



# The Welsh Government's EV charging infrastructure strategy and action plan

## Response to the CCEI Committee report (March 2023)

09/05/2023

In March 2023, the Climate Change, Environment, and Infrastructure Committee submitted its report on the Welsh Government's Electric Vehicle Charging Infrastructure Strategy and Action Plan. The report includes 21 recommendations. This is the Welsh Government's response to those recommendations.

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## Introduction

Since the Welsh Government published our EV Charging Strategy in 2021, we have invested over £26 million in charging infrastructure across Wales, increasing the number of public devices by 120%, corresponding to a total of 1,465 charge points as at 1<sup>st</sup> January 2023.

Between October and December 2022, Wales had the greatest increase in total charging devices at 17.3%, and the largest percentage increase in rapid charging or above devices at 26.9% compared to all regions across the UK.

Significant further investment will be required to meet projected levels of EV uptake and demand, especially after the proposed internal combustion engine (ICE) ban and into the 2030s.

Working with our delivery partners, we want to seize the opportunity to lead by example and help build a reliable, efficient EV charging network in Wales, transforming the way residents and visitors travel. To achieve this, Welsh Government has developed a programme-level roadmap, setting out actions across five key priorities for Welsh Government and delivery partners for the next 3-5 years, pivotal to the successful acceleration of EV charging infrastructure across Wales, and meeting the defined KPIs set by the Strategy.

I thank the members of the Climate Change, Environment and Infrastructure Committee for their report on the Welsh Government's EV charging infrastructure strategy and action plan. I have set out my response to the Report's individual recommendations below.

## Response to the 21 recommendations

### Recommendation 1

The Committee recommends that

The Welsh Government should revisit the EV Charging Strategy in light of the changing patterns of EV usage and the growth of commercial EVs. The Welsh Government should set a timeline for this work and consult with relevant stakeholders, including drivers and charging infrastructure providers.

**Response:** Reject

We recognise that, owing to the increasing uptake of electric vehicles, including battery electric vans, advancements in battery capacities and charging technology, patterns of EV usage are changing rapidly. However, we developed the EV charging strategy with this in mind and believe that the primary objectives of the strategy, increasing provision through supporting private sector roll-out and addressing gaps in the market as well as enabling longer distance travel throughout Wales, remain valid. Nevertheless, we will monitor emerging trends and seek to address specific requirements for public chargepoints where this would be useful.

As noted by the Committee, a plan for freight is being developed and we agree that decarbonisation should be considered as part of that plan. We are developing a greater understanding of potential requirements for infrastructure through engagement with experts as a signatory of the Global MoU on zero emission HDV (heavy duty vehicles), with the DfT and various fora, and are promoting Welsh participation in the Zero Emission Road Freight Trials.

**Financial Implications** – this work will be accommodated within existing budgets.

### Recommendation 2

The Committee recommends that

The Welsh Government should provide an update on the development of the Transport Decarbonisation Programme, which will support the decarbonisation of buses and taxis and private-hire vehicles.

**Response:** Accept

Net Zero Wales Carbon Budget 2 sets out the full range of policies to deliver carbon reductions during the period 2021 to 2025.

Welsh Government will provide an update on the Transport Decarbonisation Programme, which will support the decarbonisation of buses and taxis and private-hire vehicles, by the Autumn.

**Financial Implications** – None.

### **Recommendation 3**

The Committee recommends that

The Welsh Government should ensure that the EV Charging Strategy takes into account questions of equality and social justice.

**Response:** Accept

The Welsh Government has developed an equality impact assessment (EqIA) which looks at risks around the Welsh Government EV Charging delivery portfolio (initiatives, projects and studies) resulting in disproportionate or differential equality effects for protected characteristic groups. The EqIA has been carried out in line with the public sector equality duty in section 149 of the Equality Act 2010 (the Act). Whilst not an EqIA requirement, the report also identifies how equality issues have been integrated into the development of the EV charging portfolio to date. A copy of the EqIA report is attached.

**Financial Implications** – None.

### **Recommendation 4**

The Committee recommends that

No later than six months after the publication of this report, the Welsh Government should provide the Committee with a detailed update on progress against the Action Plan; progress against the commitments it gave in written evidence (set out in paragraph 13 of this report); and progress towards the delivery of each of the recommendations in this report.

**Response:** Accept

Officials constructed an ambitious delivery programme supported by modelling tools, National Standards and effective relationships with key delivery partners.

TfW has been leading a project to deliver 19 rapid EV charging points on the Strategic Road Network. This is being delivered by a unique partnership whereby the network is largely funded commercially, but public funding is focused on “unlocking” sites with severe grid constraints through funding DNO works. The location of these sites is focused in areas which are considered unlikely to benefit from purely commercial investment in the near to mid-term, yet are vital for

ensuring consistency of provision across the SRN for “top up” charging en-route to key tourist and other destinations across Wales. Development is also focused on sites in public ownership, with the added benefit of providing a modest income stream from the lease with charge point operators. Sites have also been carefully selected based on the facilities nearby, including their ability to provide benefits to existing local businesses and the hospitality sector. Completion of this project in 2023 will see rapid charge points at least every 25 miles and for most of the network every 20 miles across Wales – two years ahead of the Action Plan target.

This baseline charging infrastructure across Wales' SRN is a major step towards providing users with the confidence that they can drive across Wales without running out of charge – and the strategy's vision that “By 2025, all users of electric cars and vans in Wales are confident that they can access EV charging infrastructure when and where they need it.”

By January 2023, the number of chargepoints per 100,000 residents installed in Wales has increased from 21 to 47.2 (UK average is 55.3) or around 125% growth. Wales is showing the greatest increase of any UK region in both total charging provision (17.3%) and rapid charging (26.9%).

We will provide further update on progress against the Action Plan and progress on the delivery of the 21 recommendations by the end of September 2023.

**Financial Implications** – None.

## **Recommendation 5**

The Committee recommends that

The Deputy Minister should clarify how the deliverability plan will relate to the Action Plan and reassure the Committee that the production of plans is not a substitute for action.

**Response:** Accept

The purpose of the deliverability plan is to set out how the strategy and action plan will be delivered in practice, to be referred to as the EV charging Infrastructure Programme (the Programme), as Welsh Government sets out to accelerate the roll-out of charging infrastructure across Wales.

The Programme focuses on the deliverability of the financial, commercial and management cases of the strategy and action plan. A copy of the Executive Summary of the Programme report is attached.

The financial case suggests a total capex cost of between £351 million to £1,550 million for On-Route and Destination charging by 2040, with no growth after that point, with £114 million to £689 million spent on On-Route charging and

£236 million to £861 million on Destination charging. By this point On-Route chargepoints number 1.1 to 6.5 thousand and Destination 6.4 to 61.8 thousand, with a total of 7.4 to 68.4 thousand. Charging capacity reaches 141 to 1,165 MW, spread across 968 to 23,500 sites. This analysis is agnostic of which body is taking financial responsibility.

From a commercial perspective (and considering the considerable costs mentioned above), Welsh Government expects that most of the charging infrastructure will be delivered by the private sector. The role of Welsh Government is to facilitate private sector investments across Wales and ensure equality of access for all by focussed market interventions such as subsidies, concessions, etc. The plan for EV charging is to ensure more equitable coverage throughout the development of the network.

The Programme recommends that two elements of the delivery strategy be prioritised first (before moving on to others): the on-route network and destination / on-street charging in built-up areas. These elements will have the most short-term benefit for users in Wales, providing a strong cross-national network and catering to users who have a greater need for public charging.

The management case outlines the key considerations when delivering and managing the programme of interventions needed to facilitate and deliver the preferred network. The scale and complexity of delivering the EVCI programme necessitates a strong and effective management structure which determines how Welsh Government and delivery partners will deliver and manage the EVCI programme. This is a significant step-up from the Welsh Government resources that are devoted today.

More work and development are needed to implement the EVCI programme in the next phase, harnessing the work done to date (e.g. National Standards, early market engagement). To achieve this, a programme-level roadmap has been developed, setting out actions across five key priorities for Welsh Government and delivery partners for the next 3-5 years, to deliver successful acceleration of EV charging infrastructure across Wales, and meet the defined KPIs set by the Strategy.

5 key priorities:

1. Establish a Project Management Office (PMO) to govern delivery arrangements, set standards and monitor progress.
2. Provide support and guidance to enable local authorities (and private sector) to deliver the preferred network.
3. Engagement with the private sector to ensure we optimise the delivery of the preferred network and foster public-private sector collaboration.

4. Develop the mechanisms, knowledge and tools to deliver the preferred network.

5. Leverage the resource and mechanisms necessary to rapidly deliver the network in line with policy objectives.

**Financial Implications** – This work is being delivered by TfW (via the Remit letter), with support from Welsh Government.

## **Recommendation 6**

The Committee recommends that

The Welsh Government should review the KPIs in the Action Plan. For Actions to be delivered to a longer timescale, such as Actions 1 and 7, it should aim to develop more specific KPIs, with sub-actions and associated deadlines.

**Response:** Accept

Welsh Government will review the KPIs in the Action Plan to ensure they are specific, measurable, achievable, realistic and timebound (SMART).

Welsh Government believes the Committee's statement that "*Welsh Government had completely failed to deliver many of the Actions in the Action Plan and by the lack of progress towards achieving others*" is an unfair evaluation of the work and results that have been completed to date.

The complexity of delivering the strategy needs to be recognised. Key to the Welsh Government commercial strategy is the underlying principle that there can be no "one size fits all" approach to market intervention. The Welsh Government strategy sets out the need to balance actual charging needs with the goals of the preferred network, maximising return on infrastructure delivery while minimising public spending and allocating most risk to the private sector. Equality gaps in private sector investment need to be assessed on a case-by-case basis. Further, financial intervention need to be targeted and limited, considering factors such as ownership of land, the costs that will be passed on to the consumer, and the actual charging need in the area – for example, the Government could subsidise grid connection capex at key on-route sites where grid capacity is limited or there is a great distance to the nearest point of connection.

