ST HELENS BOROUGH COUNCIL

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE STRATEGY (2023 – 2027)

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St Helens Electric Vehicle Charging Infrastructure Strategy (2023-2027)

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FOREWORD

In July 2019, St Helens Council voted unanimously to declare a Climate Emergency. Road emissions comprise over 90% of transport emissions and the majority of these road-based emissions arise from private cars, so making the switch to electric vehicles is going to be an essential part of our own journey towards net-zero. Though given the scale of the challenge to decarbonise transport; walking, cycling and zero emission public transport must be supported and encouraged as the mode of choice where possible, with remaining vehicles switching to zero emission vehicles.

The UK is facing a climate emergency and is committed to reducing greenhouse gas emissions to net zero by 2050 in response to recommendations from the Committee on Climate Change. The UK Government's initial vision as set out in "The Road to Zero Strategy" published in July 2018 is that the entire UK road fleet should be effectively decarbonised by 2050. To achieve this the sale of new petrol, diesel and hybrid cars and vans will now be banned from 2035, with the expectation that new HGVs will be zero emission by 2040.

Meeting this ambition will require a step change in the provision of electric vehicle charging infrastructure (EVCI). The Council needs to start preparing for this transition and although it is difficult to say how the technology will progress over the next 5 years, it is highly likely that we will need a network of charging infrastructure across the borough, so that our businesses and residents, particularly those without access to off road parking, are not disadvantaged, and the area remains accessible and attractive to visitors.

By accelerating the switch away from fossil fuelled vehicles, we have an exciting opportunity to drive improvements in air quality that will benefit the health and economy of the borough. Future technologies and automation will radically change the way we travel. Our EVCI strategy seeks to tackle some of the current barriers slowing down the transition to EV usage. Of course, we can't make this happen by ourselves and we are working in partnership with the wider Liverpool City Region and the private sector to deliver our ambition across the borough.

Achieving the ambition in this strategy will need us all to act, and as an example the Council has already taken steps by continuing to transition our own fleet (including encouraging the transition of our grey fleet) to zero emission, and our wider commitments on climate change.

I look forward to working alongside our future EVCI suppliers, partners, and communities to implement this EVCI strategy alongside other measures set out in our climate response plan.

Councillor Seve Gomez-Aspron MBE
Deputy Leader and
Cabinet Member for Strategic Transport

Councillor Andy Bowden
Cabinet Member for Environmental Services
and Climate Change

1. Introduction

1.1 The Role of Electric Vehicle Charging Infrastructure

In July 2019, St Helens Borough Council voted unanimously to declare a Climate Emergency. The Council agreed:

- that climate change presents a threat to our way of life
- there is a need to act in-line with worldwide agreements on climate change and the best available evidence, and to work with partners and organisations across the borough to achieve 'net zero' by 2040
- the Council must play its part by demonstrating leadership on this issue

The St Helens Climate Emergency Response Plan sets out the Council's ambitious strategy for supporting the borough to achieve the highly challenging target of carbon neutrality ("net zero") by 2040.

Transport produced 24% of the UK's total emissions in 2020 and remains the largest emitting sector in the UK (source BEIS, 2022). Unlike other sectors, emissions from transport have remained relatively static over the last thirty years (see Figure 1.1/1 below).

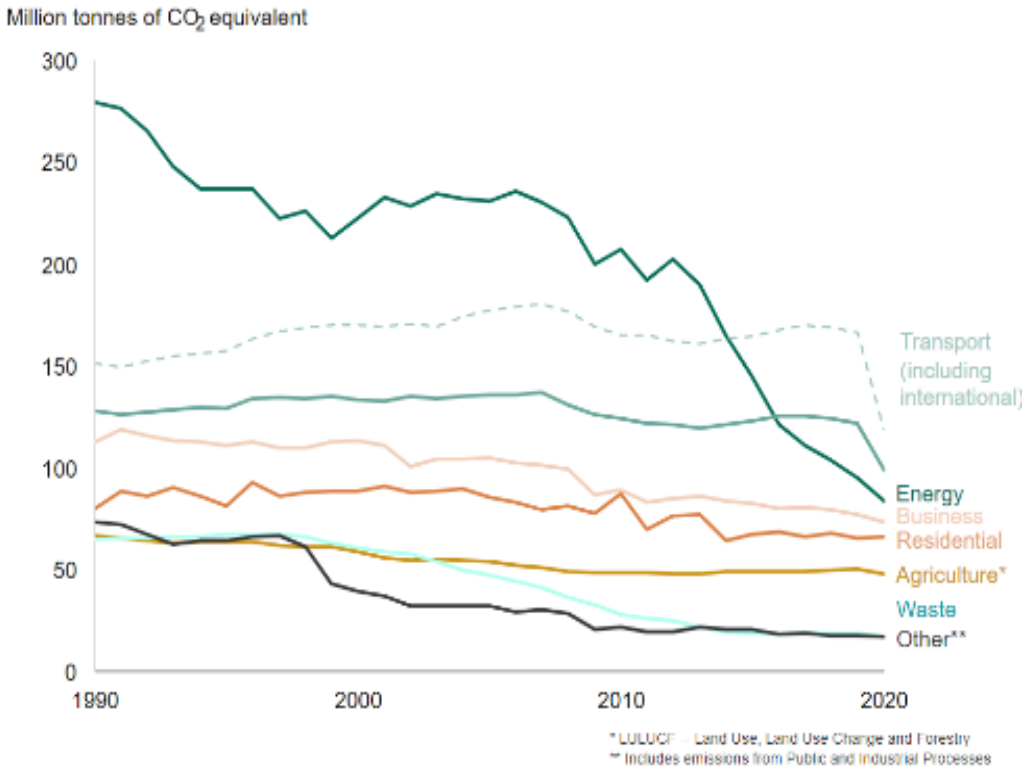


Figure 1.1/1: Greenhouse gas emissions by sector (2020) (Source: BEIS, 2022)

Road emissions comprise over 90% of transport emissions and the majority of these road-based emissions arise from private cars (as shown in Figure 1.1/2). Improvements in the level of climate change gases that cars emit has been

largely offset by an increased number of journeys, higher car ownership and a tendency towards larger vehicles.

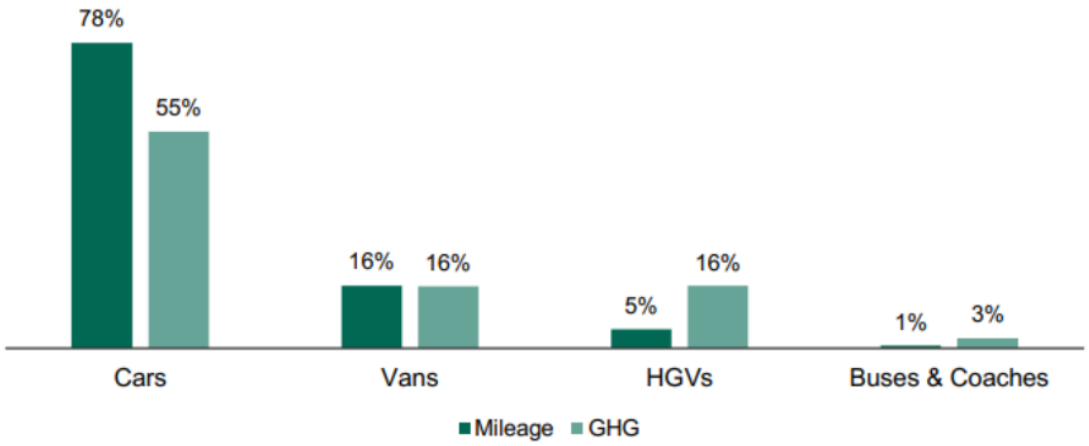


Figure 1.1/2: Emissions and Mileage for Cars, Vans, HGVs, and Buses (Source: DfT)

Car use in St Helens Borough is high. In 2019, before the COVID-19 pandemic, over 0.875 billion total vehicle miles were travelled in the borough, of which 0.667 billion miles travelled in the borough were by cars and taxis. Whilst vehicle miles did fall during the pandemic, they had been continually increasing from 1993 until 2016, where a light levelling off and continued minor reduction year on year began to occur until the extraordinary circumstances of the pandemic created a sharp fall. Figure 1.1/3 shows that vehicle miles started to climb again in 2021 and will need monitoring over the next few years to understand behaviours in a post pandemic world.

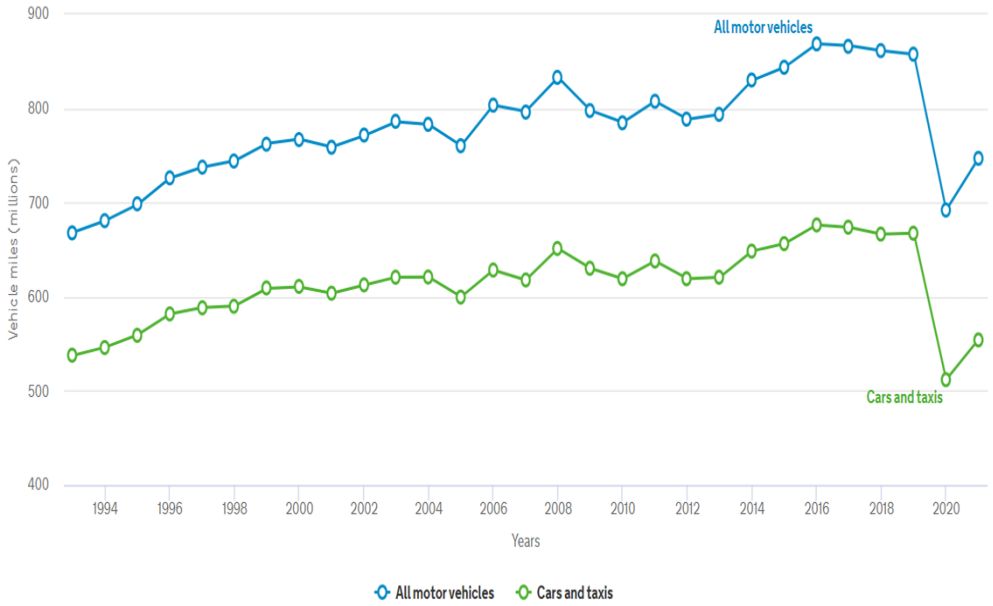


Figure 1.1/3: Annual traffic by vehicle type in St Helens (1993 to 2021) (Source: DfT Road traffic statistics - St. Helens)

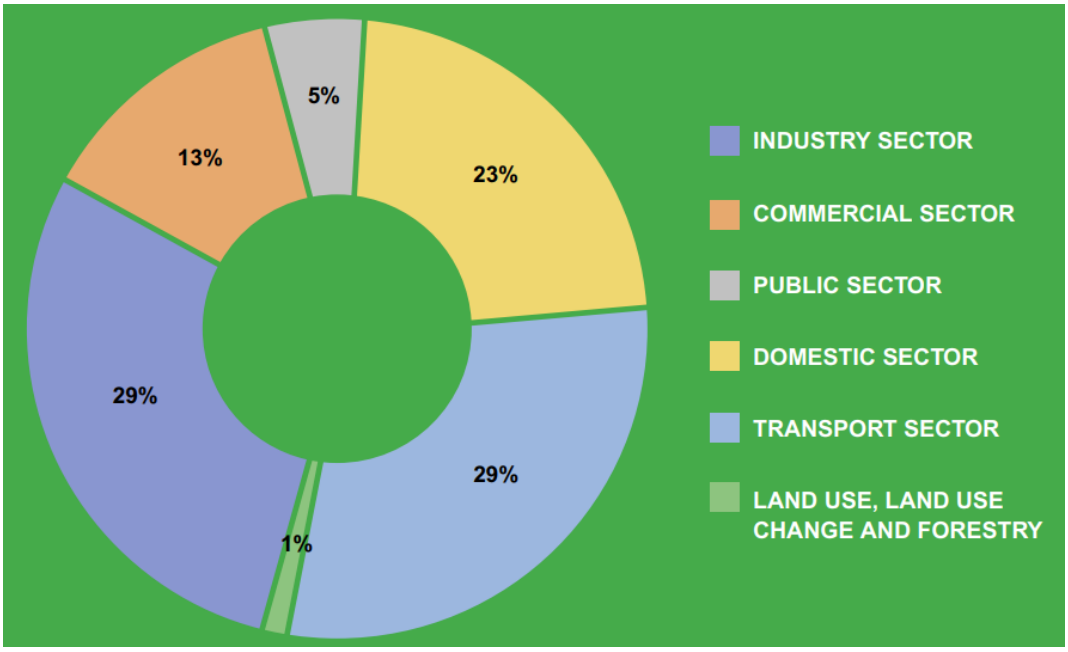


Figure 1.1/4: CO2 emissions by sector in St Helens (Source: St Helens Climate Response Plan)

The transport sector is the joint leading emitting sector within St Helens Borough, accounting for 29% of the borough's total emissions. Road transport emissions generate significant issues for air quality, which in turn significantly impacts on health. The St Helens Borough Council Climate Response Plan sets a series of commitments, including exploring the demand and infrastructure needed to roll out EV charging across the borough to support transport decarbonisation. It is important to note that EVs still generate particulate matter emissions through braking and tyre wear; therefore, true zero mission modes of transport are walking and cycling and should be prioritised as such. Where vehicles must be used these should be zero emission vehicles.

The Liverpool City Region's Active Travel Prospectus (2021) states that the vast majority of journeys made every day within the Liverpool City Region are short, and perfectly suited for low-carbon modes. 66% of all trips are less than 5km in length, yet half are undertaken by car.

A Net Zero Carbon Borough means making it easier, quicker, cheaper, and safer to move around by low-carbon modes. It also requires more of us to choose to make those everyday local trips on foot, by bike or on public transport. This St Helens Electric Vehicle Charging Infrastructure Strategy sets out the Council's approach to supporting the transition to electric vehicles within this framework. Comprehensive, accessible, and efficient charging infrastructure is essential in enabling the rapid adoption of electric vehicles and this strategy sets out the policies and plans to realise this goal.

While the Council has an important role in driving and enabling change, achieving a Net Zero Carbon Borough is not something it can deliver in isolation. As such, this strategy also sets out how the Council will work with partners, businesses, and residents to support the transition to zero emission transport.

1.2 Terminology

In this document the term Electric Vehicle (EV) is used to refer to all 'plug-in' vehicles, including pure Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEV), and Extended Range Electric Vehicles (EREVs), as all require charging to travel using their zero emissions capabilities. 'EV' here does not include hybrid vehicles without a plug.

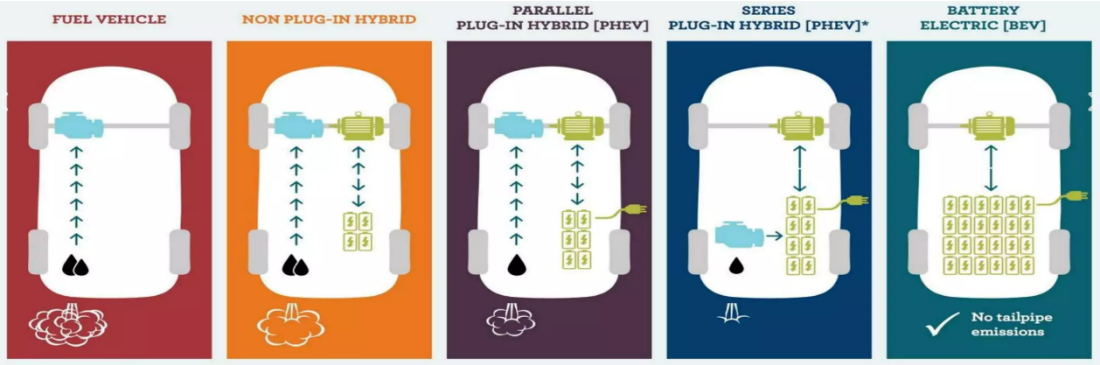


Figure 1.2/1: Vehicle Types (Source: Better NZ Trust)

In addition, in this strategy an EV charging unit is referred to as an EV charger. EV chargers may have one or more sockets which allow connection to an EV to charge. These sockets are referred to in this document as EV charge points. The EV charger, charge points and any ancillary infrastructure (including the parking/charging bay itself) are together termed Electric Vehicle Charging Infrastructure (EVCI).

1.3 Strategy Scope

Through this Electric Vehicle Charging Infrastructure Strategy, the following are identified:

- The existing national, regional, and local policy framework guiding the roll-out of EVCI.
- Opportunities and challenges for EVCI in St Helens.
- Predictions of the likely uptake of EVs across St Helens and consequent geospatial impact on demand for EVCI in the borough.
- A framework of EVCI options for residents without access to private off-road parking.
- Opportunities to further support the decarbonisation of road transport and manage the impact of EV charging on the grid, including how the Council will work with landowners and businesses to further increase EV charging provision.
- How we will promote public EV charging infrastructure and promote uptake of EVs.

This strategy will inform operational policies and processes, to ensure that EVCI is inclusive, accessible, and convenient. This strategy covers the administrative area of St Helens Borough Council. It focusses on EV charging for cars, car-

based vans, and taxis (hackney carriages and private hire vehicles) for four user groups with differing needs for EV charging:

- St Helens residents.
- Local businesses, their employees, taxis, van-based logistics operations and car clubs.
- Council fleet vehicles.
- Visitors to St Helens.

The strategy does not cover EV charging for buses or large goods and service vehicles where technological solutions are still in development and charging requirements are uncertain. Similarly, charging for e-bikes, electric motorbikes and micro-mobility solutions are not included, but may be considered in a future revision.

1.4 Delivering the Strategy

This strategy includes many measures that will require dedicated resourcing, funding, and the collaboration of external partners to complete delivery. While Council budgets are uncertain and under unprecedented constraint, the Council will use its best endeavours to deliver on the aspirational commitments made in this document, using existing project funding, future Government funding opportunities (such as the Local Electric Vehicle Infrastructure – LEVI fund) and partnerships with the private sector that deliver an effective and inclusive EVCI network for St Helens Borough with minimal impact on existing Council budgets. All timescales are indicative targets only and will often be dependent on external funding and delivery timelines outside the horizon of this strategy.

2. Policy Context

2.1 European Union (EU) Policy

Although the United Kingdom (UK) has left the EU, there are many vehicle manufacturers based in Europe that are governed by EU policy and regulations. Models made in the UK are sold across Europe and therefore the requirements of the EU in terms of vehicle specifications and decarbonisation indirectly affect the UK market.

The EU's Directive for Alternative Fuels Infrastructure requires governments to adopt national policy frameworks for EV infrastructure roll-out. The UK Government has also committed to achieving at least these goals following its departure from the EU. Grammes of Carbon Dioxide (CO2) per kilometre (km) driven is the primary measure used by the EU to enforce improvements in new car and van fleet emissions, and vehicle manufacturers can be fined based on their average new car sales emissions. The current maximum threshold for new car sales is 95g CO2/ km. The EU recently announced even tighter targets for new cars and vans to be achieved by 2030 through its Clean Mobility package. The UK Government has also committed to achieving these goals as a minimum following the departure from the EU.

2.2 National

As of September 2023, UK Government has announced a policy shift in the pathway to zero emission vehicles sales. The sale of new petrol, diesel and hybrid cars and vans will now be banned by 2035 from which point only new zero emission cars and vans can be sold. The pathway is underpinned by a Zero Emission Vehicle mandate that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035 (Government sets out path to zero emission vehicles by 2035 - GOV.UK (www.gov.uk)).

During November 2020, the UK Government made announcements on new domestic (UK) policy with reference to the climate change challenge. These announcements also fed into the UK's hosting of the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow in November 2021. For the first time, Ministers, and representatives from some of the world's largest and most progressive car markets have come together to form a new Zero Emission Vehicle Transition Council. A joint statement was released stating that road emissions currently account for over 10% of global greenhouse gas emissions, and emissions are continuing to rise; therefore, the rapid transition to zero emission vehicles is vital to meeting the goals of the climate Paris Agreement. The globe is currently not on track, and the pace of transition needs to dramatically increase. In addition to greenhouse gas emission reductions, this transition will generate job and growth opportunities, improve air quality, improve public health, boost energy security, and assist in balancing electricity grids during the transition to clean power.

The Climate Change Commission's (CCC's) Sixth Carbon Budget (2020) sets the limit on allowed UK territorial greenhouse gas emissions over the period 2033 to 2037. Under the Balanced Net Zero Pathway, options to reduce emissions, including take-up of zero emission technologies and reduction in travel demand, combine to reduce surface transport emissions by around 70% by 2035 (Figure 3.2/1).

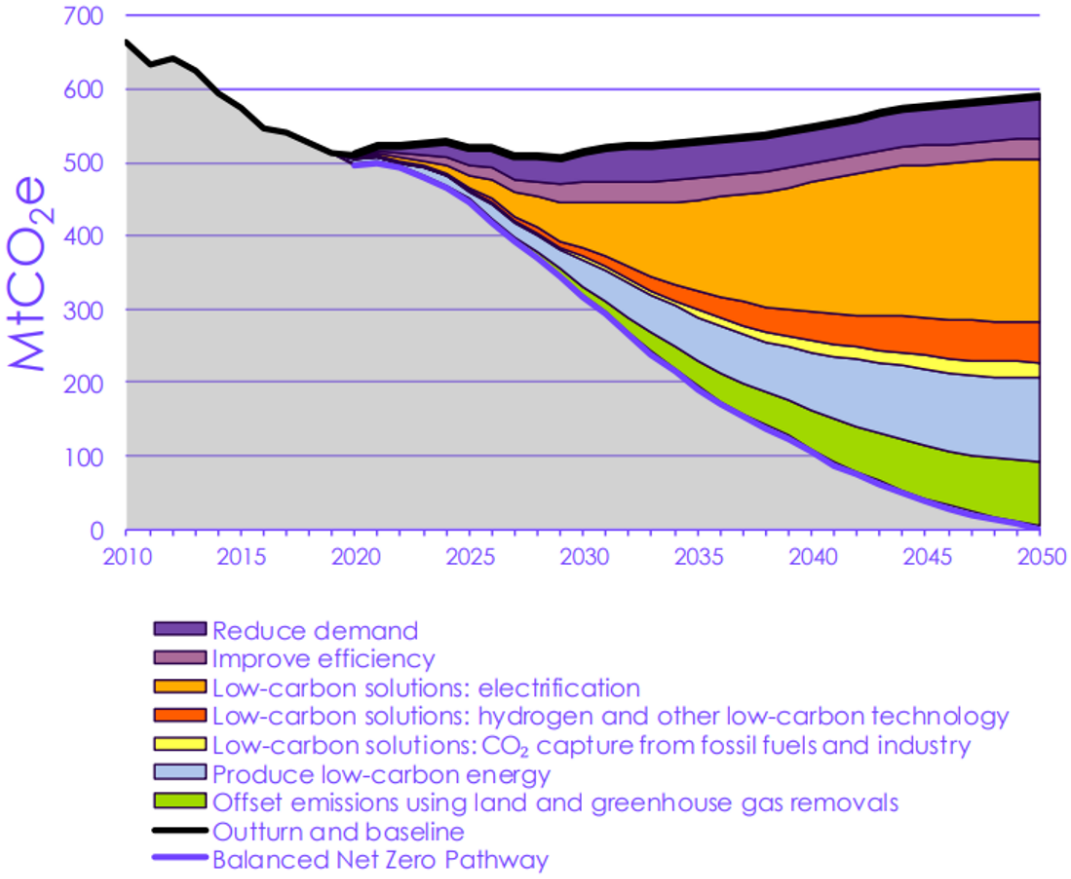


Figure 3.2/1: Sixth Carbon Budget – Types of Abatement in the Balanced Net Zero Pathway (Source: Committee on Climate Change, 2020)

The Department for Transport's Transport Decarbonisation Plan (2021) recognises that transport is the largest contributor to UK domestic greenhouse gas emissions, and that most of these emissions come from passenger cars. It notes that domestic greenhouse gas emissions from transport have been broadly flat over the last 30 years, even as those of other sectors have declined. In fact, the UK's transport sector has made the least contribution to a reduction in emissions to date (~5%[1]), making it a prime target for future regulation. It notes that a transition to zero emission cars and lorries alone will not be sufficient to meet national climate goals, nor address other harms such as congestion or road danger, and that increasing car occupancy and the share of trips taken by public transport, cycling and walking is therefore also critical.

The UK Net Zero Strategy: Build Back Greener (2021) echoes this message, and states that future Local Transport Plans produced by local authorities will need to demonstrate how local areas will deliver quantifiable carbon reductions in line with net zero targets. This confirms the approach set out in the Government's Ten Point Plan for a Green Industrial Revolution (2020)

The National Electric Vehicle Taking Charge: The UK Electric Vehicle Infrastructure Strategy (2022) sets out a plan to remove charging infrastructure

[1] Transport and Environment Statistics: 2021 Annual Report (publishing.service.gov.uk)

as both a perceived and a real barrier to the adoption of electric vehicles. It recognises that predictions of the future mix and number of charge points is uncertain but aims to make EV charging cheaper and more convenient than refuelling at a petrol station. It states that there should be around 300,000 public charge points as a minimum in the UK by 2030 "but there could potentially be more than double that number". It sets out plans for a £950m Rapid Charging Fund to support the rollout of at least 6,000 across England's motorways and major A-roads by 2035, and a further £500m to support local authorities to plan and deliver public EVCI.

Following a consultation in Summer 2019, the Government has made changes to the English Building Regulations regarding EV charging provision in new developments, setting a new national minimum acceptable standard for new developments in Approved Document S. The Approved Document took effect on 15 June 2022 and applies to any applications submitted since that date, or before if work starts on site before 15 June 2023.

In 2021, the Office of Zero Emission Vehicles (OZEV) consulted on the prospect of providing government with the power to mandate Local Authorities, Charge Point Operators, or Landowners to have a statutory obligation to plan and provide infrastructure and improve the experience for EVCI consumers. The outcome from this consultant released in March 2023, identified four key areas for improvement: streamlining the physical and digital payment methods offered to consumers, open data, supporting a reliable charging network and ensuring pricing transparency, of which the government will appoint an appropriate body to enforce the new regulations.

National Grid's Future Energy Pathway Scenarios (2021) sets out a framework for rapidly transforming the existing energy system to deliver reliability and value for consumers while achieving net zero emissions by 2050.

The Department for Environment, Food and Rural Affairs' (DEFRA) Clean Air Strategy (2019) sets out the Government's plan to tackle all sources of air pollution, making our air healthier to breathe, protecting nature and boosting the economy, including supporting a move towards mass adoption of EVs.

2.3 Regional

Transport for the North (TfN) are the England's first sub-national transport body, a partnership of local authorities, business leaders and transport operators, coordinating and lobbying for the transport infrastructure needed to drive transformational economic growth. Their Strategic Transport Plan (2019) outlines a robust case for transformational transport investment across the North, including a rapid increase in the number of public charging points across all areas of the North to ensure that EV drivers can easily locate and access EV charging infrastructure that is affordable, efficient, and reliable in accordance with their Electric Vehicle Charging Infrastructure Framework (2022). Building on this, their Transport Decarbonisation Strategy (2021) sets out how TfN and partners across the North are committing to a regional near-zero carbon surface transport network by 2045. This supports TfN's key aims for improving localised air quality, which are:

- A 55% reduction in emissions from 2018 to 2030, achieved mostly through mode-shift and demand reduction, and
- A 95% reduction in emissions from 2018 to 2040, reflecting longer-term decarbonisation measures, such as a high proportion of zero emission vehicles in the vehicle fleet.

2.4 Sub-Regional

The Third Local Transport Plan (LTP3) for Merseyside sets six goals for the regional transport network, including promoting a clean, low emission transport system. LTP3 also seeks to ensure the transport system promotes and enables improved health and wellbeing and establishes equality of travel opportunity and accessibility for all. This approach is endorsed by Local Journeys Strategy and A Transport Plan for Growth strategy that supports transition to electric vehicles within the hierarchy of local transport options, as its about striking the right balance between them and supporting better sustainable travel choices.

A new Local Transport Plan (LTP4) is being produced for the Liverpool City Region and will set the regional transport policy for the area. Whilst consultation is due shortly, it is expected that the LTP will heavily focus on decarbonisation and net zero, a prioritisation of active and sustainable public transport journeys with a focus on vision zero (road safety) and zero emission vehicles for all other trips.

The Liverpool City Region Combined Authority's Building Back Better – Improving our Air Quality (2020) policy sets out a vision and series of actions to improve air quality. Through supporting local acceleration plans to roll-out networks of alternative fuel facilities across the city region.

2.5 Local

The St Helens Borough Local Plan sets out a vision for building greener, fairer, stronger communities across the borough. In July 2019, the Council declared a climate emergency, with a requirement to achieve a net zero carbon borough by 2040. In delivering against these declarations, St Helens Climate Response Plan sets out commitments to work with partners to increase the number of publicly available EV charging points.

