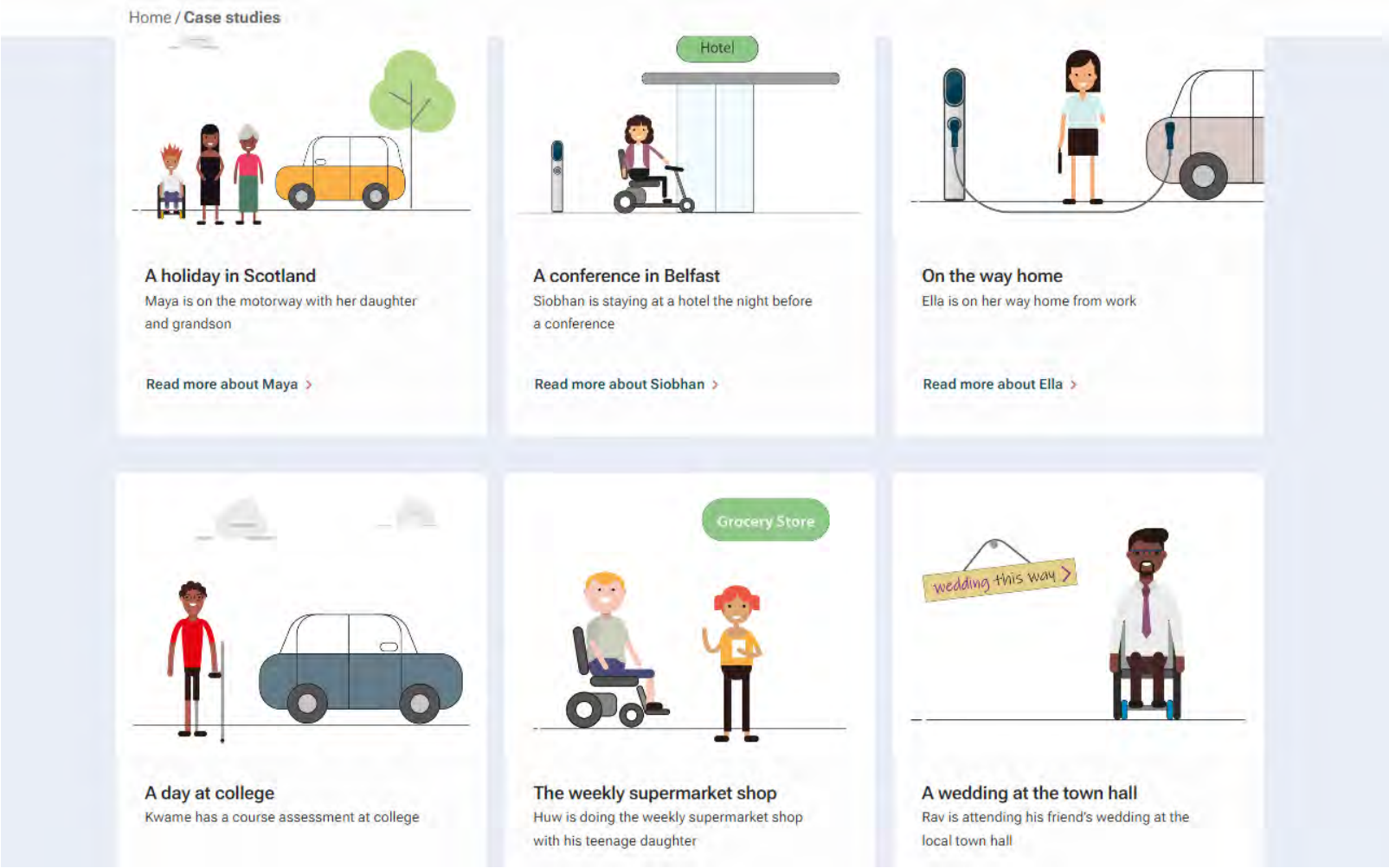
Resources

Our charging unit prototypes

The standard

Further reading

Case studies



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What might you do next?

