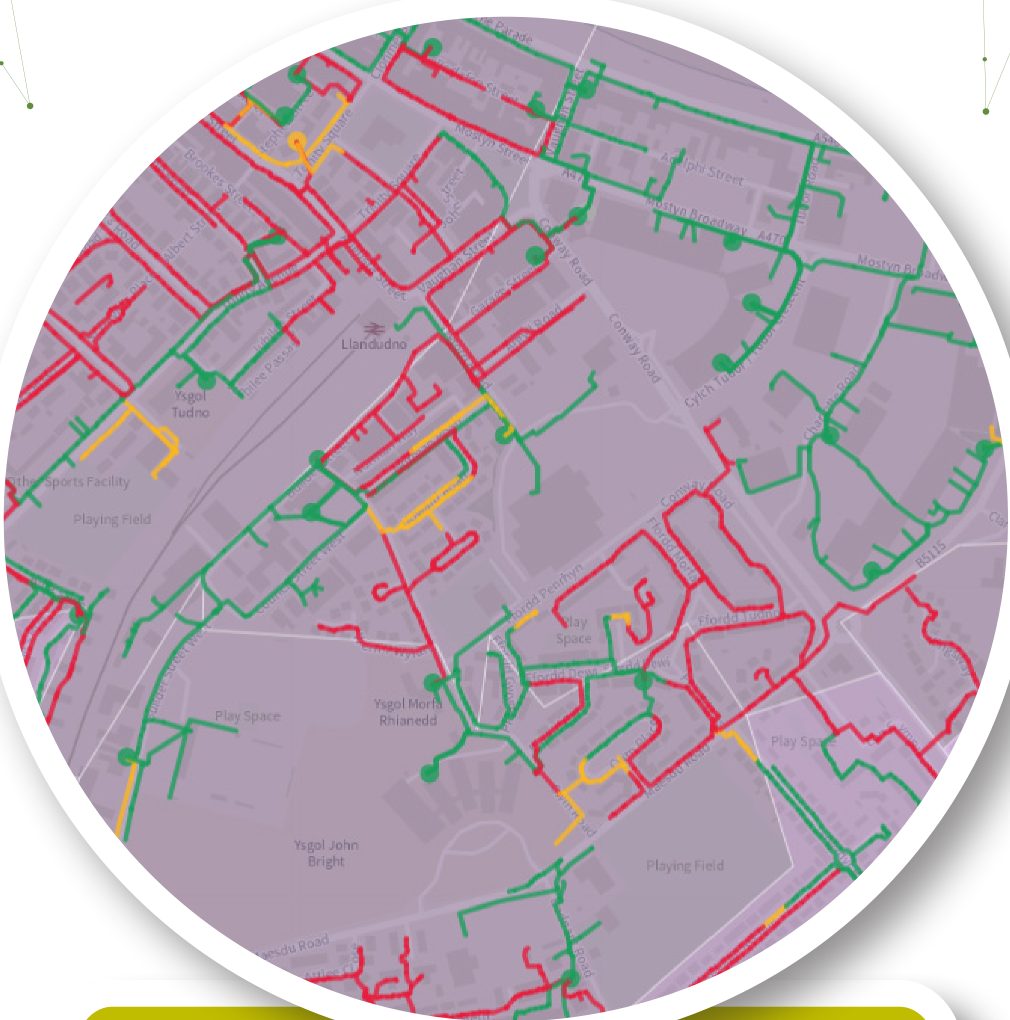
CHARGE



ConnectMore

Interactive Map User Guide

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1 Overview

Electric vehicles (EVs) are the future. With the sale of new petrol and diesel powered vehicles expected to end in 2030 in the UK, EVs will soon eclipse fossil-fuelled transport. These EVs will need an extensive and reliable power network to meet their demand for recharging.

ConnectMore is a key deliverable of the Charge Project, which SP Energy Networks is delivering in collaboration with our expert partners, EA Technology, PTV Group and Smarter Grid Solutions. The Charge Project will bring together transport and energy planning to accelerate the investment and deployment of public EV charging infrastructure. This will benefit all EV users, whether they live in residential areas with no off-street parking, or those looking for charging facilities en-route or at destinations.

ConnectMore provides up-to-date information aimed at facilitating new connections publicly available via an online portal. This information is presented through a user-friendly, web-based connection tool. It gives an indication of likely charging demand in each area, in terms of both magnitude and duration and, hence, supports decisions on what infrastructure will be needed whilst showing areas of the electricity network with capacity for new connections.

ConnectMore will allow installers to access information quickly and easily, enabling all users to work from the same data. It will accelerate the roll-out of charging infrastructure, so that EV drivers have chargepoints in their communities and the places they visit. This 'User Guide' has been developed to provide more information about the data provided in ConnectMore, and definition of the terms used in it. It is not intended to provide a step-by-step tutorial. This support is available via the short videos accessible on the ConnectMore website. Additional information is also included in a 'Frequently Asked Questions' document. Alternatively, information about individual functions is also accessible within the tool by clicking on the question mark. ?

Connect More Interactive Maps

The ConnectMore Interactive Map contains two data sets: EV Charging Demand forecasts and Electricity Network Capacity analysis

EV Charging Demand Layer

ConnectMore is designed to help users answer some key questions about charging demand:

- **Where** is demand forecast to be highest? The tool contains heatmaps which allow the user to compare demand across a wide area (e.g. their local authority). Colours are used to show the level of demand (higher demand shown in darker purple colour).
- **When:** how does demand change over time, how does it change through the day?
- **How Fast:** what type of chargers (fast, rapid, ultra-rapid – different kW ratings) are needed to meet the customer requirement?

It also provides additional data such as:

- How many charge events might occur on a typical day?
- How much energy is required?
- How many chargers, and charger rating requirements can be used to determine connection capacity (total kW needed)?

The total energy demand, number of charge events, and charger rating can form part of the business case evaluation for a site.

Four scenarios are used which vary the level of EV uptake and the availability of public charging infrastructure.

Charging demand is available for four location types:

- **Public destination:** Charging away from home at public locations and destinations such as public car parks, shopping centres, and leisure destinations, where cars are parked while the driver carries out an activity.
- **Public residential:** Public charging at or near homes for cars without off-street parking.
- **Private workplace:** Dedicated provision in private workplace car parks for employees.
- **En-route:** The data predicts the total number of EVs requiring en-route charging somewhere during their journey and the energy demand this creates.

The EV Charging Demand data for public destination, public residential and private workplace location types is split according to the 1,985 Lower Layer Super Output Areas (LSOAs) used by the Census. This is a geographic hierarchy classification designed to improve the reporting of small area statistics in England and Wales. En-route EV charging demand predictions are available for short stretches of motorway, A and B class roads.

The data forecasts demand in five-year intervals from 2025 to 2050 for the SP Energy Networks Manweb licence area only.

Electricity Network Capacity Layer

ConnectMore contains heatmaps to give a quick indication of where there is likely capacity and therefore the likely time and expense to connect to the electricity network.

A traffic light colouring system (red, amber and green) is used for conductors and transformers to show the available capacity for the required connections. The status is calculated using the network loading at the present time as the baseline. Good capacity for connection is shown in green as opposed to amber and red, where limited or no spare capacity is available without reinforcement work.

The network capacity is divided in two categories:

- **Low Voltage (LV):** displays networks consisting of 400/230V network assets.
- **High Voltage (HV):** The data displays 11kV, 6.6kV, 6.3kV, 6.0kV network assets.

The traffic light colouring system will be updated in each of these heatmaps based on six different selectable values for connection (expressed in kVA). These values will allow users to get a first indication of locations where more/less capacity for new connections is available from an electrical point of view.

To give a quick indication of the likely time and expense to connect to the electricity network, take a look at the Red, Amber, Green status of the conductors and transformers closest to your connection site.

2 Getting Started

Upon loading the ConnectMore tool, you will be greeted with a geographical map centred on the SP Energy Networks Manweb licence area, and a side bar on the right.

The side bar allows users to:

- Search for a specific area
- Configure the map to show EV Charging Demand (En-route and LSOA)
- Configure the map to show LV or HV Electricity Network Capacity

ConnectMore can be configured to show multiple map layers at the same time. Different layers can be removed from the map, or once configured, added back by selecting or deselecting the appropriate tick box below the 'Search map' panel.

