



Electric Vehicle Charging Station Signs and Road Marking Guidance

1 November 2024

V1

Copyright information

Copyright ©2024. This copyright work is licensed under the Creative Commons Attribution 4.0 International licence. In essence, you are free to copy, distribute and adapt the work, as long as you attribute the work to NZ Transport Agency Waka Kotahi and abide by the other licence terms. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

Disclaimer

NZ Transport Agency Waka Kotahi has endeavoured to ensure material in this document is technically accurate and reflects legal requirements. However, the document does not override governing legislation. Waka Kotahi does not accept liability for any consequences arising from the use of this document. If the user of this document is unsure whether the material is correct, they should refer directly to the relevant legislation and contact NZ Transport Agency Waka Kotahi.

More information

NZ Transport Agency Waka Kotahi
Published: November 2024

If you have further queries, call our contact centre on 0800 699 000 or write to us:

NZ Transport Agency Waka Kotahi
Private Bag 6995
Wellington 6141

This document is available on NZ Transport Agency Waka Kotahi website at www.nzta.govt.nz

Contents

| | |
|---|---|
| ELECTRIC VEHICLE CHARGING STATION SIGNS AND ROAD MARKING GUIDANCE | |
| 1.0 Purpose of this guidance | 1 |
| 2.0 Customer needs | 1 |
| 3.0 Layout of EV charging spaces..... | 3 |
| 4.0 Signs | 5 |
| 5.0 Parking enforcement | 6 |
| 6.0 Direction guide signs associated with EV charging stations..... | 7 |
| 7.0 Road surface markings | 8 |
| 8.0 Standard layouts for on-street EV charging spaces | 9 |

1.0 Purpose of this guidance

This guidance provides advice on the use of signs and road surface markings in connection with the optimisation of public EV charging stations. The guide also provides an explanation of the issues related to managing parking restrictions and enforcement. The target audience for these guidelines are organisations and companies involved in the planning and design of public light electric vehicle (EV) charging stations. Having a consistent approach to how EV charging stations are laid out will support a faster uptake of EVs as consumers become more confident in identifying and using charging stations. The familiarisation from continued usage can provide positive experiences, such as finding charging easy due to consistent EV charging stations layouts, allowing emotional connections to form between consumers and services which will help to retain customer engagement¹.

Public charging stations are defined as publicly accessible parking spaces with a charger that may be located on the road reserve or on private property. Public charging infrastructure includes designated spaces for charging on road, commercial facilities open to the public (e.g. service stations or malls) and open-access car parks such as park and rides.

Note: The Land Transport Act 1998 defines a road as a place to which the public have access, whether as of right or not.

Public charging infrastructure excludes chargers in restricted areas (e.g. offices), power sockets that are not intended to be used to charge EVs and charging stations provided by accommodation facilities to guests.

This guidance document should be read in conjunction with the [National Guidance for Public Electric Vehicle Charging Infrastructure](#). Standards New Zealand Te Mana Tautikanga o Aotearoa (SNZ) provides national standards for [residential](#) and [commercial](#) EV chargers.

2.0 Customer needs

EV drivers typically charge at home, overnight, however there are times when they need to charge away from home. These 'away from home' locations include charging at work, the supermarket, retail outlets or petrol stations. People may charge away from home to top up the battery to be able to complete long journeys. However, people may also charge away from home because they do not have access to off street parking or a charger at home. Furthermore, EVs which are used for commercial purposes such as taxis, courier vans and hire cars, may need access to public chargers throughout the day due to greater distances travelled.

¹ Merdiaty, N. & Aldrin, N. 2022. Effect of Brand Experience on Customer Engagement Through Quality Services of Online Sellers to Students in Bekasi. *Frontiers in Psychology*. (Vol. 12, Section Organizational Psychology).