The St Helens Air Quality Action Plan proposes a series of actions to be taken to improve the quality of air in St Helens, including promoting sustainable modes of transport and modal shift away from private vehicle use, accelerating the uptake of EV taxis, and accelerating the widespread implementation of public EVCI for private vehicles, taxis, and van-based fleets.

The St Helens Borough Strategy sets out a vision and overarching priorities for St Helens Borough Council. The Strategy recognises that the greatest threat the borough faces is climate change and commits to using funding opportunities to invest in projects that promote active travel, improve air quality, and reduce the borough's carbon footprint. One example of delivery on these priorities are set out within the adopted masterplan development frameworks for the regeneration of St Helens and Earlestown town centres, published October

2021, which recognise that the need to ensure encouraging active modes of travel, incorporating electric charging infrastructure and future-proofing new development are central to the strategic growth of the borough's town centres.

A new Transport and Travel Supplementary Planning Document is currently being produced for consultation and will set requirements for EVCI for new developments, including passive provision for future EVCI installations.

2.6 Stakeholder & Consultation Feedback

Experience has shown that stakeholder engagement and feedback is a crucial component to obtaining local knowledge for the region's EV uptake trends. An initial workshop has been undertaken with Council Officers, Jacobs Consulting and Zero Carbon Futures and the key themes identified are summarised below:

- The supply of vehicles is currently constraining uptake, rather than a lack of EVCI. Notable expansions are planned in the UK, including Vauxhall at Ellesmere Port as well as ongoing electrification of vehicles at the Jaguar Land Rover plant at Halewood.
- It is critical that the transition to electric vehicles is part of a multi-modal strategy and does not lead to electric vehicle trips replacing public transport and active travel trips.
- Consider upskilling, training, and capacity of the supply chain in delivering EVCI.
- Continuous engagement with the Distribution Network Operator is essential to ensure that there is sufficient capacity available to install EVCI in areas of high demand.
- Balancing the need for revenue generation against social inclusion.
- Considering how and where on-street parking provision could be provided.
- Promoting EV uptake via car clubs, taxis, buses, community transport operators and through electrification of the Council's fleet; and
- Working with the private sector to fund the roll-out of EVCI.

Local opportunities identified in the workshop included:

- Reviewing and recommending standards that can potentially be included in a future Supplementary Planning Document (e.g., a new Transport and Travel Supplementary Planning Document) and other relevant documents, for residential/ commercial developments.
- Exploring whether solar power can be utilised to supply charging infrastructure, which would reduce the pressure on the grid.
- Investigating whether the Council can partner with commercial operators to offset capital cost and agree revenue shares for each site.
- Facilitating a shift of 'final mile' deliveries from non-electric vehicles to e-bikes/ scooters through the provision of hubs to improve air quality in urban areas.
- Procuring EVCI so that users interact with the same interface and/ or mobile application to reduce complexity and improve EV uptake. This would also include the creation of an 'easy to use' registration scheme to build a reliable database.

- Potentially reducing the cost of noise mitigation at new developments because EVs are much quieter than conventional vehicles.
- Promoting existing applications that allow residents with off-street parking to offer their charger to EV drivers who live in dwellings with limited off-street parking provision.
- Encouraging employers to provide EV purchasing/ car leasing schemes as a benefit to employees to promote uptake.

Further to above, St Helens Council extensively consulted on a draft version of this EVCI strategy. The public consultation for the draft Electric Vehicle Charging Infrastructure Strategy ran for a period of six weeks between 12 of June and 21 July 2023 and comprised of online and in-person engagement across the borough. Responses received during the consultation process can be viewed in the accompanying consultation report and officer responses. As a consequence from the feedback received, minor changes have been made to the draft version and thus presented within this final EVCI Strategy. For example, further information on procurement of EVCI and expectations for suppliers has been included, as well as clarity on how EVCI could be funded through private investment. Information has also been included on myth-busting as well as useful links to source further EV information.

2.7 Myth-busting and useful links

Following consultation on the draft EVCI Strategy it was apparent that a number of myths around electric vehicles, cost of battery replacement, energy capacity and charging infrastructure still pervade and require addressing.

In terms of EVs, the on-board technology continues to improve. Many of the EVs provided on the market 7 to 10yrs ago had comparatively smaller batteries than today's electric vehicles. A smaller battery equates to lower mileage and a lot of this messaging still pervades in some parts of the media today. On average, battery capacity/mileage has been increasing as new EV models are released by automotive OEMs. Further concerns are often expressed around the cost of battery replacement. Most vehicle batteries come with 7 to 8years warranty. A battery pack is comprised of several cells, where partial failure may occur it may be that only a few cells require replacing rather than an entire battery pack. The following guide produced by EON is helpful - Electric vehicles | Battery | Capacity and Lifespan (eonenergy.com).

Concerns have also been raised regarding the ability of the energy network to cope with an increasing volume of electric vehicles being plugged in to charge. National Grid has confirmed that there is enough capacity in the grid to cope with forecasted growth of electric Vehicles requiring charging. National Grid has also produced a helpful guide to explain these points here - Busting the myths and misconceptions about electric vehicles | National Grid Group

Further information explaining EVs and EV charging infrastructure technology can be found on websites such as ZapMap (EV charging stations & electric vehicles - Zapmap (zap-map.com)) and Co-Charger (Co Charger - Co Charger: Neighbourhood EV charger sharing made easy (co-charger.com). This also contains a live map (Map of electric charging points for electric cars UK:

Zapmap (zap-map.com)) showing all publicly available EVCI within a location including detail if the EVCI is working and available, operator details, any restrictions on use and tariff.

In terms of public sector grant funding support for charging infrastructure, any currently available funding can be found here - Grant schemes for electric vehicle charging infrastructure - GOV.UK (www.gov.uk). Where a property is not eligible it should be noted that some automotive OEMs on purchase of select EV models do also fund the installation of chargers.

3. Summary of Policy Commitments in this Strategy

This strategy sets out 12 core policies which together outline the Council's future role in supporting the delivery of electric vehicle charging infrastructure. These are supported by extensive evidence base detailed within this report, and include an extensive policy review, technological background review, data on existing electric vehicle uptake, data on current charge point supply across the borough, and anticipated future charge point demand.

Policy EVCI-1: Delivering Electric Vehicle Charging Infrastructure as part of a holistic, inclusive, 'Net Zero' transport system
The Council will seek to support the roll-out of electric vehicle charging infrastructure as part of the development of a holistic, inclusive, 'Net Zero' transport system, where active and zero emission sustainable public transport options are prioritised. The roll-out of electric vehicle charging infrastructure should support wider measures that reduce demand for travel and shift trips to walking, cycling and public transport, and should be delivered in a way which benefits all parts of our communities.

Policy EVCI-2: Council-led Delivery of Electric Vehicle Charging Infrastructure
The Council will seek to enable and encourage deployment of an inclusive public Electric Vehicle Charging Infrastructure network suitable to meet predicted demand in line with national targets. Where the installation of new infrastructure is procured, priority will be afforded to:

- **Fast chargers** at key destinations such as the town centre, district centres, leisure centres and other key amenities, to serve destination charging.
- **Slow and Standard t chargers** in residential areas with limited off-street car parking and forecast early EV demand, to cater for overnight charging demand.
- **Rapid and ultra-rapid chargers** in selective town centre locations, primarily designed to serve electric taxis, fleet vehicles and potential for e-car clubs, alongside locations across the borough with high traffic flow/potential demands.

Recognising the inherent uncertainty in the exact number of charge points needed and yet the need to rapidly increase provision, the Council will seek to meet or exceed regional levels of public EVCI per 100,000 population by 2025 (both total number of charge points, and number of rapid/ultra-rapid chargers) and meet or exceed the same metric nationally by 2030. This metric will include Council-led and wider provision of public EVCI within the borough.

The Council will seek external funding to ensure development of a self-sustaining EV charging network that does not rely on continuing public finance support in the future and minimises the impact on existing and future Council budgets.

Procured EVCI should be capable of using the Open Charge Point Protocol (v.1.6 or above), which is promoted as the best way to provide the widely available and accessible recharging networks of the future. This would improve

functionality, reduce maintenance costs, and also allow an easier transfer of assets into any new charge operators platform if a change of supplier is required in the future.

Policy EVCI-3: Home Charging for Properties Without Off-Road Parking
Recognising that a lack of off-road parking may be a significant barrier to EV take-up, the Council will promote a hierarchy of solutions to EV charging for residents, businesses, and shared vehicles without access to off-road parking that prioritises off-street charging hubs (such as Council owned car parks and other spaces) within a 400-metre walking distance (approximate 5-minute walk) where practical, followed by other low-impact solutions that avoid, as far as possible, generating additional street clutter and maintenance/ management challenges.

It is recognised that residents with disabilities (such as Motability customers) face further challenges in both accessing and using EVCI and therefore the Council will endeavour to work with suppliers and residents to deliver suitable charging solutions to meet needs.

The Council will continue to develop our customer service process for the management and recording of requests for on-street EV charging to inform future deployment of EV charging hubs and on-street EV charging. This may include the creation of a 'request an EV charger' form for example.

Policy EVCI-4: Electric Vehicle Charging Infrastructure for Staff, Partners, and Fleet
The Council will support staff and visitors to access electric vehicle charging at Council premises in line with prioritisation for active and sustainable public transport options in the first instance and use of zero emission vehicles private vehicles where necessary. It will monitor demand for staff and contractor EV charging and seek options to provide access to charging infrastructure where necessary. It will develop staff EV charging policies to set out how staff and fleet EVCI should be used.

Where technology allows, the Council will seek to transition its fleet to Ultra-Low Emission Vehicles, in line with its target to achieve net zero carbon operations. To achieve this, it will progress a systematic Fleet Review to inform the electrification of the Council's own vehicles, including exploring innovative options to support EV charging (and other zero emission vehicle solutions) at depot sites, office car parks and at select on-street locations. The Council will explore opportunities to combine procurement, installation and siting of fleet, workplace, and public charge point infrastructure where this is practical, safe, and feasible.

Policy EVCI-5: Electric Vehicle Charging Infrastructure in Broader Policy
The Council will seek to include statements and policies supportive of EV charging infrastructure and, where appropriate, references to this Electric Vehicle Charging Infrastructure Strategy in future revisions of Council-published standards and guidance. This may include, for example, a Transport and Travel Supplementary Planning Document and other development management standards.

Policy EVCI-6: Electric Vehicle Charging Infrastructure in New Developments
All relevant developments and renovations must deliver EVCI that meets at least national minimum Building Regulations standards from June 2023, as set out in “Approved Document S”.

The Council will update its adopted Parking Standards and broader development management guidance (via the Transport and Travel Supplementary Planning Document and other relevant documents) to align with national requirements and better reflect the Council’s strategic approach to transport in new developments.

For the avoidance of doubt, these requirements will apply equally to developments where the Council and its partners are acting as site promoter or developer. In line with EVCI-1, it is not considered that the provision of EVCI will be a valid justification for additional parking spaces within a new development proposal than would otherwise be included.

Policy EVCI-7: Using the Council’s Broader Influence
The Council will seek opportunities to encourage organisations, businesses and other owners of commercial public and customer car parks, including managers of housing stock and workplaces, to deploy public EV charging infrastructure where appropriate, outside the development management process. This includes working with Council partners and landowners to support EVCI roll-out on their sites where viable. Where possible, these sites have the potential to provide benefits for local residents at times of low commercial demand, such as overnight charging.

The Council will promote and support efforts to improve the availability of rapid and ultra-rapid EV charging on and near the strategic road network and important link roads across the borough, where appropriate and in line with local and national planning policy.

The Council will use our existing online presence to signpost information which seeks to dispel myths about EVs and promote the potential benefits of EV transition as part of a wider sustainable mobility framework.

Policy EVCI-8: Monitoring
The Council will establish and undertake a systematic process of monitoring utilisation rates and tariffs across EVCI within the borough, including liaison with the commercial sector, to explore potential for increased coordination and determine the optimum time to bring forward further EVCI. As EV uptake increases, monitoring usage will also allow us to provide additional charge points at or near sites of particularly high demand to reduce risks associated with drivers queuing to charge their vehicles.

Policy EVCI-9: Procurement
The Council will undertake systematic market engagement to determine the best methodology for procurement of one or more supply partners, with a view to adopting a holistic ‘strategic sourcing’ approach to provision of a full array of EVCI types across the borough – including public, fleet and workplace charging.

This will be aligned with any relevant work undertaken at a regional or wider level to maximise potential.

Policy EVCI-10: Smart Charging, Renewable Generation and Energy Storage

The Council will seek to increase the emissions reduction benefits of electric vehicles and mitigate the impact of EVCI on the local and national grid by encouraging and promoting the use of renewable energy for EV charging, encourage 'off-peak' use of EV chargers (smart functionality requirements now mandated for private charge-points installed), and exploring technical options to manage grid demand from EV charging infrastructure. This will include encouraging, where appropriate, the consideration of on-site renewable generation and storage infrastructure and setting parking policies which encourage the use of EVCI in Council car parks at 'off-peak' times.

Policy EVCI-11: Engagement with the Distribution Network Operator

Noting that the provision of cost-effective power connections will be fundamental to the delivery of charging infrastructure, the Council will continually engage and work in partnership with Scottish Power Energy Networks (SPEN), Electricity North West and other energy network providers to address key points of weakness in the power network that are holding back the delivery of key EVCI programmes promoted by the Council and its strategic partners.

Policy EVCI-12: Situating Electric Vehicle Charging Infrastructure

St Helens Borough Council will only support or procure installation of EVCI that:

- Do not obstruct pavements, cycleways, or highways, or present a safety risk to any road users, particularly vulnerable road users.
- Do not require trailing cables across the pavement unless adaptive infrastructure is provided, and no trip hazard is created.
- Do not disrupt traffic flow, including cyclists, and do not impede pedestrian movements.
- Do not introduce additional car parking where parking spaces are not currently provided or allowed.
- Avoid the creation of additional unnecessary street clutter.
- Comply with local and national planning policy.
- Meet national accessibility standards and guidelines, particularly working towards compliance with BSI PAS 1889:2022 Electric Vehicles Accessible Charging.

The planning of all installations will fully consider liabilities, planning consents, road safety implications, positioning, management, and accessibility requirements in line with the latest technical standards and national best practice. Wherever appropriate, we will use EVCI installations as an opportunity to co-locate multimodal facilities, such as cycle parking and bus stop infrastructure.

4. Strategic Aims and Objectives

Building on the policy background in Section 2, the Council's aim for the St Helens Electric Vehicle Charging Infrastructure Strategy is:

- To provide a sustainable EV charging infrastructure network that supports journeys across the borough, is easy to use, intuitive and integrated, is inclusive and accessible for all, and offers good value for money, both for the Council and network users.
- To contribute to a broader 'Net Zero' transport network that supports the Council's decarbonisation and air quality objectives, delivering healthier communities while supporting inclusive economic growth. This requires significant reductions in reliance on private cars, along with shift to making trips on foot, by bike and via public transport.

The St Helens Electric Vehicle Charging Infrastructure Strategy provides an operational approach to enabling and deploying charging infrastructure in the borough. In the short-term, the Council's objectives are to:

- Enable and deliver a comprehensive public EVCI network across St Helens Borough, including through our ability to influence and leverage investment from the private sector and other partners.
- Set out an approach to managing EV charging in Council car parks.
- Set out an approach to managing on highway EV charging, ensuring that residents without access to private off-road parking can access appropriate EVCI.
- Encourage new developments to include high quality EV charging infrastructure.

This strategy uses a data-driven approach to understand how the Council can invest sustainably in the existing network. This will enable investments in new charging infrastructure to be made in a timely way to provide a high-quality charging network that offers value for money across the lifespan of charge points.

4.1 Social inclusion

There are significant communities of deprivation across the borough, and according to the 2019 Index of Multiple Deprivation St Helens was ranked as the 26th most deprived Local Authority in England out of 317 Local Authorities.

As illustrated in Figure 4.1/1, a total of 29 neighbourhoods (lower super output areas) are within the 10% most deprived small areas in England. Almost ¼ of St Helens residents live in the 10% most deprived neighbourhoods in the country. These are areas which can face a combination of poor access to key destinations by public transport and active travel, and high vulnerability to social exclusion based on local economic conditions, the demographics of the population, and multiple forms of deprivation.

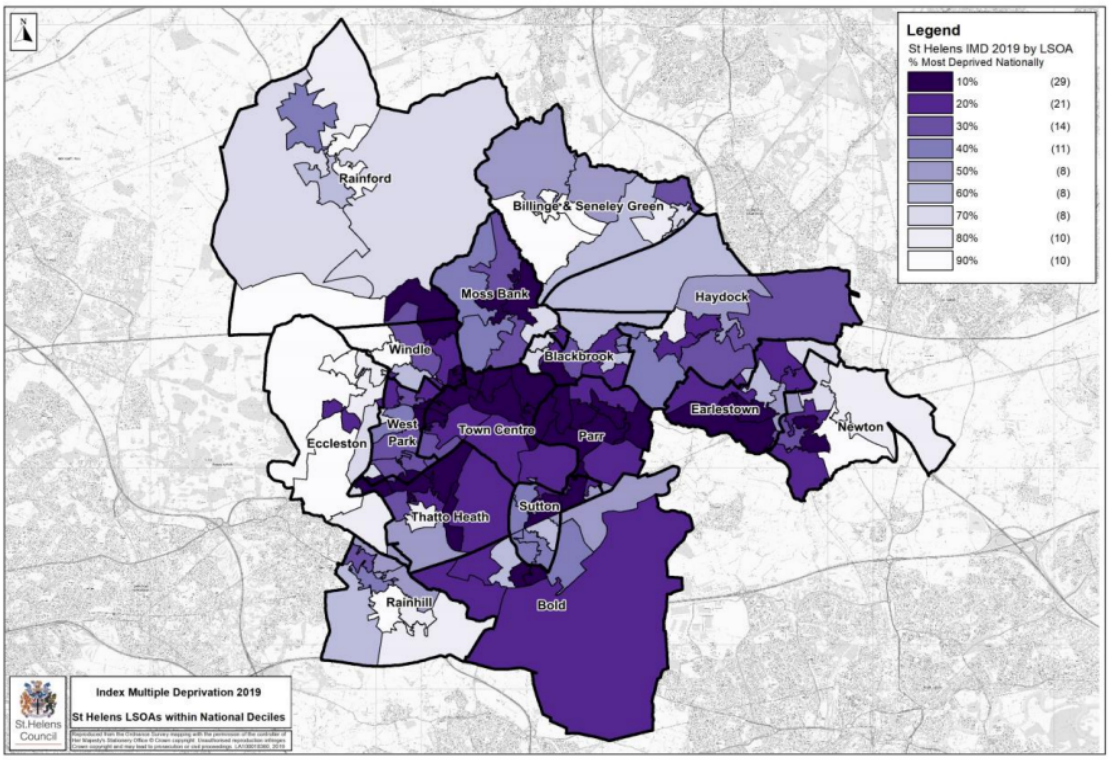


Figure 4.1/1: St Helens-Index of Multiple Deprivation (2019) (Source: IMD 2019)

As an emerging technology with significant constraints on market supply, EVs currently cost significantly more than internal combustion engine vehicles to purchase new, and there is a very limited second-hand market. As such, there is currently an established link between income levels and the uptake of EVs. Price parity is not expected to be reached until the mid-to-late 2020s and is reliant on the falling price of batteries and an increasing supply of EVs. As such, it is expected that the correlation between areas of affluence and early mass adoption of EVs will continue into the medium term.

Nonetheless, lower income households are often disproportionately affected by poor air quality and are typically more vulnerable to the impacts of climate change. While deprived communities may not be early mass adopters of EVs, they may be significant beneficiaries of a move away from polluting modes of transport. However, it is critical that the transition to EVs does not 'lock in' car dependency by coming at the expense of promoting travel reduction, active transport, and public transport options.

While the Council is limited in the actions it can take to support low-income households with the purchase of EVs, action can be taken to ensure equitable access to EVCI. Car club vehicles may also provide a more affordable alternative to private EV ownership for occasional use, with the potential to give wider access to clean vehicles, and support reductions in private vehicle ownership. Electric car clubs and the charge points needed to power them are therefore included as a valuable measure to improve social inclusion in a St Helens EV ready future. Depending on use patterns and access arrangements, car clubs can also provide a more convenient and affordable means of ensuring access to a car when needed, while avoiding the cost of owning or leasing a vehicle.

Policy EVCI-1: Delivering Electric Vehicle Charging Infrastructure as part of a holistic, inclusive, 'Net Zero' transport system:

The Council will seek to support the roll-out of electric vehicle charging infrastructure as part of the development of a holistic, inclusive, 'Net Zero' transport system. The roll-out of electric vehicle charging infrastructure should support wider measures that reduce demand for travel and shift trips to walking, cycling and public transport, and should be delivered in a way which benefits all parts of our communities.

5. Technological Background

5.1 Electric Vehicle Trends and Technologies

EVs are currently the only mature technology offering a workable alternative to Internal Combustion Engine (ICE) vehicles; however, uptake in the UK is still at the early adopter stage. Generally, uptake is led by relatively affluent, and environmentally conscious, buyers who are keen to:

- Adopt new technologies;
- Reduce their personal transport impacts; or
- Purchase an EV for tax reasons/ company policy

Early research shows that EV consumers prefer to charge at home overnight or at work during the day, which suggests a low current demand for public recharging services. Most early EV adopters have off-street parking enabling them to charge at home overnight, although this capability is greatly curtailed in some residential areas.

As of early 2023, there are 151 BEV models available on the UK market, with over 40% of all car types available as a BEV's. Electric car registrations continue to rise in absolute numbers, with 46,626 new registrations of battery-electric cars in March 2023, giving BEVs a market share of 16.2% of all new car registrations, in total there are more than 735,000 battery-electric cars in the UK. Electric car sales are now second only to petrol cars in the UK. The second-hand EV market is still small, comprising just over 3% of the used car market in 2021.2

Battery Capacities and Capabilities

The amount of charge a charge point can deliver is limited by the charging capability of the car itself. Prior to 2016, most EVs charged at 3 kW AC (called slow charging), which was adequate to fully recharge most batteries overnight. While technology has moved on, only some models produced prior to 2016 are capable of rapid charging.

Analysis of the EV vehicles on the market shows that battery capacity is growing. However, there will be lower capacity batteries within the fleet from models sold in previous years that have lower mileage ranges, particularly in the second-hand market. Whilst this will affect the average range of current BEVs, it will become less of a concern as the existing fleet grows because more recent models have longer range. Figure 5.1/1 shows typical mileage range per increased battery size.

[2] Record year for second-hand EV sales as used car market grows | RAC Drive

Battery Size	Number of Vehicles	Typical Range
Up to 40 kWh	10	Up to 160 miles
40 to 50 kWh	23	160 – 200 miles
50 to 70 kWh	30	200 – 280 miles
70 to 90 kWh	70	280 – 365 miles
90 to 100 kWh	7	365 – 400 miles
100 kWh+	11	400 – 500 miles

Figure 5.1/1: Distribution of vehicles along the battery range

Hydrogen Vehicles

Hydrogen vehicles offer a potential future alternative to plug-in electric vehicles. Hydrogen fuel cell vehicles are powered by electricity they produce internally through chemical reactions between hydrogen and oxygen. The only exhaust emissions from hydrogen fuel cell vehicles is water. Similarly to plug-in EVs, the overall carbon impacts of these vehicles are predominantly linked to the decarbonisation of fuel production. There are also combustion hydrogen systems using a conventional engine; however, these still produce nitrogen oxide (NO_x) and CO_2 exhaust emissions and are not zero emission vehicles.

The UK Hydrogen Strategy (2021) sets out the government's view of what needs to happen to enable the production, distribution, storage and use of hydrogen across a number of different sectors. It notes that hydrogen is likely to be fundamental in achieving decarbonised transport by complementing electrification. However, its use is likely to be focused initially on heavier forms of transport that might be unsuitable for standard electric vehicle systems, particularly for buses, heavy goods vehicles, shipping, and aviation.

These vehicles are outside the scope of this strategy and in no way reduce the urgent demand for new electric vehicle charging infrastructure. Battery electric technology is anticipated to remain the majority route for cars and vans over the coming decades at least, and this is reflected in investment plans from car manufacturers as well as rising uptake of EVs amongst motorists.

5.2 Electric Vehicle Charging Technologies

Types of Charge Point

There are many specifications of charge point in the market, differentiated by power output, communication protocol, type, and number of charging outlets (see Figure 5.2/1). Each have factors which make them suitable for different charging settings and use cases. Slow and fast chargers suit home/ destination charging patterns, where the driver looks to recharge at a location that they will be leaving the car for a considerable amount of time. Rapid and high-power chargers suit on-route charging, quick recharging at destinations, and support the taxi trade due to their high-speed capabilities.

Charge Point Type	Power Output (kW)	Current / Supply Type	Socket / Plugs	Charging Duration (40kW battery)	Use Cases
Slow/Standard	<7	AC	Type 2 Socket	13 hours	Home / Destination
Fast	7 – 22	AC	Type 2 Socket	2 to 5 hours	Destination
Rapid	43 – 50	AC	AC Type 2		On-route
		DC	DC - CHAdeMO	30 minutes to 80%	
		DC	DC – CCS Captive cables with plugs attached		
Ultra-rapid	100+	DC	Tesla 120Kw	Varies depending upon vehicle	On-route
		DC	Ccs 150Kw+		

Figure 5.2/1: Charging Point Types

Smart Charging

Regular charging commences as soon as the EV is plugged in, drawing the maximum amount of power available from the supply until the battery is fully charged. For large fleets, this could overload the available power supply causing practical power outages on-site, as well as financial penalties from the energy supplier. Alternatively, smart charging allows the monitoring and management of the charging session. The session can be managed remotely and control when, for how long, and how rapidly, the EV recharges.

There are currently three levels of smart charging available:

- **Basic load balancing** distributes the available power capacity equally between all charge points to prevent overloading and high energy costs at peak times.
- **Scheduled/ static load balancing** can also optimise charging schedules to take financial benefit from time of use energy tariffs.
- **Dynamic load balancing** can combine both static and dynamic data such as bus routes, next day plans and dynamic energy pricing. This ensures that the entire fleet is charged in time for individual departure at the lowest cost.

Wireless Charging

Various national companies and national Governments across the world are trialling methods of wireless charging, attempting to iron out the questions raised on the topic such as retrofitting costs, whether infrastructure should be built if supply is not sufficient and vice versa, and the international standards

needed for wireless charging to go global. Existing vehicle models do not include this technology and, therefore, there is not an immediate requirement for this infrastructure.

5.3 Opportunities and Challenges for EV charging

EVs and the infrastructure needed to support them present a series of challenges and opportunities. Figure 5.3/1 summarises the factors considered in developing this Strategy.

Opportunities	Challenges
• Encouraging drivers to switch from petrol/diesel to EV will benefit local air quality and decarbonise transport as energy generation progresses from fossil fuels to renewable sources. • Chargers may attract EV users to an area and stimulate nearby shops and the local economy. • Charge Point Operators (CPOs) offer concession contracts for chargers at little or no cost to local authorities and which may provide a revenue opportunity in the future. • The Council owns car parks located in urban centres close to both businesses and residential properties which have limited off-road parking. • The Council has control of highways land assets on major roads which could provide opportunities for rapid charging stops. • On-street charging infrastructure may offer locations for users to charge where there is no off-road alternative. • In the longer-term, as EV adoption accelerates, chargers could offer a new revenue stream for Councils.	• Available power capacity on the electricity network varies across the borough and is limited in some areas, including key urban settlements. Upgrade costs are often high. • Access to working public EV charging is a key concern for EV drivers. • Instant access to EV charging networks often requires use of apps, roaming across charger networks is limited. • Owning and operating chargers and management of contracts generate costs for Councils while funding is constrained. • The business case for CPOs remains challenging whilst demand for EVs is still growing and some operators may not want to operate in low-use settings. • Nationally, approximately 25% of households have no access to home EV charging as they park on the street. • On-street chargers require space on the public highway. Some locations may present an obstruction to pedestrians. • On-street parking bays are limited in certain areas. Reserving bays for EV users may increase pressure on parking and require resources for the traffic order. • Risk of engraining car-dependency and undermining modal shift.

Figure 5.3/1 - Opportunities and challenges for developing a public EV charging network

6. Existing Demand and Supply

6.1 EV uptake in St Helens

To support the drive to reach net zero carbon emissions by 2050, the UK government has set out its ambitions to end the sale of new petrol, diesel and hybrid cars and vans by 2035.