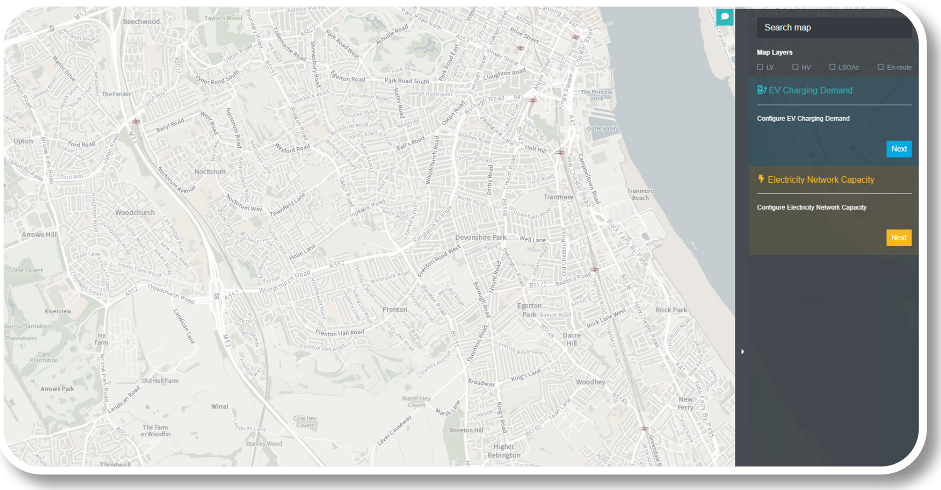

Figure 1: Initial screen of the ConnectMore Interactive Map showing the two map layers in the side bar.

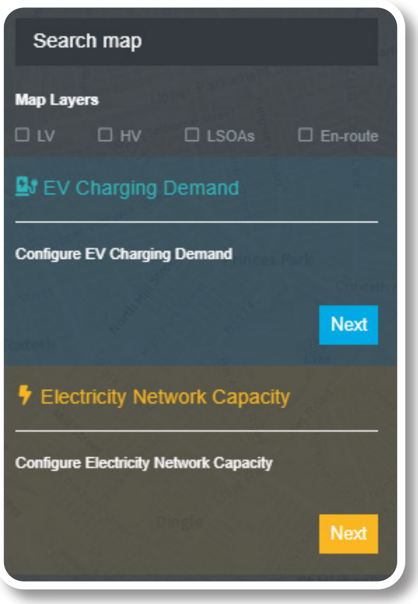

Figure 2: Opening Menu

The sidebar in ConnectMore allows users to configure the year, scenario and charging locations for the EV Charging Demand. Graphs are also displayed to show data for the charging location type, year and scenario which have been selected. The sidebar also allows users to select a desired connection size to check the available capacity in the electricity network, either at LV or HV. Further detailed information of network assets and other LSOA and En-route data is also displayed.

The user can configure ConnectMore to display just one of the layers of the tool, or to overlay them, depending on preference.

EV Charging Demand — Configuring The Heatmap – Wide Area Assessment

Public destination, public residential and private workplace EV charging demand data is presented per LSOA. To access this:

1. Click through the options to choose the charging location types, the year and scenario of interest. The map will update to show all the LSOA areas coloured based on the demand, or 'Daily Energy Consumption', from the Transport Model.
2. Click on an area to bring up the sidebar graphs.
3. The display can be configured to show Energy Demand (Low, Low-Mid, Mid-High and High) by selecting the appropriate tick boxes in the legend.
4. The search box in the top right can also be used to move the map to a chosen location. To clear the LSOAs' display and configurations, click on the "Clear map" button available in the legend panel, or return to the initial panel and deselect all selected charging locations.

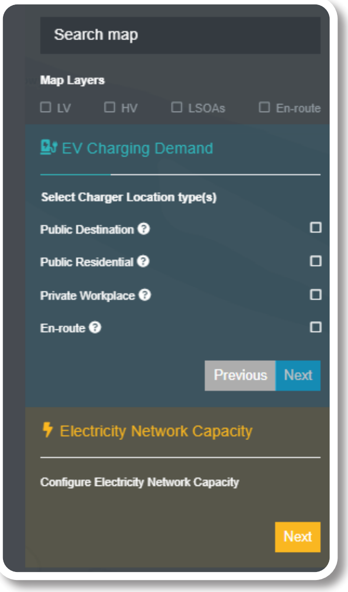

Figure 3: EV Charging Demand Menu

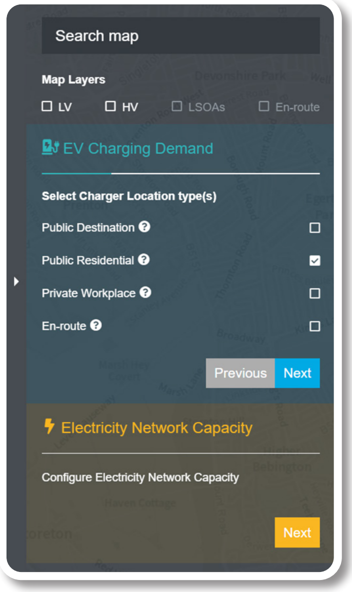

Figure 4: EV Charging Demand Charger Location Selection

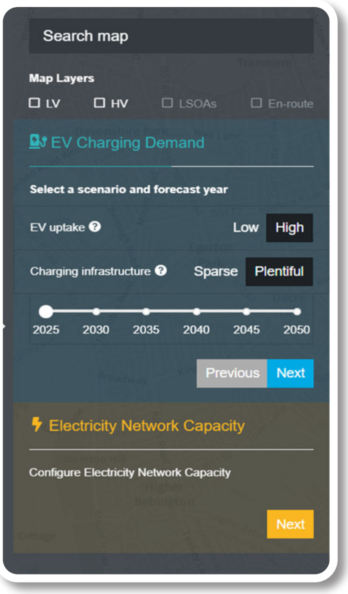

Figure 5: EV Charging Demand Scenario & Year Selection

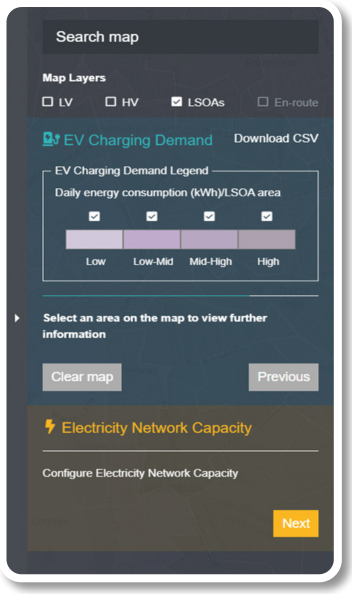

Figure 6: EV Charging Demand Charging Demand Legend

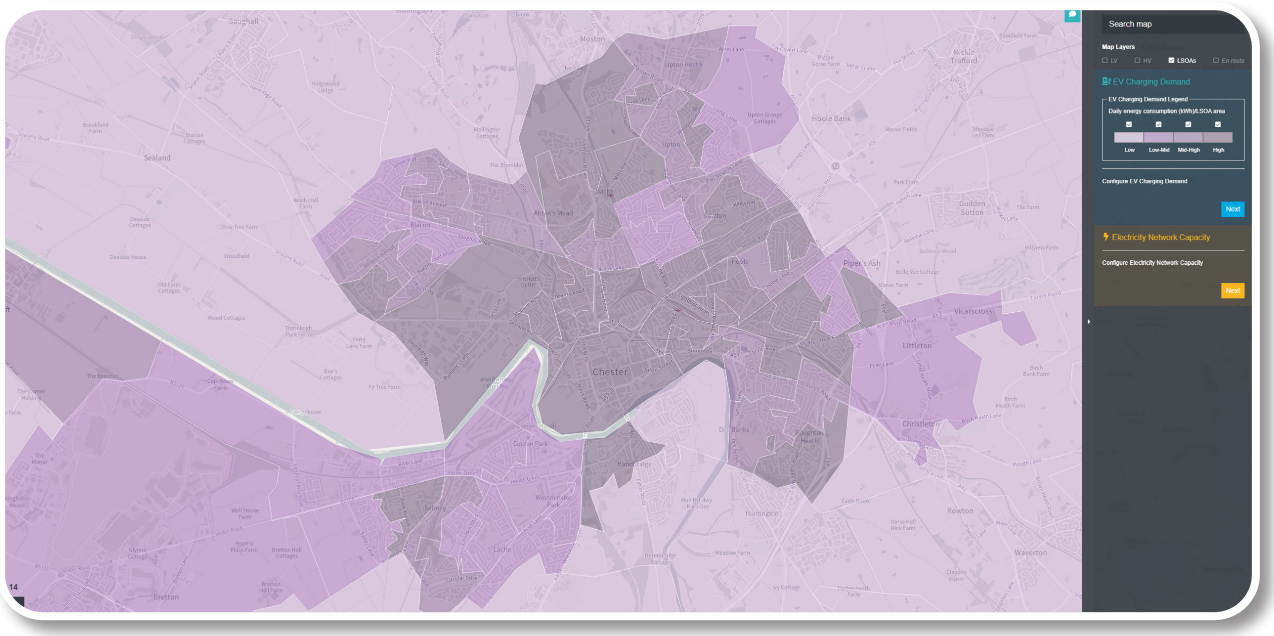

Figure 7:
EV Charging Demand - Charging Demand Heatmap

EV Charging Demand

Configuring the heatmap – En-route assessment

En-route EV charging demand data is presented per stretch of carriageway. To access this:

1. Click through the EV Charging Demand options to choose the 'En-route' charger location type, and select the year and scenario of interest. The map will update to show the road network, the line width of a stretch of carriageway indicative of the demand, or 'Daily Energy Consumption', from the Transport Model.
2. Click on a stretch of carriageway to bring up the sidebar graphs.
3. The display can be configured to show just carriageways in the Energy Demand categories (Very Low, Low, Medium, High and Very High) that the user is interested in researching by selecting the appropriate tick boxes in the legend.
4. The search box at the top right can also be used to move the map to a chosen location. To clear the En-route road network display and configurations, click on the "Clear map" button in the legend panel, or return to the initial panel and deselect all selected charging locations.