Table 1: Typical charging requirements by user type (adapted from Transport for London's 'London's electric vehicle charge point installation guidance'.)

| User category | Vehicle type | At home or depot charging (typically slow charging) | On the go charging (typically rapid charging) |
|-------------------|--------------------------------|---|---|
| Private cars | Battery electric vehicle (BEV) | Regularly | Occasionally to regularly depending on the trip |
| | Plug-in hybrid (PHEV) | Regularly | Occasionally |
| Taxis | Any | Nightly | Regularly depending on mileage |
| Courier vans | Any | Regularly | Occasionally |
| Private hire cars | Any | Nightly | Regularly to daily |
| Shared vehicles | Any | Regularly | Regularly |

Mobility access for EV drivers should also be considered, by ensuring that features of charging infrastructure are accessible to all users, for example:

- Installing dropped kerbs (pram crossing) and parking lots with level access
- Installing charging equipment at a height and distance suitable for wheelchair users or users with mobility restrictions
- Reducing the weight of tethered cable chargers for users with mobility restrictions
- Chargers with soft grip handles for users with prosthetics, muscle or joint issues
- EV charging parking spaces should also be wider (3.6m) than traditional parking (2.5m) to accommodate the width of car doors to fully open for impaired mobility users entering and exiting. This additional space is also required for the additional movement around the car when plugging in and removing cables at charging ports, particularly when charging port location differs across brands and models.



Along with commuters, other electric heavy vehicles (light duty) will need charging facilities and the additional space could encourage these vehicles to use the station and provide EV charge point operators with a wider consumer base and revenue stream. Knowing their customer market will enable charging operators to install charging stations that suit different EV configurations.

Surveys of prospective EV purchasers often find that “range anxiety” or the fear of running low on battery and not being able to find a charger is a major reason for the reluctance to purchase an EV². Improvements in battery technology, which enables greater range from a single charge, is part of the solution as well as a network of easily accessible public charging stations. However, it can be difficult for EV drivers to locate charging stations especially in situations where they are using a charging station for the first time. As a result, many EV owners have to plan in advance the charging stations that they will intend to use on their journeys, whereas forward planning is less common for drivers of petrol or diesel vehicles³.

Studies show that many EV drivers have a preferred charging location(s), with the price of EV charging, familiarity with the location, proximity to the driver’s home location, and charging reliability of the chosen location the key factors⁴. Drivers were also more loyal to locations offering EV charging where they can undertake other activities while charging, such as shopping or eating⁵. EV owners were also more likely to change their travelling behaviour, such as switching travel accommodation choices, to seek out locations that offered EV charging. Overall, EV charging locations that offer other amenities and facilities, a safe charging environment and weather protection, among others, result in more positive experiences. EV drivers with positive experiences can form a customer base for developers and retailers and contribute to increased loyalty to these sites.

Another key factor which influences customer experience is the availability of chargers when a driver wants to charge their EV. Greater availability can be achieved through increasing the number of charging stations, applying time restrictions, or through enforcement of parking restrictions. Situations when an internal combustion engine vehicle is parked in a parking space with an EV charging station (colloquially referred as “ICEing”) should be avoided. The use of correct EV charging signs and road markings makes the parking restrictions clear, which avoids confusion and aids in enforcement.

All signs and road markings should comply with [Land Transport Rule-Traffic Control Devices 2004](#).

3.0 Layout of EV charging spaces

As a general principle, EV charging stations should be located in a prominent location which makes it easier for customers to locate. For EV charging stations located within the road reserve, a prominent location may be outside of civil buildings or other key destinations. For EV charging stations located on private property, this might be near the main entrance or shop front.

The location of a charger in relation to charging spaces is another important consideration for the number of vehicles that can connect to the charger and how easy it is to connect. The location of the charging port on an EV can be on the front, side or rear of the car. Chargers which are located between (as per fig 1 green CP) parking spaces can serve multiple spaces and are therefore a more efficient use of infrastructure. Conversely, chargers that are positioned to the side of a parking space are only able to be used by one vehicle at a time. The SNZ standard for EV chargers for commercial use (SNZ PAS 6010:2021) notes that the length of supply cables is fixed by the manufacturer of the charging equipment depending on the power output (kW) of the charger.

Common dimensions of EV charging car parks in New Zealand for general use are 2.5m in width and 5.4m in length, basically standard car parks converted to EV charging sites. Where car parks are provided

² [EV Survey shows range anxiety high while charging costs remain low, Kanten, A. and Lekach, S., Forbes \(2022\); Range anxiety - the barrier to EVs in Australia?, Cruces M., Geotab \(2020\)](#)

³ [Electric Vehicle Charging Survey, Energy Efficiency & Conservation Authority \(2021\).](#)

⁴ [Customer experience drives value in public EV charging. Pischalnikov, A., Fergusson, V., Quinn, J., Meade, M., Vetter, Doug. & Ahmed, F. \(2022\).](#)

⁵ [Do EV charging stations make for more loyal customers? National Car Charging \(2019\).](#)

to cater for mobility access, these spaces are generally 3.6m in width and 5.4m in length⁶. To ensure there is sufficient clearance for charging (charging cable on the side, front or back charging port) and for car doors to fully open for mobility users, the dimensions of a mobility access car park would offer a better EV customer experience. Figure 1 shows the impact of different layouts of EV parking bays, where for vehicles parking nose-to-nose, a charge point placed in the centre of a row can then service two to eight spaces. This arrangement provides more flexibility and accessibility for drivers even if only a couple of bays are EV-designated spaces.