As of Q3 2022, there were 40.7 million licensed vehicles in the UK (all vehicles – cars, vans, bus and coach, motorcycles, and heavy goods vehicles) with just over 1 million of these licensed vehicles being plug-in (plug-in includes fully battery electric, plug-in hybrid, and range extended vehicles. Fully battery electric vehicles (BEVs) are fully zero emission at tailpipe whereas plug-in vehicles and range extended vehicles are hybrid vehicles and are only zero emission when in electric mode. Of the 1 million plug-in vehicle total (BEV, Plug-in and Range Extended), 603,100 are fully battery electric, which equates to only **1.48% of all licensed vehicles in the UK**. This demonstrates the scale of the challenge needed to decarbonise transport and the urgency to support a transition to zero emission vehicles.

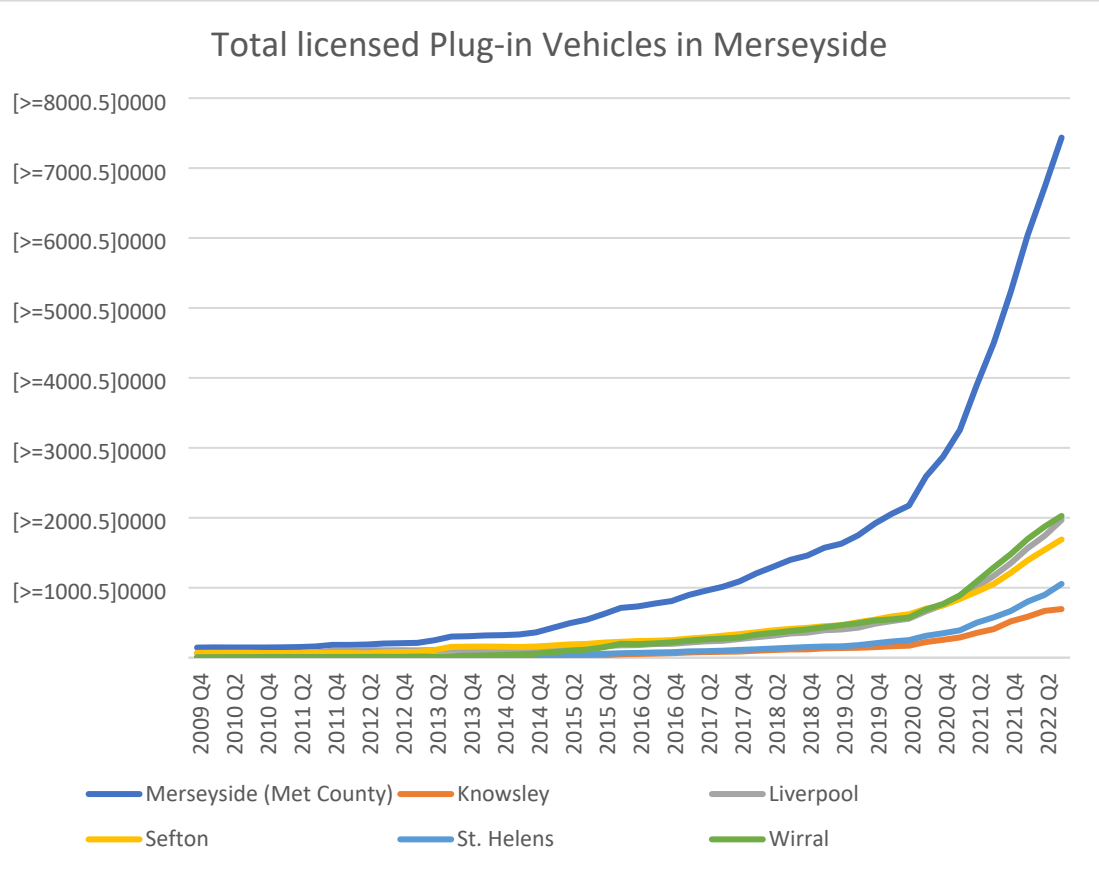


Figure 6.1/1 Number of licensed plug-in vehicles (all plug-in types) within Merseyside (Source: ONS/DfT Table VEH Statistics)

Figure 6.1/1 shows a trend in increasing numbers of plug-in vehicles licensed in the borough. As of Q3 2022 there were 1,005 licensed plug-in vehicles licensed in St Helens. Of this amount **584** were fully battery electric (zero

emission), again just under 60% of licensed plug-in vehicles. This is against a backdrop of 105,000 licensed vehicles (all fuel types) again demonstrating that fully electric vehicles currently make up a very small proportion of all vehicles licensed in St Helens. These figures do not show those vehicles licensed elsewhere but used within St Helens nor volumes of plug-in vehicles commuting to and from or visiting St Helens. EV ownership in St Helens is growing steadily, in line with global trends. Figure 6.1/2 shows the growth between 2009 Q4 and 2022 Q3 in the proportion of EVs at a more regional level:

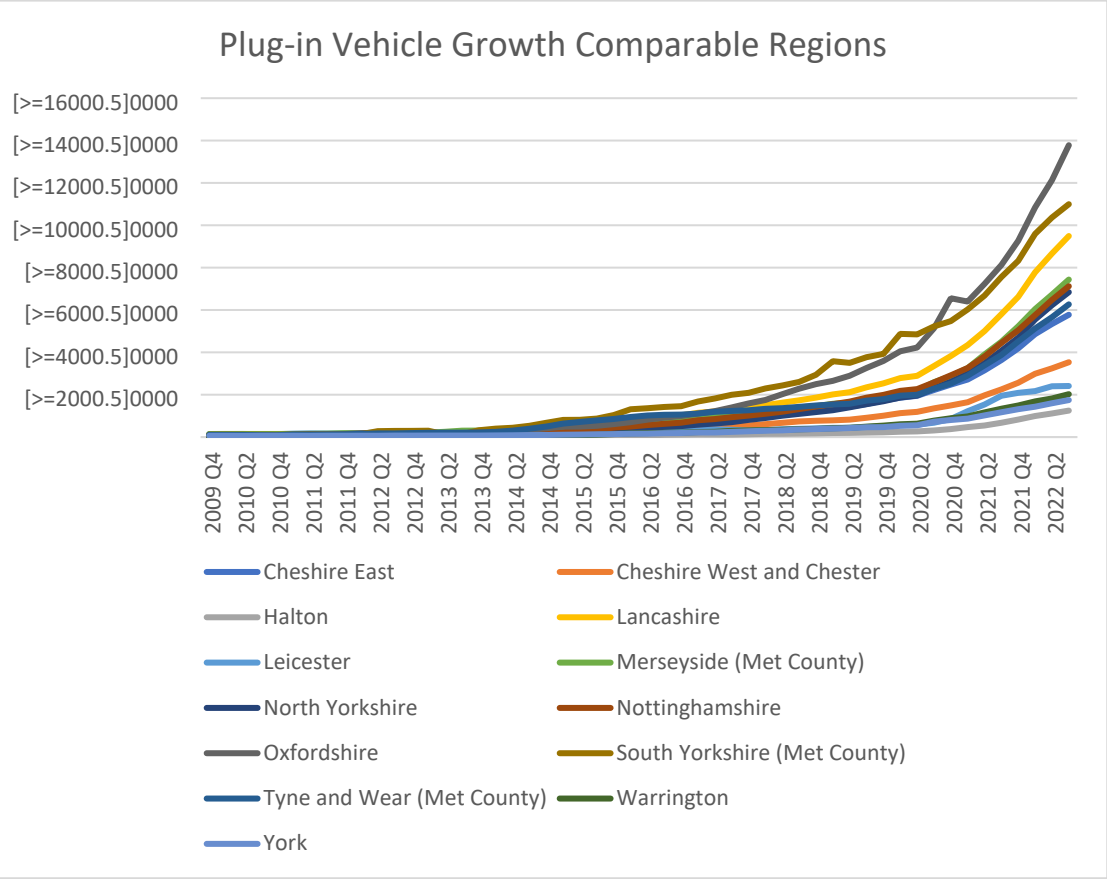


Figure 6.1/2: Registered EVs per 1000 population (2012 – 2022) (Source: ONS/DfT Table VEH Statistics)

Greater Manchester has not been included within Figure 6.1/2 but Figure 6.1/3 demonstrates that the Greater Manchester region had been following a comparable growth trend to other regions before experiencing a spike in growth in Q3 2020 that has continued.

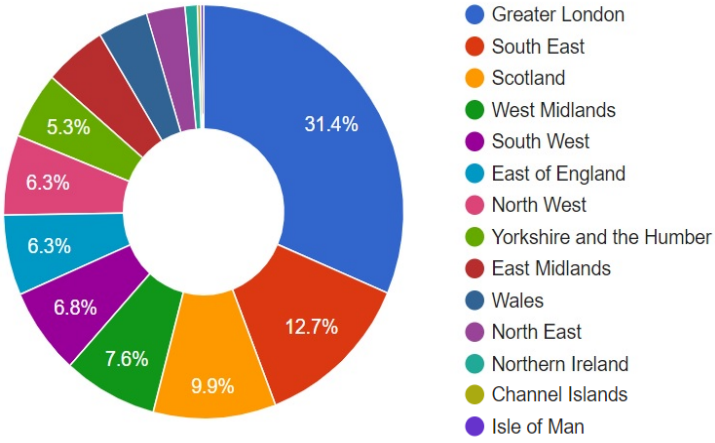
Year Quarter	Plug-in Vehicles
2019 Q1	3,653
2019 Q2	3,862
2019 Q3	4,292
2019 Q4	4,660
2020 Q1	5,195
2020 Q2	5,358
2020 Q3	32,509
2020 Q4	38,139
2021 Q1	43,321
2021 Q2	49,708
2021 Q3	56,010
2021 Q4	64,855
2022 Q1	75,227
2022 Q2	82,717
2022 Q3	90,598

Figure 6.1/3 Greater Manchester Licensed Plug-in Vehicles (Source: ONS/DfT Table VEH Statistics)

There are various reasons why this spike might have occurred, ranging from an increased provision of EV Charging Infrastructure, the ongoing development of and messaging around a Greater Manchester Clean Air Zone and the fact that these statistics relate to the location at which vehicles are licensed; In this case, Lex (Business Car Leasing | Lex Autolease) a national car leasing company is head-quartered in Stockport thus the national fleet of vehicle are also registered in Stockport.

6.2 Current EV charging provision

Figure 6.2/1 illustrates the current volume of EVCI charge points and their distribution by region across the UK.



Total charge devices: 38982. Source: Zap-Map database, 28th February 2023

ZAP MAP

Figure 6.2/1 Distribution of UK Charging Points by geographical area

Public EV charging infrastructure in St Helens is currently limited and patchy, with most centred in and around the town centre and key destinations, with little provision elsewhere in the borough. Data from ZapMap suggests there are currently 28 public chargers within St Helens, divided by speed as set out in Figure 6.2/2. Figure 6.2/3 and Figure 6.2/4 demonstrate how this compares with regional and national averages across the UK.

Charger Type	Quantity of Charge Points (NCR)	Quantity of Charge Points (Zap-Map)
Fast up to 22kW AC	24	30
Rapid 43kW AC	2	3
Rapid 50kW+ DC	1	10

Figure 6.2/2: Public EV chargers in St Helens by speed (Source: NCR and ZapMap)

At the time of writing there are 13 ‘rapid’ chargers, 30 ‘fast’ chargers and 1 ‘slow’ charger in St Helens. As identified, a significant number of the chargers are up to 22kW (slow and fast), with rapid chargers making up a much smaller proportion of overall chargers, showing a gap in the network for these types of chargers which can serve a broader range of use cases.

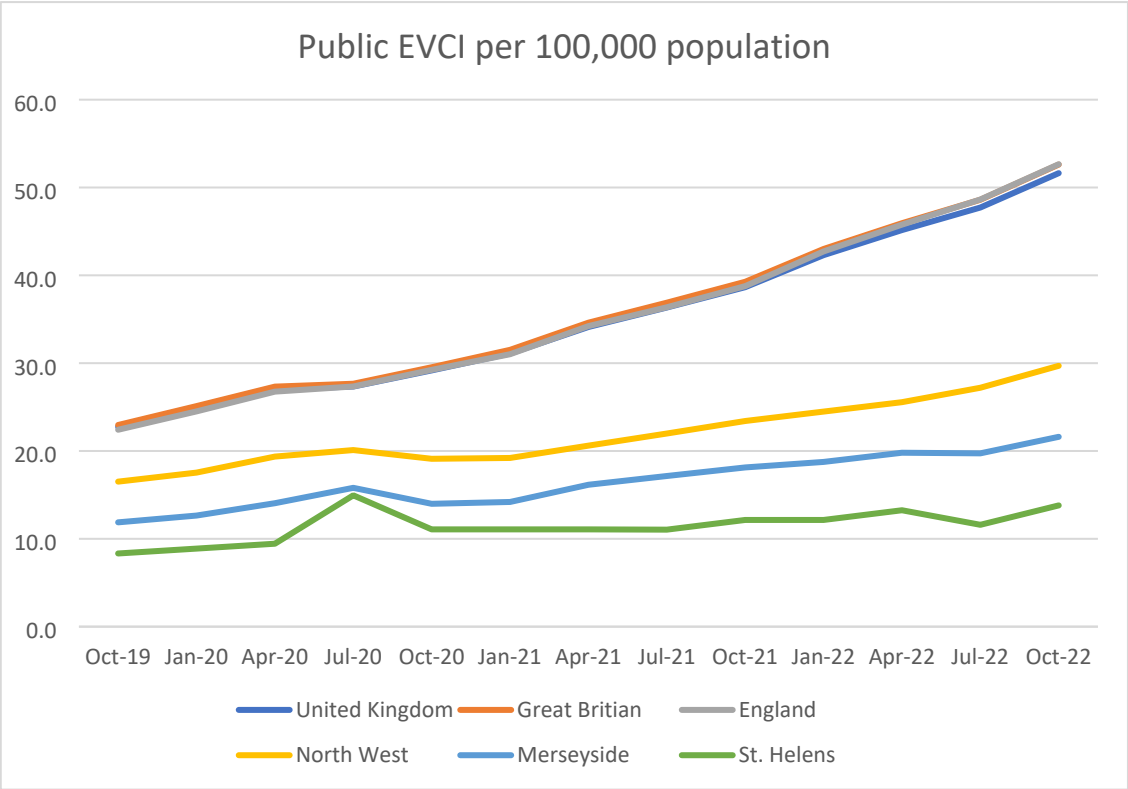


Figure 6.2/3: Regional comparison of public EVCI per 100,000 population (Oct 19 to Oct 22) (Electric Vehicle Charging Device Statistics www.gov.uk)

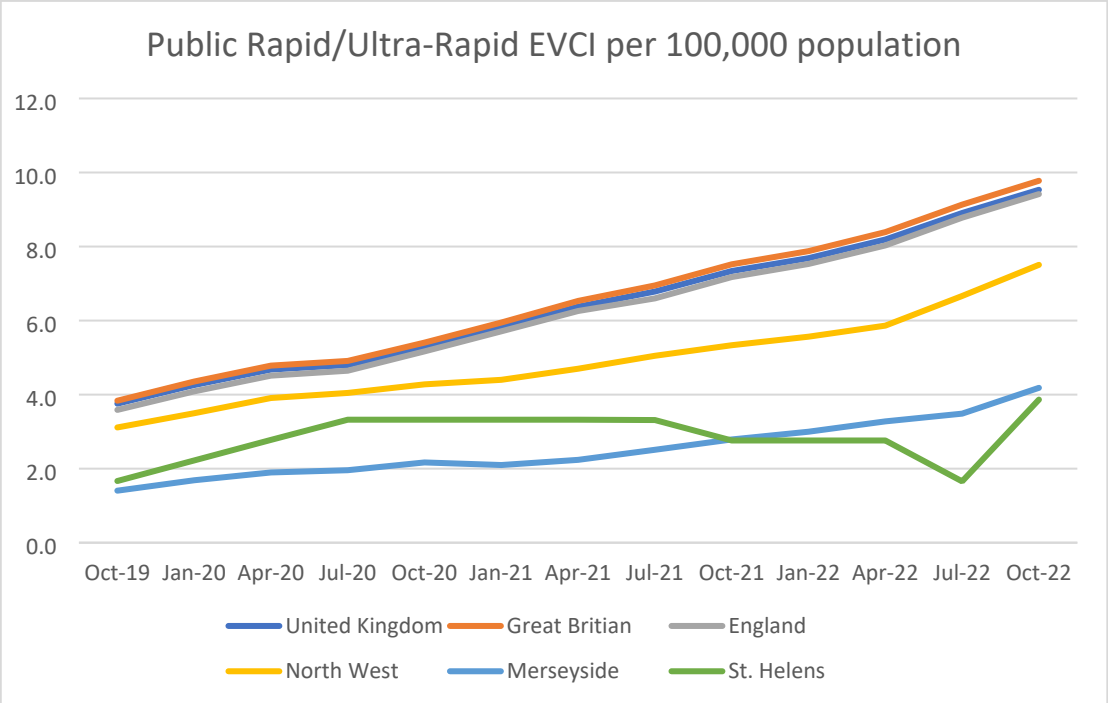


Figure 6.2/4 Regional comparison of public rapid/ultra-rapid charge points per 100,000 population (Oct 19 to Oct 22) (Source: Electric Vehicle Charging Device Statistics www.gov.uk)

Figure 6.2/5 shows the locations of the existing EV chargers within St Helens Borough, categorised by charging speed. This shows that there is less charging infrastructure in some regions of St Helens. This is likely to be due to the rural nature of these areas, which generally have a lower population and more dwellings with off-street parking than urban areas. These factors therefore result in lower demand for charging infrastructure.

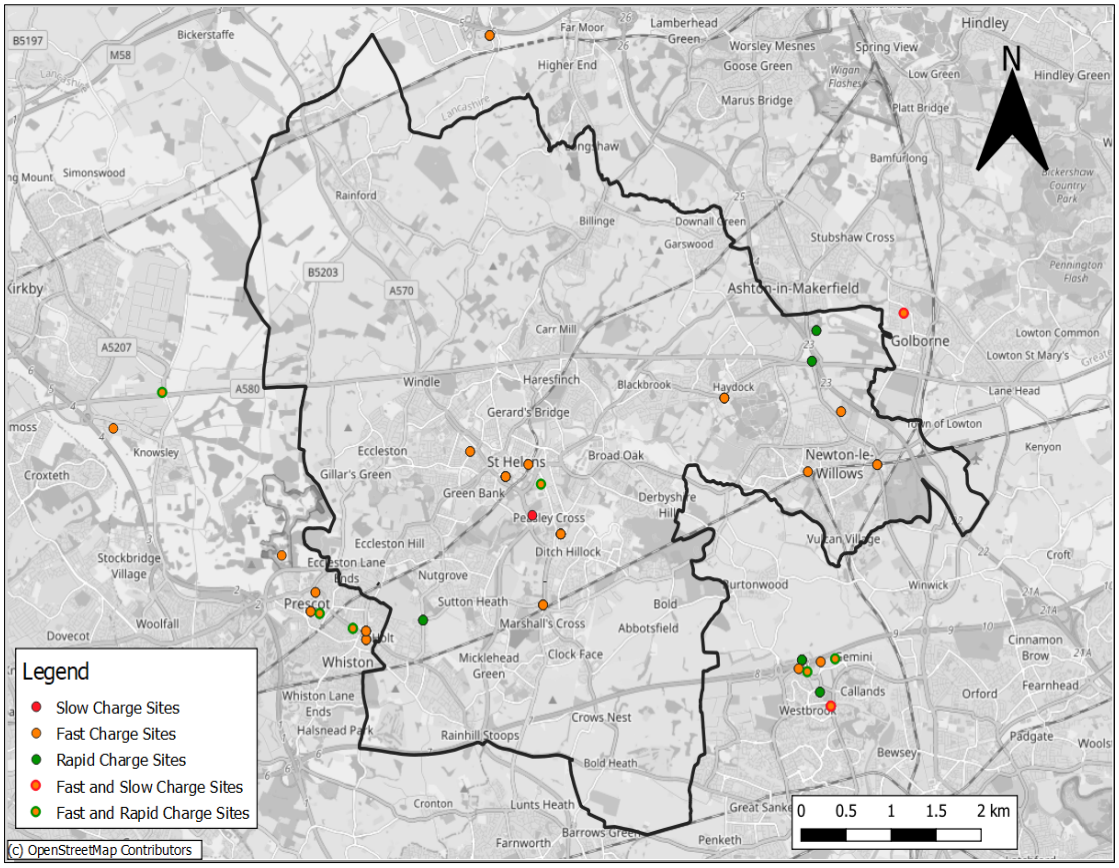


Figure 6.2/5 - EV Charging infrastructure in St Helens (Source: Zap-Map)

Comparison with other regions

The population of St Helens was 183,200 (Census 2021) and the number of publicly available EVCI devices of all types was 43. This equates to around 23 devices per 100,000 population. This is below the Northwest average of 30 devices, and well below the UK average of 52 devices as shown in Figure 6.2/6: Devices per 100,000 population across different regions.

Region	Devices per 100,000 population	Rapids or quicker per 100,000 population
United Kingdom	52	9.5
North East	43	9.7
North West	30	7.5
Yorkshire and the Humber	33	9.6
East Midlands	38	10.1
West Midlands	42	10.6
East of England	36	8.6
London	122	9.1
South East	49	10.3
South West	42	9.8
Wales	39	7
Scotland	60	15.1
Northern Ireland	18	1.2

Figure 6.2/6: Devices per 100,000 population across different regions (Electric Vehicle Charging Device Statistics www.gov.uk)

Current Utilisation within St Helens

Most EVCI are operated privately on private sites with public access. St Helens Council has been able to access some data from four public charge points at: Fairclough Street, Lea Green Station, Queens Park Fitness Centre, and Newton-Le-Willows, there locations are shown in Figure 6.2/7. The public usage of these charge points from September 2019 to June 2020 is shown in Figure 6.2/8. The data was derived from Franklin Energy, which later went into administration, and therefore more recent usage figures was unavailable, although the charge points remain available for use.

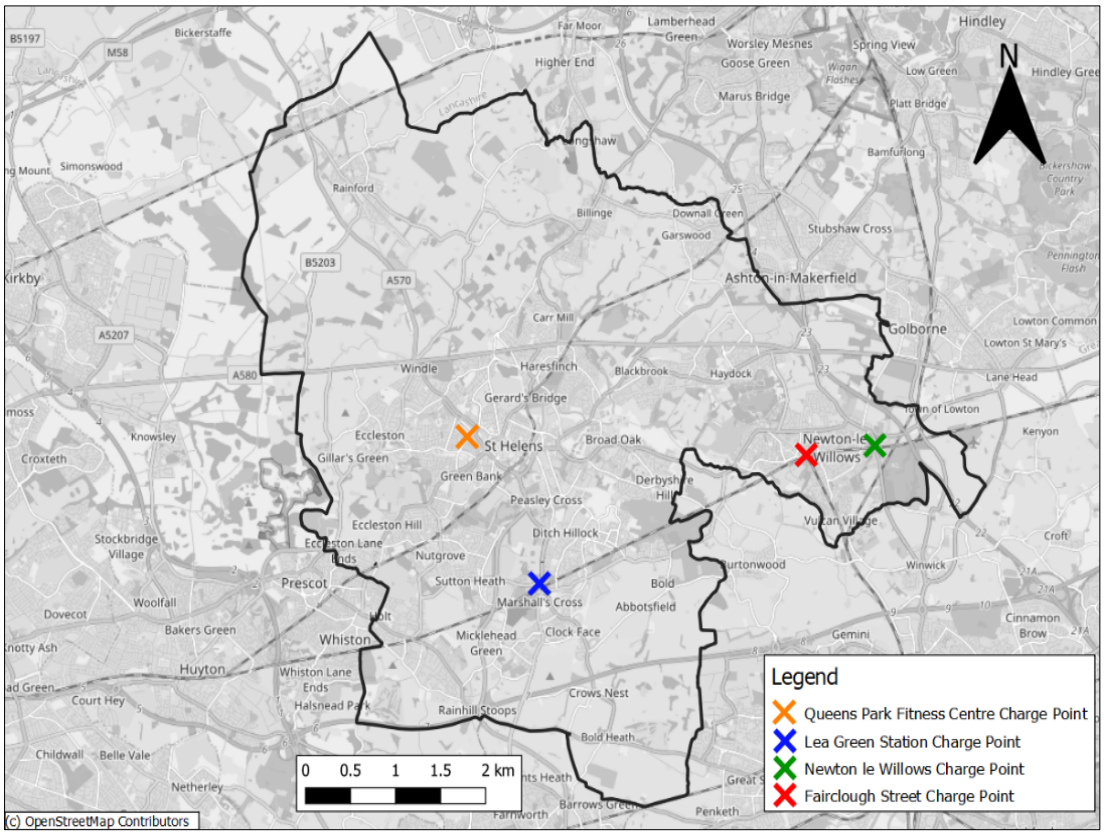


Figure 6.2/7: Charge Point Usage Locations

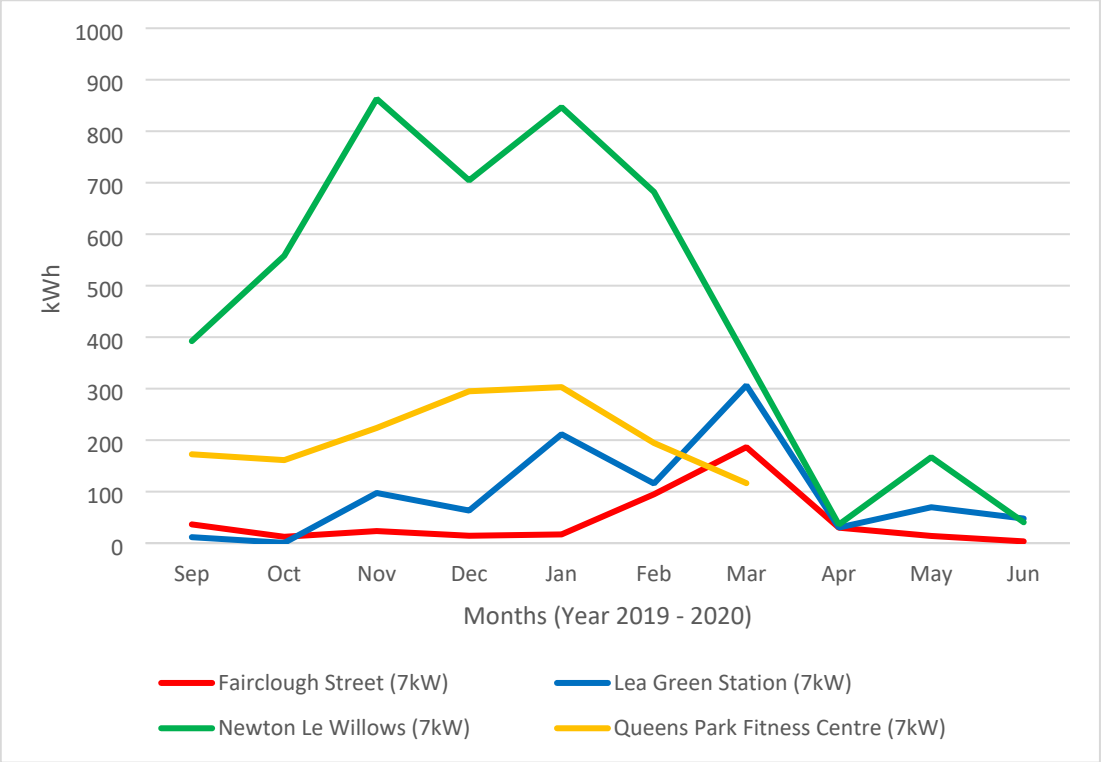


Figure 6.2/8: Devices per 100,000 population across different regions

The total charge delivered at the Newton-Le-Willows charge point between September 2019 and June 2020 was much higher across all months compared to Lea Green Station, Fairclough Street and Queens Park Fitness Centre. This outcome can be expected due to the fact that the charge point is located in Newton-Le-Willows Rail Station car park, and thus will serve those who commute by train each day. The total charge delivered at Queens Park Fitness Centre can be expected to be higher than Fairclough Street and Lea Green Station because there is likely to be large numbers of people using the Fitness Centre on a daily and weekly basis.

Although usage at Lea Green Station and Newton-Le-Willows fluctuates, there is an overall increase between October 2019 and January 2020. In comparison, the total charge delivered at Fairclough Street between these months averaged approximately 21 kWh before increasing to 186 kWh in March3.

From March 2020 onwards, charge usage at Newton-Le-Willows, Lea Green Station and Fairclough Street decreased significantly. This is most likely due to COVID-19, when the UK was in its first national lockdown until July, when restrictions began to be lifted. It is likely that figures representing September 2019 through to January 2020 are more indicative of the typical charge point usage.