Since the publication of the strategy, Welsh Government has focused its limited resources on two key priorities: delivering a baseline charging infrastructure across Wales that gives users the confidence that they can travel across Wales without fear of running out of charge (the vision of the strategy); and developing tools and plans that will help local authorities and other delivery partners accelerate the roll-out of publicly available charging facilities across Wales.



Actions	Expected KPIs	KPIs delivered
1	1 public charge point for every 7-10 EVs by 2025	As at September 2022 (latest data available for the comparison), Wales has 1,417 public chargepoints installed, approximately 1 chargepoint for every 9 BEV. The total UK figure is 1 chargepoint for approximately every 16 BEV.
2	Connections Group to report in the current financial year (2021)	Remains to be delivered. See response to Recommendation 12.
3	Network of charging forecourts across Wales at approximately 20 miles across the SRN by 2025	The installation of 19 rapid charge points at least every 25 miles and for most of the network every 20 miles across Wales will be completed in 2023 - two years ahead of the Action Plan target.
4	WG will deliver a National Quality Standard to be used in public sector procurement by the end of 2021	<p>Welsh Government has developed National Standards for EV Charging Infrastructure in Wales. The online guide details a set of best practice recommendations for safe, accessible, and reliable public electric vehicle charging in Wales. The Standards have been developed for use by public sector organisations, community enterprises and delivery partners involved in the deployment of electric vehicle charging infrastructure in Wales.</p> <p>The guide has been used by local authorities and other deliver partners since January 2022, and will be published on the Welsh Government website in the next few weeks.</p>
5	Review of policy and regulations by 2022 and updates made, where appropriate, to	Welsh Government will consult on draft amendments to Building Regulations during the first half of 2023. The draft amendments are to mandate the provision of EV chargepoints for each new dwelling with an associated car parking space and

	support EV uptake	<p>that every new non-residential building with more than 10 car parking spaces to have one chargepoint and additional cable routing.</p> <p>Welsh Government will work with the electricity industry to facilitate a further review of the Welsh Government policy and regulations to support electric vehicle charging. This will include whether any further measures can be taken to support local and regional spatial planning and a framework for strategic and local development plans.</p> <p>There will be a review of Permitted Development rights in view of industry alignment and addressing any inconsistencies in development control or the way in which it is applied across the UK. There will be ongoing engagement and collaboration with local planning authorities to support the development of local approaches.</p>
6	Establishment of a charge point operator working group in 2021	Remains to be delivered. See response to Recommendation 17.
7	Enhanced public confidence in EV charging, moving Wales from the innovator stage to early majority stage of market maturity by 2030.	Welsh Government is planning a communication programme that will keep stakeholders and the public updated, increasing their confidence in EV charging.
8	Complete a supply chain and opportunities review by end of 2021. Establish a programme to realise opportunities for	The Welsh Government Transport Decarbonisation team is working with the Business & Regions division (including Innovation and the Inward Investment teams) to identify and support innovation and private sector investment opportunities.

	innovation and investment.	<p>Welsh Government is developing a new National Procurement Framework that will provide the opportunity to work collaboratively across the Welsh public sector to ensure a standard delivery model and avoid ad-hoc procurement exercises. It will help deliver wider benefits for Wales, such as the opportunity to develop a supply chain in Wales.</p> <p>The 19 rapid charging sites on the SRN have been carefully selected based on the facilities nearby, including their ability to provide economic development benefits to existing local businesses and the hospitality sector.</p>
9	Charging infrastructure to be considered in all relevant new and emerging local and regional development plans, starting 2021.	<p>EV charging is already covered in both Planning Policy Wales and the Future Wales.</p> <p>Meeting the requirement for EV charging is also a key part of the development of Local Area Energy Planning (LAEP), a pioneering approach which addresses the whole energy system.</p>

Financial Implications – None.

### **Recommendation 7**

The Committee recommends that

The Welsh Government should deliver on its commitment to review the KPIs annually and publish the review's outcome. In addition, the Welsh Government should publish regular updates on progress against the KPIs.

**Response:** Reject

The Welsh Government recognises that monitoring the progress of EV charging infrastructure provision is a critical task to ensure the programme is on course to achieve the objectives and KPIs set by the Strategy, as well as ensure sufficient charging infrastructure is being provided to meet future EV demand.

The Welsh Government is planning to review and publish the KPIs at strategic points in time, reflecting key stages of the delivery programme and the availability of resources.

**Financial Implications** – this work will be accommodated within existing budgets.

## **Recommendation 8**

The Committee recommends that

The Deputy Minister should confirm whether the target of rapid charge points at least every 20 miles on the strategic road network is on track to be achieved and confirm when he expects the target to be met.

**Response:** Accept

The installation of 19 rapid charge points at least every 25 miles and for most of the network every 20 miles across Wales will be completed in 2023 - two years ahead of the Action Plan target. Refer to response to Recommendation 13 for further details.

**Financial Implications** – None.

## **Recommendation 9**

The Committee recommends that

The Welsh Government should provide further details on specific actions related to EV charging infrastructure that the Ultra-Low Emissions Vehicle Transformation Fund (ULEVTF) will be used to fund.

**Response:** Accept

Local authorities have a crucial role to play in enabling the transition to EVs in their areas, including proactively supporting and delivering the rollout of electric vehicle chargepoints.

The purpose of the ULEV grant is to provide local authorities with government funding support to deliver publicly available EV charging infrastructure in their areas in line with the objectives of the EV charging strategy for Wales and its Action Plan.

### ULEV eligibility criteria:

- **Delivery of destination charging**

Destination charging typically takes place at locations the user would otherwise already visit: retail centres, grocers, gyms, etc. The user charges at the destination car park while they visit. In locations where dwell time is longer, e.g. overnight at hotels, slow charging may be used. Most destination chargepoints (CPs) are fast, while some may be rapid, e.g. where dwell time is shorter. PodPoint has projected that 7% of all charging will take place at destinations in a fully fledged EV market. Public rapid and ultra-rapid charging – which includes hub, on-route, and some destination – makes up 45% of public charging demand by energy, as modelled by BloombergNEF.

- **Delivery of on-street charging**

On-street charging is typically on the slower side of public charging, with vehicles often dwelling at the charger overnight. Slow and fast CPs are often incorporated into street-side lamp posts or are installed along the kerb. Tariffs often range considerably, even within network. Reduced rates can be available for residents charging within their local area, for non-urban areas, and / or for network members. Modelling from BloombergNEF indicates that the majority of on-street charging takes place on slow chargers.

Welsh Government are encouraging local authorities to submit applications to the Office for Zero Emission Vehicle (OZEV) for the On-Street Residential Chargepoint Scheme (ORCS) once the scheme is launched. The purpose of the scheme is to increase the availability of on-street chargepoints in residential streets where off-street parking is not available, thereby ensuring that on-street parking is not a barrier to realising the benefits of owning an EV. Refer to response to Recommendation 11.

- **Delivery of hub charging facilities**

Hubs are dedicated sites, often serving multi-modal vehicle demand, sometimes with retail or industrial facilities on-site. Charging available at hubs is often rapid and ultra-rapid, with short dwell times. Hubs are sometimes used by drivers charging on-route. They are distinct from street charging and destination charging in their location and charging-focused offering. Hubs can be in remote or urban areas, but grid constraints (limiting the size of connection) and land availability can pose challenges, especially in the latter. Many hubs have charging facilities dedicated to multiple user types, e.g. taxis, fleet vehicles, buses, private cars. It can be challenging to serve different vehicle modes at one hub if their technical charging needs are unique.

- **Delivery of co-location sites**
- **Assess the opportunity for the colocation of renewables with EV charging infrastructure.**

**Financial Implications** – We have allocated £xx million and £xx million in ULEV grants for the 2023-24 and 2024-25 financial years respectively. [DRAFTING NOTE: This will be updated by officials following agreement of MA-LW-0927-23 on capital budgets.]

## **Recommendation 10**

The Committee recommends that

The Welsh Government should work with stakeholders to develop guidelines for best practice in placing public charging infrastructure.

**Response:** Accept

Welsh Government has developed National Standards for EV Charging Infrastructure in Wales. The online guide details a set of best practice recommendations for safe, accessible, and reliable public electric vehicle charging in Wales. The Standards have been developed for use by public sector organisations, community enterprises and delivery partners involved in the deployment of electric vehicle charging infrastructure in Wales. Except where explicitly stated, the recommendations set out in the National Standards are not legally binding. Instead, they have been developed to form an informative best practice guide to support Wales towards its net zero carbon targets.

The recommendations cover areas including the specifications surrounding charge point design, such as speeds, planning requirements and plug connection types, as well as placement of the charge point within the surrounding environment. They also cover aspects of streetscape, including accessibility and security, energy and connection needs, operational aspects, procurement notes and emerging and future considerations. They provide solutions to avoid any obstruction of footways and safeguard travel routes. It is appreciated that not all the recommendations will be applicable in every situation as each individual charge point needs to respond to local needs and nuances, as well as regional and national policy frameworks. However, the National Standards strive to ensure that, going forward, all users of electric vehicles in Wales are confident in their ability to access charging infrastructure wherever and whenever required.

The National Standards will be published shortly.

**Financial Implications** – None.

## **Recommendation 11**

The Committee recommends that

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The Welsh Government should assess the impact of the decision to no longer allow Welsh Government funding to be used to make up the 25% of funding not covered by a grant under the On-Street Residential Charging Scheme (ORCS) and provide information on discussions it has held with the UK Government on this issue.

**Response:** Accept

Welsh Government are encouraging local authorities to submit applications to the Office for Zero Emission Vehicle (OZEV) for the On-Street Residential Chargepoint Scheme (ORCS) once the scheme is launched. The purpose of the scheme is to increase the availability of on-street chargepoints in residential streets where off-street parking is not available, thereby ensuring that on-street parking is not a barrier to realising the benefits of owning an EV.

The scheme gives local authorities access to grant funding that can be used to part-fund the procurement and installation of on-street EV chargepoint infrastructure for residential needs. As demand for on-street charging infrastructure grows, Welsh Government expect the private sector to invest more to build and operate a thriving, self-sustaining public network. It is essential that local authorities facilitate commercial models being put in place to ensure networks can continue to expand and improve, to serve residents' needs. Local authorities are encouraged to explore all commercial options available to them when planning EV infrastructure.