Providing wider than normal EV charging parking spaces may result in an overall reduction in parking spaces. Some councils may have an obligation to report these changes to community boards to seek approval.

Another consideration is the angle of the parking bays, which influences how easy it is to connect to a charger. Ninety-degree parking spaces provide the greatest flexibility for EV owners to either drive straight in or reverse in depending on the location of the charging port on their vehicle. Whereas 60-degree and 45-degree parking spaces can result in the need for longer cables to reach the back of the vehicle, as it is often not feasible to reverse into these spaces. This could cause traffic flow disruptions so would require careful consideration.

As the number of EVs in the fleet grows and battery technology improves, the need to cater for EVs towing trailers, caravans or boats will need to be considered.

⁶ [Parking dimensions, Auckland Design Manual, Auckland City Council](#); [Parking Space and Manoeuvring Dimensions in Metres, TDM - Engineering Design Code, Auckland Transport](#); [Car park dimensions, NZS 4121:2001, Standards New Zealand \(2001\)](#). Note, these dimensions are larger than the minimum dimensions as recommended in [Travel for London's Electric Vehicle Charge Point Installation Guide](#) (which are 2.4m in width and 4.8m in length for general parking and 2.7m width and 3.6m in length for mobility parking), providing more space for users.

Regarding health and safety responsibilities around site use, it is recommended that users handle charging equipment carefully and report damage or any hazards to the charging service operator (indicated by signs)⁷.