The exact usage, and how this relates to the overall EV uptake will need to be monitored over a longer period of more stable usage. This will be impacted on how promptly charge point operators can respond to incidences with EVCI devices and ensure they are maintained and operational.

6.3 Taxis: Hackney Carriage and Private Hire Vehicles

Across the borough and wider region, EVs are already starting to enter the Hackney Carriage and Private Hire Vehicle fleet.

The usage patterns of both forms of taxi mean that access to rapid and ultra-rapid charging are important in allowing drivers to maximise their productive work time. EVCI at company premises, and close to popular routes or ranks are beneficial to supporting the EV taxi business case.

While it is not within the scope of this strategy to define specific locations for charging for electric taxis, the strategy aims to ensure that public EV charging is available to all user types, including taxis. Slow charging will typically be unsuitable for taxis, which are usually charged at home or at a depot overnight but may need rapid charging provision to top up charge between trips during the day.

It should be noted that taxi ranks themselves are not always appropriate locations for EV taxi charging, due to the need for vehicles to continually move up the queue based on demand.

7. Anticipating Future Demand

A range of key factors can influence charging demand in different areas, including access to off-street parking spaces, demographics, geographic area, and commuter journey patterns. Chargers must be located in areas which are convenient to drivers, and have the space, energy, and network connections to make installations feasible.

7.1 On-street parking

Residents without access to off-street parking are unlikely to be able to accommodate private charging points, making it less attractive to transition to an EV both in terms of cost and convenience. Not everyone without off-road parking has a vehicle, and user habit trends are still emerging in relation to electric vehicles, but there are indications that around 25% of all cars nationally are currently parked on streets overnight[4]. This is confirmed within the National Electric Vehicle Infrastructure Strategy. However, a network of public chargers is essential for drivers who do high mileage, travel long distances and/or have no access to chargers at home or work. The National EVCI Strategy notes that 90% of all current EV drivers rely on the public charging network from time to time.

Figure 7.1/1 provides an indication of households that are less likely to have access to private driveways and garages. The following dwelling types were considered to have limited off-street parking availability:

- Whole house or bungalow: Terraced (including end-terrace).
- Flat, maisonette or apartment: Purpose-built block of flats or tenement.
- Flat, maisonette or apartment: Part of a converted or shared house (including bed-sits).
- Flat, maisonette or apartment: In a commercial building; and
- Caravan or other mobile or temporary structure

Most on-street parking in St Helens is focused within urban centres (town and districts), where terraced properties and high-density housing are key features of the urban landscape, and where air quality concerns are most acute.

[4] Vehicle mileage and occupancy - GOV.UK (www.gov.uk)

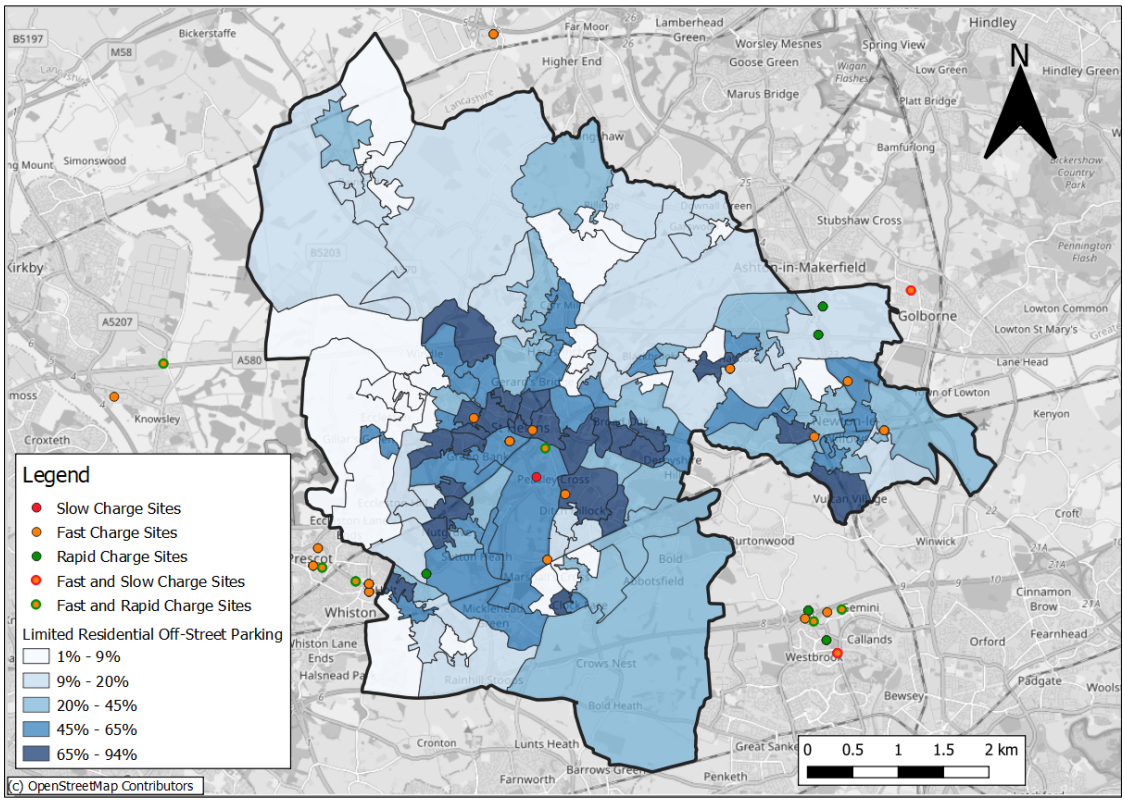


Figure 7.1/1: Existing Charging Points and Limited Off-Street Parking Availability (Source: Census 2021 and ZapMap)

7.2 Demographic Analysis

As set out previously, there is currently an established link between income levels and the uptake of EVs (until EV prices reduce and the second-hand market stabilises). As this trend is expected to continue into the medium-term, income data has been analysed to help understand where stronger uptake of EVs may come forward. However, this strategy also considers how a balanced network can be provided across the borough, and the benefits of electrification do not solely benefit drivers (if delivered as part of a comprehensive multimodal strategy).

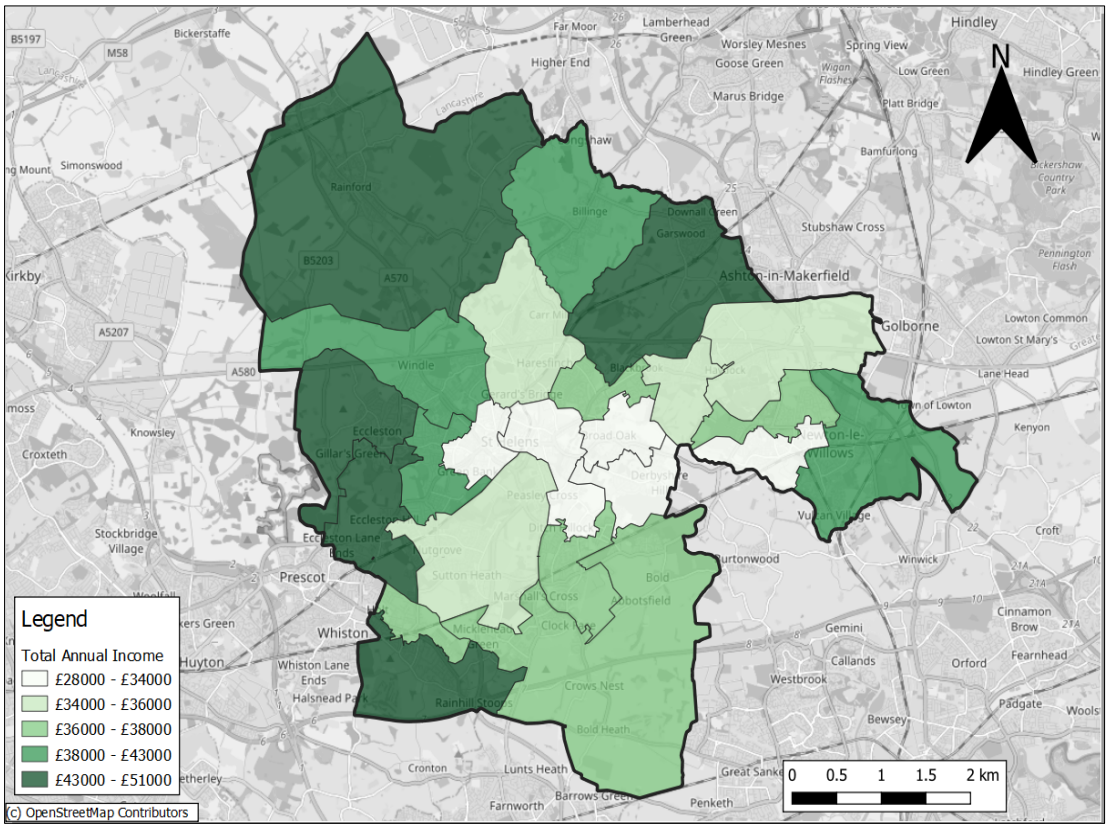


Figure 7.2/1: Average annual household income levels across the borough (Source: ONS)

Figure 7.2/1 presents a distinctive income level divide between the town centre of St Helens and the surrounding areas, with the highest income levels concentrated in the northern and western outskirts of St Helens, including Rainford, Windle, Eccleston, and Rainhill. The lowest income levels are concentrated in more dense, urban areas including in and around the town centre of St Helens. Higher income levels can be identified in Newton-Le-Willows and Vulcan Village. These areas were found to have the highest percentage of BEV and PHEV ownership and, thus, this outcome can be expected. In areas where there are lower income levels, car clubs can offer a low cost and flexible access to EVs.

7.3 BEV and PHEV Ownership

Figure 7.3/1 presents Battery EV (BEV) ownership across the region, whilst Figure 7.3/2 presents PHEV ownership. While overall ownership remains low, ownership is higher in the east and southern areas, this follows the general pattern of the EID as discussed above. Areas located on key commuter corridors also tend to experience higher levels of ownership.

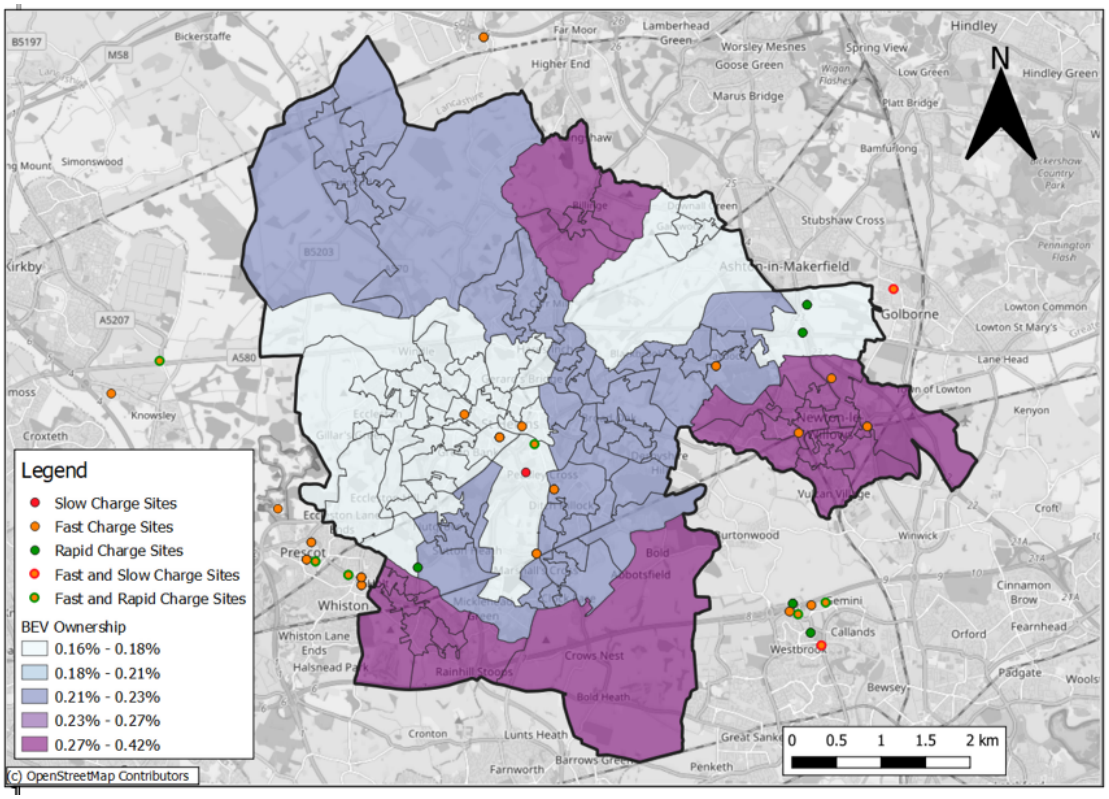


Figure 7.3/1: Battery EV Ownership (Source: Zap-Map and GOV.UK)

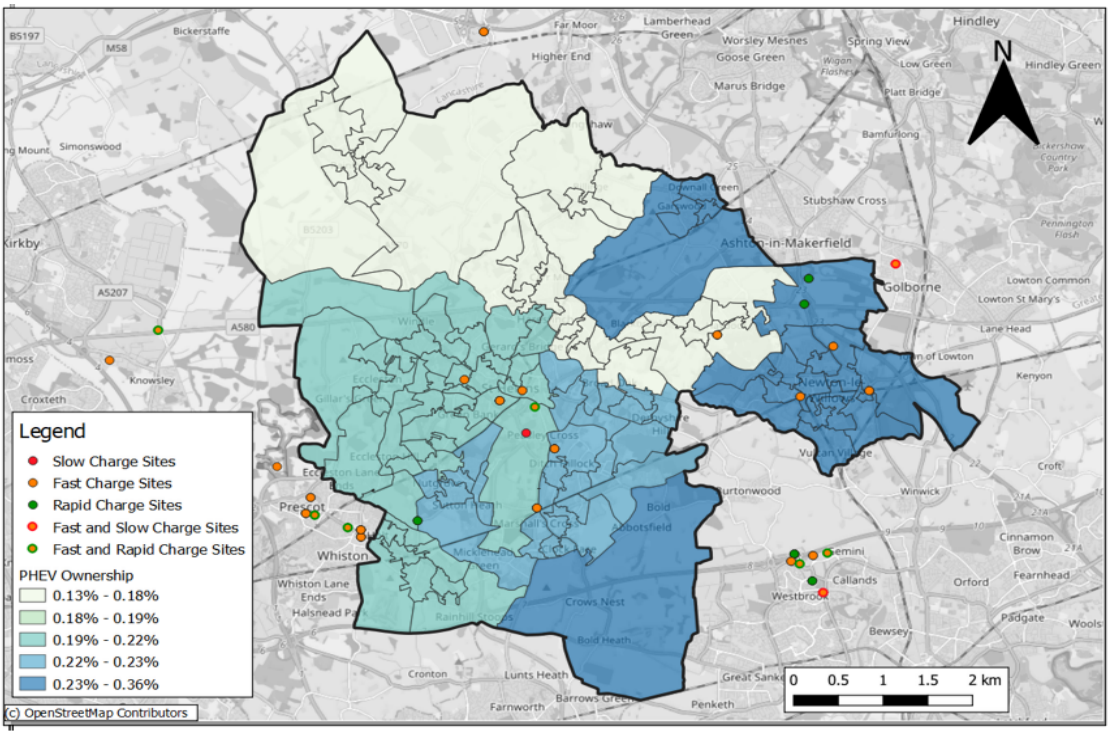


Figure 7.3/2: Plug-In Hybrid EV Ownership (Source: Zap-Map and GOV.UK)

Similar to BEV ownership, Figure 7.3/2 shows an overall low percentage of PHEV ownership across St Helens. Higher rates of PHEV's are concentrated in less urban areas including Bold Heath, as well as in villages and towns around St Helens, including Newton-Le-Willows, Garswood, Sutton and Rainhill.

Interestingly, in comparison to BEV Ownership rates across St Helens, the north Rainford area has a significantly low level of PHEV ownership, despite being associated with a higher income area and an area with low rates of off-street parking.

7.4 Spatial Modelling – Future Uptake of EVs

The Council has utilised a geospatial model to forecast increase in uptake of electric vehicles across the borough until 2050. Details of the model are set out in Appendix 1. The spatial results for EV uptake across St Helens are shown in Figure 7.4/1. This shows that the greatest variation in EV uptake density occurs between 2025 and 2035, particularly within the main urban areas. The distribution of EVs within the borough generally follows population density. Given government commitments to introduce a 2035 ban on sale of new diesel, petrol and hybrid cars and vans, and it is assumed that almost all non-electric vehicles will be removed from the network by 2045. Growth in EVs from this date will be predominantly driven by demographic changes, new residential/ commercial developments, and changes in society's relationship with transport. Accurately predicting the scale of change beyond this point, which could be induced by any of these variations, is out of scope for this strategy.

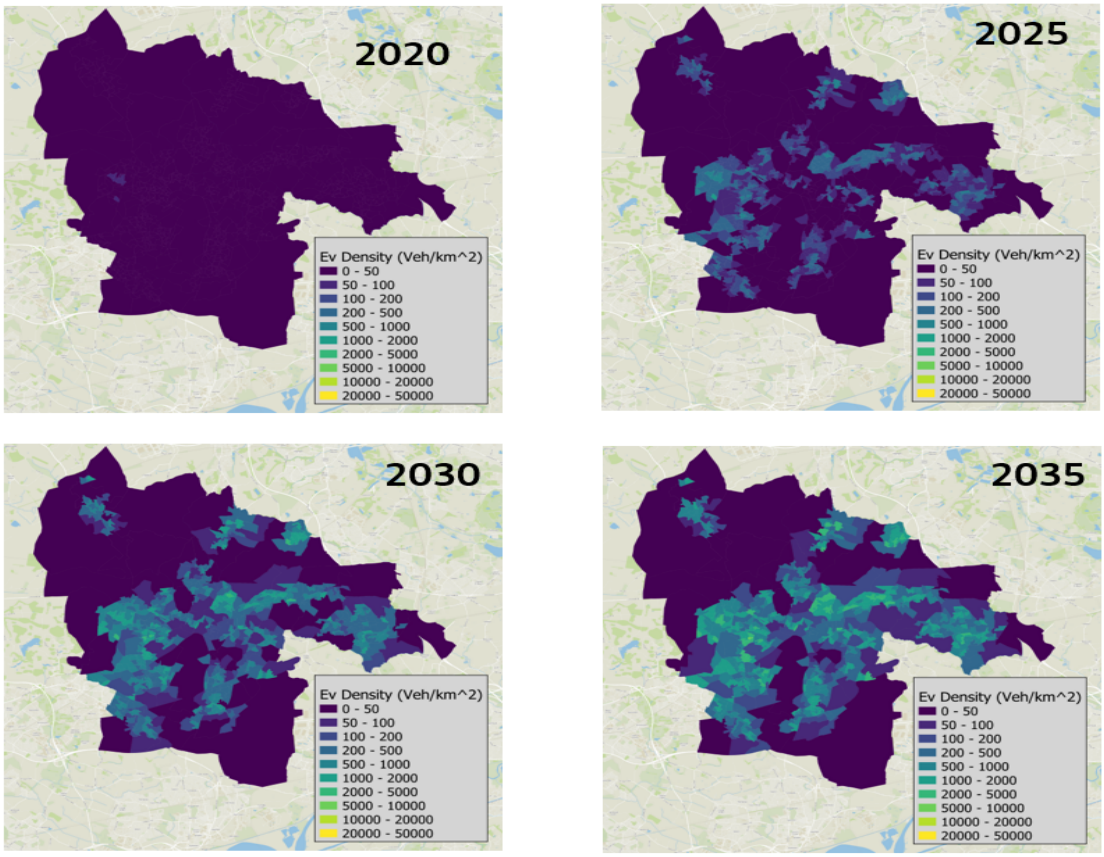


Figure 7.4/1: Spatial uptake of EVs by forecast year

7.5 Commuting and Travel Pattern Analysis

In addition to uptake of EVs and demographic factors, the demand for EVCI will depend on the movement of vehicles. Journey to work data from the 2011 census has been used to estimate commuting journeys within the borough. This has been combined with data from the National Trip End Model to provide an estimated ratio for weekday to weekend trips.

Figure 7.5/1 shows the ratio of long to short journeys within the borough, collated by where journeys begin and end. Within the map, the areas with a higher ratio (those in yellow/ orange) have a greater proportion of long-range trips. There are multiple areas within St Helens that show a much higher ratio of Long (>20 km) to Short (<20 km) journeys across both images. There is a much higher ratio of long to short trips in Newton-Le-Willows than the rest of St Helens. The prevalence of longer journeys would be a potential indicator that charging would be more necessary.

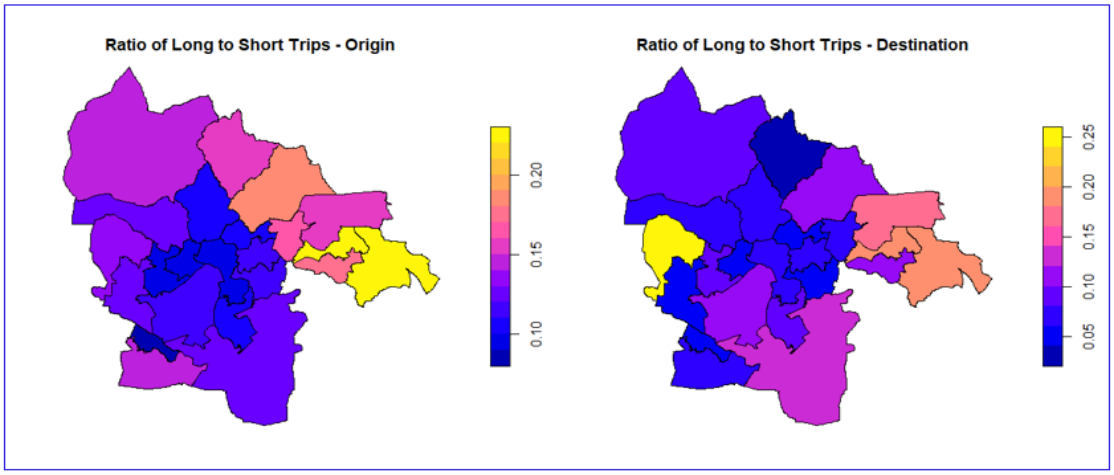


Figure 7.5/1: Ratio of long to short journeys for destinations and origins (Source: 2011 Census and National Trip End Model data)

Figure 7.5/2 shows the ratio of weekend trips to weekday trips. The areas with a higher ratio are those where the trips during the weekend are greater than those during the week. Weekend trips are likely to be generated by leisure and other non-work-related activities, which could serve as an indicator for charging during non-weekday time periods.

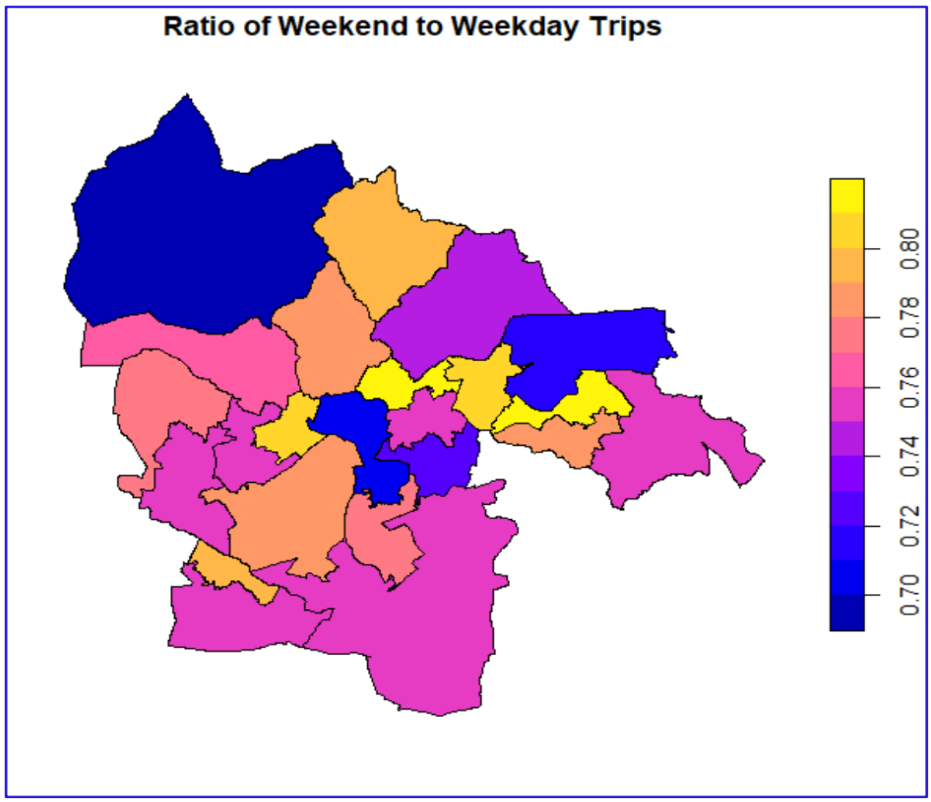


Figure 7.5/2: Ratio of weekend to weekday journeys (Source: 2011 Census and National Trip End Model data)

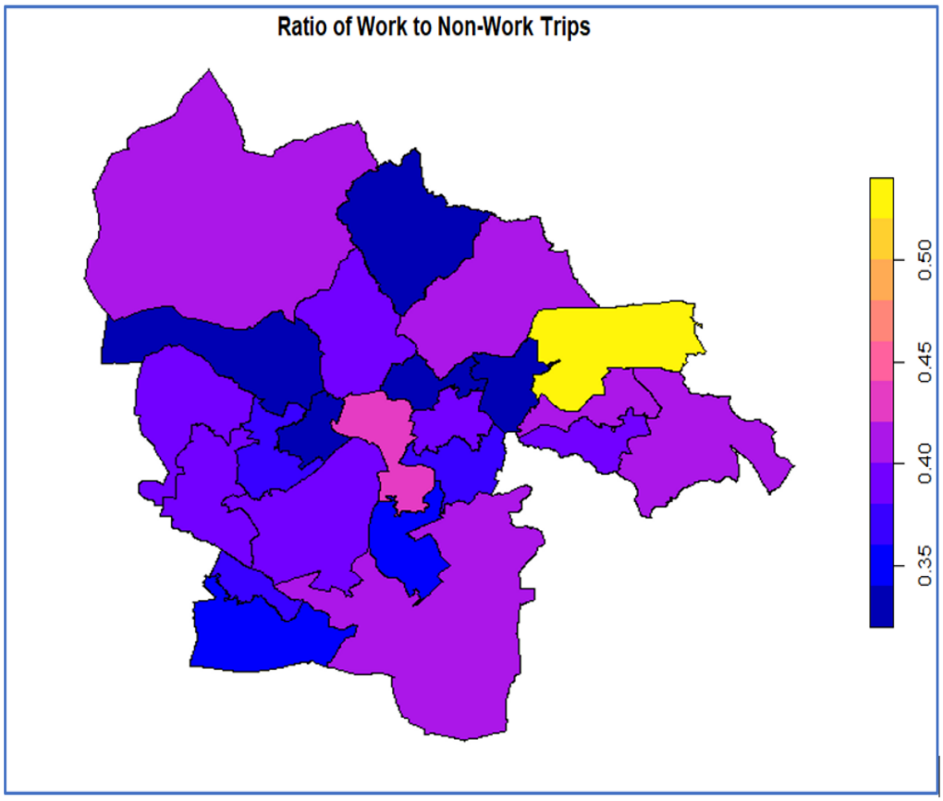


Figure 7.5/3: Ratio of work to non-work trips (Source: 2011 Census and National Trip End Model data)

Figure 7.5/3 shows the ratio of work to non-work trips across the borough. The few areas showing a higher proportion of weekend to weekday trips also have a comparative reduction in work trips compared to non-work trips. This suggests that:

- Chargers with lower power could be provided in areas of high weekday workplace trips (by destination) because they serve people who are parked for a longer period of time.
- The provision of rapid charging on route may be less necessary, because that the vehicle will likely be stationary for an extended period of time at their destination. If their destination was a typical non-workplace destination (sporting event, shopping etc.), the dwell time of the vehicle would be less, meaning a reduced capacity to charge.

7.6 Second Hand Uptake

The majority of analysis of EV uptake focuses on the purchase of new EVs, as it is the influx of EVs into the overall vehicle marketplace that will determine the overall success of the transition to electromobility. However, the final distribution of those vehicles (such as where they are parked at night, where they are parked during the day, who owns them etc.) will also be determined by the second-hand market.

Data on second hand purchases of EVs is difficult to obtain. As current levels of EV ownership are relatively low, the probability of those EVs being sold on second-hand is even lower. However, in the future this could be a key market in St Helens due to affordability and strong sales of nearly new vehicles.