ORCS 2023-24 applications will be eligible for 50% ORCS funding and will be required to secure 50% private match-funding. We work closely with the OZEV and agree with them about the need to ensure that private companies are contributing to chargepoints roll-out.

**Financial Implications** – None.

## **Recommendation 12**

The Committee recommends that

The Welsh Government should explain why the connections Group that it committed to establishing under Action 2 was not established according to the timeline in the Action Plan. The Welsh Government should establish the connections Group within the next few weeks.

**Response:** Reject

Welsh Government plan is planning to establish a Connections group in early autumn 2023 that will include Welsh Government, TFW and Distribution Network Operators initially to scope the remit of the group. At that point, the group will identify what other parties would need to be involve. The overarching purpose of

the Connections group will be to maximise the availability of power for charging vehicles.

Officials have established a good working relationship with both SPEN and National Grid (WPD). It was felt that a robust delivery programme needed to be developed before the Connections Group is established, so that the group could be presented with a clear and agreed direction of travel.

**Financial Implications** – None.

## Recommendation 13

The Committee recommends that

The Deputy Minister should provide an update on the comments from the Electric Vehicle Association (EVA) Cymru that infrastructure is in place in only 3 of the 21 locations identified by TfW as expecting new infrastructure under Action 3.

**Response:** Accept

The SRN Rapid project included 11 sites originally (not counting Bala as the pilot site). The 21 figure reflected chargepoints for the original 11 sites and not locations.

TfW have added another 7 sites to the project, which means they are delivering 36 chargepoints on 19 sites (if we add in Bala).

A site in Conwy was removed from the project and replaced with a site in Anglesey.

TfW have already delivered 6 of the 19 locations and on track to deliver the remaining 13 locations this year, most of them by Q3 2023.

Location	Local Authority	Site Live	Updates
Bala Pilot - Y Grîn (Pilot Site)	Gwynedd	17/11/2021	Completed - site live Transferred ownership to SWARCO - 22/11/22
Machynlleth - Bank St	Powys	14/07/2022	Completed - site live
Crickhowell - Beaufort St	Powys	27/09/2022	Completed - site live
Newtown - Back Lane	Powys	19/12/2022	Completed - site live
Llandovery - Castle Car Park	Carmarthenshire	23/12/2022	Completed - site live
Llanybydder - CP off Teras-Yr-Osaf	Carmarthenshire	23/12/2022	Completed - site live
Dolgellau - Y Marian Mawr	Gwynedd	26/05/2023	



Porthmadog - Lard-yr-Orsaf	Gwynedd	26/05/2023	
Blaenau Ffestiniog - Diffwys	Gwynedd	26/05/2023	
Ammanford - Carregamman Car Park	Carmarthenshire	Q2 2023	
Corwen Car Park	Denbighshire	Q2 2023	
Welshpool - Church Street	Powys	12/05/2023	
Llandrindod Wells - High Street CP	Powys	19/05/2023	
Porthcawl - Eastern Promenade	Bridgend	Q3 2023 - TBC	Lease to be returned.
Talgarth CP	Powys	Q3 2023 - TBC	3rd party Wayleave and disruptive work.
Newcastle Emlyn - Livestock Market CP	Carmarthenshire	TBC	Car park to be registered before wayleave can clear, then need to build a Transformer.
Craig -y -Nos	Powys - Brecon National Park	TBC	Planning required and 1MW substation to be delivered. Also wayleaves and lease to be completed
Llangurig - Blue Bell	Powys (private landlord)	TBC	Lease to be agreed.
Plas Arthur Leisure Centre	IACC	TBC	Planning required.
Colwyn Bay Princes Drive CP	Conwy		Site removed from the project by Conwy council

**Financial Implications** – Total project costs: £697,959. Approximately £500k of Ofgem Green Recovery funding towards the DNO costs was received for 8 of the 19 sites.

## Recommendation 14

The Committee recommends that

The Welsh Government should clarify why Action 4 was delivered late and provide an update on when the Standard was completed and whether local authorities have used it since then.

**Response:** Accept

Refer to response to Recommendation 10.

The development of the National Standards formed part of a portfolio of six complex and ambitious workstreams commissioned by Welsh Government and delivered by Arup between April 2022 and March 2023 that will help TfW, local

authorities and other delivery partners accelerate the delivery of charging infrastructure across Wales.

The Welsh Government believes it was important to take the time required to develop strong evidence-base Standards.

**Financial Implications** – None.

### **Recommendation 15**

The Committee recommends that

The Welsh Government should explain why the review of building regulations was not delivered in 2022, as committed to under Action 5.

**Response:** Accept

The requirement to prioritise work meant that the consultation on the amendment of Building Regulations to mandate EV chargepoints was deferred but work has now progressed, and the consultation is due to be launched in summer 2023.

**Financial Implications** – £100k has been allocated to delivering the Building Regulations consultation.

### **Recommendation 16**

The Committee recommends that

The Welsh Government should work closely with local authorities and stakeholders to ensure the review of building regulations to support EV uptake is completed as soon as possible. The Welsh Government should provide the Committee with a timeline for completing this work. The Government should consider how the planning system can encourage or require the delivery of charging infrastructure alongside other appropriate developments such as hotels, visitor attractions, and fuelling stations.

**Response:** Accept

A consultation on the amendment of Building Regulations to mandate EV chargepoints is due to be launched in summer 2023.

Both Planning Policy Wales and Future Wales support the provision of EV chargepoints. Future Wales, which has development plan status, states under Policy 12: Regional Connectivity that: "Where car parking is provided for new non-residential development, planning authorities should seek a minimum of 10% of car parking spaces to have electric vehicle charging points."

**Financial Implications** – £100k has been allocated to delivering the Building Regulations consultation.

## **Recommendation 17**

The Committee recommends that

The Welsh Government should explain why a charge point operator working group was not established in 2021, as committed to under Action 6. The Welsh Government should fulfil the commitment in the Action Plan and establish the charge point operator group within the next few weeks. This group is essential to speed up the deployment of the EV charging infrastructure.

**Response:** Reject

Welsh Government and TfW agreed that the EV charging Infrastructure Programme (as defined in response to Recommendation 5) was a prerequisite to our formal engagement with a group of CPOs. We expect the majority of the EV charging infrastructure in Wales will be delivered by the private sector (and the UK Government agrees with this position). Our financial case modelling estimates the cost of installing all On-Route and Destination charging infrastructure in Wales to reach £351 million to £1.550 million by 2040. It was therefore crucial that we take the time to establish clear, evidenced-based priorities and actions that will enable public and private sector delivery partners to accelerate the delivery of infrastructure across Wales.

The Infrastructure Programme is now completed and TfW, with support from Welsh Government, will set up a CPO Working group in the summer 2023.

**Financial Implications** – None.

## **Recommendation 18**

The Committee recommends that

The Committee would like an update on the development of the proposal for an in-house service desk to facilitate all aspects of EV charge point delivery and management, including whether it will be reflected in a revised Action Plan or associated KPIs.

**Response:** Accept

TfW's capacity was increased in September 2022 to oversee the implementation of the in-house service desk. TfW met with each local authority to gain a greater understanding of their EV charging infrastructure plans, issues and support requirements.

The service desk is operational and provides bilingual call out support to public and private sector EV charging delivery partners, enabling them to respond in Welsh to queries from users.

Through the service desk, Tfw organises and delivers webinars on issues and topics raised by delivery partners. The first webinar on 14<sup>th</sup> April 2023 delivered a presentation on the National EV Insight & Strategy (NEVIS) tools. This resulted in strong positive feedback which led to the decision to enable local authorities and NHS organisations to access the NEVIS tools through the service desk. The Insights toolkit provides data analysis that ensure that delivery partner organisations are equipped to deliver a clear vision, strategy and delivery plan for EV infrastructure. The Knowledge Repository toolkit will equip and resource local authorities and NHS organisations with guidance and key information for each stage of the EV infrastructure delivery process (developing strategy; delivering planning; procurement; mobilisation & installation; and operations). The service also provides a discussion group platform for sharing experience and topic ideas, encouraging collaboration and contribution.

**Financial Implications** – None.

## **Recommendation 19**

The Committee recommends that

The KPI for Action 7 – 'Increase public awareness' - should be revisited to make it more granular and measurable.

**Response:** Accept

Welsh Government will review the KPI for Action 7, as part of our wider KPI review (refers to our response to Recommendation 7).

**Financial Implications** – this work will be accommodated within existing budgets.

## **Recommendation 20**

The Committee recommends that

The Deputy Minister should clarify why Action 8 – 'Encourage investment opportunity and innovation' - was not delivered on time and take steps to progress it within the next six months.

**Response:** Accept

Welsh Government believes it was essential to develop a credible delivery programme and preferred network before engaging with delivery partners to

discuss investment opportunities. This work took Welsh Government approximately 12 months to deliver.

Welsh Government is bringing together the Transport Decarbonisation and Business & Regions teams to explore and deliver private sector investment and innovation opportunities in the field of EVs and EV charging.

Welsh Government is building a new National EV Charging Procurement Framework that will help the development of supply chain, innovation and investment opportunities across Wales. The Framework is scheduled to be ready by the end of the summer.

TfW are working with local authorities and private sector to identify and implement innovative solutions and investment opportunities that will help resolve key issues that are currently hindering progress – e.g. on-street charging solutions.

**Financial Implications** – None.

## **Recommendation 21**

The Committee recommends that

The Deputy Minister should provide a detailed update on the progress made against Action 9 and the tool it has commissioned to assess the opportunity for the co-location of renewables and EV charging infrastructure.

**Response:** Accept

Welsh Government has commissioned Arup to design and create a modelling tool to assess the opportunity for the colocation of renewables with EV charging infrastructure (referred to as the 'colocation tool'). The tool is ready and is designed for site level work which may sit within broader Smart Local Energy Systems (SLES) or Local Area Energy Plans (LAEPs).