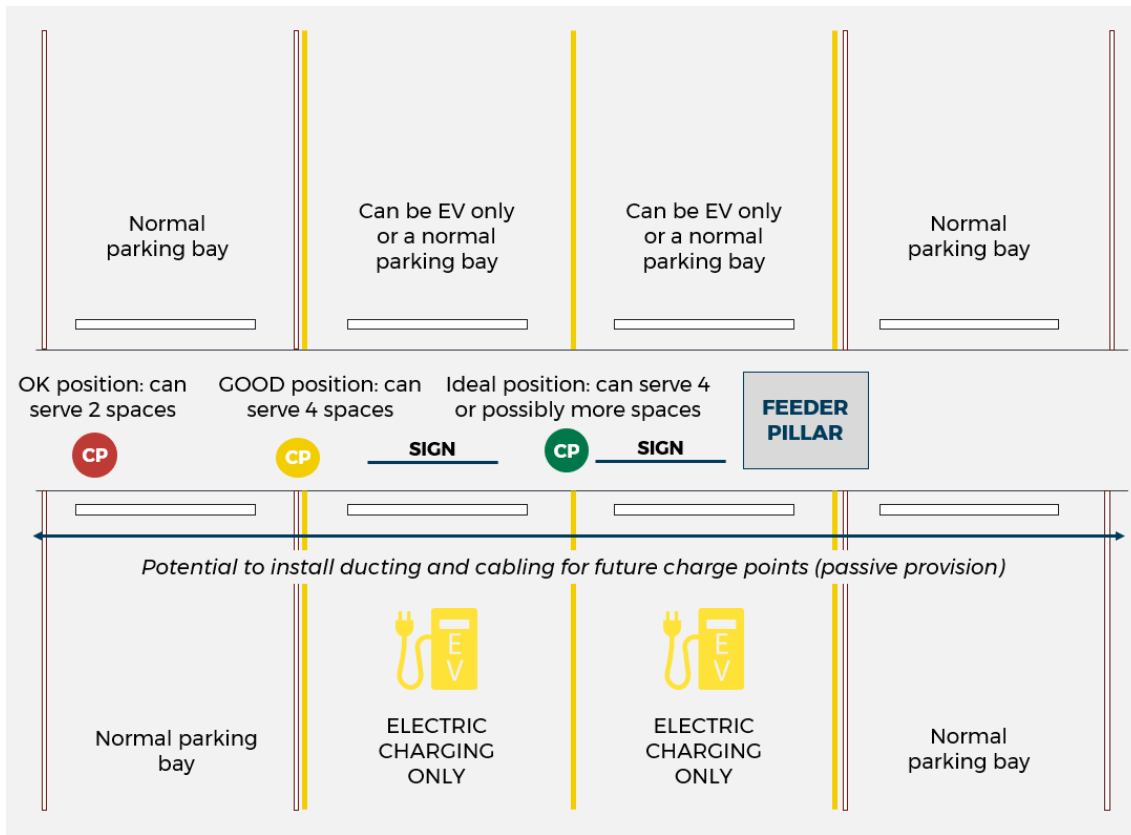


Figure 1: The impact of different layouts of EV charging bays.

Note: When a standard space is marked next to an EV space, a single yellow line next to a single white should be marked as shown in figure 1 above

For sites which have multiple EV chargers, it is generally recommended that these are located adjacent to each other (i.e. a charging hub or cluster) rather than scattered along a road or within a parking lot. This is because situating multiple EV chargers together, enables customers to see the chargers that are available without having to visit multiple locations. Furthermore, multiple EV charging spaces are more prominent than a single space, making it easier for customers to locate them in the first instance.

Most EV charging station operators have an app that allows subscribers to see whether a charger is in use, available or out of service. Some show the percentage state of charge of EVs currently using the station. These apps provide EV owners with valuable information to assist them with their charging needs and charging station developers should be encouraged to offer this type of service.

4.0 Signs

There are two types of signs relevant to EV charging stations: parking signs and service signs. Parking signs are located at parking spaces and are the primary means of communicating parking restriction to road/parking lot users. In the case of EV charging, signs indicate both a parking space with a charging station service that is reserved for EVs to charge their batteries. EVs which do not require charging of their batteries should park in general parking spaces and leave the EV charging spaces for those looking to

⁷ [Charging an EV, Genless \(n.d.\)](#).

charge. A time restriction can be placed on the length of time an EV is allowed to park in the space before needing to vacate.



Figure 2: Example of parking signs with time restrictions for EVs. Source: [New Zealand Transport Agency Waka Kotahi](#).



5.0 Parking enforcement

Either a council or private operator controls the area where a public EV charging site is located and is also the Road Controlling Authority (RCA) for that 'road'.

It is the responsibility of the driver to be able to interpret approved signs and this is an element of the driver licence approval process. It is important that the bylaw decision making process and all signs and surface markings are compliant otherwise any parking infringement notice issued could be challenged in the district court.

Another type of parking restriction that may be applied to EV charging spaces is paid parking, whereby EV owners need to pay to use the parking space like any other type of vehicle. Paying for the parking is in addition to paying to use the EV charger, where payment for the parking space is done at the meter and paying for the electricity to charge the vehicle is done at the charging unit.

EV owners will consider the charging rates of charging stations when using time-restricted parking provided for the purpose of charging, for example 30 minutes of fast charging will provide around 80km of

range, whereas slow charging will require up to 120 minutes to provide the same range⁸. Similarly, those providing EV charging spaces need to align any time restrictions applied to those spaces with the rate at which charging will occur to in order to provide a good service to EV owners. Any parking control, such as charging EVs for parking should be considered against the RCA parking policy and good practice in parking management (see [National Parking Management Guidance](#) for more information).



Figure 3: Example of pay for parking signs with time restrictions for EVs. Source: [New Zealand Transport Agency](#). Waka Kotahi

The definition of EV charging spaces under the Traffic Control Devices Rule amendment 2017 is “a parking place with a charging station, reserved for EVs to charge their batteries”⁹. However, some RCAs have been installing secondary signs to make it clearer that only EVs that are charging should park in the space. This practice is not recommended because this is an unlawful supplementary sign that does not comply with the Traffic Control Devices Rule.

Nonetheless for some RCAs, it is useful to describe spaces used for EVs only when charging. There is obviously the difficulty of the parking warden and driver knowing when the battery is fully charged, particularly when the EV owner is not in the vicinity while the vehicle is charging. In these situations, careful consideration of how the charging site is to be used and appropriate approved signage that encourages the desired charging behaviour at the site should be installed.