The RAC report “Car Ownership in Great Britain” shows the average length of time that a new vehicle is owned for, at circa 14 years. Based on the assumption that a new vehicle, once sold on, is then distributed across the local area purely weighted by the overall level of vehicle ownership, it is possible to produce an approximate estimate of EV population distribution.

Figure 7.6/1 shows that the total number of second-hand EVs is expected to steadily increase from 2025 and form a majority of total EV sales by approximately 2035. Therefore, analysis and procurement of EVCI beyond 2030 must take this into account to ensure that the charging network remains accessible to all owners.

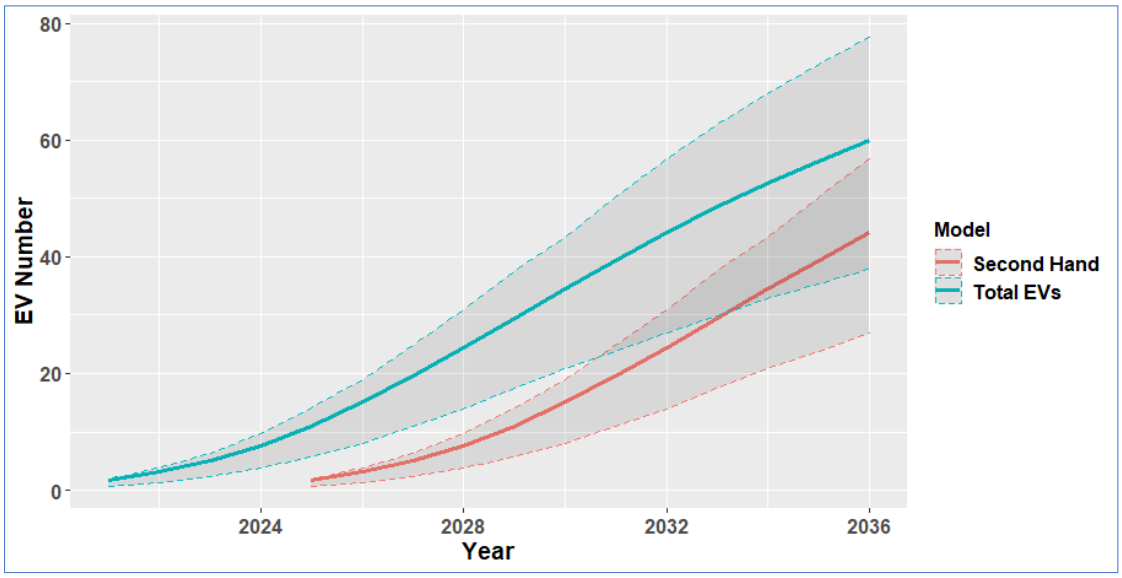


Figure 7.6/1: Estimated second-hand EV uptake rates

As shown in Figure 7.6/2, the inclusion of second-hand vehicles leads to a redistribution of EVs from the original high uptake areas (urban centres) to those which were not previously expected to see as much demand (rural areas) within the borough. However, it should be noted that growth in the second-hand EV market is later than new EVs, and any associated EVCI demand will therefore also follow later.

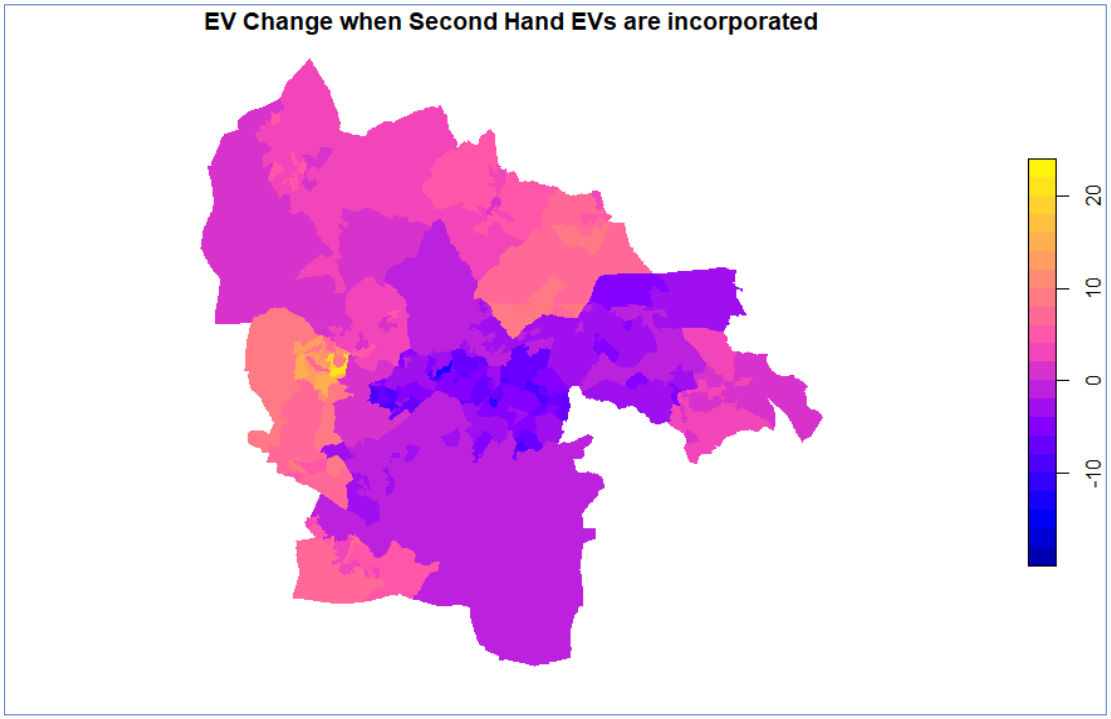


Figure 7.6/2: The impact of second-hand EV market on EV uptake distribution

7.7 How Many Charge Points Does St Helens Need?

Transport for the North Electric Vehicle Charging Infrastructure Framework

Published in 2022, the Transport for the North Electric Vehicle Charging Infrastructure Framework uses regional analytics to develop a place-based understanding of future EV uptake and charging need. Across the North of England, it identifies a total public charging requirement of 39,000 to 54,000 by 2025, and 123,500 to 161,200 by 2030. Forecast requirements in St Helens are set out in detail in Appendix 6 and are summarised in Figure 7.7/1 below.

Charge Point Use Case		Destination Charging	HGV Depots	Home Charging	Public Residential	Workplace Charging
Status		Public/ Private	Private	Private	Public	Private
Total EV Charge Points Required (Baseline)	2020	3 - 8	31	300	6	3
	2025	81 - 340	160 - 170	6200 - 12000	190 - 255	56 - 75
	2030	280 - 710	200 - 240	25000 - 34000	640	190 - 200
	2035	420 - 960	380 - 400	48000 - 55000	937 - 1000	270 - 300
	2040	450 - 980	450 - 490	65000 - 68000	1017 - 1100	260 - 330
	2045	410 - 1000	480 - 530	74000	1013 - 1100	270 - 290
	2050	380 - 1000	480 - 520	78000	985 - 1000	260 - 270

Figure 7.7/1: Forecasted EV Charge Point Demand (Source: TfN EVCI Framework Visualisation Tool)

The TfN Framework also provides an indication of key locations for locating rapid and ultra-rapid chargers for on-route charging (See Appendix 6). Areas identified on a regional scale include in and around St Helens Town Centre, Warrington, Wigan, and Prescot.

EVCI Rapid Charger Model

Rapid chargers (capacity of approx. 50 kWh) serve a wide range of use cases, including destination and on-route charging as well as charging for service vehicles such as taxis. The analysis above demonstrates there is a particular shortage of rapid and ultra-rapid charge points across St Helens. To guide the development of a base network in the short to medium term, an indicative model has been developed to estimate the number of rapid chargers required. Details of the methodology for this model is contained in Appendix 5.

Based on this model, approximately 3 - 7 rapid chargers are recommended in the St Helens area to satisfy current demand and between 34 - 97 rapid chargers by 2025.

7.8 Conclusion: Forecasts of EV Demand

Future levels of demand for EVCI are currently subject to a high degree of uncertainty, principally focused on uptake of EVs, technological developments and consumer charging behaviours. However, there is a significant gap between current supply and upcoming demand. While the vast majority of EV charging is likely to take place at home over night, there is likely to be substantial demand for charging at key destinations, including workplaces, and there is a need to accommodate public 'home charging' for households who currently park on-street. There is also a significant role for private charging facilities, such as at workplaces and fleet depots, and the Council can play a key role in leading the way in relation to its own staff and fleet.

Regionally, the north-west of England is significantly underperforming in terms of the number of charge points per head of population. Within St Helens, there is a particular demand for public rapid- and ultra-rapid charge points, with a forecast need of at least circa 34 by 2025. Latest national data suggests St Helens is currently falling behind even regional averages in terms of rapid/ultra-rapid EVCI. As EVs become more widely adopted, and particularly as the second-hand EV market begins to develop, the current geographical divide of EV ownership is forecast to become significantly less pronounced.

8. Delivering Electric Vehicle Charging Infrastructure

8.1 The Council's sphere of influence

The St Helens Electric Vehicle Charging Infrastructure Strategy will focus on the measures and policies the Council can either carry out directly or influence:

- **Direct control** – measures to improve EV infrastructure provision on the Council's own estate, defined as the Council's own operational buildings or at Council owned or managed public parking, and through the procurement or licensing of EV charging infrastructure.

The Council also has extensive direct and indirect spheres of influence:

- **Direct influence** – measures that will have a direct impact on the EV infrastructure provided by others, such as through planning and infrastructure policies.
- **Wider influence** – through partnerships, advice, lobbying and leadership.

Viewing the challenges for EV charging infrastructure through these three lenses gives us an indication of what actions the Council can take, how they can be prioritised, and what impact they are likely to have on the development of EV charging infrastructure over the coming years.

Potential Commercial Sites

A key objective of the St Helens Electric Vehicle Charging Infrastructure Strategy is to ensure the network delivered offers good value for money, both for users and for the Council itself. Accordingly, it is important to ensure that any investment in EVCI does not duplicate known investment plans from the private sector or other partners.

Figure 8.1/1 illustrates the analysis and mapping of potential commercial sites in St Helens Borough, alongside existing charge points. These sites include:

- BP and Shell forecourts with both companies committing to installing charge points.
- Supermarkets, who are increasingly working with charge point operators and private car manufacturers to bring forward EV charging.

There are generally more potential commercial sites within and around St Helens Town Centre and Newton-le-Willows. Commercial sites in dense urban areas are likely to support destination charging patterns. Furthermore, users are likely to stay at these sites for enough time to sufficiently charge their EV, supporting the case for investing and implementing charging infrastructure at commercial sites.

The majority of BP and Shell service stations and Supermarkets are located in and around the centre of St Helens, with few located outside of the centre. There are large areas where there are neither BP nor Shell Forecourts or supermarkets. These areas may need to be a focus for public sector intervention, although they also demonstrate lower EV uptake in the short-term.

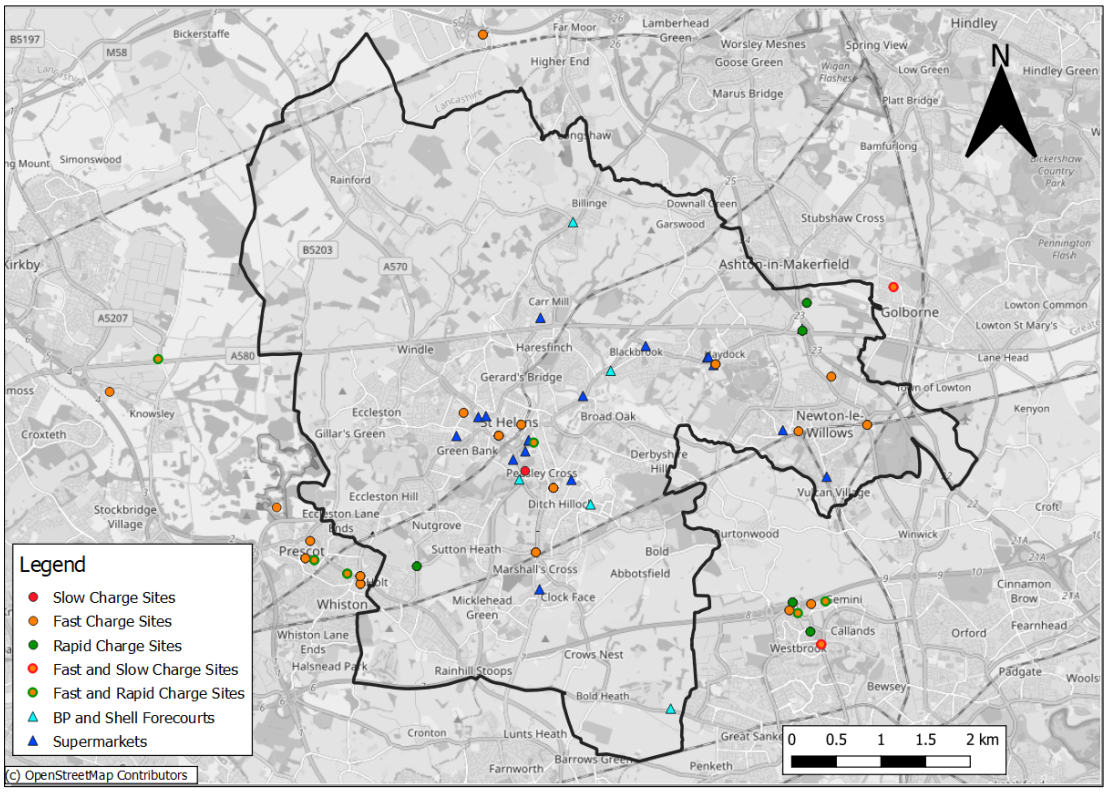


Figure 8.1/1: Potential Commercial Sites (Source: ZapMap and GoogleMaps)

As demonstrated in Section 7, predicting the absolute number of EV chargers that will be needed in the future is highly complex. Rapidly changing vehicle and charging technologies, economic factors, and dependence on public behaviour change means there is a great deal of uncertainty. Moreover, any simple metric does not differentiate between the different charger speeds, tariffs, and how or when charge points are accessible.

Public Charging in Local Authority Car Parks

St Helens Borough Council direct control of some off-road car parks located across the borough, in addition to other car parking on street and at leisure and community centres. Charging in public car parks can be a valuable resource for destination charging and can also have great value for local residents without access to a private driveway or garage where they can charge from their home power supply.

As uptake of EVs grows over time, we will continue to monitor the usage of Council-owned charge points to help us to identify sites of particularly high demand where additional charging infrastructure may be required. This will help to mitigate risks associated with drivers queuing to charge their vehicles, such as inconsiderate parking within car parks or in nearby areas.

8.2 Charging at home for those without off-road parking

As discussed in Section 7, many households in St Helens have no access to private off-road parking, and subsequently have limited or no access to home charging. This is a significant barrier to EV uptake for many households. Without

support, some drivers may attempt their own fixes. Nationally, there are already examples of EV drivers trailing cables across the public footway to charge vehicles from their homes. This presents a significant trip hazard (even with a covering mat), is detrimental to inclusive mobility, and may contravene the Highways Act 1980. The Council, therefore, does not permit this form of EV charging as standard.

The installation of EV chargers on the public highway, if not carefully managed, may also generate street clutter, and create negative impacts for road users; in particular, pedestrians and those with disabilities, potentially compromising the Council's commitment to inclusive mobility.

Providing safe alternative access to EV charging for people who must park their car on the street is therefore critical to the UK's transition to EVs, and the protection of inclusive mobility for road users with additional needs. St Helens Borough Council, as the local highways authority, recognises the need to enable safe access to EV charging for residents who do not have opportunity to charge their car off-street as part of the broader programme of net zero transport.

It is also important to note that, even with older vehicle models, most EV drivers will not need to charge their vehicles every night, just as few petrol and diesel car drivers need to top up every day. The National EVCI strategy states that "for many people, charging will not be needed more than once a week".

Figure 8.2/2 summarises performance of different charging options for those who park on the street against four key feasibility factors. Further details of this assessment are listed in Appendix 2.

Option	Impact on streetscape & mobility	Complexity & cost	Commercial Sustainability	Scalability
Off-road fast charging hubs	Nil	Medium	High	High
Cable channels/ gullies	Medium	Medium	High	Medium
Off-road rapid & super-rapid hubs	Nil	Medium	Medium	Medium
Streetlight charging	Low	Medium	Medium	Medium
Free-standing on-street chargers	High	High	Low	Low
Rising bollards	Medium	High	Low	Low
Removable Lance	Medium	High	Low	Medium

Figure 8.2/2 – Feasibility of EV charging options for residents without off-road parking

Where possible, the Council will seek to avoid the need for on-street electrical infrastructure by creating off-road fast charging hubs (such as Council owned car parks and other spaces) within a close walking distance of residential areas with low levels of private off-street parking (e.g., driveways and/or garages) where practical. When planning new developments, guidance from the Chartered Institution of Highways and Transportation (CIHT) defines a reasonable maximum walking distance to a bus stop as approximately 400 metres. In the absence of detailed research on walking distances to EVCI hubs, this is the definition adopted here. This is broadly equivalent to a 5-minute walking distance.

Where off-street charging hubs are not possible, or a 400m walk is impractical due to blue badge holder status, we will prioritise use of low-impact on-street measures, such as lamp-post chargers where these are deliverable (i.e. front of kerb and depending on lamp-post facility) and do not pose a trip hazard. Finally, on-street charging bollards (rising or fixed) targeted at home charging use will only be accepted where it has been shown that the alternative options are not deliverable. These will generally be slow or standard chargers only, reflecting that these facilities are intended for overnight charging in a similar way to a home driveway, rather than attracting on route or destination charge uses to residential roads.

It is recognised that residents with disabilities (such as Motability customers) face further challenges in both accessing and using EVCI and therefore the Council will endeavour to work with suppliers and residents to deliver suitable charging solutions to meet needs.

The potential to provide safe access to charge an EV with a home charger using a cable gully or channel is currently being piloted in various locations across the UK. This has the potential to become an alternative low-impact on-street charging option, deliverable at mass scale, simply and cost effectively, in a similar way to dropped kerbs. The Council will keep this under review and consider whether such solutions would be suitable in a future revision of this strategy.

In summary the prioritised approach to delivery of EVCI for those without access to a drive or a garage is:

- Identify potential in the local area to deliver off-street charging hubs, such as Council owned car parks and other spaces.
- Where that is not possible review the potential for lamppost charging
- Where there are difficulties in delivering lamppost charging or demand is particularly high, explore potential for the delivery of suitable low-impact on-street charging solutions
- Piloting of pavement channels may also take place at select locations.

This prioritised assessment applies primarily to the provision of domestic charging solutions for properties without off-street charging. In the right location, on-street charging may have alternative use-cases, such as rapid charging focused on taxi vehicles, which need to be carefully considered prior to commissioning and installation. All procurement and installation of electric

vehicle charge points should directly contribute to the overarching goal of achieving Net Zero by 2040 and thus careful consideration must be given to walking, cycling and zero emission public transport in the first instance.

Installation of public EVCI takes significant coordination and planning, as well as financing, procurement, and delivery arrangements. Certain provisions may not be suitable in specific locations or may require costly enhancements to the energy grid. The Council will therefore not be able to deliver this infrastructure ‘on demand’ in response to individual requests, at least in the short term. Where ‘on demand’ systems have been trialled in the past, EVCI installations have proved difficult due to lengthy Traffic Regulation Orders, opposition from neighbours, DNO supply times and site selection issues. However, the Council will establish a web-based system to record any requests received and will use this to identify areas of high demand across the borough. This will help to inform future delivery programmes and funding bids.

Policy EVCI-2: Council-led Delivery of Electric Vehicle Charging Infrastructure

The Council will seek to enable and encourage deployment of an inclusive public Electric Vehicle Charging Infrastructure network suitable to meet predicted demand in line with national targets. Where the installation of new infrastructure is procured, priority will be afforded to:

- **Fast chargers** at key destinations such as the town centre, district centres, leisure centres and other key amenities, to serve destination charging.
- **Slow and standard chargers** in residential areas with limited off-street car parking and forecast early EV demand, to cater for overnight charging demand.
- **Rapid and ultra-rapid chargers** in selective town centre locations, primarily designed to serve electric taxis, fleet vehicles and potential for e-car clubs, alongside locations across the borough with high traffic flow/potential demands.

Recognising the inherent uncertainty in the exact number of charge points needed and yet the need to rapidly increase provision, the Council will seek to meet or exceed regional levels of public EVCI per 100,000 population by 2025 (both total number of charge points, and number of rapid/ultra-rapid chargers) and meet or exceed the same metric nationally by 2030. This metric will include Council-led and wider provision of public EVCI within the borough.

The Council will seek external funding to ensure development of a self-sustaining EV charging network that does not rely on continuing public finance support in the future and minimises the impact on existing and future Council budgets.

Procured EVCI should be capable of using the Open Charge Point Protocol (v.1.6 or above), which is promoted as the best way to provide the widely available and accessible recharging networks of the future. This would improve functionality, reduce maintenance costs, and also allow an easier transfer of assets into any new charge operators platform if a change of supplier is required in the future.

Policy EVCI-3: Home Charging for Properties Without Off-Road Parking

Recognising that a lack of off-road parking may be a significant barrier to EV take-up, the Council will promote a hierarchy of solutions to EV charging for residents, businesses, and shared vehicles without access to off-road parking that prioritises off-street charging hubs within a 400-metre walking distance (approximate 5-minute walk) where practical, followed by other low-impact solutions that avoid, as far as possible, generating additional street clutter and maintenance/ management challenges.

It is recognised that residents with disabilities (such as Motability customers) face further challenges in both accessing and using EVCI and therefore the Council will endeavour to work with suppliers and residents to deliver suitable charging solutions to meet needs.

The Council will continue to develop our customer service process for the management and recording of requests for on-street EV charging to inform future deployment of EV charging hubs and on-street EV charging. This may include the creation of a 'request an EV charger' form for example.

Fleet and workplace charging at Council sites

Sites owned by St Helens Borough Council were analysed as part of a desktop review and mapped alongside existing charge points in the area (see Figures 8.2/3 and 8.2/4). In addition to public charging, there is potential for the Council to provide charging infrastructure at their offices to encourage employee transition to EVs. Some sites owned by the Council may also be suitable for on-route charging provision for Council fleet vehicles. There may be options to facilitate public EV charging overnight at Council car parks where appropriate.

The Council will continue to review and update its fleet and identify measures to support the Council to make its own activities net zero. This must be done in a careful and considered way, ensuring that the Council continues to have the right vehicles for the right jobs. This will include an innovative programme of EVCI in Council depots, car parks and on-street to enable the greening of the fleet.

The Council will explore opportunities for maximising public EVCI delivery by making fleet focused EVCI available for public EV charging where it is safe and practical to do so. This approach also extends to Council owned car parks and potential for public facilities to also make wider EVCI provision.

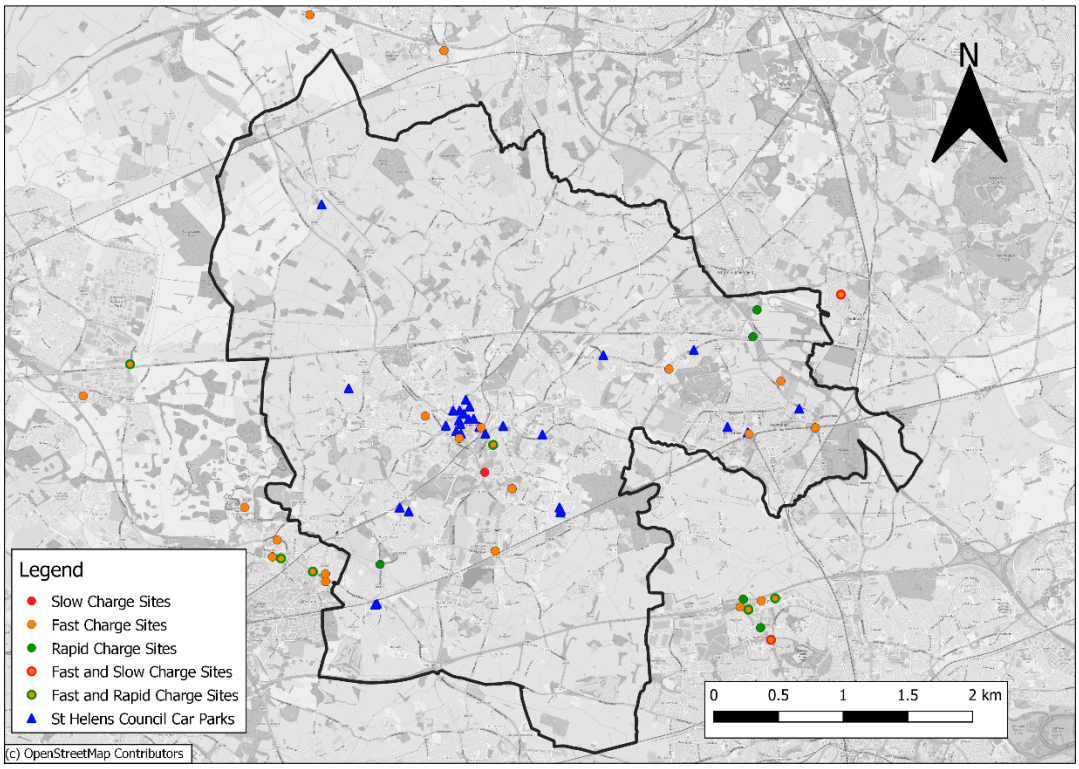


Figure 8.2/3: Council Owned Car Parks

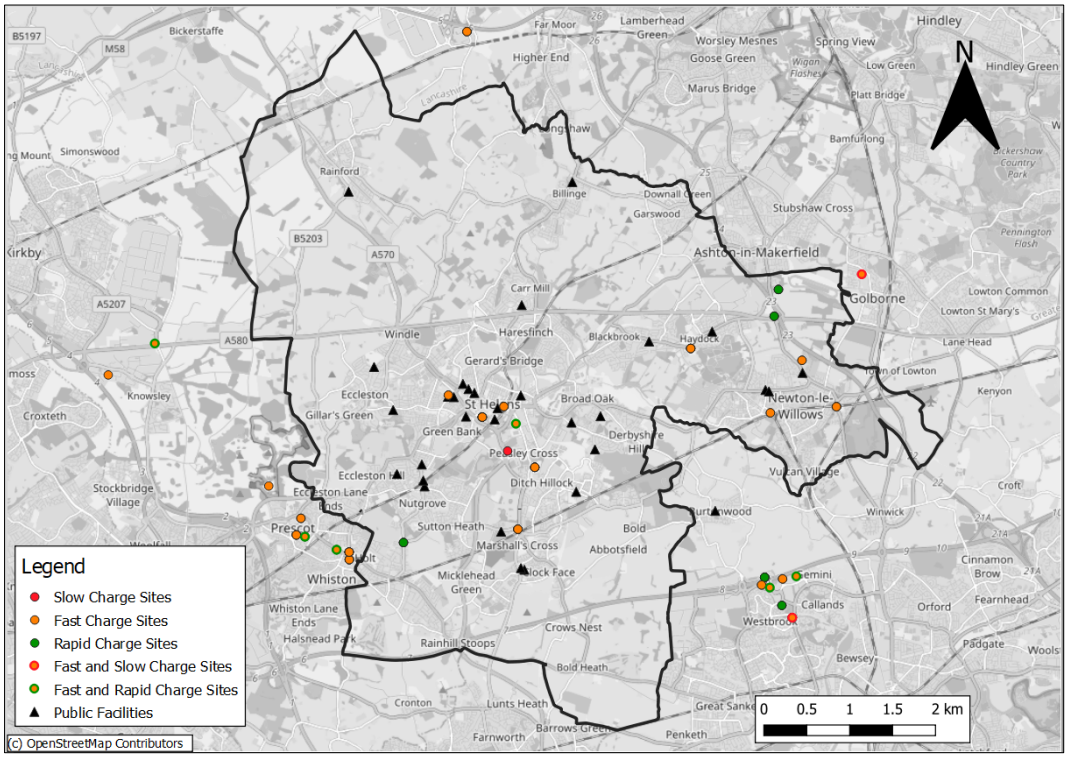


Figure 8.2/4: Public Facilities (e.g. Libraries, Leisure Centres)

Policy EVCI-4: Electric Vehicle Charging Infrastructure for Staff, Partners, and Fleet

The Council will support staff and visitors to access electric vehicle charging at Council premises in line with prioritisation for active and sustainable public transport options in the first instance and use of zero emission vehicles private vehicles where necessary. It will monitor demand for staff and contractor EV charging and seek options to provide access to charging infrastructure where necessary. It will develop staff EV charging policies to set out how staff and fleet EVCI should be used.