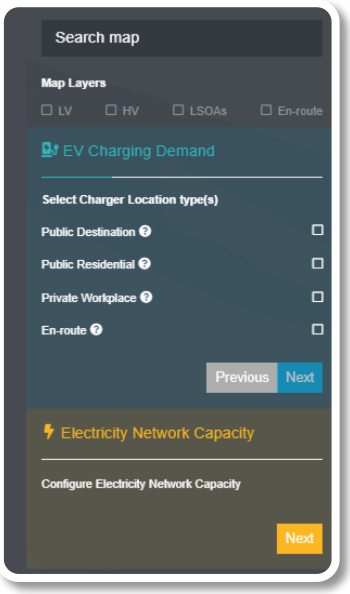

Figure 8:
EV Charging Demand Menu

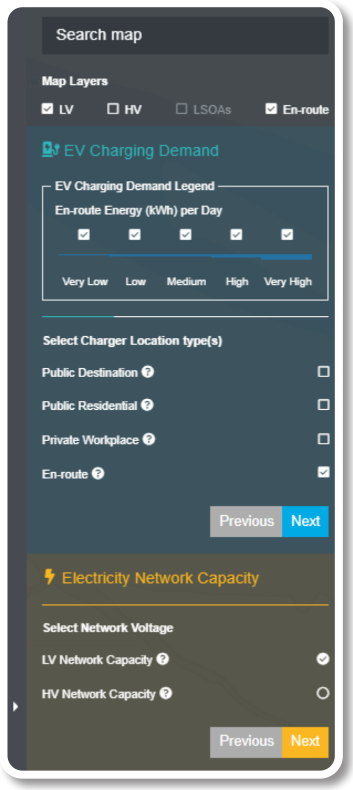

Figure 9:
En-route charging demand selection

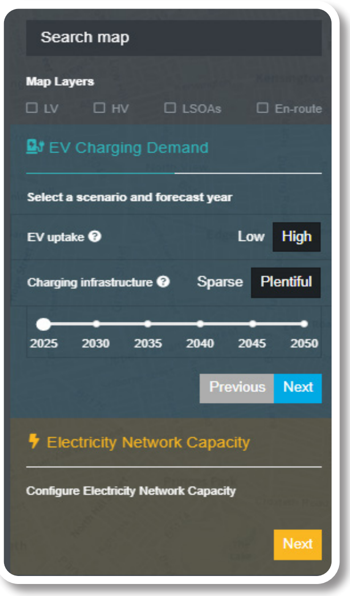

Figure 10:
En-route scenario and year selection

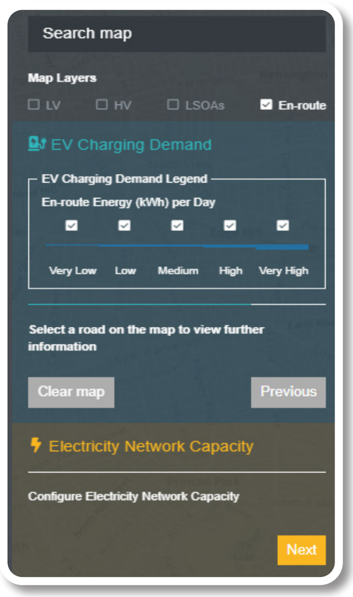

Figure 11:
En-route charging demand legend

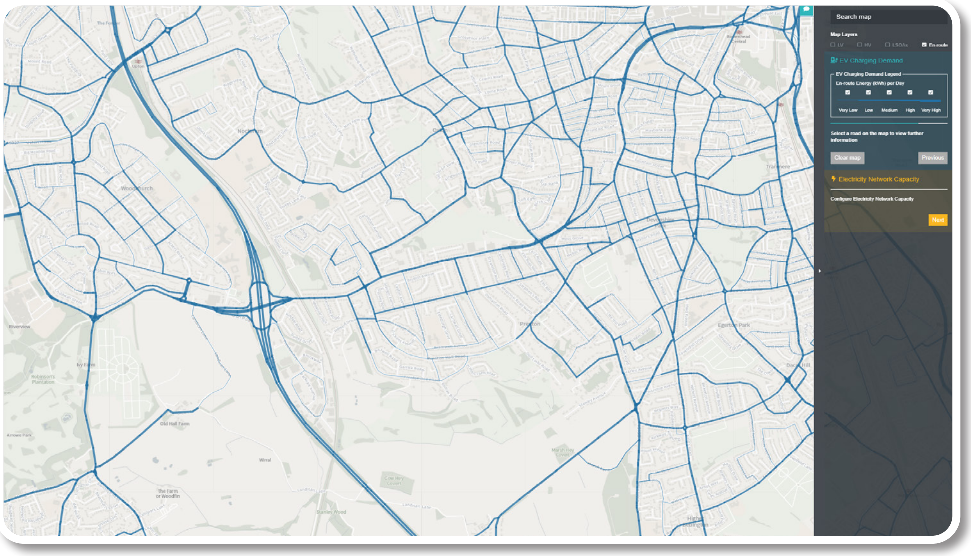

Figure 12: EV En-route charging demand heatmap

Electricity Network Capacity Configuring the heatmap

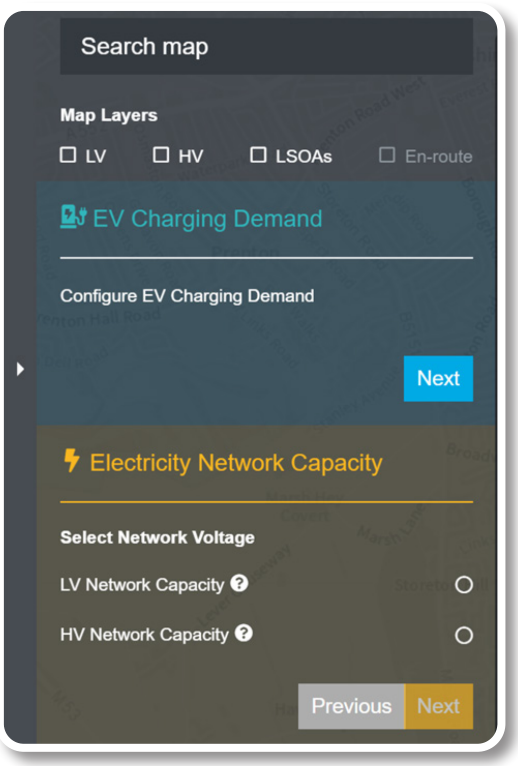

Figure 13: Electricity Network Capacity Menu

1. Simply click on the voltage level you are interested on and click next. (Select LV Network Capacity if you are connecting less than 150kVA, i.e. about seven fast chargers, or HV for 250 to 2500kVA).

2. Select the desired connection size (in kVA); the tool automatically defaults to 25kVA when LV is chosen, or 250kVA when HV is selected.

3. Click on a network asset, i.e. a red, amber, green conductor (line) or transformer (circle) for more information. To clear the Electricity Network Capacity heatmap, deselect the chosen option "LV network Capacity" or "HV Network Capacity" as presented in step 1 above or click on the "Clear heatmap" button.