The signs shown in Figure 3 (above) clearly indicate that the site is restricted to charging EVs, but parking fees apply for the indicated maximum time limits. By stating ‘At All Times’ indicates that these parking restrictions apply 24 hours per day, 7 days per week. Without this statement, under the legislation, the parking restriction only applies between the hours of 8am and 6pm on days other than public holidays¹⁰.

6.0 Direction guide signs associated with EV charging stations

Another class of signs is service signs which direct EV drivers to the charger. Service signs shown in Figure 4 can include information on the distance to travel before needing to make a turn such as “turn left 300m” or the distance to the charger. NZ Transport Agency Waka Kotahi recommends that service signs are placed on main roads to identify the location of upcoming EV chargers that have a charging rate of at least 43kW. In areas with fewer public chargers, it may be appropriate to provide signposting to charging stations with a lower charging rate.

Directions to EV chargers may be incorporated into a single larger sign which provides information on the multiple commercial services available at the one location. Service signs/wayfinding signs also have a secondary function in advertising for the availability of EV charging location/sites. [Traffic Control Devices Manual Part 2](#) provides guidance on the appropriate use and location of service signs.

⁸ [Charging rate terminology](#), Waka Kotahi New Zealand Transport Agency (n.d.).

⁹ [Land Transport Rule: Traffic Control Devices Amendment 2017 \(nzta.govt.nz\)](#)

¹⁰ As per 12.6(1) of the Traffic Control Devices Rule 2004



Figure 4. Examples of motorist service signs. Source: [Waka Kotahi New Zealand Transport Agency](#).

7.0 Road surface markings

Under the [Land Transport Rule: Traffic Control Devices 2004](#), road surface markings for EV charging spaces are to be yellow. Each space should also have a yellow EV charging station 1m x 1m symbol marked, shown in Figure 5. For some existing EV charging sites, different colour road surface markings have been used and therefore it is recommended that these road markings be repainted yellow. The colour yellow signifies some sort of parking restriction. Additionally, EV charging spaces when marked correctly, should look sufficiently different from adjacent areas such that the use of coloured surfacing will not be necessary. It should be noted that coloured surfacing has specific uses and meanings in other situations and should not be used in EV charging spaces. In particular, the use of blue surface marking is not compliant with the Traffic Control Devices Rule as the colour blue is reserved for mobility parking.

The typical meaning of coloured surfacing is¹¹:

- Green – public transport (bus lane) or cycle lanes
- Blue – mobility access¹²
- Red – high risk area (e.g. speed restrictions)

Examples of standard layouts for on-street EV charging spaces, such as parallel, 45-to-60-degree angle and 90-degree angle layouts are shown in Figures 6, 7 and 8. Road surface markings in standard layouts should be located centrally in the charging space between the yellow edge lines and positioned where it is most visible for drivers. For parallel layouts, road markings should be positioned closer to the traffic lane and for 45-to-60-degree angle and 90-degree angle layouts, road surface markings should be positioned at the 'entry' end of the space.

¹¹ [Coloured Surfacing Principles - Best Practice Guidance Note, New Zealand Transport Agency Waka Kotahi \(2022\)](#).