Where technology allows, the Council will seek to transition its fleet to Ultra-Low Emission Vehicles, in line with its target to achieve net zero carbon operations. To achieve this, it will progress a systematic Fleet Review to inform the electrification of the Council's own vehicles, including exploring innovative options to support EV charging (and other zero emission vehicle solutions) at depot sites, office car parks and at select on-street locations. The Council will explore opportunities to combine procurement, installation and siting of fleet, workplace, and public charge point infrastructure where this is practical, safe, and feasible.

8.3 Direct Influence

EV charging in new developments

Through the planning system, the Council can use its direct influence on developments to improve provision of EV charging via strategic infrastructure and transport planning, local plans, guidance, and conditions.

Local planning policies in England are guided by the National Planning Policy Framework (NPPF), which plays an important role in future proofing new developments. The planning system should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, and infrastructure to mitigate climate impacts and support renewable and low carbon energy and infrastructure. The NPPF states in paragraph 107 that:

"If setting local parking standards for residential and non-residential development, policies should take into account: a) the accessibility of the development; b) the type, mix and use of development; c) the availability of and opportunities for public transport; d) local car ownership levels; and e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles."

And in 112.e that applications for development should:

"be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible, and convenient locations"

Following a consultation in Summer 2019, the government has made changes to the English Building Regulations regarding EV charging provision in new developments, setting a new national minimum acceptable standard for new developments in a document titled Approved Document S. A summary of the requirements is set out in Figure 8.3/1 below. Please note these standards are subject to various caps and conditions, and the below is provided for illustrative purposes only.

EVCI Requirements	
New residential buildings or change of use	1 EV charge point per dwelling, capped by total number of parking spaces. Any additional parking spaces should include cable routes for future additional charge points
Major Renovations to residential buildings	1 EV charge point per 10 parking spaces, and cable routes for all additional parking spaces
New non-residential buildings and major renovations to non-residential buildings	1 EV charge point per 10 parking spaces, and cable routes for at least a fifth of the total number of remaining parking spaces
All	All charge points must be capable of providing a reasonable power output (7kw) for each parking space for which it is intended to be used, must run on a dedicated circuit and must be compatible with all vehicles which might require access to it.

Figure 8.3/1: National Requirements for EVCI in developments and renovation (Source: Approved Document S)

The Approved Document took effect on 15 June 2022 and applies to any applications submitted since that date, or before if work starts on site before 15 June 2023. As amended in 2022, the Council's Parking Standards commit to implementing the requirements set out in Approved Document S from 15th June 2023, with locally set recommended standards listed for the interim transitional period.

Policy EVCI-5: Electric Vehicle Charging Infrastructure in Broader Policy

The Council will seek to include statements and policies supportive of EV charging infrastructure and, where appropriate, references to this Electric Vehicle Charging Infrastructure Strategy in future revisions of Council-published standards and guidance. This may include, for example, a Transport and Travel Supplementary Planning Document and other development management standards.

Policy EVCI-6: Electric Vehicle Charging Infrastructure in New Developments

All relevant developments and renovations must deliver EVCI that meets at least national minimum Building Regulations standards from June 2023, as set out in "Approved Document S".

The Council will update its adopted Parking Standards and broader development management guidance (via the Transport and Travel Supplementary Planning Document and other relevant documents) to align with national requirements and better reflect the Council's strategic approach to transport in new developments.

For the avoidance of doubt, these requirements will apply equally to developments where the Council and its partners are acting as site promoter or developer. In line with EVCI-1, it is not considered that the provision of EVCI will be a valid justification for additional parking spaces within a new development proposal than would otherwise be included.

8.4 Wider Influence

Commercial car parks

As identified in earlier sections there is a need to rapidly progress EVCI across the borough to support decarbonisation. The Council can contribute to this need by facilitating the installation of EVCI on Council owned car parks. However, given the scale of change evidenced, the Council cannot be responsible for delivering all the public EVCI needed to cater for growing future charging demand. Owners and managers of other car parks also need to deliver EVCI for their sites.

Public car parking at large retailers, supermarkets, shopping centres and transport hubs such as railway stations present an opportunity to provide EV charging for users of these amenities, and like car parks owned by local authorities, could provide vital support with EV charging for those unable to charge an EV at home or off-road at business premises. As set out above, many commercial organisations are installing rapid and fast charging at many of their sites.

EV charging provided by commercial organisations for their customers is a useful step towards supporting those drivers who already have access to a charger at home, but significantly greater benefits could be realised if those charger assets were made available to local people without access to off-road EV charging at home.

Communal residential car parks

Existing high-density housing developments often have communal parking areas for residents. These are usually separated from individual households,

preventing residents installing home EV chargers or accessing the government's home charging grant. In some cases, housing management companies or landowners may lack the resourcing or expertise to understand how EV charging could be implemented or funded in communal car parks. The problem may be particularly acute for registered social landlords, where budgets are constrained.

Electric car clubs offer an opportunity to give wider access to clean vehicles, and reduce private car ownership in residential areas, which applies equally to both new and existing development. The Council will review how car clubs can be supported within St Helens Borough.

Through our established relationships and partnerships, the Council will encourage and signpost owners and managers of housing stock to available and affordable options to support tenants and leaseholders with EV charging and affordable access to clean vehicles. Funding opportunities from the government may also enable future projects to take place in partnership with owners and managers of housing stock which could support resourcing at the Council to deliver this engagement and potential future projects.

NHS Hospitals

There is already a significant programme of investment planned to decarbonise the NHS, including transitioning their fleet to EVs. Visitors and staff are likely to dwell at hospitals for enough time to warrant the investment and implementation of infrastructure in hospital car parks. Additionally, charging hubs at hospitals could also support wider demands in appropriate locations.

NHS hospitals in St Helens Borough were identified as part of a desktop review and plotted alongside existing charge points in Figure 8.4/1 below.

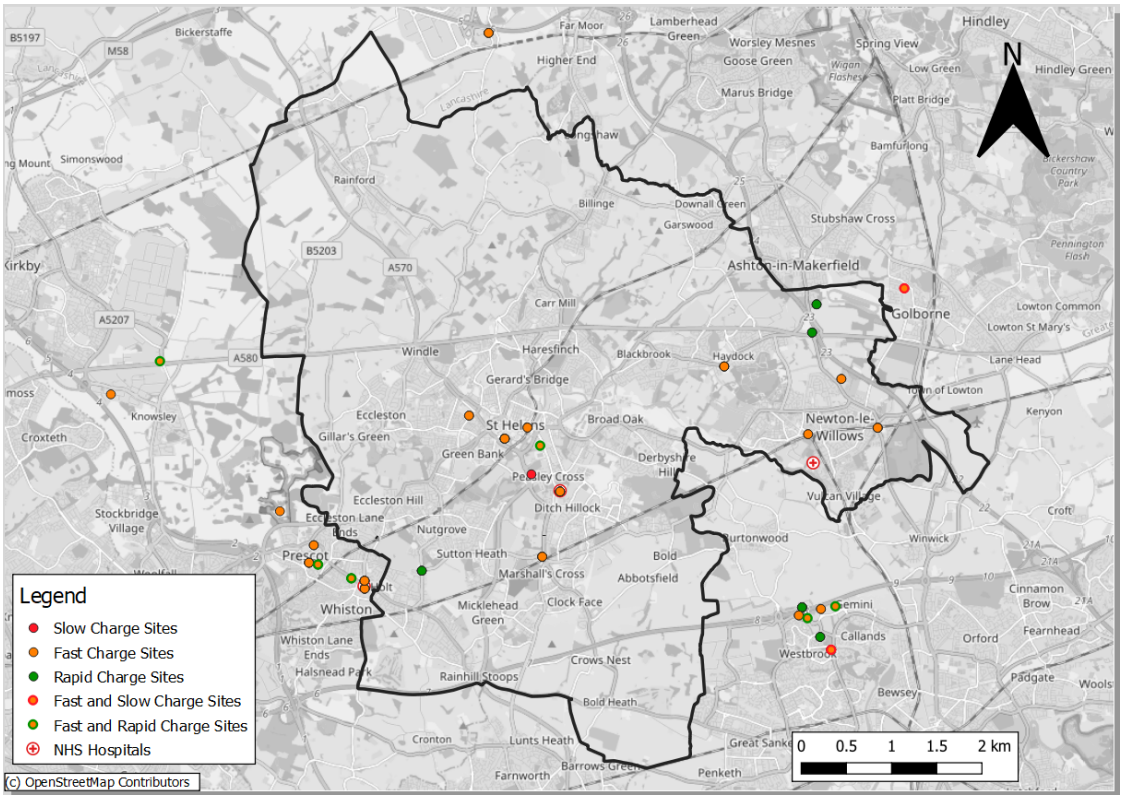


Figure 8.4/1: Existing Charge Points and NHS Hospitals in St Helens

Workplace & business charging

Workplace EV charging, provided where public and active transport are not an option, can support commuters to switch to EVs. Workplace charging can also support businesses to switch their fleets to EVs.

At the time of writing this strategy the Government's Workplace Charging Scheme provides a grant to support charging infrastructure at workplaces of 75% of the purchase and installation costs of a charger capped at a maximum of £350 per socket (a maximum of 40 sockets per organisation), which hundreds of companies across the UK have used to install EV chargers for their employees and fleets. The Government has also legislated so that no benefit in kind liability arises for employees who charge their own EVs at work.

To further support reduction in commuter transport emissions, the Council can act to encourage employers across the borough who provide workplace parking to offer EV charging for their staff and visitors. Workplace charging can also support drivers without off-street parking at home and can enable plug-in hybrid and range extender drivers to travel further within the electric zero emissions capability of their vehicle.

Rapid charging on the Strategic Road Network

The UK has one of the largest, and most comprehensive rapid charging networks in Europe. The Government wants to encourage and leverage private sector investment to build and operate a self-sustaining public network including rapid charging. Transport for the North estimate that between 12,000 and

26,000 rapid public EV charge points will be needed along the Strategic Road Network and Major Road Network across the north of England by 2025 to meet long-distance, on-route rapid charging requirements.

The number of rapid and ultra-rapid charge points on the network has grown rapidly, with the number of ultra-rapid chargers increasing 40% nationally between in the first half of 2022.[5]

St Helens Borough Council has an established relationship with National Highways, and with the Office for Low Emission Vehicles, and may be able to make the case for encourage deployment of rapid and ultra-rapid EVCI at sites in the borough.

As the Highway Authority for the borough, St Helens Borough Council also has responsibility for highways land assets, including important link roads and associated lay-bys. Subject to funding and planning policy requirements, there may be opportunities to use some large and underutilised spaces as rapid charging stops, where grid connections and space allow.

Promoting EVs and EVCI

Given that EVs have not yet reached mass adoption stage, a broader challenge beyond public charger infrastructure is the level of information and general understanding that people have regarding EVs. Research commissioned by the Department for Transport highlights a perception that EVs do not fit well with existing parking and driving habits, but that these views are often exacerbated by low awareness, poor knowledge, and some misconceptions about EV charging, costs, and range.[6] The Council recognises that we can contribute towards information provision to help overcome this.

Increasing knowledge, understanding and experience of EVs can help break down the barriers to EV ownership, challenge perceptions, and give people the encouragement and reassurance they need to make the shift to a cleaner vehicle. Awareness of available EV charging infrastructure is also a factor in driving EV adoption. The Council has opportunities to use its existing online presence to signpost current and potential EV drivers toward existing sources of information on chargers, and to use resources from our projects to promote EVs and a cleaner transport choice. A good example of challenging common misconceptions about electric vehicles can be found on the Office for Zero Emission Vehicles website.[7]

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[5] https://www.zap-map.com/ultra-rapid-charging-growth-2022/
[6] Public Electric Vehicle Charging Infrastructure. Deliberative and quantitative research with drivers without access to off-street parking. Research report. (publishing.service.gov.uk)
[7] Common misconceptions about electric vehicles (accessible web version) - GOV.UK (www.gov.uk)

Policy EVCI-7: Using the Council's Broader Influence

The Council will seek opportunities to encourage organisations, businesses and other owners of commercial public and customer car parks, including managers of housing stock and workplaces, to deploy public EV charging infrastructure where appropriate, outside the development management process. This includes working with Council-partners and landowners to support EVCI roll-out on their sites where viable. Where possible, these sites have the potential to provide benefits for local residents at times of low commercial demand, such as overnight charging.

The Council will promote and support efforts to improve the availability of rapid and ultra-rapid EV charging on and near the strategic road network and important link roads across the borough, where appropriate and in line with local and national planning policy.

The Council will use our existing online presence to signpost information which seeks to dispel myths about EVs and promote the potential benefits of EV transition as part of a wider sustainable mobility framework.

9. Site Assessment – EVCI Charging Hubs

Site assessments have been completed using data from a demand-led evidence base and model. The assessments primarily focus on the short to medium term, where trends in EV uptake and technological developments are more certain. Site assessments and location recommendations are indicative only and require further assessment and appraisal, including by charge point operators, prior to installation.

9.1 Criteria for Assessment

The methodology for conducting the multi-criteria appraisal of sites is presented Figure 9.1/1 and Figure 9.2/1. Infrastructure feasibility assessments were carried out in liaison with Scottish Power Energy Networks, the local Distribution Network Operator, and utilised their 'ConnectMore' Tool (ConnectMore Interactive Map). This indicatively shows whether each site would have a sufficient energy supply to facilitate the proposed charge points. For off-street sites, a requirement of 100 kWh power was assessed to:

- Reflect the need for rapid chargers as identified in the evidence base.
- Best practice of installing a cluster of chargers for resilience; and/or the need for significant banks of slow/ fast chargers. For on-street sites, assessments of 50 kWh were made to reflect:
- The constraints on installing multiple rapid chargers; and
- The fact some on-street locations would serve predominately the residential use case through a collection of 7 kWh chargers.

Further technical feasibility work would be required prior to deploying sites, including seeking budget estimates from Scottish Power Energy Networks.

Classification	Sifting Criteria	Description
Off-Street Public	Capacity	Sites with a capacity under 20 spaces are removed from contention
	EV uptake of wider area	Projected EV uptake of the LSOA and daily travel catchment
	Destination charging potential	Based on assessment of future usage based on proximity to key facilities such as retail and employment locations
	On-route charging potential	Whether the site is in close proximity to routes used by high volumes of traffic requiring top up charging
	Residential charging potential	The expected charging demand that would be driven from residential parking
On-Street Public	EV uptake of wider area	Projected EV uptake of the LSOA and daily travel catchment
	Destination charging potential	The expected charging demand that would be driven from residential parking rather than on route or destination parking

Figure 9.1/1: Sifting Criteria to identify short list

9.2 Assessment of Potential Charging Sites

Sites that already have rapid charging infrastructure have been discounted to focus this assessment on other sites that could potentially provide rapid charging to expand the existing base network. The criteria in Figure 9.2/1 have been used to assign each site a score.

Criteria	Description
Place-making conflicts	Sites were scored 1-3 based on whether the delivery of EV charging infrastructure would impact on the usability of the footway or wider public realm
Site Security	Sites were scored 1-3 for security based on factors such as lighting, fencing, security barriers, CCTV, and proximity to surrounding developments. Sites scoring 3 were most secure, whilst sites scoring 1 were least secure and lacked the listed security measures.
Commercial EV Charging Conflict	Sites were scored 1-3 on their potential for conflict with current and future commercial charge point investment. Sites located near current charge points, supermarkets, or close to companies with future plans for charge point investment such as Shell and BP scored lower.
DNO Supply	Following an assessment on the implementation costs for each site, sites were scored 1-3, 1 being the costliest (over £30k), and 3 being the least costly (£0-£10k).
Without Off-Street Parking	Model output scoring the site 1-3 based on the number of EVs predicted to not have access to private off-street parking i.e., those that would require some form of public charging infrastructure. Score is based on a rank between each area.
Destination Demand (Employment & Retail/ Leisure)	Model output scoring the site 1-3 based on an assessment of future destination-based usage through a review of proximity to key facilities such as employment, retail, and leisure locations.
On-Route Demand	Model output scoring the site out of 3 on whether it is near routes used by fleet vehicles and/ or high volumes of traffic. In LSOAs that are home to key roads, the score was determined on the order of total flow on that particular road; 3 being the highest flow and 1 being the lowest. In LSOAs without a key road, a score of 1 was given.
Local EV Uptake (within 1km)	The model output for the projected EV uptake within 100m grids. Daily travel catchment calculations scored each site out of 3, 3 being high projected output and 1 being low.

Figure 9.2/1: Assessment criteria for 40 sites on the short list

Additionally, a RAG assessment for deliverability at each site was also included:

- Sites assessed as red require further work with Scottish Power Energy Networks to improve the existing connection;
- Sites assessed as amber are likely to require some reconfiguration of car parks and/ or other civils works (e.g., footway widening) to facilitate EV charging infrastructure; and

- Sites assessed as green can accommodate EV charging infrastructure, subject to further on-site assessment.

This deliverability assessment has been completed through a desktop review. This assessment should be validated through site visits and liaison with partners prior to installing EV infrastructure at any sites.

9.3 Rankings

Figure 9.3/1 illustrates the sites shortlisted for assessment and Figure 9.3/2 presents the rankings for the shortlisted sites based on the application of the criteria.

This shows that the higher scoring sites are generally concentrated around St Helens Town Centre and Newton-le-Willows. This is because these sites are generally located near key attractors and residential areas with limited off-street parking.

The higher scoring sites generally have spare capacity within the DNO supply to accommodate 100 kWh connections. Most sites generally score well for place-making conflicts because they are off-street and have sufficient space to accommodate EV charging points. However, lower scoring sites generally have a large proportion of back-to-back parking spaces that may need to be reconfigured to accommodate EV charging points. This prioritisation and ranking of sites are indicative only, and the list of sites is not exhaustive. It presents a starting point for network planning processes but is not a detailed implementation plan. Further assessment is required prior to EVCI procurement and installation.

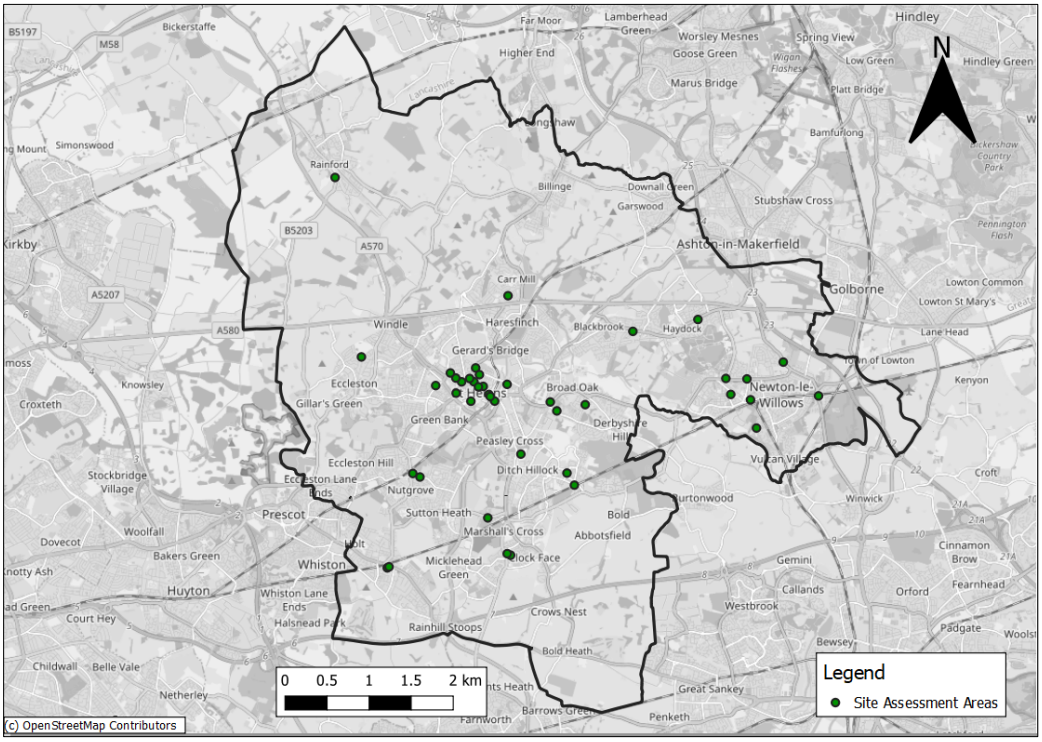


Figure 9.3/1 Sites shortlisted for assessment

Site Name	Location	Security of Location	Commercial EV Charging Conflicts	Residents Without Off-Street EVs Charging	Destination Charging	On Route Charging	EV Uptake in Wider Area	Total Score	Power Connection
St Helens Hospital	St Helens	5	3	5	2	4	5	24	
Walmesley Road Car Park	Eccleston	3	5	5	5	4	1	23	
Church Road Car Park	Rainford	3	5	5	4	2	4	23	
Church Road Car Park	Haydock	3	5	5	3	4	3	23	
Newton-le-Willows Health and Fitness Leisure Centre	Newton-Le-Willows	4	3	4	5	4	2	22	
Clifton Street Car Park	St Helens	4	2	4	2	4	5	21	
Moss Bank Community Library	Moss Bank	3	5	1	5	4	3	21	
Peckershill Road Car Park	Sutton	3	1	4	4	4	4	20	
Haydock Medical Centre	Haydock	5	1	2	5	4	3	20	
St Helens Junction Train Station	St Helens	4	2	2	4	4	4	20	
Newton-Le-Willows Train Station	Newton-Le-Willows	5	3	5	3	1	3	20	
Vista Road Surgery Medical Centre	Newton-Le-Willows	3	2	3	5	3	3	19	
Newton Medical Centre	Newton-Le-Willows	4	1	4	5	3	2	19	
Chester Lane Library	Marshall's Cross	4	1	5	4	2	3	19	
Four Acre Health Centre	Clock Face	5	1	2	4	4	3	19	
Millennium Centre Car Park	St Helens	4	2	4	2	2	5	19	
Fingerpost Health Centre	St Helens	5	2	3	2	2	5	19	
St Helens Central Train Station	St Helens	5	2	3	2	2	5	19	
Dane Court 1 Car Park	Rainhill	3	5	1	5	3	2	19	
Nunn Street Car Park	Parr	4	5	2	2	2	4	19	
Central Street Car Park	St Helens	3	2	4	2	3	4	18	
Parade Street Car Park	St Helens	3	2	4	2	2	5	18	

Site Name	Location	Security of Location	Commercial EV Charging Conflicts	Residents Without Off-Street EVs Charging	Destination Charging	On Route Charging	EV Uptake in Wider Area	Total Score	Power Connection
Fairclough Street Car Park	Earlestown	4	2	2	4	4	2	18	
Dane Court 2 Car Park	Rainhill	2	5	1	5	3	2	18	
Bowery Medical Centre	Thatto Heath	4	5	2	2	4	1	18	
Parr Street Car Park	St Helens	4	1	3	2	2	5	17	
Sankey Street Car Park	Earlestown	4	1	2	4	4	2	17	
Newton Community Hospital	Newton-Le-Willows	5	2	1	3	4	2	17	
Sutton Leisure Centre	Sutton	4	3	1	2	2	5	17	
Elephant Lane Car Park	Thatto Heath	2	5	3	2	4	1	17	
Birchley Street Car Park	St Helens	4	2	4	2	1	4	17	
Tolver Street Car Park	St Helens	3	1	1	2	4	5	16	
Haydock Community Leisure Centre	Haydock	3	2	1	5	4	1	16	
Queens Park Health and Fitness Leisure Centre	St Helens	4	1	4	4	2	1	16	
Ward Street Car Park	St Helens	3	2	4	2	1	4	16	
Millstreet Medical Centre	St Helens	5	1	3	2	1	3	15	
Central Surgery Medical Centre	St Helens	5	1	3	2	1	2	14	
Tontine Car Park	St Helens	3	1	2	2	1	4	13	
Lingholme Health Centre	St Helens	4	1	3	2	1	2	13	
North John Street Car Park	St Helens	4	1	3	2	1	2	13	

Figure 9.3/2 Assessment of shortlisted sites

9.4 Indicative Implementation Plan

Based on the assessment above, an indicative implementation plan is set out in Figure 9.4/1, detailing recommendations for installing infrastructure to achieve a base-level EVCI network in St Helens. Actual installations will be subject to further site investigation, detailed assessment of electrical capacity, and (depending on procurement route) market interest. As such, other sites assessed above may come forward sooner and the timescales listed below are included as an indication of deliverability only.

Recommendation	Rationale	Timescale
Delivery of rapid charging points at: • Millennium Centre Car Park (2x 50kWh rapid chargers) • Moss Bank Community Library (2x 50kWh rapid chargers) • Newton-le-Willows Health and Fitness Leisure Centre (2x 50kWh rapid chargers) • Newton Medical Centre (2x 50kWh rapid chargers) • Church Road Car Park (2x 50kWh rapid chargers)	A lack of rapid charging sites is likely to limit the potential for on-route, destination, residential and taxi charging. Rapid chargers cater for a broader range of use cases. As battery sizes increase, larger batteries take longer to charge.	Short to medium term for filling key gaps in the rapid charging network.
Further slow and fast charging facilities in St Helens could be delivered at: • Sutton - Peckershill Road Car Park • Clock Face - Four Acre Health Centre • Thatto Heath - Bowery Medical Centre • Rainhill - Dane Court 1 Car Park Further sites with potentially problematic DNO connections were identified at: • Eccleston - Walmesley Road Car Park (Eccleston is an area with a high uptake of second hand EVs) • Newton-le-Willows -Vista Road Surgery Medical Centre • Parr – Nunn Street Car Park • Earlestown – Fairclough Street Car Park	These facilities will support a range of use cases and areas where there is more limited infrastructure.	Short to medium term for considering bringing forward further infrastructure in line with utilisation monitoring.

Recommendation	Rationale	Timescale
Opportunity in the medium to long term for the provision of 'slow' EV infrastructure in the following car parks to support residential areas immediately north of the town centre: • Ward Street Car Park • Clifton Street Car Park • Parade Street Car Park • Birchley Street Car Park • Tolver Street Car Park	A lack of opportunities for EV charging at present where there is limited off-street parking.	Short and medium term for the Queen's Park area. Medium to long term recommendations for car parks immediately north of the town centre due to slower uptake within these areas.

Figure 9.4/1: Indicative Implementation Plan

10. Securing Open, Accessible, and Reliable EV Charging

10.1 Procurement of EVCI

EV charging is a developing market, and business models for successful operation of charging networks are evolving rapidly. Installing and operating EVCI requires both upfront capital and ongoing revenue funding. The bulk of capital funding is spent in the connection of the EV charger to the energy network, and remains reasonably static, while chargers themselves have significantly reduced in cost as technology has developed and demand increased. Ongoing and essential inspection and maintenance of chargers represent the bulk of revenue costs, with back-office and data connection fees taking a smaller part.

Much of the UK's charging infrastructure has been supported historically by capital grants from Government, currently administered via the Office for Zero Emission Vehicles (OZEV). However, public funding is becoming less readily available and private investors require an acceptable return on their investment, which is sometimes difficult to define in an evolving market.

There is a continuous spectrum of differing models that could be followed in delivering or expanding an EV charging network. Table 101/1 outlines the key features of three models, setting out how they work and the risk implications for a Local Authority. It is important to note that although a particular commercial model might be preferred, it cannot be known if a specific model is possible in a specific area until market research and/ or an actual procurement process has been carried out. Multiple commercial models could co-exist in a single Local Authority area.

Model		Description	Features/Risk
1	In-House Management	A Local Authority selects locations, purchases charging points, and keeps any revenue.	• Purchase could include installation and ongoing maintenance. • OZEV grant funding could be used for residential on-street charging points. • Potential to ensure equity through providing in areas of market failure. • Particularly appropriate for workplace and fleet installations where demand is assured. • Income for the Local Authority. • *If under-utilised, financial risk for the operation and maintenance falls on the Local Authority. Inter-operability with other provision needs to be factored in.*

2	Partnership / Concession	A Local Authority leases public highway or off-street parking bays to private suppliers/operators	• Annual permit price plus possible up-front charge. • Operator selects own locations and Local Authority consults/ approves/ makes traffic order. • Local Authority may receive a small share of revenue from each charge point annually. • Likely to be more suitable for rapid/ fast chargers near key destinations. • Publicly owned car parks/ land could be considered under this model. • *Financial risk divested to suppliers/ operators but interested operators may be limited in some areas.*
3	Commercially Led	Private-sector suppliers use private land with limited or no Local Authority involvement.	• Rapid/ ultra-rapid charging points purchased and installed on private property (such as petrol station forecourts, private car parks, supermarkets, highway services, etc). • Requires sufficient capacity in the electricity network • Larger scale installations often require ancillary commercial uses which may not be appropriate for a particular site in planning policy terms • *No financial risk to Local Authority. However, this approach will likely lead to gaps in provision where locations are less commercially attractive.*

Table 10.1/1: Summary of EV Charging Commercial Models

Local authorities have taken various approaches to the funding and ownership of EV charging infrastructure. Initial EVCI installations were delivered using an 'in-house' model. This approach saw local authorities acting as Charge Point Operators and required significant resourcing to manage the network. However, this model left Councils with an ongoing operating cost burden without the funds to support it, causing poor reliability and availability with the associated customer dissatisfaction. Recognising this, private charging suppliers began offering to cover the operation and maintenance costs if the Council or private organisation paid the capital costs. This allowed Councils to maintain asset

ownership while passing on responsibility for operation and maintenance for a fixed period, usually with the option of extension, in the supplier's contract.