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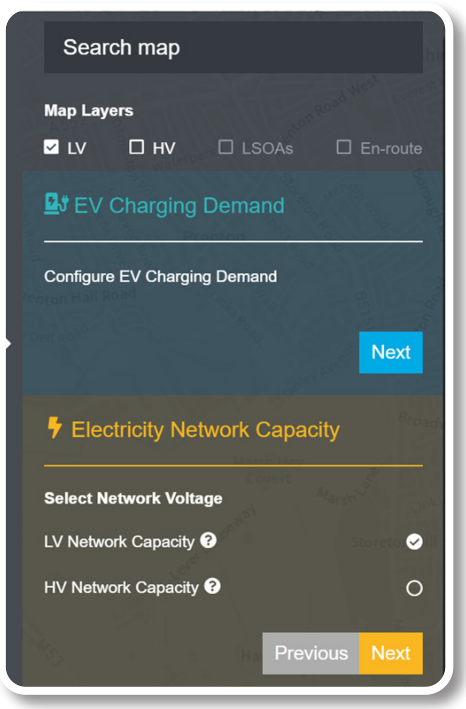

Figure 14: Electricity Network Capacity Select Network Voltage

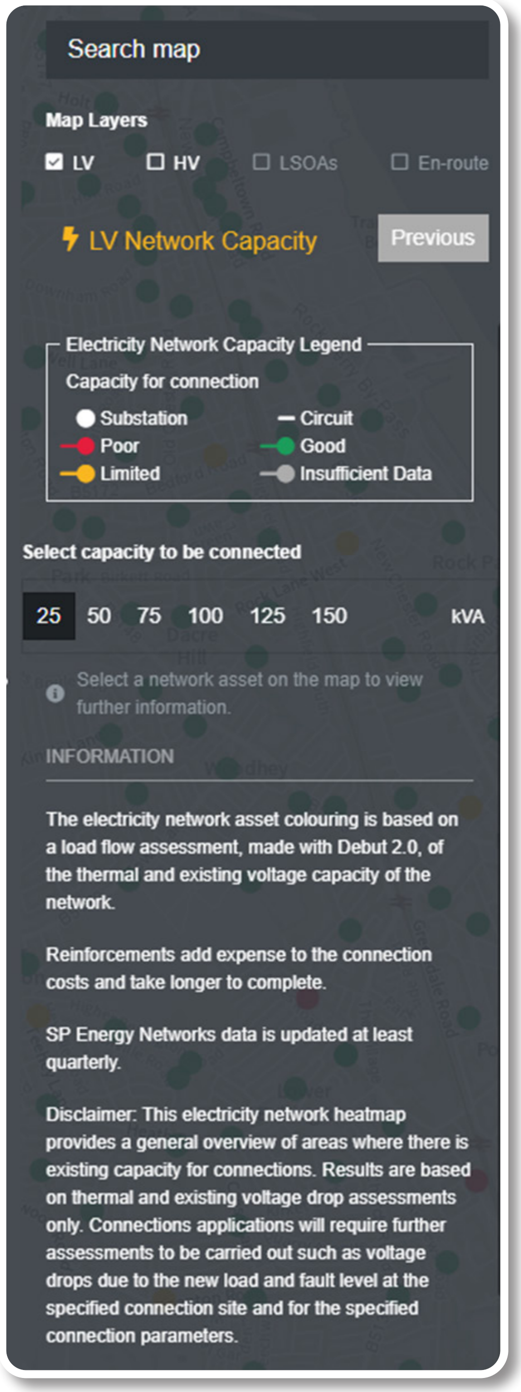

Figure 15: Electricity Network Capacity Select Capacity to be Connected

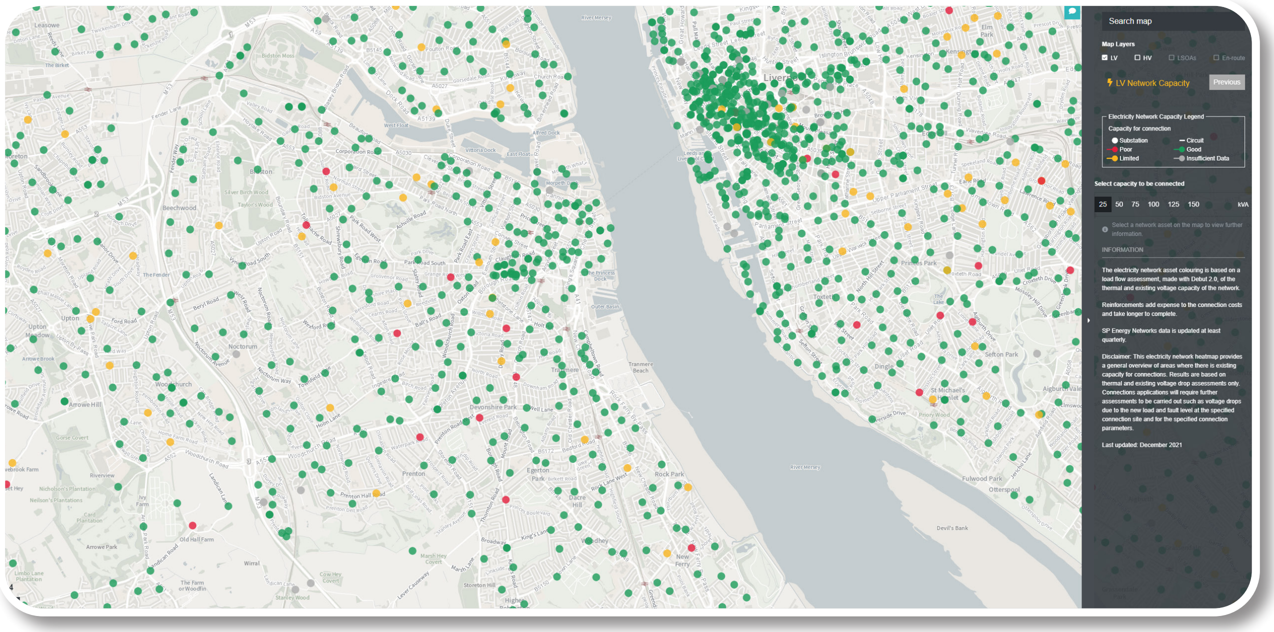

Figure 16:
Electricity Network Capacity – Transformers

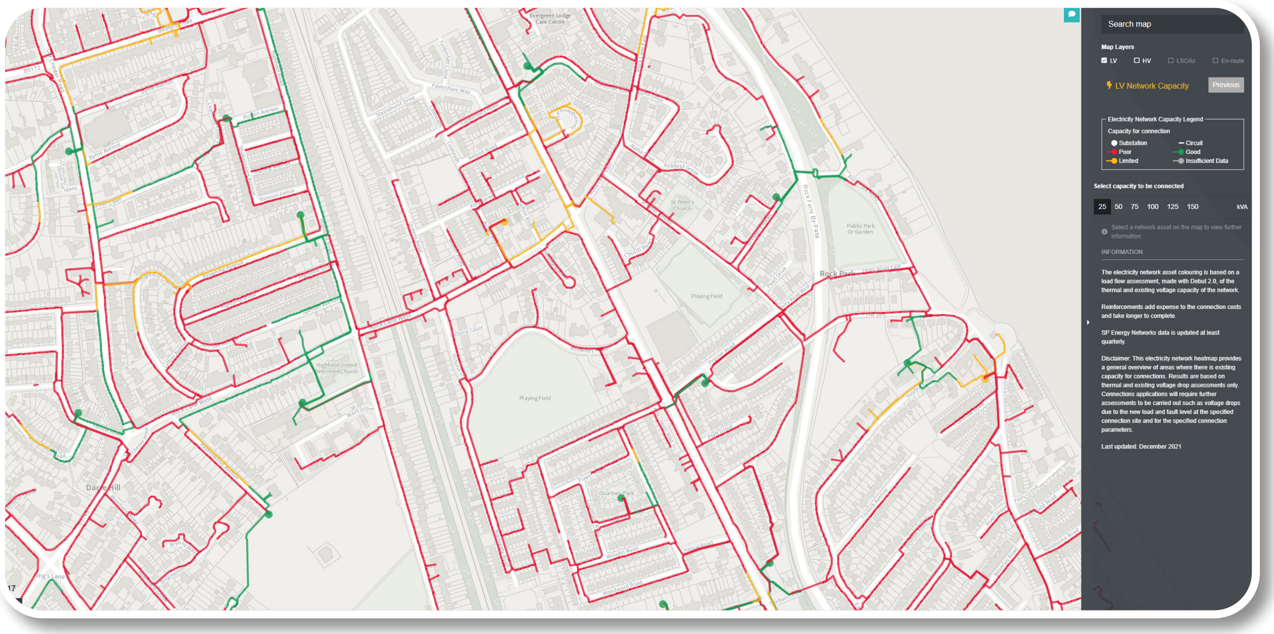

Figure 17:
Electricity Network Capacity – Transformers and Conductors

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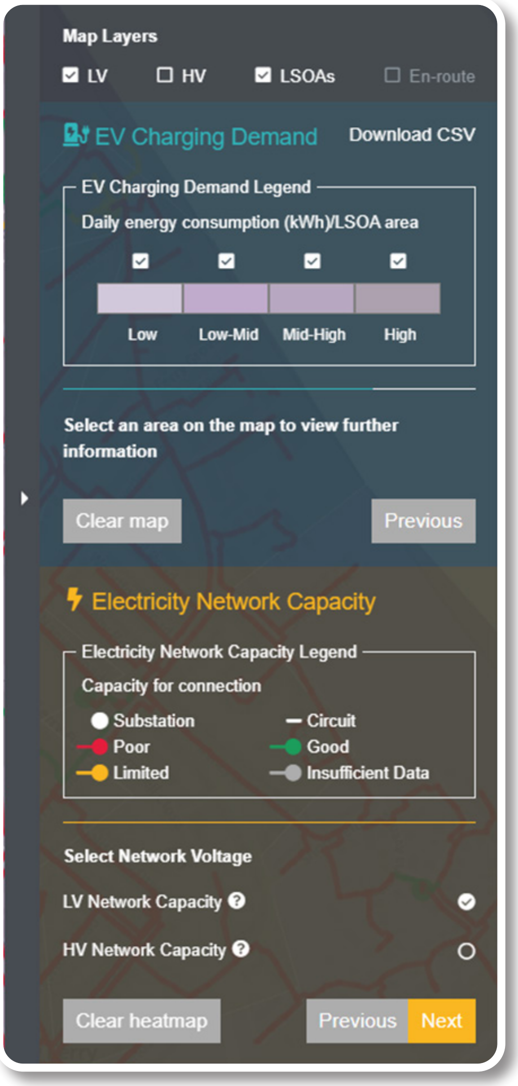

Figure 18: EV Charging Demand and Electricity Network Capacity Menu

Handy Hint!