The purpose of the tool is to appraise opportunities for the use of renewables within EV charging sites. For a given site, the tool will compare:

- Connecting the site to the electricity grid with no renewables.
- Using wind and solar canopy with any excess renewables exported to the grid.
- Using ground mounted solar and solar canopy with any excess renewables exported to the grid.
- Using wind and solar canopy with battery storage.
- Using ground mounted and solar canopy with battery storage.

The tool can also be used to compare different sites.

The colocation tool is designed to improve understanding around the following points:

- The types of EV charging sites most suitable for the colocation of renewables.
- The renewable and storage configurations most suitable for colocation with EV charging.
- High-level indication of the comparative costs of colocation.
- Where additional financial support may be required to support installation of colocation sites.

Installing behind-the-meter renewables at EV sites has the potential benefits of:

- Providing zero or low carbon electricity to EVs
- Reducing demand on electricity networks, particularly in constrained areas

**Financial Implications – None.**



Welsh Government

## EV Strategy

### Equality Impact Assessment

Reference: Issue

Ver03 | 14 April 2023



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This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 286448-00

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# Document Verification

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		<b>Name</b>	Rowena Ekeramawi	Catriona Macdonald
		<b>Signature</b>		
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			<b>Prepared by</b>	<b>Checked by</b>
		<b>Name</b>	Rowena Ekeramawi	

**Signature**

*R.C. Ekeoma C. Hill*



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Issue

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EqIA Issue 03

**Description**

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following  
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*R.C. Ekeoma*

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# 1. Introduction

## 1.1 Why is the Welsh Government developing an Electric Vehicle charging portfolio?

Electric vehicles have a significant role to play in securing a greener future on our roads. The Welsh Government (WG) is developing its approach to delivering Electric Vehicle (EV) infrastructure in Wales that will meet future charging demand, in the right places, at the right charging speeds and within the right commercial and financial environment. This is being driven by the rapid expansion in the EV market, that is itself being driven by the 2030 ban on the sales of new petrol and diesel. An EV charging portfolio is required to establish what EV charging infrastructure is needed throughout Wales, where and how will it be delivered. Different approaches and studies are required to answer these questions and therefore these different components are referred to as the EV charging portfolio. Details of each component within the portfolio are set out in Section 2.

## 1.2 Purpose of the EqIA

This document is the Equality Impact Assessment (EqIA) which looks at the potential for the WG EV portfolio to result in disproportionate or differential equality effects for protected characteristic groups. It provides an EqIA in line with the public sector equality duty in section 149 of the Equality Act 2010 (the Act). Whilst not an EqIA requirement, the document also identifies how equality issues have been integrated into the development of EV charging portfolio to date.

Under the Act, all Welsh public bodies, including the WG, have a duty to pay due regard to eliminating discrimination, harassment, and victimisation and to fostering good relationships between groups both in the workplace and wider society. The Socio-economic duty came into force on 31<sup>st</sup> March 2021 when the Welsh Government commenced Section 1 of the Act. This places a duty on public bodies (or those with a public duty) to consider how their decisions may help to reduce inequalities associated with socio-economic disadvantage and lead to improved outcomes for people experiencing socio-economic disadvantage. The commitment to fostering equality in Wales is further strengthened through the Well-being of Future Generations (Wales) Act 2015. One of the seven well-being goals included within the Act is the aspiration to create a 'More Equal Wales', defined as 'a society that enables people to fulfil their potential no matter what their background or circumstances'.

In consideration of the abovementioned legislation, this EqIA analyses the EV charging portfolio that has been developed to date, assessing each component for the possibility of discrimination. It also seeks to understand the opportunities presented to promote equality and foster good relationships between different groups of people with protected characteristics, as well as between those who have protected characteristics, and those who do not.

The aim of the EqIA is therefore to identify whether people with protected characteristics, or who are socio-economically disadvantaged could be affected by the various elements of the EV charging portfolio disproportionately or differentially:

- **Disproportionate effects** arise when an impact has a proportionately greater effect on people with protected characteristics than the rest of the population.
- **Differential effects** arise where people with protected characteristics could be affected differently from the rest of the population, due to a particular need or sensitivity.

## 1.3 Scope of EqIA

There are nine protected characteristics identified in the Equality Act, and which are covered by the scope of this EqIA:

1. age
2. disability

3. gender reassignment
4. marriage and civil partnership
5. pregnancy and maternity
6. race
7. religion or belief
8. sex
9. sexual orientation.

In addition to these protected characteristics and in order to meet the socio-economic duty, people who experience socio-economic disadvantage are also considered.

These protected characteristics can be broken down into further groups which may assist in identifying where effects may occur (see Table 1). Consideration is given to all of these subgroups when assessing potential impacts on each of the protected characteristics.

**Table 1 Protected characteristic groups considered in the EqIA**

Protected characteristic	Further subcategories within protected characteristic groups for consideration within the assessment
Age	Children and young people (under 19)
	Older people (aged 60+)
Disability	People with physical impairments (Includes mobility, co-ordination, lifting and carrying, manual dexterity, wheelchair user)
	People with communication or sensory impairments (Includes blind/partially sighted, deaf/hard or hearing, difficulty speaking)
	People with a learning disability, cognitive impairment or neurodiversity (Includes conditions which affect ability to learn, understand, read, remember, and concentrate e.g. Downs Syndrome, autism, ADA)
	People with mental health problems (Includes depression, schizophrenia)
	People with long standing illness/health condition (Includes cancer, HIV, MS, diabetes, heart disease, epilepsy, continence)
	Other disability/impairment not covered by any of the above
Gender reassignment	Transgender
Marriage and civil partnership	No further sub-categories
Pregnancy and maternity	No Further subcategories
Race	Asian or Asian British Backgrounds (This includes Pakistani, Indians and Bangladeshi, Chinese or any other Asian background)
	Black or Black British Backgrounds (This includes Caribbean, African or any other black background)
	Mixed /Multiple Ethnic Groups (This includes White and Black Caribbean, White and Black African, White and Asian or any other mixed background)
	White British Background (This includes English, Scottish & Welsh, Irish and Gypsy or Irish Travellers)
	Non-British White Backgrounds (This includes Irish, Polish, Spanish, Romanians and other White backgrounds)
	Arabs
	Any other background not covered by any of the above
Religion or belief	Buddhists
	Christians
	Hindus
	Jews
	Muslims

Protected characteristic	Further subcategories within protected characteristic groups for consideration within the assessment
	Sikhs
	Lack of belief
	Others
Sex	Men
	Women
Sexual orientation	Gay men
	Lesbians
	Bisexual

It should be noted that the social model for disability has been used for this assessment. This approach emphasises that it is not impairments themselves that cause a problem for disabled people, rather it is the social barriers that exist which are the main cause of problems. These barriers can include people's attitudes to disability, as well as physical and organisational barriers.

### 1.3.1 Geographical scope

At this stage, the EqIA applies to the whole of Wales because the EV charging portfolio is non site specific and considers issues and requirements at a country level. It is recognised that different issues may have a greater or lesser prominence in different regions of Wales; more detailed assessments to reflect this may be appropriate as work on the portfolio develops.

### 1.3.2 Temporal scope

The EqIA covers outputs associated with the various elements of the EV charging portfolio that seek to meet the EV charging needs that need to be delivered by 2050. The assessment undertaken represents a snapshot of information at the time of writing; however, it is a live document and should be read accordingly. It is recommended that an update is made following any changes or developments in the portfolio work.

## 1.4 Approach to the assessment

To produce a concise and proportionate assessment, the EqIA approach that has been followed includes:

- **Establishment of baseline** – high level (Wales) social and demographic data is identified to establish the proportion of different protected characteristics and socioeconomic deprivation across the country.
- **Literature review** – review of published literature (including grey literature, peer reviewed journals, government papers) to identify known issues and barriers experienced by protected characteristic/socioeconomically disadvantaged groups in relation to accessing electric vehicle infrastructure.
- **Establishment of equality impact indicators** – identification of equality indicators that are used to guide the assessment. These are based on identification of issues and barriers identified in the literature review and from available feedback from existing stakeholder consultation.
- **Assessment of impacts** – based on the equality impact indicators, potential equality impacts from the EV charging portfolio are identified. Consideration of whether these would be likely to have a disproportionate or differential impact on protected characteristic groups/socio-economically disadvantaged groups is based on a review of the evidence. Each element of the portfolio is assessed in turn.

Impacts are identified as either positive or negative based on professional judgement with a precautionary, worst-case approach applied for uncertainties. This is supported by a narrative justification which whilst qualitative in nature, is determined with consideration of how the impact is

distributed across the population, the sensitivity of the receptor (i.e. protected characteristic group) and the likelihood of the receptor experiencing the impact.

- **Recommendations** - The assessment includes a set of recommendations, which sets out the measures that should be put in place as the EV charging portfolio evolves, to reduce or remove potential adverse equality effects, to strengthen potential positive equality effects, and to ensure that, where possible, the strategy promotes equality of opportunity.

The professional judgements made in this EqIA are inherently subjective and are based on the information available at the time of undertaking. People are, of course, more than the sum of their characteristics and it is acknowledged that there is significant diversity within, as well as between, the protected characteristics considered in this EqIA. Individuals may also have multiple protected characteristics which may interact to change the way in which they experience place and people.

Nevertheless, there are ways in which broad groups of people with protected characteristics could be systematically disadvantaged and this process attempts to ensure that, as far as possible, the EV charging portfolio does not do so.

## 1.5 Consultation

Various groups and organisations representing protected characteristic groups were sent the initial version of the EqIA, along with the publicly available EV strategies. They were invited to a workshop to provide an opportunity to discuss their views and opinions of the assessment carried out and to contribute any further ideas relating to potential impacts. Invitees included:

- Disability Wales
- Bevan Foundation
- Wellbeing of Future Generations Commissioner
- Commissioner for Older People
- Race Council for Wales
- Stonewall
- Welsh Language Commissioner
- Mentrau Iaith Cymru
- Menter a Busnes

Take up of the invitation to participate in the workshop was very low and therefore further invites were sent to the stakeholders to invite one to one discussion. This approach also did not result in any further interest. It is not clear why this should be the case. Feedback from participants has been integrated into the assessment presented in this document.