A financial model developed for the Council, based on each of the options above is included in Appendix 3. This demonstrates revenue potential in the long-term, but limited returns prior to 2030, largely due to the gradual uptake of EVs. The model also assumes 100% usage, which is unlikely in the short-term and 6 charging events per day. However, if utilisation drops below this point to levels more usually indicated by market engagement, the ongoing revenue losses will be considerable, leaving the Council with significant ongoing funding commitments for several years.

The high cost of installing and managing EV charging equipment in house means that it is unlikely that Councils will be able to fund this without ongoing government funding and private investment. Instead, Councils may pursue a partnership/concession model, whereby local authorities can 'host' chargers operated and managed by the CPO at little or no cost to the local authority, while revenue from charging is retained by the operator or shared with the host. The larger scale of the networks operated by commercial businesses allow them to benefit from savings in operating costs which are not readily accessible to Councils running smaller networks in-house. This model has been successfully used around the country.

In instances where usage and turnover of EV charge points are low, particularly on-street EV charging in residential areas, the business case for operators is more challenging. Some capital government subsidies exist, but the business case for operators may still be less attractive where return on investment is uncertain, making it more challenging for Councils to secure externally funded EVCI.

Policy EVCI-8: Monitoring

The Council will establish and undertake a systematic process of monitoring utilisation rates and tariffs across EVCI within the borough, including liaison with the commercial sector, to explore potential for increased coordination and determine the optimum time to bring forward further EVCI. As EV uptake increases, monitoring usage will also allow us to provide additional charge points at or near sites of particularly high demand to reduce risks associated with drivers queuing to charge their vehicles.

The economics for on-street residential charging will continue to be challenging until the tipping point for EV adoption is closer, and analysis of and improvements in deployment costs, commercial models and actual asset utilisation can be assessed and addressed more fully. This may continue to require government grant funding to help de-risk EV charger deployment. It is not the intention to use local council funding to underpin the network, we shall continue to source external funds such as the Local Electric Vehicle Infrastructure (LEVI) fund to help seed-fund a network and attract private investment to then build out a network at no cost to the Council.

Policy EVCI-9: Procurement

The Council will undertake systematic market engagement to determine the best methodology for procurement of one or more supply partners, with a view to adopting a holistic 'strategic sourcing' approach to provision of a full array of EVCI types across the borough – including public, fleet and workplace charging.

10.2 Managing energy impacts

EV charging relies on energy supply through connection to networks or lighting circuits, generating challenges in connecting EV chargers and providing sufficient power to operate.

Rapid charging hubs and ultra-rapid charging take huge amounts of energy out of the grid at busy times, which can lead to expensive upgrading of the local electrical grid, including new substations or transformers. Due to their nature of delivering large amounts of energy very quickly, there is limited opportunity to manage the delivery of energy across off-peak hours to protect the grid. Even fast charger installations can require upgrades or reinforcement of networks in areas where the local network can only support small increases. The cost of these works can be prohibitive. Without managed charging, EVs could cost £2.2 billion in UK grid infrastructure by 2050.[8]

Smart charging, during off-peak periods and when demand and network congestion is otherwise low, means consumers can potentially benefit from cheaper pricing when charging, avoid triggering future network reinforcement, use their EVs to power their homes or businesses or sell energy back to the grid.[9] Since 2019 all government funded charger installations must have smart functionality.

In deploying or licensing privately funded EV charging infrastructure, the Council has opportunities to require charger operators to meet the same standards set by government for smart charging. The Council can also guide developers deploying EV charging to opt for smart chargers though planning advice and the emerging Transport and Travel Supplementary Planning Document, plus any further technical notes to be developed.

[8] My Electric Avenue |
[9] The Road to Zero (publishing.service.gov.uk)

In addition, renewable energy generation and on-site storage offer even greater potential benefits for the transition to net zero transport. EVs necessarily reduce CO2 and other harmful emissions from the tailpipe, positively benefitting the drive to reduce transport emissions. These environmental benefits can be increased if upstream carbon emissions are also tackled when EVs are charged from renewable sources. Projects across the UK have made use of battery storage, sometimes combined with on-site photo-voltaic generation, to support EV charging. The Council could increase the use of renewables in the EV charging network, and mitigate against challenges in energy supply, by promoting the installation of on-site renewable generation and storage where EV chargers are deployed in significant numbers, particularly on new development sites, and in locations that comply with local planning and design policies.

Policy EVCI-10: Smart Charging, Renewable Generation and Energy Storage

The Council will seek to increase the emissions reduction benefits of electric vehicles and mitigate the impact of EVCI on the local and national grid by encouraging and promoting the use of renewable energy for EV charging, encourage 'off-peak' use of EV chargers (smart functionality requirements now mandated for private charge-points installed), and exploring technical options to manage grid demand from EV charging infrastructure. This will include encouraging, where appropriate, the consideration of on-site renewable generation and storage infrastructure and setting parking policies which encourage the use of EVCI in Council car parks at 'off-peak' times.

Policy EVCI-11: Engagement with the Distribution Network Operator

Noting that the provision of cost-effective power connections will be fundamental to the delivery of charging infrastructure, the Council will continually engage and work in partnership with Scottish Power Energy Networks (SPEN) and other energy network providers to address key points of weakness in the power network that are holding back the delivery of key EVCI programmes promoted by the Council and its strategic partners.

10.3 Safety and Operational Considerations

There are several additional considerations that the Council must be mindful of when promoting or commissioning the installation of new EVCI. These include:

- **Negligence liabilities** – maintenance, trip hazards, duty of care typically sits with the owner of the infrastructure (unless contractually passed to another entity).
- **Planning consents** – most EVCI does not require planning permission, or are covered by permitted development rights, but it can apply for specific units and any proposals for associated uses or infrastructure, depending on

the size, design, and location, particularly in heritage, conservation, and rural areas.

- **Road safety** – potential for drivers to be in the road while accessing a charge point, maintaining footway and cycleway widths, obstacles for visually impaired people
- **Charge point positioning** – some vehicles charge at the front, some at the rear and some at the side, and a charge point should be useable by all.
- **Management** – parking enforcement, signage, Traffic Regulation Orders, reporting faults and complaints, emergencies, inspection process, revenues.
- **Disability access** – charging bay, charge point, ease of access and use. BSI PAS 1889:2022 Electric Vehicles Accessible Charging contains the latest standards for accessible EVCI design and installation.

The bullet points below set out requirements for new charge point installations as detailed in the national Electric Vehicle Charging Strategy.[10] As well as underlining the points set out above, these requirements emphasise the primacy of planning for active and sustainable modes of transport in the provision of a holistic transport network based on the hierarchy set out in Policy EVCI-1:

- Charge points should not obstruct pavements or highways or present a safety risk to pedestrians.
- Cables will not be allowed to trail across the pavement unless adaptive infrastructure is provided to accommodate them safely (e.g., gullies). Anything that creates a trip hazard does not constitute adaptive infrastructure.
- Charge points must be incorporated into existing street furniture or parking bays wherever possible. In circumstances where it is not possible, priority must be given to ensuring that access to, and use of, pavements is not impeded, and safety of pedestrians is not jeopardised.
- Parking spaces for EV charging will not be added in places where parking spaces are currently not allowed, nor where they could disrupt traffic flow, cyclists, or pedestrians.
- Charge point design and placement should meet accessibility standards and guidance.

10 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1065576/taking-charge-the-electric-vehicle-infrastructure-strategy.pdf

Policy EVCI-12: Situating Electric Vehicle Charging Infrastructure

St Helens Borough Council will only support or procure installation of EVCI that:

- Do not obstruct pavements, cycleways, or highways, or present a safety risk to any road users, particularly vulnerable road users.
- Do not require trailing cables across the pavement unless adaptive infrastructure is provided, and no trip hazard is created.
- Do not disrupt traffic flow, including cyclists, and do not impede pedestrian movements.
- Do not introduce additional car parking where parking spaces are not currently provided or allowed.
- Avoid the creation of additional unnecessary street clutter.
- Comply with local and national planning policy.
- Meet national accessibility standards and guidelines, particularly working towards compliance with BSI PAS 1889:2022 Electric Vehicles Accessible Charging.

The planning of all installations will fully consider liabilities, planning consents, road safety implications, positioning, management, and accessibility requirements in line with the latest technical standards and national best practice.

Wherever appropriate, we will use EVCI installations as an opportunity to collocate multimodal facilities, such as cycle parking and bus stop infrastructure. As part of the development of our forthcoming Local Transport Plan, the Liverpool City Region Combined Authority is considering the case for the development of a Kerbside Strategy and Policy, setting out a strategic approach of managing kerbside highway uses. The Kerbside Strategy may seek to enable accessible and active travel, create social spaces, increase climate resilience, and reduce traffic and emissions. It also means a much more diverse kerbside with potential for new shared scooter and bike bays, electric vehicle charging points, cycle hangers and support for businesses using cargo bikes and electric delivery vehicles.

11. Conclusion and Action Plan

In many ways the transition to EVs will be influenced by factors outside the control of St Helens Borough Council and in some cases, the UK Government. Overcoming challenges regarding the global supply of batteries / vehicles and the interlinked issue of EVs being comparatively more expensive than ICEs, will require a cross-sector effort by both public and private sector organisations. St Helens can however take strategic actions to ensure the local environment is fit for the EV future alongside wider cross sector working. The below table sets out key strategic recommendations to create this conducive EV environment, the rationale underpinning this and indicative timescales.

A number of measures are proposed in this strategy to support the transition to electric vehicles in St Helens as set out below. The report also makes recommendations for delivery of charging infrastructure as set out in section 9 – Site Assessments, of this report.

Recommendation	Rational	Timescale
1. Provide a balanced base charging network (right charge point, right place) that gives residents, visitors, and fleet operators the confidence to transition to EV. Using the site recommendations detailed in this study, provide a base level of infrastructure to encourage uptake. Provision of charge points by the commercial sector and local authority combined is considered reasonable across the majority of St Helens with a mix of slow, fast, and rapid charging. However, rapid charging capabilities are currently lacking in some areas within the borough including Newton-Le-Willows, Rainford and St Helens town centre, limiting the potential for on-route, destination, residential and taxi charging. Recommendations for improving charging provision in St Helens are made in the following sections. Using the model detailed in Appendix E approximately 3 - 7 rapid chargers are recommended in the St Helens area based on currently registered EVs, broadly in line with current provision. Under this model, by 2025 approximately 34 - 97 rapid chargers would be required in the St Helens area. It is recommended that due to a number of uncertainties however, monitoring of utilisation rates is conducted and engagement with the commercial sector conducted on an ongoing basis to determine the optimum time to bring forward further charge points on top of the base network.	Although there is no empirical link at present between the provision of charge points and uptake of EVs, public opinion surveys consistently show the opportunity to charge at publicly available charge point is highly valued. As the supply of vehicles increases it will be important to give users confidence that facilities exist to support their journeys. With increasing battery capacities, the ability to charge quickly on rapid chargers (or in time ultra rapid) will be important. Additionally, residents who do not have access to off-street parking will require public facilities. The commercial sector is expected to pick up a significant proportion of the demand and future rollout strategy should be done in consultation and with reference to this. Rapid chargers cater for a broader range of us cases and therefore are the most appropriate type of charger to invest in in most cases.	Maintain base network in the short term to 2023 (0-2 years) and expand facilities as demand increases to 2025. Monitoring of utilisation and engagement with commercial sector to determine further phases of infrastructure to be brought forward over the medium to long term (2023+).

Recommendation	Rational	Timescale
2. Consider undertaking trials of on-street charging solutions in residential areas with limited off-street parking. Look to install on-street charging for an area without off-street parking through a combination of charge points in car parks that are conveniently located and on-street charging provision in locations using charge point types that don't conflict with place making. Consider the trial of a community hub facility.	St Helens Borough Council could undertake trials in an area with limited off-street parking to understand any key issues and the feasibility of rolling out wider infrastructure which could help form a policy position going forward.	Short to medium (0-3 years).
3. Future proofing technology and the operating model deployed in future phases of infrastructure rollout and procurement of commercial partners / contracts. This would entail specifying future proofing electricity connections for high capacities where feasible, procuring robust charging infrastructure to appropriate specifications (e.g. OCPP), and adding to the charging network ultra-rapid chargers as the number of vehicles capable of accepting this charging speed increases. Commit procured providers to a requirement for keeping pace with innovations alongside a technology roadmap.	Currently the demand for ultra-rapid charging is limited by the low numbers of models with this capability. Additionally, the technological solutions for vehicle to grid and inductive charging are relatively immature. However, these technologies are likely to play a prominent role in the future.	Integrate requirements for keeping pace with innovations into contracts with commercial partners in the short term (0-2 years). Delivery of ultra-rapid chargepoints in the medium to long term (2025+).
4. Embed the monitoring of technological development and maturity of solutions within the appropriate LA teams to address use cases that are currently problematic such as HGVs.	These use cases although problematic at present are still key to meeting policy aims, particularly given the industrial estates and logistics operations based in St Helens.	Monitoring over short to long term (0-4 years).

Recommendation	Rational	Timescale
5. Conduct procurement of strategic commercial partner through developing a bespoke contract to leverage land assets to secure investment. Recommend using the site assessments in this study in combination with market engagement to offer a balanced package of sites which overall will be commercially attractive and meet policy aims of creating a balanced network. It is recommended that a coordinated approach is taken to setting tariffs for usage of charge points in partnership with the commercial operator. Ex-Franklin/Raw Charging Ltd assets will also need to be refreshed in future. In tandem with developing a procurement exercise, seeking external funding from government from: On-Street Residential Charging Fund; Charging Infrastructure Investment Fund; Ofgem funding; and forthcoming funding such as Local Electric Vehicle Infrastructure (LEVI) funding.	A procurement exercise alongside LCRCA maximising the scale of the opportunity is likely to realise best value and leverage investment	Short term to 2023.
6. Ensure EV strategy is not delivered in isolation but is pursued as part of a wider policy to reduce overall car use through e-car clubs, ultra-low emission buses, shared and micro mobility, and potentially mobility as a service in the longer term.	Electrification of personal cars will play a key role in decarbonisation however this on its own will not achieve CO2 reduction targets or tackle other issues such as congestion on roads, improving health / wellbeing, and placemaking within communities. Transition to EV must be delivered as part of an overarching transportation plan to reduce overall car use. Joint working with the wider Liverpool City Region should be conducted to deliver these complementary measures to ensure a joined-up offer for users.	Ongoing through short to long term (0-4 years).

Recommendation	Rational	Timescale
7. Continue engagement with SP Energy Networks (SPEN) and Electricity Northwest (ENW) to address key points of weakness in the power network specifically linked to the sites noted in Section 8 regarding site assessment chapter. Identify capability at each charge point location for expansion and costs of additional points.	Provision of cost-effective power connections will be fundamental to the delivery of charging infrastructure.	Ongoing through short to long term (0-4 years)
8. Develop appropriate local EV parking standards that defines requirements for new developments. This could include introducing local standards for 'active' and 'passive' EV parking bays and % requirement for both in new developments. An active bay requirement could include provisions for ducting space, energy supply, cable installation, and charger installation. A passive bay could be ducting and chamber space only (ready for future cable and charger installation). This review may also include establishing a local standard for design and accessibility requirements particularly for wheelchair access around EV bays. For potential consolidation of car parking / new car parks, ensure EV charging is included as per recommendations within the St Helens Parking Report.	The introduction of local design standards will help increase provision of charging infrastructure and bays that are 'EV ready' passive bays for future installation as demand continues to increase.	Short to medium term (0-3 years).
9. Consider future-proofing highways schemes and redevelopment within St Helens Town Centre by making EVCI ready by installing cable routes and charger chambers for future EVCI installation at locations where greater demand is expected.	Installing charger chambers and cable routes at the time of construction will be less costly than retrofitting later. Requirements will mean that it will be easier to install chargers in the spaces and pull cable through ducting space in future. Potential future revenue opportunity for St	Short to medium term (0-3 years).

Recommendation	Rational	Timescale
Whilst Government has introduced recommended minimum standards for new developments the potential to deliver futureproofed infrastructure within highways schemes has received less focus	Helens depending on who installs cabling (connection rent) and EVCI. Would require joint working with partners.	
10. Promotion and Education - to review how residents and businesses could be better supported to make a transition to EV. This could include myth-busting, signposting to organisations that conduct fleet reviews for businesses, tracking EVCI charger demands, providing supportive material, organising EV trial days, and learning sessions from existing EV drivers. This could also include undertaking travel to work surveys and provide a review of staff travel plans.	There are some EV myths that continue to perpetuate from earlier EV market development such as range anxiety. General terminology, model choice and charger types can be confusing. Continued and increased education and promotion will help encourage EV adoption further and can increase confidence for users and businesses to switch to EVs.	Short to medium term (0-3 years).
11. Explore the potential for St Helens to be a testbed for trialling innovative EV technology and associated solutions. This could be achieved through establishing a supportive policy and legislative environment, establishing key partnerships with local suppliers e.g. E-verve, and targeting supportive innovation funding opportunities.	Similar to the development of the St Helens Hydrogen Refuelling Centre, there is considerable opportunity to establish a lead on trialling EV technology and energy generation/management systems.	Short to medium (0-3 years).
12. To lead by example by continuing to transition the Council fleet where applicable to EV.	This supports the uptake of EVs within the Council's own fleet and any grey fleet and be viewed as the Council "leading the way" whilst also increasing visibility of EV across the borough, supporting the wider take-up of EVs through demonstration. Since 2019, the Council have	Short (0-2 years)

Recommendation	Rational	Timescale
	started the process of decarbonising their transport fleet by acquiring electric vans, trialling alternatively fuelled vehicles and retiring old inefficient vehicles.	
13. To develop and introduce EV contract specification and standards within relevant contracts to ensure suppliers are transitioning to EV.	St Helens Borough Council has the ability to specify EV requirements when contracting suppliers and third parties, ensuring a wider take-up of EV.	Short to medium (0-3 years).
14. Continue to explore how the taxi sector and freight / last mile delivery could be better supported to encourage EV adoption. This could include regularly updating on model choice, reviewing current costs, signposting of vehicle financing options (e.g. pay per mile loans for EV taxi), policy and other financial incentives.	A much clearer breakdown of full costs, finance options and efficiencies/savings using examples and lessons learned from elsewhere may help encourage EV take-up.	Short to medium (0-3 years).
15. To explore local opportunities for renewable energy generation in addition to ensuring contractual obligations for supplying EVCI.	An opportunity to support the development of renewable energy sources as a long-term revenue investment with potential to also supply EVCI.	Medium to long term (3-4 years).
16. To engage with the public on any proposals / EV strategies to understand their views.	Public buy-in and awareness of the Council's plans will improve uptake and provide helpful feedback for consideration.	Short to medium (0-3 years).

Table 11.1/1: Action Plan

The above key strategic recommendations will require dedicated resourcing, funding, and the collaboration of external partners to complete delivery. While Council budgets are uncertain and under unprecedented constraint, the Council will use its best endeavours to deliver on the aspirational commitments made in this document, using existing project funding, future Government funding opportunities and partnerships with the private sector that deliver an effective and inclusive EVCI network for St Helens Borough with minimal impact on existing Council budgets. All timescales are indicative targets only and will often be dependent on external funding and delivery timelines outside the horizon of this strategy.

Indicative Timescales for Key Recommendations

	Timescales		
	Short Term (2023-2024	Medium Term (2024-2030)	Long Term (2030+)
Provide a base level of infrastructure to encourage up take of EVs.			
Continuously monitor utilisation of charge points and bring further additional infrastructure in co-ordination with the commercial sector.			
Conduct procurement of strategic commercial partner			
Future proof technology provided in base network and ongoing procurement			
Pursue the integration of EVs with the wider hierarchy of transport			
Continuously engage and collaborate SPEN and ENW to future proof the power network			

Table 11.1/2: Indicative Timescales for Key Recommendations

12. Appendices

12.1 Appendix A: Geospatial Demand Model

Overview of Model

The usage potential for any charging site depends on many different factors, but the most important is the total number of EVs. This is not a static number, either spatially or temporally. Therefore, it was important to develop a model that can handle both the variation in location and the year of interest. To understand how the public fleet will transition to EVs, the model includes a function to assess how new technology will diffuse into an existing fleet. The diffusion of the new vehicle models was governed by two important characteristics outlined below.

Characteristic	Description
Rate that new vehicles are purchased	This determines the "churn" of vehicles within the overall fleet. If few new vehicles are being purchased (e.g., due to a recession), there will be a substantial reduction in the transition to EVs as the population of vehicles is not being replaced.
Probability of new vehicle purchases being an EV	If the fleet is to transition to EVs, the probability of each new vehicle being an EV should increase to 100%. This aligns with the 2030 target that has been set by the UK Government.

Income data for each Middle Super Output Area (MSOA) and the ratio of new vehicle to existing vehicle registrations was used to generate a probability of new vehicle purchases. This variable alters with income due to the strong relationship between average income and new vehicle purchase rates.

To calculate the probability of new vehicle purchases being an EV, a choice model was used. This model is a technique for providing a systematic method of choosing between multiple options, each of which may have benefits associated with it. The choice model used was a Binary Logit Choice Model, with changing variables over two alternatives. This allowed the probability of choosing between two distinct options available to the purchaser to be calculated. The general form of this model is shown below.

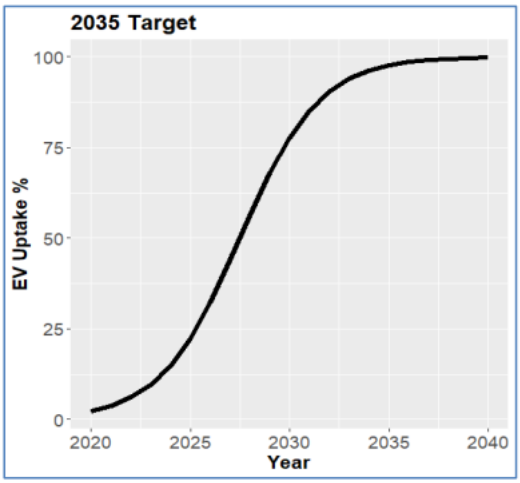
$$P(C_1) = \frac{\exp(\lambda U_1)}{\exp(\lambda U_1) + \exp(\lambda U_2)}$$

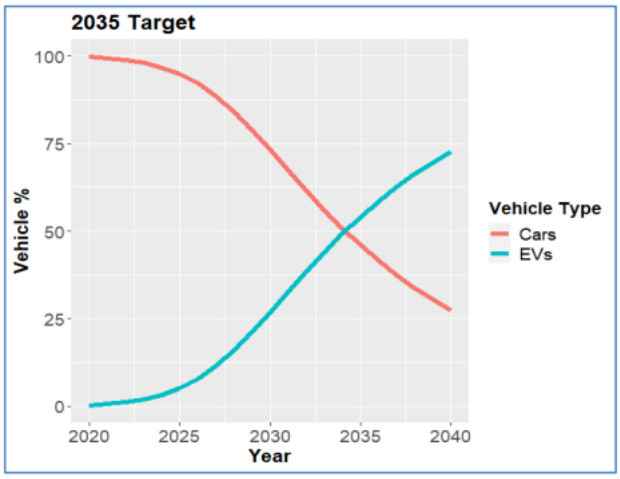
Here, C1 represents Option 1 and U1 represents the Utility of that choice (defined below). λ is a parameter used to determine the sensitivity to change for the utility values within the model. The utility in this case is defined through a combination of income and EV price. From this model, a stock flow equation was created to govern the movement of vehicles into and out of the public fleet.

$$Fleet_{2021} = Fleet_{2020} + New\ Vehicles_{2021} - Scrapped\ Vehicles_{2020}$$

The fleet in 2021 is governed by the fleet in 2020 plus all new vehicles from 2021, minus those vehicles scrapped in 2020. The new vehicles will comprise a mix of ICE and EV.

The two charts below show that the number of EVs in the fleet lags behind the 2035 target. Even though 100% of all new vehicles by 2035 will be EVs, the fleet will only contain approximately 50% EVs.





Data Review of Information Feeding into the Model

The model has been constructed, where possible, through the combination of publicly available data sets shown in the table below.

Data	Description	Use
Current EV Sales	The current EV sales by Local Authority	To determine both the current state of the EV market and also used to verify the uptake model.
Current Car Totals	The current car totals by Output Area	To disaggregate EV uptake into smaller zones.
Housing Distribution	Total numbers of houses, including housing type by Output Area	To determine the percentage of homes with off street parking.
Income Distribution	Median income by MSOA	To determine both EV uptake percentage and the probability of purchasing a new vehicle.

Employment Distribution	Employment type by LSOA	To determine the destination charging potential using different employment types to categorise the zones
Journey to Work OD Matrices	Survey data from MSOA to MSOA	To determine journey charging potential.
OpenStreetMap Road Network	Open-source Road network	To construct a graph network of the UK which, with the journey to work matrices, is used to model long distance movements.

12.2 Appendix B: Evaluation of charging options for residents without private off-road parking

Option	Streetscape & Mobility Impact	Complexity & cost of deployment	Commercial Sustainability	Scalability
Off-road fast charging hubs	Nil - Avoids street clutter	Medium/ High density installations enable efficiencies. Reduced interaction with utilities and parking regulations: deployment is less complex	High Multiple charger installations enable cost savings. ORCS funding can be accessed for certain property-types. Use by residents and car park visitors generates higher usage and income. Opportunities for private investment and concession agreements.	High Opportunities to deploy in publicly or privately owned car parks.
Cable gullies / channel	Medium - Integrates well into existing streetscape. Requires footway excavation. Reliant on users feeding cable into channel – potentially dirty and with implications for disabled users. Potential for heels to get caught, causing trips unless enclosed and heel weight tested.	Low - Low tech and simple: reduces costs of installation significantly. Regular cleaning of channel needed to remove leaves / detritus. May require agreement with resident. May require residents to hold public liability insurances. Impact on highway maintenance costs for reinstatement works by third parties.	High - Potential for self-funding by residents, similar to dropped kerbs. Low maintenance requirements mean very low ongoing costs. Potential for damage by statutory undertakers.	Medium - Very few limitations on where cable gullies can be deployed. Clusters of gullies in close proximity may impact cost of footway maintenance.

Option	Streetscape & Mobility Impact	Complexity & cost of deployment	Commercial Sustainability	Scalability
Off-road rapid and ultra-rapid charging hub	Nil - Avoids street clutter entirely.	Medium - Multiple charger installations can enable efficiencies in deployment. Reduced interaction with utilities and parking regulations makes deployment process less complex. High power needs of rapid and super-rapid charging can create complexities and significant costs in securing power supply.	Medium - Higher usage across groups generates greater income for operator. This is balanced by significant upfront costs for installation. Opportunities for private investment and concession or hosting agreements with landowners.	Medium - Suitable sites with appropriate power supplies are challenging to secure. High numbers of rapid and super-rapid chargers generate significant challenges for local and national electrical grid.
Street-light integrated charging	Low - Integrates well into existing streetscape. Limited to locations with streetlighting at kerbside.	Medium - Relatively simple installation. ORCS funding can be accessed for certain property-types.	Medium - Low cost of technology and installation. CPOs moving away from concession models including maintenance.	Medium - Deployment limited to areas where streetlight position is at leading edge of footway. Deployment limited by lighting network capacity.
Freestanding on street charger bollards	High - Generates street clutter from charger pillar and electrical supply cabinet. Removes space for	High - Dedicated electrical supply is required. Low density installations: cost savings cannot be realised. Potential high level of	Low - Higher costs of installation and low utilisation mean that residential on street locations are less commercially	Low - Deployment limited by grid capacity and pavement width. Lack of commercial sustainability means

Option	Streetscape & Mobility Impact	Complexity & cost of deployment	Commercial Sustainability	Scalability
	walking and cycling modes.	maintenance/ replacement needed due to vandalism/ vehicle strikes.	viable in the near term (5-10 years). CPOs moving away from concession models including maintenance.	operators by be reluctant to install in areas likely to see low usage without subsidy.
Rising bollards	Medium - Stored below pavement surface when not in use. Some clutter impact when in use.	High - Deep excavation required, generating complexity with existing utilities and archaeological sites. Dedicated electrical supply is required. Costs are higher for installation.	Low - Higher costs of installation and low utilisation less commercially viable in the short term. Charger operators moving away from concession models including maintenance. Additional maintenance liability to ensure raise/ lower function operates.	Low - Deployment limited by grid capacity, pavement width and underground utilities. Lack of commercial sustainability means operators by be reluctant to install in areas likely to see low usage without subsidy.
Removable Lance	Low - Depending on design some clutter when not in use. Some impact when in use. Depending on design lance may be too heavy/ inaccessible for some users.	Low - Relatively simple installation. Dedicated electrical supply is required.	Medium - Relies on users having correct lance from correct manufacturer. 'Locked in' to particular supplier.	Low - Deployment limited by grid capacity and pavement width.