- Click on the question mark item ? beside the text for more information on a particular field or term.
- Some configurations will display more graphs than others, if there is no EV charging demand for a location type there will be no graphs.

If you have any problems or query, click on the feedback button (the speech bubble icon at the top right-hand corner of the map) to submit your query.

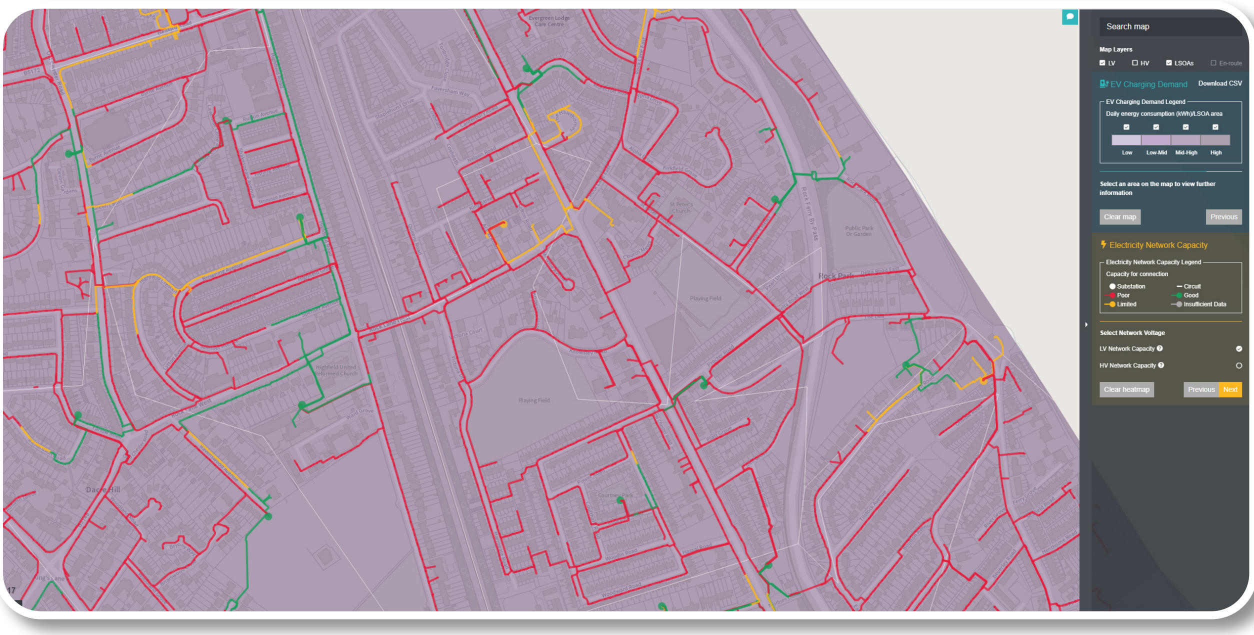

Figure 19:
EV Charging Demand and Electricity Network Capacity Heatmap

3 EV Charging Demand
Understanding The Sidebar Graphs

This 'How to' guide is reflective of ConnectMore at the time of writing. ConnectMore will be updated at regular intervals, and as such it is possible that some illustrations in this guide may not exactly match what you are seeing in the tool. Functionality will not be removed from ConnectMore although specific menu items may be moved within the tool in response to feedback received.

Small Area Assessment

When looking at the graphs remember that they relate to the LSOA as a whole – they do not give site specific figures.

The model predicts weekly totals – ConnectMore shows the daily average based on total for the week divided by 7.

The results vary considerably between scenarios in the early years (2025, 2030). In the later years, almost all vehicles are EVs regardless of the scenario, so demand is more consistent between scenarios.

Total Energy Demand

- This pie-chart displays the total demand for energy (kWh, units of energy) on a typical day.
- It shows all the charging locations (even if they are not all selected). This helps to give an indication of the type of demand in the area selected.
- The total energy demand could be used to inform a business case, as revenue from the chargers is likely to be tied to energy consumption by users (how many units of energy they take).
- In this example, demand is mostly for public destination and workplace charging. It's a town centre zone so residential demand is low.

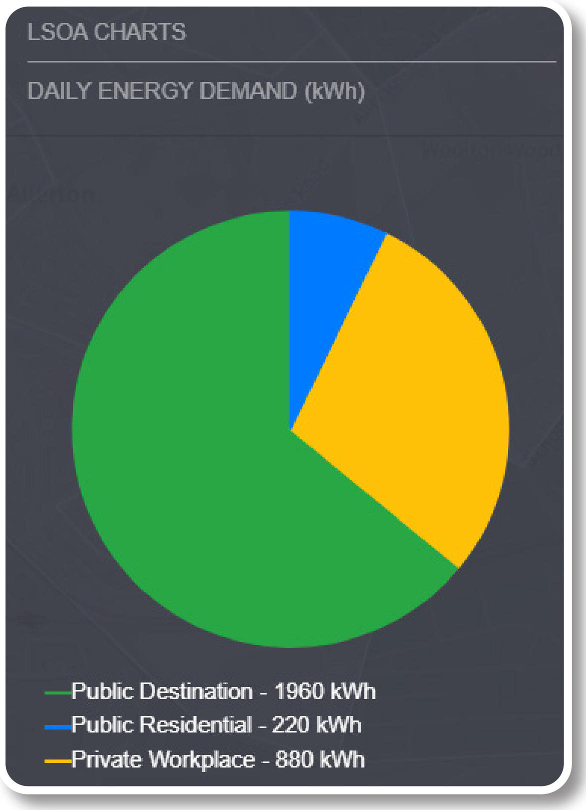

Figure 20:
Total Energy Demand

Dwell Time Distribution

- This graph shows how long cars are typically at a charger for in this zone. It shows the % of all events in each of four categories.
- The time is linked to the activity the person is doing – e.g. the dwell time for workplace charging is likely to be mostly 'Over 6 hours' (a 9 – 5 working day).
- A separate distribution is shown for each of the selected charging locations.
- This graph should not be considered in isolation; it should be considered alongside the energy demand per session (next graph).
- Short dwell time, combined with high energy requirements could mean there is a need for rapid chargers.

Figure 21:
Dwell Time Distribution

Energy (kWh) Per Charging Session Distribution

- This graph provides an estimate for the amount of energy that might be required per charging session. It shows the % of all events in each of five categories.
- A separate distribution is shown for each of the selected charging locations.
- The energy demand per session could be helpful in predicting the typical revenue earnt per charging session, if customers are going to be charged based on energy consumption (i.e. £ per kWh).
- If this graph is combined with the dwell time distribution it can be used to show the type of chargers required.
- High energy consumption (larger right-hand bars in this graph) combined with short dwell times mean a higher charge rate is needed to satisfy most customers.

Figure 22:
Energy (kWh) per Charging Session Distribution

Number Of Sessions A Day By Charging Speed

This graph shows:

- How many charging sessions per day are expected (the height of the column).
- The charging rates which could satisfy the requirements of dwell time and energy demand (the proportion of column in different colours).

This graph suggests how many charging sessions could be satisfied with the minimal power rate. It should be interpreted as cumulative, all the sessions that could be satisfied by a 3.5kW charger could also be satisfied by a 7kW charger. The tool/model does not make any assumption on what sort of charging speed people might prefer, simply what might be sufficient based on typical dwell times.

In this example, workplace demand could potentially be satisfied by 3.5kW chargers. 7kW chargers could meet the requirements of slightly more charging sessions. This suggests there is little need for speeds greater than 7kW for workplace charging. Public destination charging has a greater (although still small) need for higher charging speeds. In all these examples, it is assumed that drivers are parking at their destination to carry out a separate activity, i.e. they are not only visiting the site to charge (in which case higher power rates are more suitable).

The larger the orange/red bars, in proportion to the others, the greater the need for rapid charging.