- Explore our Design Guidance website
- Raise awareness with your colleagues
- Share the guidance with your industry connections

Procurers/commissioners

- Incorporate the Design Guidance and PAS 1899:2022, BSI standard into your tender documentation

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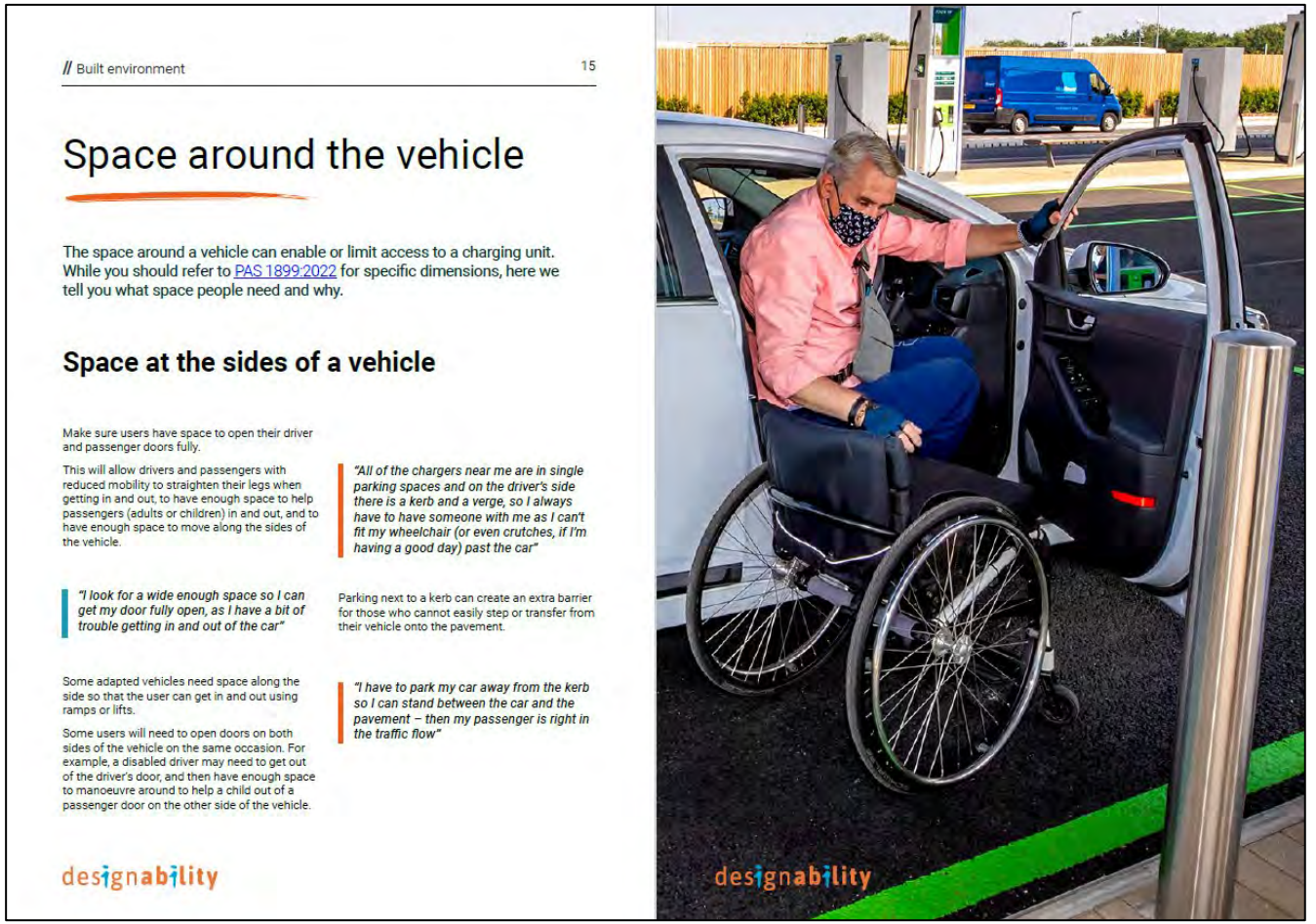
Design Guidance download



PDF, 14MB

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Design book

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Charging
Prototypes

Accessible electric vehicle charging

Connector design

‘Looped’ handle

This design means the connector can be held on the top, bottom and back of the handle, allowing it to be gripped in different ways, with one or two hands.

This supports people with a range of different strength and dexterity in their hands, and people approaching the charge point at different heights.

For example, a seated wheelchair user may grip the back of the connector, whereas a tall standing user may grip the top of the handle.

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Live Q&A – Your questions

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Thank you

https://accessibleevcharging.designability.org.uk/

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