During the preparation of the EqIA of the Wales EV charging portfolio the evidence used as the basis of the assessment was gathered from publications and reports that have been subject to consultation, or which was itself specific consultation related to lived experiences of using EV infrastructure. This includes the following:

- Research Institute for Disabled Consumers, July 2021. Inaccessible charging is a barrier to electric for disabled and older drivers<sup>1</sup>.

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<sup>1</sup> Research Institute for Disabled Consumers, July 2021. Inaccessible charging is a barrier to electric for disabled and older drivers. Available online at: <https://www.ridc.org.uk/transport/inaccessible-charging-barrier-electric-disabled-and-older-drivers>



- DfT, 2022. Consultation outcome. The consumer experience at public charge points.<sup>2</sup>
- Cenex, January 2021 Electric Vehicle Infrastructure Barriers, Project Report<sup>3</sup>.
- British Standards Institute (BSI) – Electric vehicles- Accessible charging – Specification (PAS 1899:2022)<sup>4</sup>:
- OZEV Design considerations for electric vehicle charge points (2022)<sup>5</sup>

It is considered that this indirect use of consultation feedback is appropriate for the analysis for this assessment.

Further consultation will be anticipated as part of the monitoring and review process (refer to section 7.1).

## 2. EV charging portfolio

The Welsh Government EV charging portfolio includes the following workstreams:

- Electric Vehicle Charging Strategy for Wales – Facilitating the transition to net zero
- Electric Vehicle Charging Strategy for Wales – Action Plan
- Electric Vehicle Charging Infrastructure in Wales – National Standards
- Preferred network
- Deliverability Plan

More details on each of these is set out below along with a brief narrative of how issues related to equality have been integrated into their development.

### 2.1 Electric Vehicle Charging Strategy for Wales – Facilitating the transition to net zero (March 2021)

The Strategy sets a vision for Wales that *‘by 2025, all users of electric cars and vans in Wales are confident that they can access electric vehicle charging infrastructure when and where needed’*. The Strategy recognises that where possible, home charging is the most convenient and cost-effective charging solution and therefore sets out a plan to require all new homes to be ready for charging whilst also providing wider support for those wanting to install charging at home. It is also recognised within the Strategy that there is a need to install fast charging at a variety of locations in order to serve those who do not have the option to charge at home and/or for longer journeys that cannot be completed in one charge. This includes the introduction of measures that will:

- require new non-residential buildings with more than 10 parking spaces to have a charge point by 2025;

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<sup>2</sup> DfT, 2022. Consultation outcome. The consumer experience at public charge points. Available online at: <https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-charge-points/the-consumer-experience-at-public-charge-points>

<sup>3</sup> Cenex, January 2021 Electric Vehicle Infrastructure Barriers, Project Report. Available online at: <https://www.cenex.co.uk/app/uploads/2021/04/Electric-Vehicle-Infrastructure-Barriers-FINAL.pdf>

<sup>4</sup> PAS 1899:2022. Electric Vehicles – Accessible Charging – Specification. Available online at: <https://www.bsigroup.com/en-GB/standards/pas-1899/>

<sup>5</sup> Office for Zero Emission Vehicles (2022). Design considerations for electric vehicle chargepoints. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1062876/design-considerations-for-electric-vehicle-chargepoints-print-version.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1062876/design-considerations-for-electric-vehicle-chargepoints-print-version.pdf)

- require businesses to provide charging facilities at places of work;
- require destinations to provide charging facilities for customers/visitors;
- aim to achieve one on street charge point for every three vehicles that cannot charge at home; and
- promote the creation of charging hubs that enable multi-modal journeys.

### Equality considerations

Equality considerations have been considered during development of the Strategy evidenced through the promotion of:

- improved user experience which includes all users, with various needs (particularly accessibility needs). This covers physical access to chargers, location, safety, and payment platforms for customers. The development of a national standard for charging facilities, which would include standards related to all these elements of user experience, is identified as a quality outcome within the Strategy.
- creation of favourable conditions to promote economic development across Wales, including in those areas experiencing economic disadvantage. This includes community led and not for profit initiatives that would deliver local benefits.
- planning for electric charging infrastructure so that it is delivered in the right place where users need and want it. This will enhance confidence of all users (reducing stress and range anxiety), and create economic opportunities in the localities of facilities.
- WG support for EV infrastructure provision in areas that would not be commercially attractive to the private sector investors.

## 2.2 Electric Vehicle Charging Strategy for Wales – Action Plan (October 2021)

The Action Plan has been developed to support with achieving the vision set out within the EV Charging Strategy for Wales. The actions set out in the Action Plan are intended to be developed and implemented up to 2030 in line with the timeframe of the Strategy. Each of the actions identified have been assigned a specific timeframe of delivery, in addition to Key Performance Indicators (KPIs) which can be used to monitor progress toward the delivery of each of the actions.

### Equality considerations

Actions included in the Action Plan are listed below in Table 2 alongside an indication of how equality issues have been acknowledged:

**Table 2 Actions identified in EV charging strategy Action Plan and an indication of how equality has been considered in the development of these actions**

Action from EV charging strategy Action Plan	How have issues related to equality been considered in the development?
Delivery of charging infrastructure through funding and collaboration	Sets agenda for working with community partners to address the needs of those unable to charge at home, mobility impaired users and rural communities (among others – although specifics are not given). Commitment to support local needs. Commitment to integrate infrastructure that would also support public transport, active travel and car share schemes.
Optimisation of energy provision	No obvious consideration of equality issues.
Enhance charging on the strategic trunk road network. To include enhanced rapid charging provision	Recognises that the needs of mobility impaired users and rural communities need to be accounted for in the development of the charging network across Wales. Identifies that consultation with stakeholders is required to identify needs of users with mobility impairments and rural residents/users.

Action from EV charging strategy Action Plan	How have issues related to equality been considered in the development?
(every 20 miles on strategic trunk road network).	Makes the commitment to work with Local Authorities to establish local needs (to align with Llwybr Newydd - the Wales Transport Strategy, 2021 <sup>6</sup> ).  Identifies a need for the involvement of local businesses to identify secondary services such as amenities and rest facilities that would enhance user experience.
Develop a Welsh quality standard for charging infrastructure	Sets the requirement that charging facilities need to be available to everyone, including those with accessibility needs.  Sets the mandate that payment platforms are easy to use.  Sets requirement for bilingual provision.  Sets requirement for consideration of safety and security, particularly for users who may be more likely to feel vulnerable using the infrastructure.  Commits to collaborating with Office for Zero Emission Vehicles (OZEV) to align with UK standards, and to incorporate work OZEV have done in relation to equality and inclusion.  [Covered more fully in National Standards workstream; Section 2.3 below]
Facilitating infrastructure delivery	No obvious consideration of equality issues.
Partnership and collaboration	Recognises that constraints and opportunities need to be identified in consultation and collaboration with community-based organisations. The creation of a Charge Point Operator working group would facilitate this involvement.
Increase awareness of the needs of transport decarbonisation	Acknowledging that there needs to be improved access to information about electric vehicle charging for the general public.  Delivery partners identified include community interest groups which would raise the profile of the needs of protected characteristic groups.
Encourage investment and innovation	Recognises the benefit to local communities from investment – economic benefit but also human capital from training opportunities.
Maximise synergies between different charging needs	Recognises the synergies that exist between charging hubs and other uses such as rural charging hubs powered by community renewable projects and other activities such as car share, community transport or modal interchanges in towns linking rail, bus and local services with active travel infrastructure. This recognises specific rural/socioeconomic need.

## 2.3 Electric Vehicle Charging Infrastructure in Wales – National Standards (Autumn 2022)

The National Standards is a guide that is aimed at public sector organisations, community enterprises and delivery partners involved in deploying public electric vehicle infrastructure in Wales. It sets out good practice standards for ‘safe, accessible, and reliable public charging for electric vehicles in Wales’. The premise of the National Standards is that local charging needs, customer behaviours and demand need to be understood before charging points are procured. It identifies a number of factors that can influence charging needs and behaviours locally including:

<sup>6</sup> Llwybr Newydd – the Wales Transport Strategy 2021. Available online at: <https://gov.wales/llwybr-newydd-wales-transport-strategy-2021>

- the nature of vehicle use
- accessibility needs of customers
- the range of the vehicle battery and charging capabilities of the vehicle
- availability for people to use home charging
- cost, convenience and quality of public charging
- proximity of charge points to services and amenities
- safety and perception of safety when using public charging
- the length of time customers intend to stay (parked) at different charging locations.

### Equality considerations

Table 3 identifies different elements of EV charging infrastructure and related best practice that is set out within the National Standards. A brief description is given on how issues related to equality have been explicitly identified and/or discussed within the narrative of the best practice.

**Table 3 Good practice standards for different elements of EV charging infrastructure set out in the National Standards and an indication of how equality has been considered**

<b>Good practice standards in relation to various elements of EV charging infrastructure</b>	<b>How have issues related to equality been considered in the development?</b>
<b>Charge point types</b> –location (general), charging speed, plug connection types and planning requirements	No obvious consideration of equality issues.
<b>Placement of charge points</b> – best practice for the how the charge points should be placed in any particular location, i.e. the characteristics of charge point sites	<p>Sets out that accessibility requirements for wheelchair users and users of mobility aids to be designed in, and that kerbside charge points should not cause an obstruction to wheelchair users, pushchairs or other accessibility needs.</p> <p>Requires that charging locations should be sufficiently lit. This provides safety and security for users who may be more likely to feel vulnerable using charge points after dark.</p> <p>Identifies desirable characteristics of a site to include creating a feeling of a safe environment, being in close proximity to shops, cafes, supermarkets and toilets, and having lighting operational throughout the night. These are not specifically identified as being to meet the needs of people with protected characteristics, but some would be likely to find them beneficial.</p> <p>Details are also given of what should not be a feature of charge point locations which includes sites that result in obstruction of footways, and which replace bays that are already allocated for disabled provision.</p>
<b>Streetscape</b> – details related to accessibility, design of traffic signs, road markings required, surface gradient, lighting, impact protection, security cameras.	<p>Dictates that public charge points must be accessible for everyone, identifying the Equality Act, 2010 as the legal protection for people with protected characteristics against discrimination.</p> <p>Sets out the requirements for various elements of the streetscape</p>
<b>Energy and connections</b> – Availability of energy supply, Distribution Network Operators and connecting to the network, managing connection costs, electrical requirements, independent	No obvious consideration of equality issues.