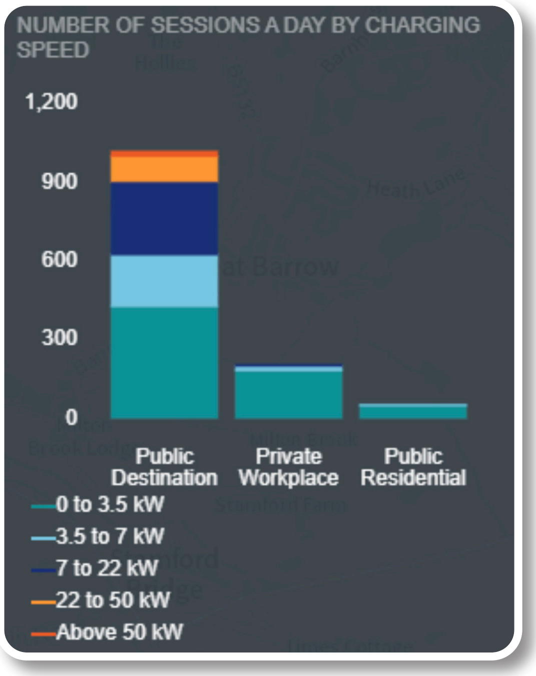

Figure 23: Number of Session a Day by Charging Speed

Charging Events Arrival Profile – All Selected Locations

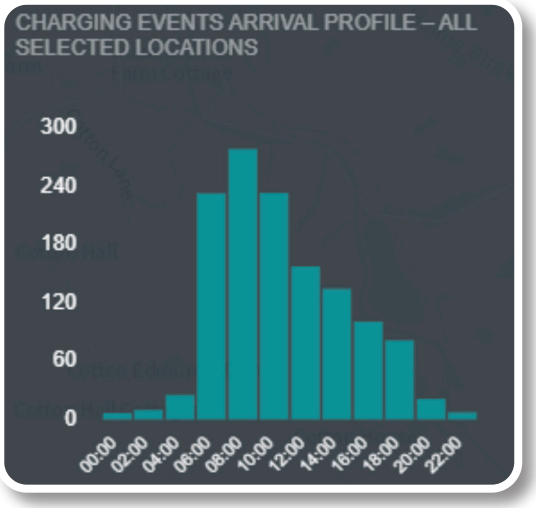

Figure 24:
Charging Events Arrival Profile

- This graph shows the number of charging events beginning in each hour of the day.
- Daily Energy Demand is highest in the time periods with the taller bars.
- It can be used to estimate the minimum number of chargepoints needed in the LSOA.
- The numbers can be used to estimate the maximum number of coincident charging sessions in the zone.
- There should be enough chargepoints to satisfy the maximum coincident sessions.
- This comes from the highest number of sessions in each hour, plus charge events just before/after the highest bar (particularly if the site has long dwell times).
- With this number it is best to add a margin of error as this daily chart is created from a weekly average, depending on the site this demand could all happen at the weekend or during the weekdays.

Daily Energy Demand (kWh) In Future Years

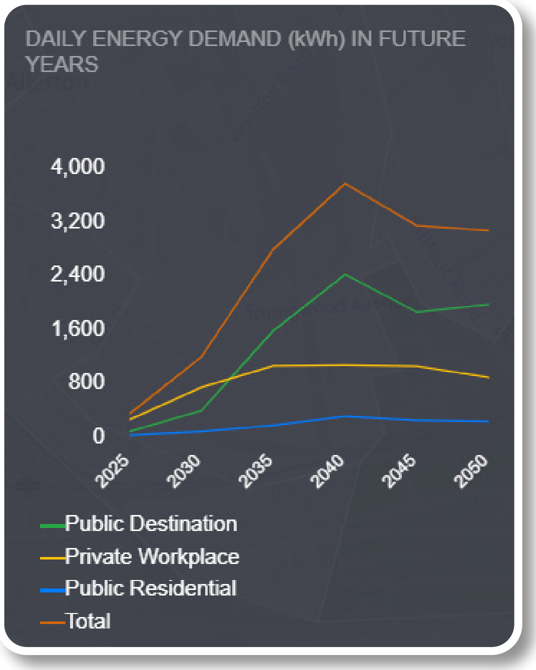

Figure 25:
Daily Energy Demand (kWh) in Future Years

- This graph shows the total daily energy demand in the LSOA for the different charging locations from 2025 to 2050.
- All charging locations are shown, regardless of which ones were selected for the heatmap
- This graph gives an indication of the trend in demand over the years in the model.
- Users may use it to identify a year to get more detailed data on (by changing the scenario selector to update the other sidebar graphs).
- It could also be used to help future proof development – e.g. so they develop infrastructure that meets 2030 needs as well as 2025.

Understanding the graphs - En-route Assessment

The graphs provided relate to short lengths of carriageway, identified by the road name and a Link Number unique to this transport model. Information is also displayed stating whether a length of road is one-way or bidirectional

The ConnectMore En-route graphs shows a daily average based on total for the week divided by seven.

The results vary considerably between scenarios in the early years (2025, 2030). In the later years, almost all vehicles are expected to be EVs, so demand is more consistent between scenarios.

Predicted Road Charts – Daily Cars In Future

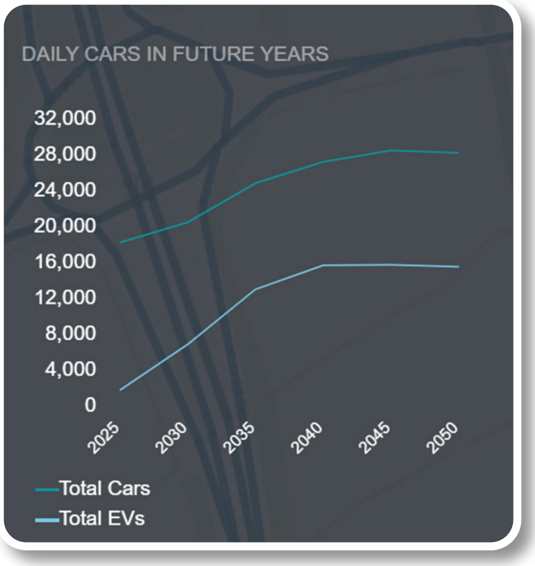

Figure 26:
Daily cars in Future Years

This graph shows the estimated total daily number of cars (EVs and non- EVs) and the number of EVs using the specific stretch of road from 2025 to 2050.

- This graph gives an indication of the trends in traffic for the stretch of carriageway over the years in the model.
- This data could also be used to help future proof development – e.g. so infrastructure is developed that meets 2030 needs as well as 2025.

Predicted Road Charts – Daily EVs Charging En-Route In Future Years

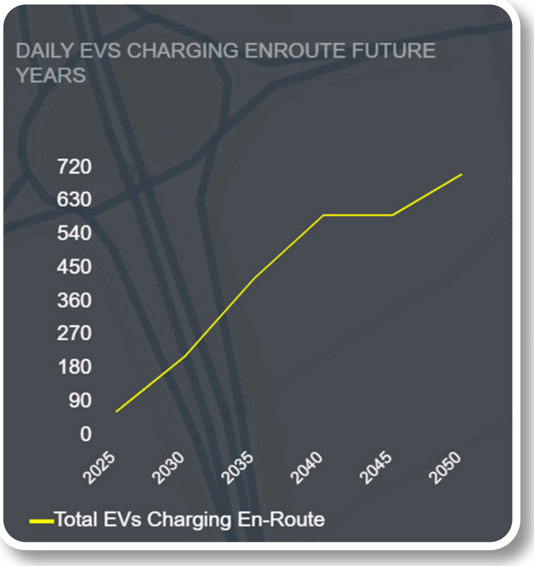

Figure 27:
Daily EVs Charging En-route

- This graph shows the estimated total number of EVs that travel along the specified link of road, and require En-route charging somewhere during their journey, each day from 2025 to 2050. This result can only be used on a per link basis, not summed across links.
- This graph gives an indication of the trend in demand for En-route charging among EVs that use a specific stretch of road over the years in the model.
- It could also be used to help future proof development – e.g. so infrastructure is developed that meets 2030 needs as well as 2025.