¹² Refer 12.4(9A) Land Transport: Traffic Control Devices Rule 2004

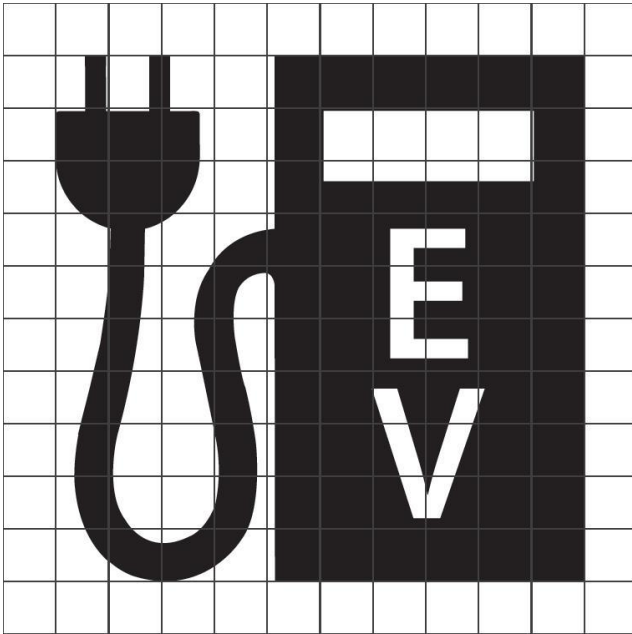
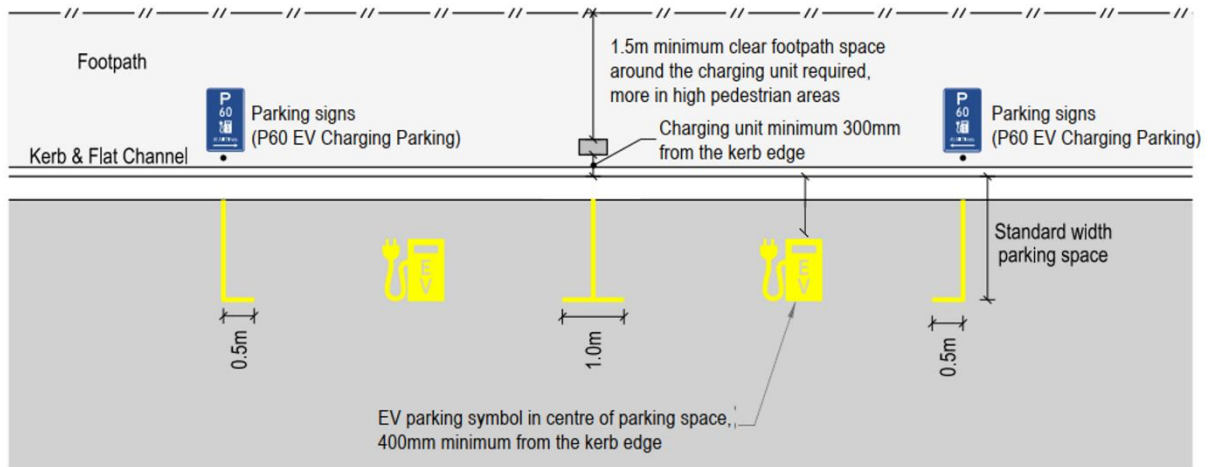


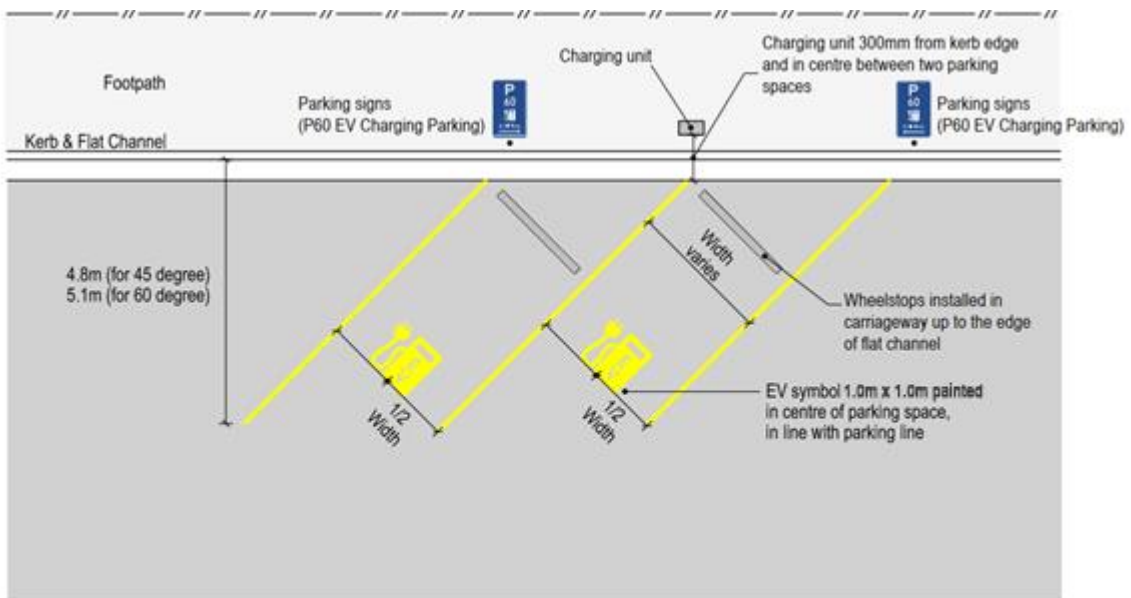
Figure 5. EV charging station road surface marking, with colour to be implemented as yellow (each square is 100mm by 100mm).
Source: Sch 2 Land Transport Rule :Traffic Control Devices 2004 M3-6.