12.3 Appendix C: Commercial Modelling

Commercial Modelling Introduction

Integrating the modelling results with potential commercial models introduces a wide range of uncertainties. In addition to the underlying potential variation in EV uptake, the commercial viability of any model will be determined by the:

- Broadly unknowable behavioural change for future EV users; and
- Price of electricity and installation/ maintenance costs.

Whilst it is possible to determine the broad range within which such parameters may fall, there is an inherent uncertainty. However, as an indicative exercise three separate commercial models for the installation of 10 charge points across St Helens has been considered. The charge points are not in specified locations but are drawn from the population charging potential at evenly spaced percentile intervals (i.e., the least commercially viable charge point to be considered would be in position 90 out of 100 charge points, the next at position 80 and so on).

In reality it is unlikely that the charge points would be so evenly distributed across the charge potential, but in some ways, this simulates the need for local authorities to provide charging infrastructure based on equality of access rather than a purely commercial assessment.

Please note that commercial modelling was undertaken at the time using pre-energy price rise costs and pre-pandemic charging usage data.

The base level of usage for a single charge point in 2021 has been derived from the usage stats provided for 2021. The average charge recorded per day, for a single site, was 4.1 kWh. This is the value that will be scaled using the predicted EV uptake values. 4.1 kWh of charge per day, sold over the course of a year at a price of £0.15/ kWh and over the cost of purchasing the electricity, would create a revenue of £225 per year. Whilst this is substantially under the cost of installing a charge point (typically at around £5,000 including scoping etc.), it is the expected growth in EVs which may make this a potentially viable revenue stream.

The total number of charge points to be installed at each site is determined through assuming that the total charging demand will scale with the expected growth in EVs, and each charge point will be able to serve a total demand determined by:

$$Total\ Energy = Charge\ Point\ Power \times 24 \times Max\ Utilisation$$

The Charge Point Power is determined by the power rating of the charge point (e.g., 7 kWh). 24 is the number of hours in the day and the Max Utilisation is a ratio specifying the actual number of hours which the charge point could realistically be expected to charge. For example, a charge point with a Max Utilisation of 50%, would be expected to be in use for no more than 12 hours in a day.

Commercial Models

Three distinct commercial models have been chosen for this preliminary examination:

- **Model 1:** St. Helens installs all ten charge points across the ten sites. It is responsible for the maintenance, operating and installation costs but retains all revenue.
- **Model 2:** Private Companies install at the 5 best charge points whilst St. Helens installs at the other 5. Each operator is responsible for their own costs, but the Private Companies pay a commission of 10% on all profits generated from the charge points (Note: In a tender exercise the % required would be left open to bidders to competitively offer so may be higher)
- **Model 3:** Private Companies install at all ten charge points but pay a relatively modest fixed rent. (Note: in a tender exercise typically % profit share and a payment per post would both be required)

There are many other models which could be proposed. However, these three models are considered to represent a reasonable balance between Public and Private installation. The basic structure of each model is that a series of charge points are installed with the total number determined by the charging demand at each site. For this basic model, the costs are assumed to be linear with little to no efficiencies of scale in the delivery of charge points.

The cost of each charge point, and the subsequent revenue, is borne by the installing party. The exception is Model 2 where a commission is paid to St Helens Borough Council from the private installers. The price per kWh (£0.15) * is assumed to be constant throughout each model.

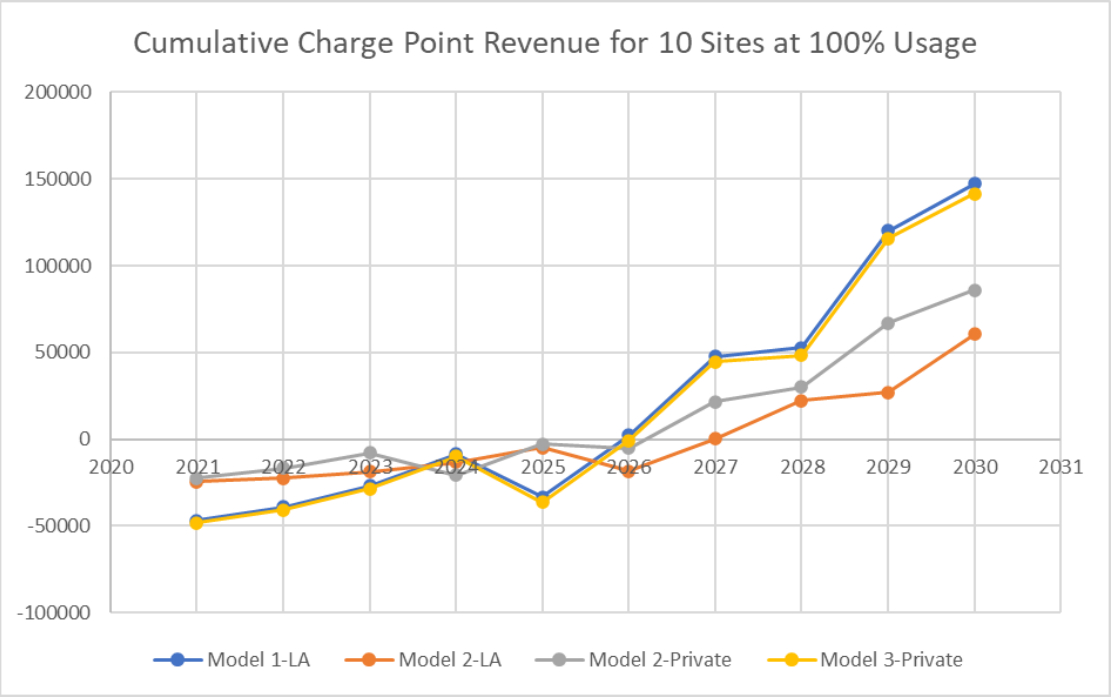
**This analysis was carried out pre recent energy price rises*

The chart below illustrates the fundamental risks involved in funding extensive EV infrastructure. Under the standard charging demand no models break even before 2025. After this point, both Model 1 and Model 3 begin to generate increasing revenue fuelled by the increasing uptake of EVs.

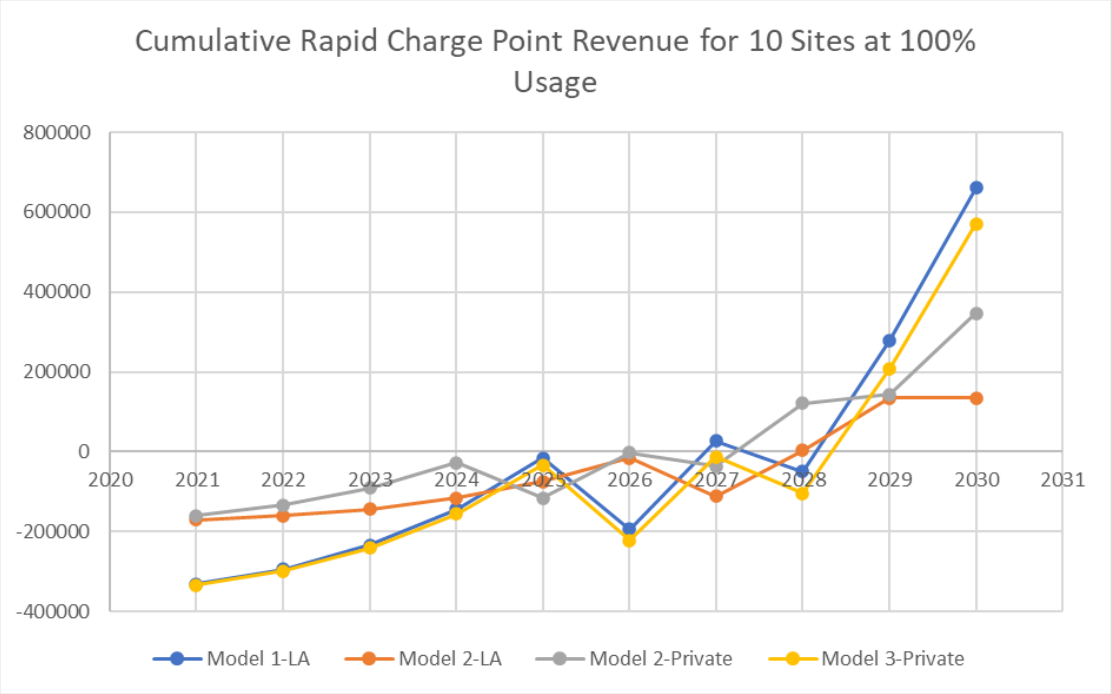
However, both Model 1 and Model 3 show a large initial outlay. Whilst it is expected that this will eventually be recouped, there is the risk external events may lead to a substantially reduced charging demand.

Model 2, a blended model between private and public installation, shows a much flatter revenue curve. Both private and public spend far less in the first five years, but also generate less income as the EV demand increases.

Slow Chargers

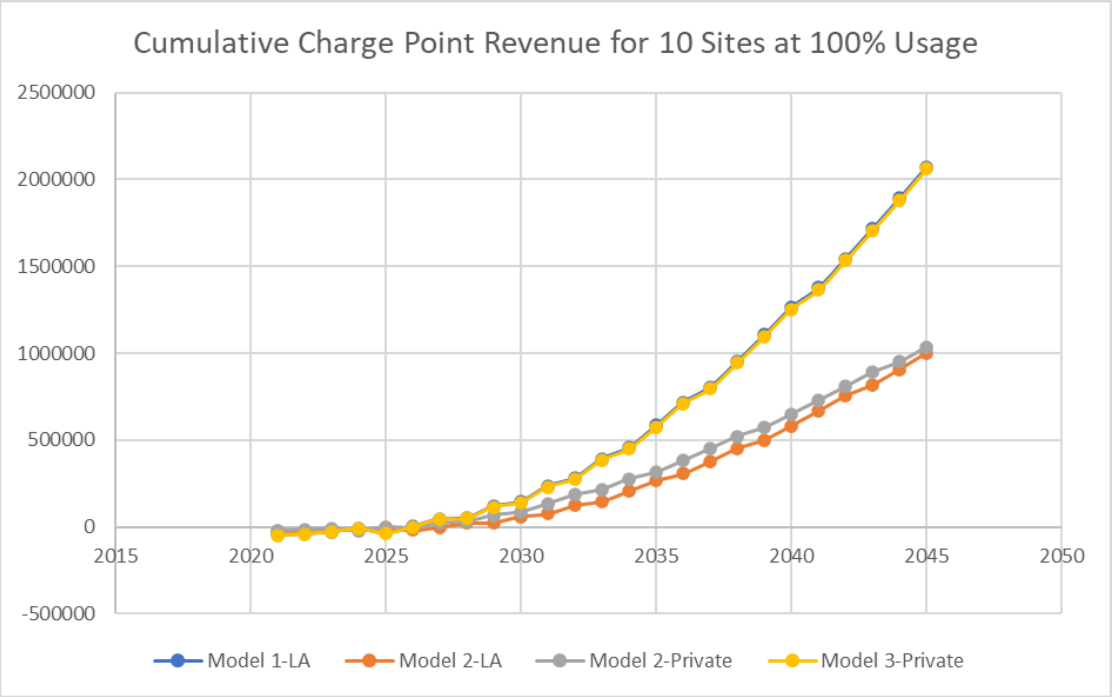


Rapid Chargers

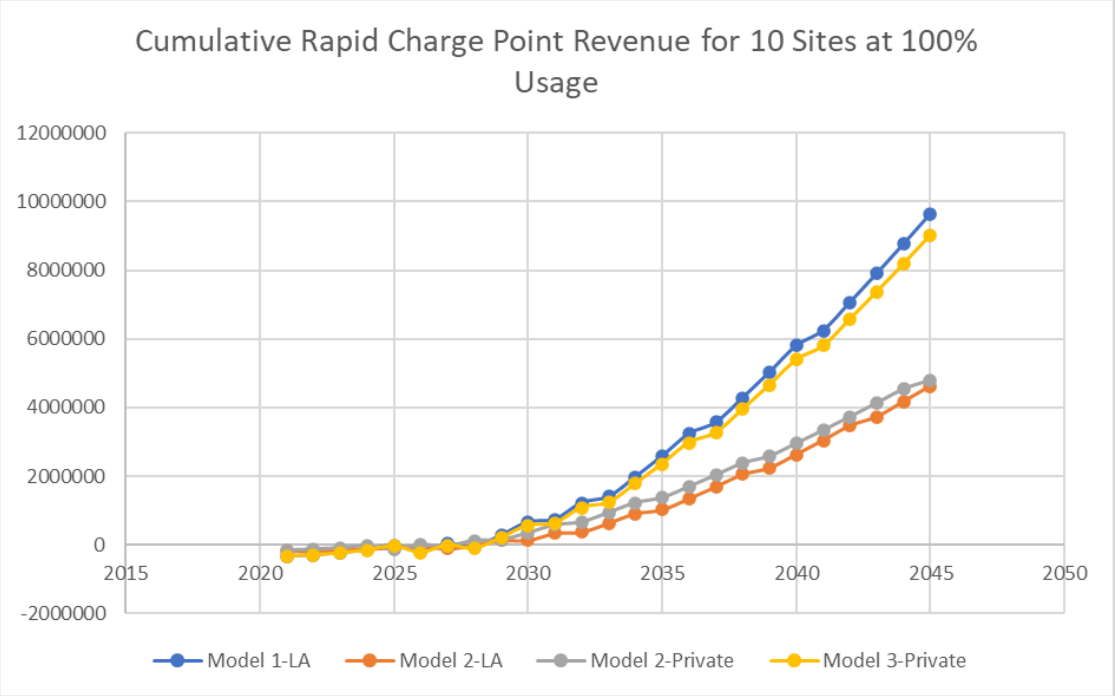


In the next chart below, the future outlook has been expanded through to 2045. At this point, the cumulative net revenue generated across the 10 different sites has increased much more steeply, leading to each site generating a healthy profit. However, it is important to note that this is based on multiple assumptions, specifically that each site may continually install charge points to keep up with demand.

Slow Chargers

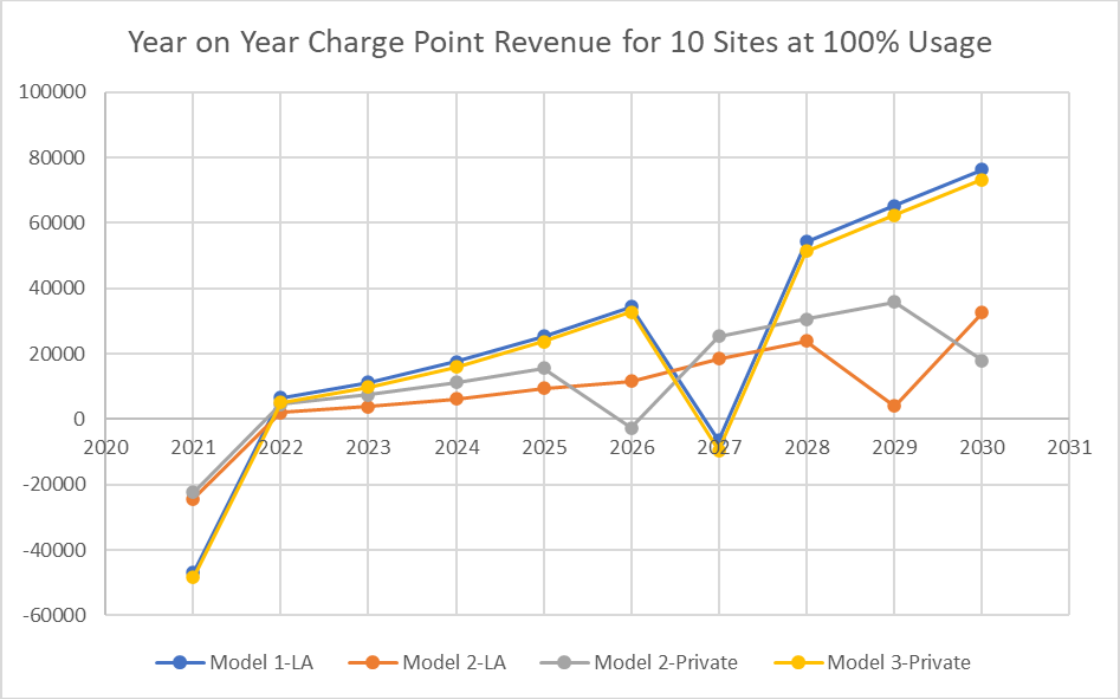


Rapid Chargers



In contrast, the annual revenue between 2021 and 2031 in the chart below demonstrates the major fluctuations in revenue (and hence the reduction in total cumulative revenue). This is caused by the purchase and installation of charge points.

Slow Chargers

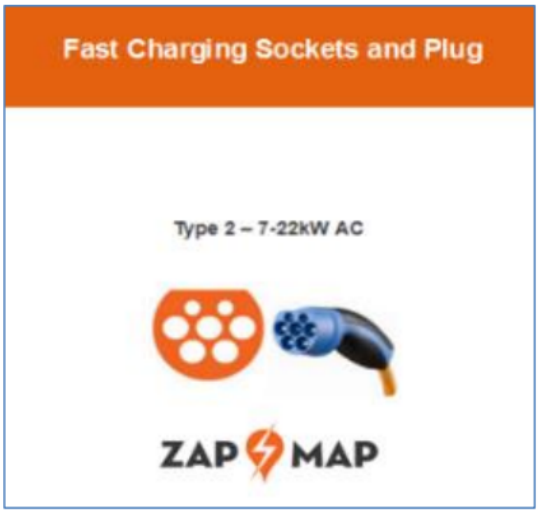

Year on Year Charge Point Revenue for 10 Sites at 100% Usage
100000
80000
60000
40000
20000
0
-20000
-40000
-60000
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
Model 1-LA
Model 2-LA
Model 2-Private
Model 3-Private

12.4 Appendix D: Additional Information on Charging Connectors

PIV cars and light vans are supplied with a charging cable used to connect the vehicle to slow or fast charge points. This cable has a plug specific to the vehicle on one end, and a suitable plug on the other end to connect to slow/ fast charge points in the UK. Some vehicles have separate charging sockets for slow/ fast and rapid charging solutions, whilst some manufacturers have standardised around one vehicle-side socket for all charging solutions.

Charging cables are typically supplied with a Type 2 plug to connect to slow and fast charge points in the UK. Charging cables are also available fitted with standard UK three-pin plugs, which are intended for infrequent use where Type 2 charging solutions are not available.

Rapid and high-power chargers do not use the cable supplied with the vehicle. Instead, these chargers are fitted with tethered cables and connectors that plug directly into the vehicle due to the high power being delivered. There are four socket/ plug formats used for rapid and high-power charging in the UK. Most vehicle manufacturers use the CHAdeMO or CCS DC socket/plug for rapid and high-power charging.



(Source: Zap-Map)

There are many different types of chargers, the following image shows a local company (E-Verve Energy) that supply wall mounted chargers.

Source: Press Release (issued November 2021)

12.5 Appendix E: Rapid Charger Model

The below sets out the methodology used for the Rapid Charger Model referenced in this strategy.

$$Number\ of\ Rapid\ Chargers\ Required\ Per\ Day = Nv\ x\ \text{Pr}\ x\ (\ Ct\ Cw)$$

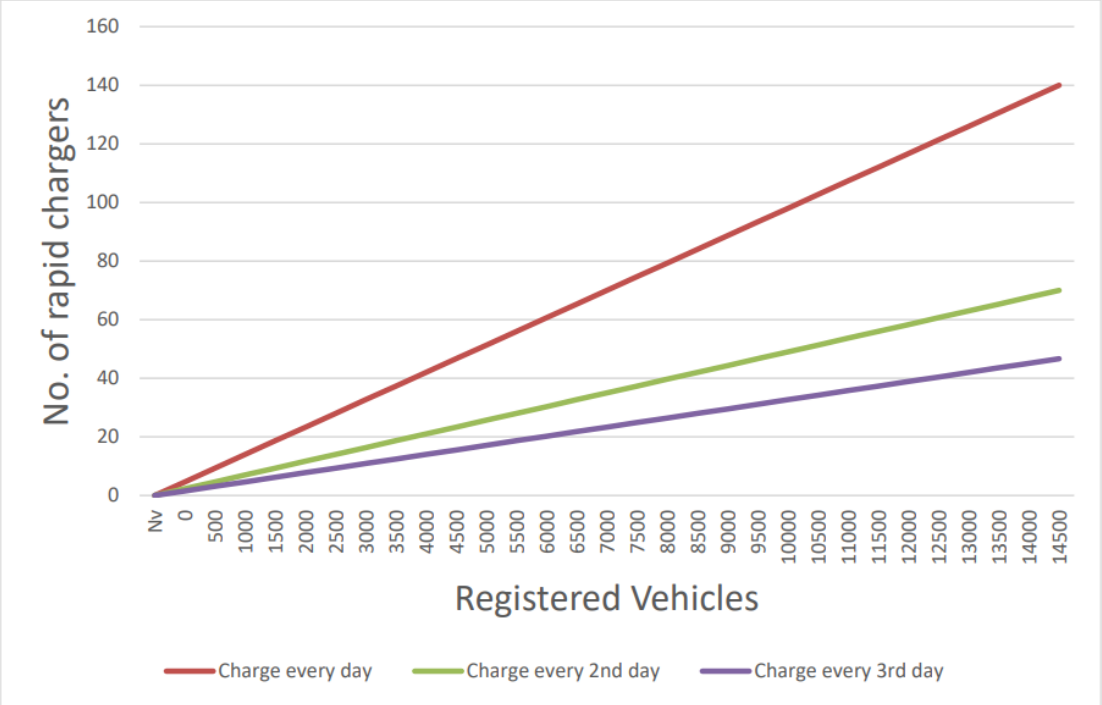
Where:

- Nv = number of vehicles expected in Cheshire West and Chester.
- Pr = The percentage predicted which may/ will use a rapid charger (20%). This is based on research that 80% of EV owners charge at home.
- Ct = The average charge time (42 minutes); and
- Cw = The charge window (the realistic window when people will use rapid chargers each day. This has been assumed as 900 minutes (15 hours) each day.

The chart below presents three scenarios from the model, which are:

- Charging every day.
- Charging every second day; and
- Charging every third day.

These scenarios have been assessed because of the uncertainty in consumer behaviour in the future. This shows that the number of required rapid chargers decreases as the frequency of charging decreases.



The range of rapid chargers required in St Helens for 2021, 2025, 2030, 2035, 2040 and 2045 are presented below:

Future Year	Charging Behaviour Scenarios		
	Every Day	Every Second Day	Every Third Day
2021	50	25	17
2025	325	162	113
2030	828	414	289
2035	1231	615	430
2040	1496	748	522
2045	1666	833	582

This model provides estimates of the likely number of rapid chargers required to aid strategy development. However, as noted in the main body of this strategy, there are several uncertainties regarding the uptake of EVs and consumer recharging behaviour. For this reason, monitoring usage at current charge points should be conducted to understand the demand for further rapid charging facilities. The estimates in this section have been used as a contributory piece of evidence to inform strategy development and should not be used to directly underpin investment decisions and business cases.

12.6 Appendix F: Transport for the North Electric Vehicle Charging Framework Data

This Appendix sets out data developed by Transport for the North as part of their Electric Vehicle Charging Infrastructure Framework. Further details can be found at TfN Electric Vehicle Charging Infrastructure Framework

Electric Vehicle Uptake per 1000 Vehicles

The tables below set out TfN's projections of future EV uptake per 1000 vehicles for St Helens Borough, split according to EV and vehicle type, across four future scenarios. Averages have been added. Data accessed March 2023.

Car – Battery EV

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	530	460	510	650	770	850	880
Digitally Distributed	530	460	680	810	870	890	890
Prioritised Places	530	380	560	710	810	870	890
Urban Zero Carbon	530	570	710	810	870	890	890
Average	**530**	**467**	**615**	**745**	**830**	**875**	**887**

Car – Plug-in Hybrid EV

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	410	440	390	250	130	46	9
Digitally Distributed	410	450	220	97	33	6.7	0
Prioritised Places	410	530	340	190	87	28	4.5
Urban Zero Carbon	410	340	190	91	32	6.7	0
Average	**410**	**440**	**285**	**157**	**70**	**22**	**3**

Van – Battery EV

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	46	47	55	68	83	94	100
Digitally Distributed	46	47	74	84	92	98	100
Prioritised Places	46	39	61	75	87	96	100
Urban Zero Carbon	46	58	76	85	92	99	100
Average	**46**	**48**	**66**	**78**	**88**	**97**	**100**

Van – Plug-in Hybrid EV

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	0	43	41	26	13	5	2
Digitally Distributed	0	44	22	9	3	1	0
Prioritised Places	0	52	35	19	9	4	1
Urban Zero Carbon	0	34	19	9	3	1	0
Average	**0**	**43**	**29**	**16**	**7**	**3**	**1**

HGV – Battery EV

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	20	6	3	3	3	4	4
Digitally Distributed	20	4	3	3	3	4	4
Prioritised Places	20	5	3	3	3	4	4
Urban Zero Carbon	20	3	3	3	3	4	4
Average	**20**	**4**	**3**	**3**	**3**	**4**	**4**

EVCI Requirements

The tables below set out TfN's projection of the total number of EV charge points needed to meet future charging demand within St Helens Borough, split according to charge purpose/location, across four future scenarios. In some tables, data is also split by two 'user preference' scenarios, one of which shows an increased level of destination-focused charging. Averages have been added. Data accessed March 2023.

Destination

		2020	2025	2030	2035	2040	2045	2050
Just about Managing	Baseline	3	81	280	420	450	410	380
	Destination	8	190	670	1000	1200	1100	1000
Digitally Distributed	Baseline	3	120	260	360	380	390	380
	Destination	8	280	640	930	1000	1100	1000
Prioritised Places	Baseline	3	110	270	380	390	370	360
	Destination	8	250	660	960	1000	1000	1000
Urban Zero Carbon	Baseline	3	140	280	360	360	360	370
	Destination	8	340	710	960	980	1000	1000
Average	**Baseline**	**3**	**113**	**273**	**380**	**395**	**383**	**373**
	Destination	**8**	**265**	**670**	**963**	**1045**	**1050**	**1000**
	Combination	**5**	**189**	**471**	**671**	**720**	**216**	**686**

HGV Depot

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	31	160	200	400	490	530	520
Digitally Distributed	31	150	200	400	490	530	520
Prioritised Places	31	170	240	380	460	480	470
Urban Zero Carbon	31	170	240	380	450	480	480
Average	**31**	**162**	**220**	**390**	**472**	**505**	**497**

Home

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	300	6200	25000	48000	65000	74000	78000
Digitally Distributed	300	9100	29000	52000	67000	74000	78000
Prioritised Places	300	7700	27000	50000	66000	74000	78000
Urban Zero Carbon	300	12000	34000	55000	68000	74000	78000
Average	**300**	**8750**	**28750**	**51250**	**66500**	**74000**	**78000**

Public Residential

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	6	190	640	1000	1100	1100	1000
Digitally Distributed	6	270	610	900	1000	1000	1000
Prioritised Places	6	240	630	920	1000	970	950
Urban Zero Carbon	6	320	680	930	970	980	990
Average	6	255	640	937	1017	1013	985

Workplace

	2020	2025	2030	2035	2040	2045	2050
Just about Managing	3	56	190	300	330	290	260
Digitally Distributed	3	80	170	250	270	270	260
Prioritised Places	3	72	190	260	270	250	250
Urban Zero Carbon	3	94	200	270	260	270	270
Average	**3**	**75**	**187**	**270**	**282**	**270**	**260**

Potential on-route rapid charging locations (2025-2050)

(Source: TfN EVCI Framework Visualisation Tool)

Potential on-route rapid charging locations per LA (2025-2050)

(Source: TfN EVCI Framework Visualisation Tool)

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