Daily Energy Demand (kWh) In Future Years

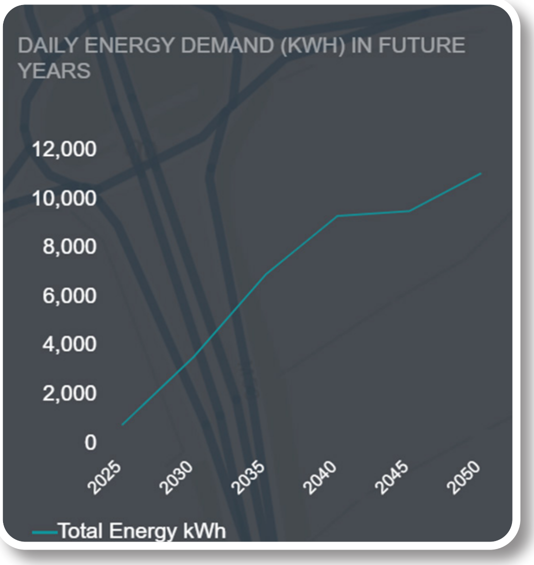

Figure 28:
Daily Energy Demand (kWh)

- This graph shows the estimated total energy required for En-route sessions somewhere during their journey by all EVs requiring a charge traveling along the specified link of road each day between 2025 to 2050. This result can only be used on a per link basis, not summed across links.
- This graph gives an indication of the trend in energy demand over the years featured in the model.
- It could also be used to help future proof development – e.g. so infrastructure is developed that meets 2030 needs as well as 2025.

4 EV Charging Demand

Data Download

The sidebar graphs show the data for one LSOA at a time. For most of the graphs they only display a single year and scenario. Some users may want to compare demand in different LSOAs or see how demand varies between years and scenarios. The data download function can help with this.

The data download produces a single, large CSV table. It contains the data for all 1,985 LSOA areas, in all the years and scenarios. This CSV could be used in Excel or other programs to analyse the data or plot more bespoke graphs.

The data download is accessed by clicking through the configuration options (see 'Configuring the Heatmap' above). The CSV download will contain all of the data, regardless of what selections are made in the configuration wizard.

This screen (Figure 29) will appear in the sidebar: Click on 'Download CSV' and the file called 'TransportData' will begin to download. The file is approximately 30 MB, so may take a little while to download depending on your connection speed.

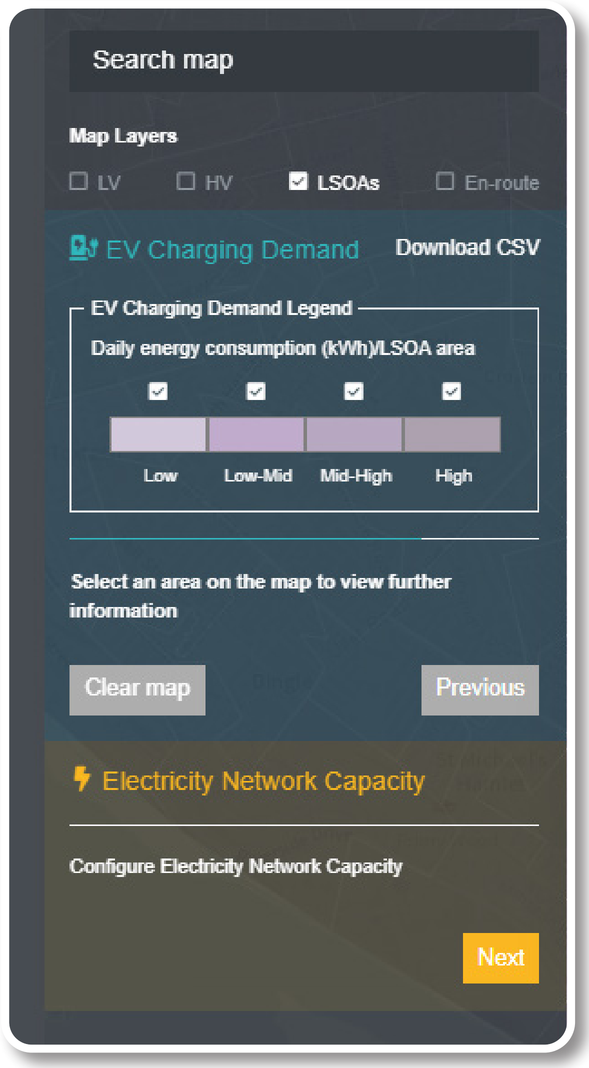

Figure 29:
CSV download functionality

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The tables below explain the fields contained in the download. The first few columns are:

Field Name	Explanation
Code	Official alphanumeric LSOA code/identifier – you can find the codes for LSOAs you are interested in by clicking them on the heatmap. The LSOA identifiers are shown under 'LSOA Information'.
Postcode	A postcode within the LSOA
Zone Number	The ID number for the LSOA
Scenario Name	The scenarios are named using the labels from the scenario selector – they vary the level of EV uptake, and the availability of public charging infrastructure.
Year	Modelling year. Data is available in five-year intervals from 2025 to 2050.
Total Daily Car Arrivals	The number of all cars (EVs and non-EVs) which arrive in the LSOA on a typical day.
Total Daily EV Arrivals	The number of EVs which arrive in the LSOA on a typical day.

The remaining columns present several data fields which are each disaggregated into the charging locations (Public Destination, Private Workplace, Public Residential – these are explained in the introduction section of this guide).

The fields are:

Field Name	Explanation
Charging Events per Day	The total number of charging events on a typical day for the given charging location.
Daily Energy Demand (kWh)	The total amount of energy (in kWh) that will be needed for charging on a typical day, for the given charging location.
% of Charge Events Dwell Time 0 to 1 Hours	The percentage of all the charging events where the dwell time (the time the vehicle is parked) is between 0 and 1 hours. The total of the dwell time distribution will equal 1 unless there are no charging events for this zone and charging location. In which case the value for all will be zero.
% of Charge Events Dwell Time 1 to 3 Hours	The percentage of all the charging events where the dwell time (the time the vehicle is parked) is between 1 and 3 hours.
% of Charge Events Dwell Time 3 to 6 Hours	The percentage of all the charging events where the dwell time (the time the vehicle is parked) is between 3 and 6 hours.
% of Charge Events Dwell Time Over 6 Hours	The percentage of all the charging events where the dwell time (the time the vehicle is parked) is over 6 hours.
% of Charge Events Energy Taken 0 to 5kWh	The percentage of all the charging events where the energy taken in the charging session is between 0 and 5kWh. The total of the energy taken distribution will equal 1 unless there are no charging events for this zone and charging location. In which case the value for all will be zero.
% of Charge Events Energy Taken 5 to 15kWh	The percentage of all the charging events where the energy taken in the charging session is between 5 and 15kWh.
% of Charge Events Energy Taken 15 to 30kWh	The percentage of all the charging events where the energy taken in the charging session is between 15 and 30kWh.
% of Charge Events Energy Taken 30 to 60kWh	The percentage of all the charging events where the energy taken in the charging session is between 30 and 60kWh.

continued...

Field Name	Explanation
% of Charge Events Energy Taken 60 to 100kWh	The percentage of all the charging events where the energy taken in the charging session is between 60 and 100kWh.
Sessions per Day Satisfied by a 3.5kW Charger	The number of charging events each day that based on the dwell time and energy requirements could be satisfied by a charger rated at 3.5kW. For example, if a charging session needed 9kWh and had a dwell time of 3 hours, a 3.5kW charger used for 3 hours would provide 10.5kWh – more than the required 9kWh. The total of all the values for the 'Sessions per Day Satisfied by...' field will equal the total number of charging sessions per day at the location.
Sessions per Day Satisfied by a 3.5 to 7kW Charger	The number of charging events each day that based on the dwell time and energy requirements could be satisfied by a charger rated between 3.5 and 7kW. For example, if a charging session needed 15kWh and had a dwell time of 3 hours, a 5kW charger used for 3 hours would provide 15kWh. In this example a 3.5kW charger would be too slow, but 7kW would be suitable, so this would be accounted for in the 3.5 to 7kW category. A charger rated at 7kW could satisfy the needs of the '3.5 to 7kW' and '3.5kW' categories.
Sessions per Day Satisfied by a 7 to 22kW Charger	The number of charging events each day that based on the dwell time and energy requirements could be satisfied by a charger rated between 7 and 22kW. For example, if a charging session needed 18kWh and had a dwell time of 1 hours, a 18kW charger used for 1 hours would provide 18kWh. In this example a 3.5kW or 7kW charger would be too slow, but 22kW would be suitable, so this would be accounted for in the 7 to 22kW category. It's important to consider that not all EVs are capable of charging at speeds greater than 7kW on an AC charger
Sessions per Day Satisfied by a 22 to 50kW Charger	The number of charging events each day that based on the dwell time and energy requirements could be satisfied by a charger rated between 22 and 50kW. For example, if a charging session needed 60kWh and had a dwell time of 2 hours, a 30kW charger used for 2 hours would provide 60kWh. In this example a 3.5kW, 7kW or 22kW charger would be too slow, but 50kW would be suitable, so this would be accounted for in the 22 to 50kW category.

continued...