8.0 Standard layouts for on-street EV charging spaces



PARALLEL EV CHARGING ON-STREET PARKING² N.T.S.

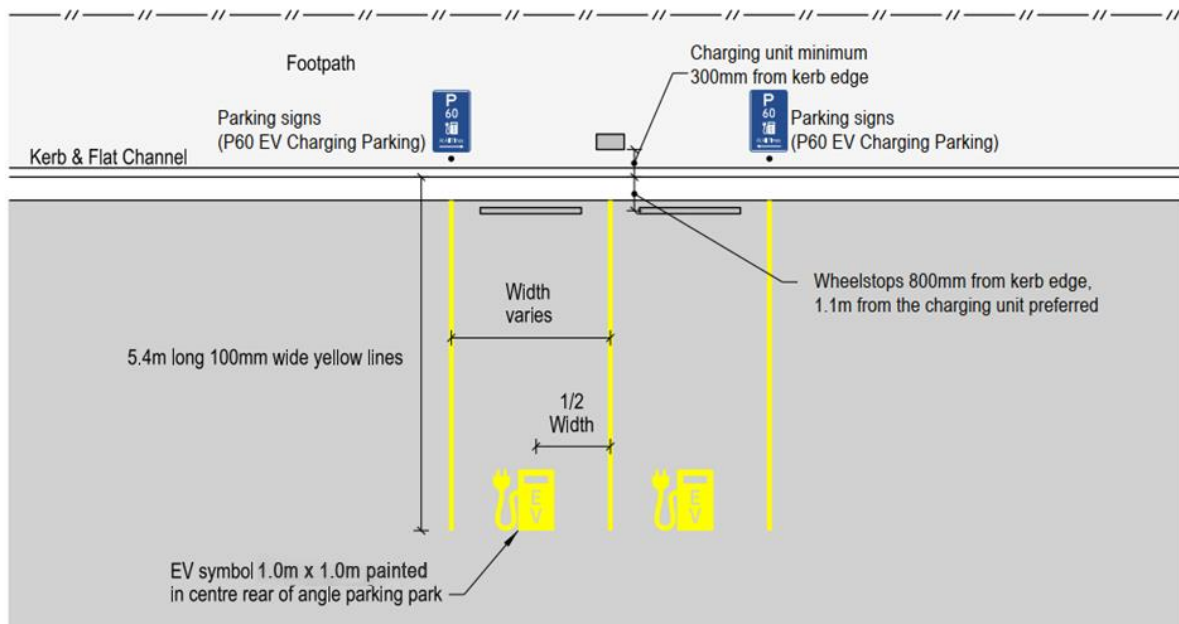
Figure 6. Standard layouts for on-street EV charging spaces, marked in yellow. Parallel layout (top). Source: Christchurch City Council.



45 TO 60 DEGREE ANGLE EV CHARGING ON-STREET PARKING²

N.T.S.

Figure 7: Standard layouts for on-street EV charging spaces, marked in yellow. 45-to-60 degree angle layout (middle). Source: Christchurch City Council.



90 DEGREE ANGLE EV CHARGING ON-STREET PARKING²

N.T.S.

NOTE:
 1. Face of EV sign should be 300mm from kerb edge
 2. Dimensions for off-street parking may differ, refer to relevant standards

Figure 8: Standard layouts for on-street EV charging spaces, marked in yellow. 90 degree angle layout (bottom). Source: Christchurch City Council.

Figure 9 shows examples of EV marked parking spaces with parking signs to indicate that these spaces are for charging EVs. Charging stations are located between spaces to serve multiple vehicles at one time.



Figure 9: Example of EV parking space road markings with standard yellow charger symbols and signs. Source: Hiko tron and Wellington City Council.

As both the EV fleet and public charging infrastructure grows there will be lessons learnt that will require these guidelines to be updated.

If you have any suggestions to improve these guidelines, please send your comments to environment@nzta.govt.nz

For more information on EV charging, please visit the [NZ Transport Agency Waka Kotahi website](https://www.nzta.govt.nz/transport/waka-kotahi) or [Standards NZ](https://www.standards.govt.nz/) for guidance on other aspects of commercial electric vehicle (EV) charging.