<b>Good practice standards in relation to various elements of EV charging infrastructure</b>	<b>How have issues related to equality been considered in the development?</b>
connection providers, cable routing, supply and tariffs.	
<b>Operation</b> – service agreements, business models, health and safety, asset inventory and open data, inspection and maintenance, customer support, payments services and fees, data protection and cyber security, traffic regulation orders, managing overstay, digital standards, data and interoperability.	No specific reference to equality considerations although the premise of the standard is that public charge points across Wales should be working and in good condition, whilst also providing good standards of customer service. For protected characteristic groups this would improve user experience and be especially beneficial where real time information about charger locations, and functionality of chargers is available.
<b>Additional guidance</b> – includes information related to procurement frameworks, funding opportunities, existing procurement guidance, futureproofing infrastructure, passive provision, data sharing and management, smart charging and infrastructure, future grid requirements, vehicle to grid, micromobility and tracking of emerging solutions.	No obvious consideration of equality issues.

## 2.4 Preferred network (ongoing)

There is an opportunity to proactively plan the future EV charging network in Wales; to encourage public and private sector investment to take place in a way that meets growing demand and provides the best value to Wales. To support this, Welsh Government has commissioned Arup to develop evidence to support this, in the form of a web-map that will help understand the geographic spread of future charging demand and identify priority areas for installing EV charging infrastructure.

The demand for charging is estimated using Arup’s proprietary EV charging demand forecast model by drawing on a comprehensive set of Wales specific data sources. This includes National Trip End Model (NTEM), the National Travel Survey (NTS), census and geographical data from Office of National Statistics, Future Energy Scenarios (FES) from National Grid, weather data, charging behaviour data from the Department of Transport (DfT), Strategic Road Network (SRN) data, and internal Arup data regarding user charging capability and behaviour. The model uses these data to develop scenarios of forecasts and spatial distribution of charging infrastructure across Wales at the Lower Layer Super Output Area (LSOA) level. The model develops future charging demand estimates for two different user behaviours: destination charging, and on-route charging. The spatial energy demand outputs are then combined with additional data relating to existing provision, grid and socio-economics to create the combined web map outputs.

The analysis is being conducted at a level appropriate to strategic, national-level decisions – so areas for charging infrastructure will be identified, but not specific sites. There are a number of strategic decisions that will need to be made to determine priorities and preferred locations, and so in the first instance a number of scenarios will be presented to enable discussion and decision-making.

The preferred network has been established using a number of different data sets which have been overlain with each other at the spatial level of Lower Super Output Areas (LSOA) and assessed against three scenarios including:

1. Commercially attractive - 70% weighting given to areas where there is a gap in provision (outstanding EV demand) and 30% weighting given to areas with high substation capacity (high headroom availability)
2. Where additional grid would be useful - 70% weighting given to areas where there is a gap in provision (outstanding EV demand) and 30% weighting given to areas with low substation capacity (low headroom availability)
3. Where WG need to prioritise - 50% weighting given to areas where there is a gap in provision (outstanding EV demand) and 25% weighting given to areas identified as most deprived by the Welsh Index of Multiple Deprivation and 25% weighting given to areas considered to be most rural (rurality)

Data sets used in the modelling include:

- destination charging demand predicted for 2039
  - on-street charging demand predicted for 2039
  - on-route charging demand predicted for 2039
  - existing charging provision
  - Welsh Index of Multiple Deprivation
  - details of the Strategic Road Network
  - details of publicly-owned land
  - population centres
  - current grid capacity data of Distribution Network Operators in Wales (Western Power Distribution and Scottish Power Energy Networks)
- } (based on understanding of different battery sizes and starting charge levels)

Assumptions applied to the demand predictions include assumptions on whether home charging is an option, type of chargers likely required at different locations (3kW (slow) for all home chargers and 7-22kW (fast) for on-street chargers), average annual mileage, average battery size, EV efficiency, and existing government incentives that will provide charging for up to 50% of vehicles that cannot charge at home. These assumptions have been fed into the modelling that has been used to predict destination, on-street and on-route charging demand.

### Equality considerations

The development of the Preferred Network has included consideration of the Welsh Index of Multiple Deprivation (WIMD) within the model. The WIMD is the official measure of relative deprivation for small areas of Wales and is designed to identify areas where there are the highest concentrations of deprivation. The WIMD is based on eight separate domains (types) of deprivation and includes income, employment, health, education, access to services, housing, community safety and physical environment. Rurality has also been considered within the modelling. The objective is to use this data to identify areas that might most justify public sector intervention to reduce inequality impacts.

## 2.5 Deliverability Plan

The Deliverability Plan concerns how the EV Charging Strategy for Wales will be delivered and implemented. It focuses on the following ‘cases’:

- **Financial case** – this is the total capital cost of charging infrastructure required to meet projected demand. The bearer of the capital cost – whether it be public or private, or any combination thereof – is not considered at this stage.
- **Commercial case** – what the commercial arrangements of the Strategy are. It explores the EV charging value chain, and the different options for the WG role in the value chain, or other

interventions in the market. It explores whether there might be different commercial arrangements for different areas (i.e. urban / rural) or charging modes.

- **Management case** – this looks at the management arrangements that should be put in place for the successful delivery of the Strategy.

The Deliverability Plan does not include financial modelling for specific sites, but rather a high-level portfolio capital costing exercise will be undertaken, taking into consideration the location types, destination (which includes on-street and multi-model hub charging), and on-route charging.

#### Equality considerations

There is currently no specific evaluation of equality issues within the Deliverability Plan. However, equality of network coverage, equality of access to infrastructure, equality of pricing, and national standards are all key considerations of the commercial case.

## 3. Guidance and standards

The following section sets out the relevant guidance and standards that have been developed in relation to EV charging infrastructure and considerations of accessibility:

- **British Standards Institute (BSI) – Electric vehicles- Accessible charging – Specification (PAS 1899):** This covers requirements for the provision of accessible public charge points for EVs for all potential users, including disabled people and older people. This has been developed in collaboration with Motability.
- **OZEV Design considerations for electric vehicle charge points (2022):** This sets out design considerations for public charge points that will improve the user experience. Includes charge point recognition details, payment, cable and socket management, accessible design, product maintenance and end-of-life, and installation and setting.
- **Consumer Experience at public charge points, Department for Transport (DfT) (2022):** Following consultation, regulation is to be laid before parliament to mandate minimum standards in relation to a minimum payment method, consistency of payment metric across the public network, industry-led payment roaming, open and some dynamic data to be made available to customers and reliability of rapid charge points.

## 4. Equality impact indicators

The role of the EqIA is to identify where changes associated with the EV charging portfolio may result in disproportionate or differential impacts, particularly in relation to groups within the community that have protected characteristics. In order to achieve this, framing the assessment in relation to selected equality impact indicators is an effective approach, providing focus and consistency to the assessment.

In relation to EV charging infrastructure, issues that appear most frequently in the literature include consideration of accessibility to the infrastructure, affordability for individuals and personal safety when utilising EV charging provision. Table 4 provides a summary of why each of the EqIA impact indicators has been selected for use in the assessment with more narrative around the evidence base for this selection in Sections 4.1 – 4.3.



**Table 4 Equality Impact Indicators used for the assessment and justification for inclusion**

<b>EqIA impact indicators</b>	<b>Includes</b>	<b>Justification for inclusion</b>
Accessibility	Access to charging infrastructure/ the design/location/signage	Accessibility (or ease of access) to charging infrastructure includes the physical location of charging points and how easy it is for someone to access these locations conveniently without needing to go out of their way either on route or at their destination/starting point. It also includes the design of the charge points themselves and how accessible they are for different people as well as the signage surrounding the charge points. For example, a wheelchair user will require charge points that can be accessed from a seated position and without any obstructions to wheelchairs.
Affordability	Charging approach (i.e. how units of electricity are charged, payment options, affordability of on street/destination charging)	How much units of electricity are charged at different charging points and also the method of payment contributes to how affordable and accessible charging is for an individual. Where there is a requirement to use a smart phone, or to be signed up to a particular payment method can influence how affordable (or at least accessible in terms of ability to pay by a particular method).  This indicator does not include consideration of affordability of EVs themselves. Whilst this is an equality issue in itself, it is separate from the affordability of charging and how people are able to access this.
Safety	Design/lighting/perceptions of safety	The physical design of charging infrastructure may result in adverse safety issues, for example if there are trip hazards, or the ground surface material becomes slippery when wet. The layout can also influence the location of charging infrastructure in relation to other people and services; if they are placed in a more distant location, this can leave some people feeling vulnerable. The lighting available also influences the safety, and practically, the ability to operate units in conditions of darkness.

## **4.1 Accessibility**

Accessibility relates to the ease with which people are able to reach and use the public charging infrastructure. Different groups of people have different accessibility requirements, and in order to provide EV charging infrastructure that is accessible to everyone, the user experience of all needs to be taken into account, with designs reflecting as many accessibility requirements as possible. To date, accessibility barriers are frequently experienced by disabled users, and these have been widely reported in a number of published research findings. For example, in a survey carried out by the Research Institute for Disabled Consumers in 2021<sup>7</sup>, it was found that 61% of disabled people would consider buying an electric vehicle if charging were made more accessible. A number of aspects of charging that present as barriers to this group were identified as including:

- Charging cables - 54% identified lifting a cable from the boot of the car and then needing to close the boot as being difficult or very difficult for them to do.
- Manoeuvrability - 41% identified cable manoeuvring from/to the charge point would be difficult/very difficult to do. The heavy weight of the cables contributes to this.
- Physical barriers - 66% identified space or trip hazards/barriers around the car and charger as being difficult or very difficult to navigate (not enough space to open doors fully to get wheelchair

<sup>7</sup> Research Institute for Disabled Consumers, July 2021. Inaccessible charging is a barrier to electric for disabled and older drivers. Available online at: <https://www.ridc.org.uk/transport/inaccessible-charging-barrier-electric-disabled-and-older-drivers> .



alongside the car, bollards around the charge point meaning wheelchairs can't get close enough to them).