Field Name	Explanation
Sessions per Day Satisfied by a 50 to 150kW Charger	The number of charging events each day that based on the dwell time and energy requirements could be satisfied by a charger rated between 50 and 150kW (a rapid or ultra-rapid charger). For example, if a charging session needed 50kWh and had a dwell time of half an hour, a 100kW charger used for 0.5 hours would provide 50kWh. In this example a 3.5kW, 7kW, 22kW or 50kW charger would be too slow, but 150kW would be suitable, so this would be accounted for in the 50 to 150kW category.
Sessions per Day Satisfied by a 150+ kW Charger	The number of charging events each day that based on the dwell time and energy requirements could only be satisfied by a charger rated at more than 150kW (an ultra-rapid charger). The data in the download is for destination charging only where dwell times are likely to be relatively long (because the driver carries out another activity while charging). This means that the demand for very high charging speeds is likely to be low. Demand for chargers (where the purpose of the stop is purely to charge, and the driver wants to charge as quickly as possible) will be shown separately in a future version of the ConnectMore Interactive Map.

5

EV Charging Demand

Other Considerations For Decision-Making

When using the graphs and data obtainable in the EV Charging Demand heatmap to assess demand for **public destination**, **public residential** or **private workplace** charging, it is important that the user considers the following points:

- The number of vehicles that can charge at that charge rate:
    - AC charging rate is determined by the rating of the vehicles on-board AC charger. Some of the most common BEV models take a maximum of 11kW on a 3-phase charger - 22kW chargers therefore are suitable for flexible connections.
- Hardware costs of charger - 50kW chargers are significantly more expensive, but there is little difference in charger cost for 22kW vs. 7kW.
- Price for charging (determined by chargepoint operator), faster charging is more expensive (£/kWh likely to be higher for rapid chargers). Are likely customers willing to pay a premium for rapid charging in a given location?
- Average, minimum, maximum battery sizes (50kWh to 100kWh depending on what year you're looking at) and States of Charge.

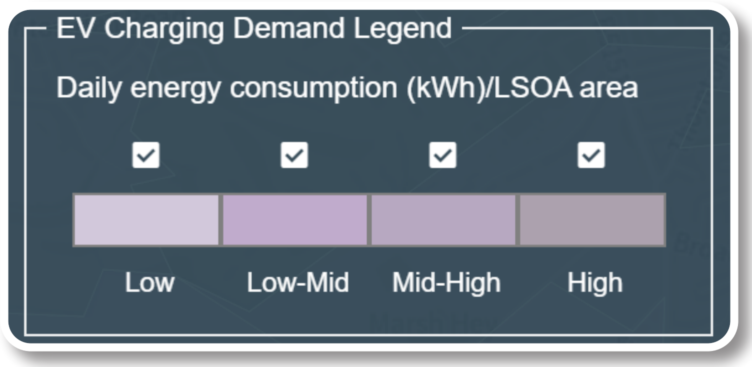

Figure 30:
EV Charging Demand Legend

The user should consider the points below when using the graphs and data obtainable from the En-route EV Charging Demand heatmap:

- The number of vehicles that can charge at a specified charge rate:
- AC charging

6 Electricity Network Capacity

Early Clues About Ease Of Connection

The Red, Amber or Green status of each electricity network asset (conductor and transformer) is based on the modelled capacity (loading or demand compared to rating of the asset). It is there to give an indication of the relative ease and cost of connection. You need to look at the nearest conductors (lines) and also the nearby transformers (circles) to where you would like to connect, to get an idea of the overall likely status of the network.

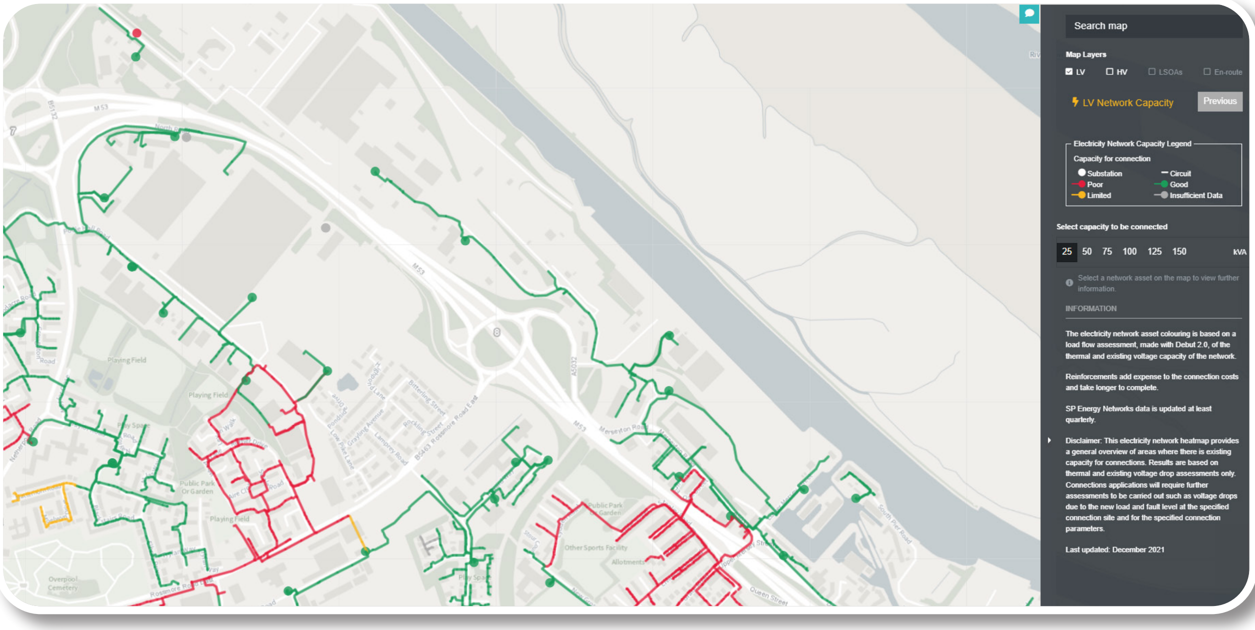

Figure 31:
LV Network Capacity heatmap

The Electricity Network Capacity legend is always visible when the heatmap is populated. Available capacity for connection is shown in green as opposed to amber and red, where limited or no spare capacity is available without reinforcement work. A very small amount of assets, for which network data is unavailable, are also shown in grey.

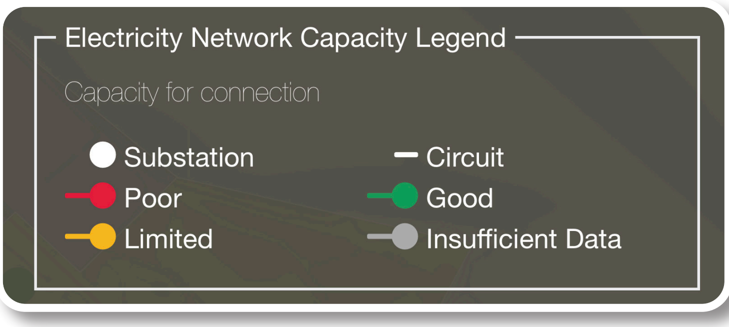

Figure 32:
Electricity Network Capacity Legend

Users can also test different connection sizes (in kVA) to get an indication of network capacities. This is especially of interest for those users that may be flexible with their connection size and location. It could be that a certain connection size (e.g., 100kVA) would require network reinforcement at a specific location but, however, a slightly lower connection size (e.g., 75kVA) would show good capacity for connection. In this example, this would indicate that connections around and above 100kVA would be more expensive and likely require network reinforcement, whereas connections below and around 75kVA would be easier and more economical.

The heatmaps presented in the Electricity Network Capacity (LV and HV) provide an indication of the ease and cost of the connection based on electrical assessments of the network. If your connection crosses different land parcels and requires road closures or diversions, etc., the associated wayleaves and other related costs are not accounted for in the Red, Amber or Green status and are likely to cause additional delays and expenses.

A further development of the ConnectMore tool, the cost estimator, will consider reinstatement costs and will give a good indication of the cost of the connection which will be confirmed at the 'formal quote' stage should you wish to proceed.

7 Next Steps

The features available via the ConnectMore tool will continue to be developed throughout the Charge project. More information about this timeline can be found at www.chargeproject.co.uk.

8 Useful Definitions

AC	Alternating Current
BEV	Battery Electric Vehicle - a pure EV without a secondary source of propulsion
CSV	Comma Separated Values – it is a way to provide data that is used for files that contain lots of values that is smaller (file size) than excel but can be opened by excel – if you open it without converting it 1st you just see a string of numbers separated by a commas. Essentially to provide this amount of data in an excel file, the file would be too big
EV	Electric Vehicle
HV	High Voltage
kVA	KiloVolt ampere - total amount of power used in a system
kW	KiloWatt - unit of actual power
kWh	KiloWatt hours
LSOA	Lower Super Output Area
LV	Low Voltage
Manweb	Electricity distribution licence area covering Merseyside, Cheshire, North Shropshire, North & Mid Wales
State of Charge	The level of charge of an electric battery relative to its capacity
V	Volts

ea technology

PTV GROUP the mind of movement

smarter grid solutions

SP ENERGY NETWORKS