Whilst the first two points are more related to the design of the cars themselves, they are still relevant for consideration in how public charge points can be made more accessible to address these concerns. This feedback mirrors that received from the DfT consultation on consumer experience at public charge points<sup>8</sup> which identified that existing infrastructure is not accessible for a large proportion of disabled people who experience difficulty with mobility or dexterity. This is identified as being a result of a range of factors including lack of dropped kerbs making access with wheelchairs and mobility aids difficult, height of connection points being too high for wheelchair users, and height and angle of payment screens resulting in wheelchair users not being able to view them therefore making the charging transaction difficult. More widely, accessibility barriers for people with impaired mobility have been identified as including the following<sup>7,9,10</sup>:

- Lack of clarity and consistency of signage and ground markings
- Lack of tethered cables (at charge point end) to simplify connection and mitigate issues of moving heavy cables
- Lack of lighting around charge points
- Lack of human assistance on site or by phone
- Lack of up-to-date information in journey planning apps on location of disabled-adapted charge points and whether they are in service and/or occupied at a particular point in time
- Lack of weather protection at charge points.

Reliance on public charge points for people living in apartments and houses without private connection points means that this group of people are already at a disadvantage in terms of ease of access to charge points. Low- and middle-income earners are more likely to live in properties that do not provide options for private charge points and therefore this group are particularly affected by accessibility issues regardless of whether they experience additional barriers as a result of disability or age.

## 4.2 Affordability

The average cost to buy an electric car in the UK in March 2022 was approximately £44,000 (£26,965 average for non-luxury models)<sup>11</sup> which puts purchase of EVs beyond the affordability of many low- and middle-income earners. For disabled drivers this can be compounded by the additional costs of any modifications they may need on the vehicle. These costs, which are higher than equivalent petrol and diesel cars, creates an embedded social justice barrier to accessing EVs; however, in terms of affordability in the context of the charging infrastructure itself, on street public charging has a higher cost than home charging (with some research showing as much as a ten times difference<sup>12</sup>). This is partly due to the faster charge rates and the charge points being commercially run for profit, but is also a result of higher rates of VAT being charged for electricity from public charge points (20%) than home charging (5%). This means that people

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<sup>8</sup> DfT, 2022. Consultation outcome. The consumer experience at public charge points. Available online at: <https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-charge-points/the-consumer-experience-at-public-charge-points>

<sup>9</sup> Catapult Energy Systems, March 2022. Equal EV Phase 2: Technology viability and future services for vulnerable customers.

<sup>10</sup> The 'missed opportunity' of EV charging accessibility, 5<sup>th</sup> May 2022. Article by Current. Available online at: <https://www.current-news.co.uk/blogs/the-missed-opportunity-of-ev-charging-accessibility>

<sup>11</sup> Average cost of an electric car UK 2022. NimbleFins, March 2022. Available online: <https://www.nimblefins.co.uk/average-cost-electric-car-uk>

<sup>12</sup> The Guardian, Article, March 2020. Public EV Charging up to 10 times more expensive than home charging. Available online at: <https://www.banburyguardian.co.uk/lifestyle/cars/public-ev-charging-up-to-10-times-more-expensive-than-at-home-2449162>

who do not have access to home charging are disadvantaged, both from a cost perspective and also from the lack of investment in urban area public charge points where perceived competition from home charging hinders investment<sup>13</sup>. As people who are low- or middle-income earners are more likely to live in properties that do not have access to home charging, this compounds the affordability issue.

Car ownership varies considerably for those who share protected characteristics. The National Survey for Wales shows that of those in the 20% most deprived households in Wales, only 65% of households have use of a car compared to 89% of households within the 20% least deprived<sup>14</sup>. Affordability is a major factor in these statistics with the average cost of a new small car in February 2021 being £15,450 and £23,185 for a medium sized car (with second-hand models likely to be considerably less)<sup>15</sup>. With average prices for a small and medium-sized internal combustion engine vehicles (ICE) lower than the average for a non-luxury EV model, EVs appear even more unaffordable for those households unable to afford an ICE car.

A survey by DfT<sup>16</sup> shows that in the UK car ownership levels are lower amongst Black, Asian and Minority Ethnic groups; 29% of Black people had no access to a car or van compared to 14% of White people in 2020. These statistics suggest that some people with particular protected characteristics are more likely to be reliant on public transport and taxis to meet their travel needs. For taxis in particular, the transition to EV will require that public EV charging infrastructure is also readily available and accessible for this sector.

The outcomes from the DfT consultation on consumer experience at public charge points also identifies lack of clarity on how much units of electricity cost at these locations, to be a barrier to how confident people feel when using them<sup>8</sup>. Different methods of tariff setting leads to confusion for all users but particularly for people who experience anxiety and those who are newcomers to the EV market. Further to this, different EV charge point operators (CPOs) offer a 'pay-as-you-go' tariff which requires a user to sign up to their particular platform in order to access cheaper tariffs. This adds complexity to usage tariffs (which then differ between different CPOs) which may act as a deterrent for those people who may be dissuaded from using EVs by this complexity, and also impacts on affordability for users<sup>13</sup>.

Currently, many public charge points require the use of a smart phone to access payment. This puts people who do not own a smartphone at a disadvantage. Whilst 86% of 16-24 year olds had a smart phone in 2021, for people over 55, this reduces to 78%<sup>17</sup>.

### 4.3 Safety

It is recognised that people's safety is put at risk if their vehicle runs out of charge. It is therefore important that EV users are able to access functioning and well-maintained public EV charge points. The worry related to running out of charge before being able to find a suitable charge point is known as 'range anxiety', and affects everyone, but particularly those who are more prone to anxiety and/or who are inexperienced EV drivers. It is estimated that 6.6% of adults in the UK have high levels of anxiety in any given week and how these people engage with EVs is not widely recognised<sup>9</sup>.

In the DfT customer experience consultation, most respondents stated that improved lighting was necessary for consumer safety and positive consumer experience when charging<sup>8</sup>, with women in particular raising this as a concern in relation to safety. Disabled users have also identified lighting as a barrier to accessibility<sup>10</sup>. Whilst this is not necessarily in relation to safety concerns, the lack of adequate lighting undoubtedly makes the charging environment more hazardous for disabled people and older people with mobility difficulties. As

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<sup>13</sup> Cenex, January 2021 Electric Vehicle Infrastructure Barriers, Project Report. Available online at: <https://www.cenex.co.uk/app/uploads/2021/04/Electric-Vehicle-Infrastructure-Barriers-FINAL.pdf>

<sup>14</sup> Welsh Government (2014) National Survey for Wales - Transport

<sup>15</sup> Average cost of cars UK 2021. NimbleFins, February 2021. Available online: <https://www.nimblefins.co.uk/cheap-car-insurance/average-cost-cars-uk>

<sup>16</sup> Department for Transport, 2021. Travel by vehicle availability, income, ethnic group, household type, mobility status and NS-SEC.

<sup>17</sup> Statista Research, 2021. Share of adults who own a smartphone in the United Kingdom (UK) in 2008 and 2019 to 2021, by demographics. Available online at: <https://www.statista.com/statistics/956297/ownership-of-smartphones-uk/>

well as lighting, weather protection was identified by consumers as being required to enable them to feel more comfortable and safer during charging.

A further barrier identified includes charge points that are far from other amenities that people wish to use whilst their vehicle is charging. This is relevant for all users, but particularly for disabled people and older people who are more likely to find getting to amenities further away more difficult and may result in these users feeling more vulnerable or isolated<sup>7</sup>.

## 5. Baseline

This section provides a general baseline in relation to protected characteristics in Wales, including consideration of socio-economic data, in particular related to areas of socioeconomic deprivation. EV charging infrastructure needs to be accessible to the whole population, however by including a baseline of data related to groups within the population helps to provide an understanding of the scale of accessibility requirements that need to be taking into consideration in the development of EV infrastructure related policy and actions. The most recent available, published data is presented. At time of writing there is very limited data released from the 2021 census.

### 5.1 Population and age structure

The population of Wales on 21st March 2021 was 3,107,500, with a population density of 152.9 persons per square km<sup>18</sup>. Wales has a slightly higher female population, representing 51.1% of the population with 48.9% being male<sup>18</sup>.

The population of Wales has increased by 1.4% since the previous census in 2011. There is a higher percentage change in the 65+ age group compared to both the age groups 0-15 and 16-64. There has been a 2.9% increase in the 65+ group, compared to the decrease for both 0-15 and 16-64 groups (-0.4% and -2.5% respectively) from 2011 to 2021.

In the 2021 census 21.3% of Wales' population was over 65, 62.2% of the population is 15-64 and 16.5% is under 15 years.

### 5.2 Ethnicity and language

The dominant ethnicity in Wales is White (95.5%), followed by Asian/Asian British (2.2%) (see Figure 1)<sup>19</sup>. Most households in Wales have English as the primary language. According to Welsh language use surveys, in 2019-20, 22% of the population aged over three years classed themselves as Welsh speakers<sup>20</sup>. Welsh language ability was highest for those aged 3 to 15 at 37%, and lowest for those aged 65 or older at 17%. Geographically, North West Wales has the highest proportion of Welsh speakers (50-59%), with Mid Wales having 40-49%, South West Wales 30-39% and North East and South East having the lowest proportion at 0-19%. However, it should be noted that these statistics include all levels of fluency.

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<sup>18</sup> Office for National Statistics, 2022. Usual resident population in Wales, Census 2021.

<sup>19</sup> Nomis, 2011. Ethnic Group data set KS201UK. Available online at: <https://www.nomisweb.co.uk/query/asv2htm>

<sup>20</sup> Welsh Government, 2020. Welsh in the home and in education (Welsh language use survey): July 2019 – March 2020 – Available online at: <https://gov.wales/welsh-home-and-education-welsh-language-use-survey-july-2019-march-2020-html#section-91120>

Welsh Population by Ethnicity (2011 Census)

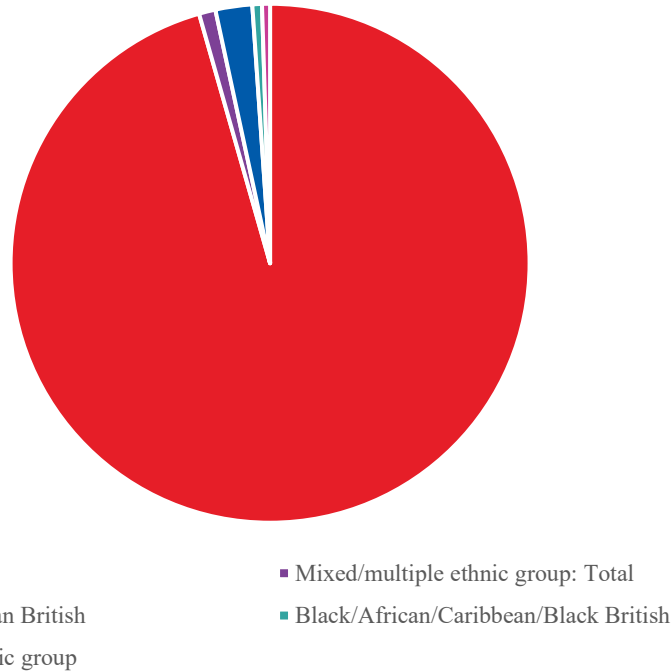


Figure 1 Welsh Population by Ethnicity<sup>19</sup>

### 5.3 Religion and belief

Annual population survey data identifies that 49.9% of the Welsh population considers themselves to have no religion. This compares to 45.8% of the population identifying as Christian, and 2.4% of the population identifying as other religions including Islam, Judaism, Buddhism, Hinduism and Sikhism<sup>21</sup>.

### 5.4 Disability

In 2018-2020 there was an estimated total of 422,300 people aged 16-65 in Wales who were disabled<sup>22</sup>. Of this population, 55.8% were female and 44.2% were male. The majority of those aged 16-65 who are classed as disabled were in the 45-65 age group. There are an estimated 370,230 registered carers in Wales<sup>23</sup> with research by Carers Wales estimating that 220,000 carers are in paid work alongside their caring responsibilities<sup>24</sup>.

### 5.5 Marriage, Civil Partnership and Sexual Orientation

According to 2011 census data 46.6% of the Welsh population is married whilst 0.2% of the population are in a same-sex civil partnership<sup>25</sup>. Over five years to 2019, the proportion of the Welsh population identifying as lesbian, gay or bisexual has increased from 1.6% in 2014 to 2.9% in 2019<sup>26</sup>. ONS data has found that in

<sup>21</sup> StatsWales, 2018-2020 - Religion by region. Available online at: <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/Religion/religion-by-region>

<sup>22</sup> Welsh Government, 2022. Stats Wales: Disability by Age and Sex. Available online at <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/Disability/disabilitystatus-by-age-sex>

<sup>23</sup> Carers Wales, 2014. Facts & Figures. Available online at: <https://www.carersuk.org/wales/about-us/facts-and-figures>

<sup>24</sup> Carers Wales, 2019. Number of carers juggling paid work and care across Wales increases to 220,000. Available online at: <https://www.carersuk.org/wales/news-campaigns/news/number-of-carers-juggling-paid-work-and-care-across-wales-increases-to-220-000>

<sup>25</sup> ONS, 2011. Marital and civil partnership status

<sup>26</sup> Welsh Government, 2021. Sexual Orientation. Available online at: <https://gov.wales/sexual-orientation-2019>

the UK statistically 16-24-year-olds are the most likely to identify as lesbian, gay, or bisexual and a higher proportion of men identify as gay<sup>27</sup>.

## 5.6 Economy and the Labour market

At the end of 2021, the Welsh Government recorded an economic activity rate for those of working age (16-64) of 76.4%.<sup>28</sup> The remaining 23.6% of the population were economically inactive. The most common reason for economic inactivity for males in Wales in 2020-21 was being a student. This was closely followed by long-term sickness accounting for 31.2% of all economically inactive male, down by 1.7 percentage points from a year earlier but well above the UK proportion (28.0%)<sup>29</sup>.

The most common reason for economic inactivity for women in Wales in 2020-21 was long-term sickness, accounting for 25.7% of all economically inactive women in Wales. Over the same period of 2020-2021, there was a rise in the proportion of students and a fall in those looking after family, accounting for 23.9% and 23.3% of all economically inactive women, respectively<sup>29</sup>.

In terms of qualifications, 41.4% of the Welsh population have an NVQ Level 4 (i.e. degree level) qualification and above compared to 7.3% of the population who have no qualifications.<sup>30</sup>

Average gross weekly earnings in Wales for full time workers was £562.80 per week in 2020. If broken down by gender the average weekly pay for full time male workers is £565.00 whilst for female workers, the figure is £513.30.<sup>31</sup>

There is also a considerable pay gap in relation to those with an impairment. Research in the UK indicates that the size of the ‘disability pay gap’ varies depending on the exact type and nature of the disability. As an example, data shows that disabled men and men with learning difficulties have a pay gap of approximately 60%. The difference between non-disabled female workers earnings and that of a woman with a physical impairment can vary between 8% and 18% depending on the type of employment<sup>32</sup>.

Variations in earnings are also significant for Black, Asian and Ethnic minority households with evidence suggesting that for example, typical Bangladeshi household incomes being 35% less than the White British median and typical Black African household incomes being 22% lower than the White British median<sup>33</sup>.

The average salary in Wales is £31,900 per year<sup>34</sup>. In 2020 the low-income threshold for a couple is £14,800 (after housing costs)<sup>35</sup>.

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<sup>27</sup> ONS, 2019. Sexual Orientation, UK, 2019. Available online at: <https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/sexuality/bulletins/sexualidentityuk/2019>

<sup>28</sup> Welsh Government, 2021. Stats Wales: Economic activity rate by Welsh local area and year. Available online at: <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/People-and-Work/Employment/Persons-Employed/economicactivityrate-by-welshlocalarea-year>

<sup>29</sup> Welsh Government, 2021. Labour market analysis by protected characteristic (Annual Population Survey): April 2004 – March 2021. Available online at: <https://gov.wales/labour-market-analysis-protected-characteristics-annual-population-survey-april-2004-march-2021-html>

<sup>30</sup> Welsh Government, 2021. Stats Wales: Highest qualification level of working age adults by region and local authority. Available online at: <https://statswales.gov.wales/Catalogue/Education-and-Skills/Post-16-Education-and-Training/Data-For-Regions-of-Wales/highestqualificationlevelofworkingageadults-by-region-localauthority>

<sup>31</sup> Welsh Government, 2021. Stats Wales: Gender Pay Differences in Wales. Available online at: <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/People-and-Work/Earnings/genderpaydifferenceinwales-by-year>

<sup>32</sup> Equality and Human Rights Commission (2017) The Disability Pay Gap

<sup>33</sup> Corlett, A. (2017) Diverse Outcomes: Living Standards by Ethnicity

<sup>34</sup> Plumplot, 2021. Wales average salary comparison. Available online at: <https://www.plumplot.co.uk/Wales-salary-and-unemployment.html>

<sup>35</sup> People in low income households, 2022. Available at: [ethnicity-facts-figures.service.gov.uk/work-pay-and-benefits/pay-and-income/people-in-low-income-households/latest](https://ethnicity-facts-figures.service.gov.uk/work-pay-and-benefits/pay-and-income/people-in-low-income-households/latest)

## 5.7 Transport and travel

In 2011, 22.9% of households in Wales did not have access to a car (or van)<sup>36</sup>. There is a large difference between urban and rural areas with 26.3% of households in urban areas and 16.2% of households in rural areas not having access to a car (or van). 34.1% of households had access to two or more cars/vans in 2011. More recent data is not currently available from the 2021 census.

Car ownership varies considerably for those who share protected characteristics and for different socio-economic groups. The National Survey for Wales shows that of those in the 20% most deprived households in Wales, only 65% of households have use of a car compared to 89% of households within the 20% least deprived<sup>37</sup>.

A survey by DfT shows in that in the UK, car ownership levels are lower amongst Black, Asian and Minority Ethnic groups. 29% of Black people had no access to a car or van compared to 14% of White people in 2020.<sup>38</sup>

Disabled people are more likely to be in a household without access to a car and in households with access to a car they are less likely to be a driver. 55% of disabled people aged 17-64 held a full driving licence in 2020, compared with 83% of non-disabled people.<sup>39</sup>

It has also been reported that women only account for 35% of registered car keepers in the UK<sup>40</sup> and that 27% of adults aged 17 years and over did not hold a full car driving licence in 2016.<sup>41</sup>

The majority of those in employment in the UK drive to work (67.4%), 6.6% use bus or train, 10% walk on foot while 0.5% of people use a taxi to travel to work. Urban areas make up the majority of the population that use a taxi to go to work (84.1%)<sup>42</sup>. These data are now relatively old (2011), but do still serve as an approximation of travel behaviours.

In terms of accessing other services (outside of employment), the National Survey for Wales carried out by the WG surveyed how easy people found accessing key infrastructure. This research found that older people (particularly those aged 75 and over) found it more difficult to get to hospital compared to younger people, and that getting to hospital was generally considered to be easier by those who had access to a car. For example, of those surveyed only 3% of those with a car said it was 'very difficult' to get to hospital, compared to 10% of those without<sup>43</sup>.

## 5.8 Index of multiple deprivation

The Welsh Index of Multiple Deprivation (WIMD) is the WG's official measure of relative deprivation for small areas in Wales (Lower-layer Super output Areas (LSOA) typically comprising of 1,600 people). The WIMD ranks these LSOAs from 1 (most deprived) to 1,909 (least deprived) and there are numerous indicators that feed into the WIMD including income, employment, health, education, access to services, community safety, physical environment and housing. Communities that are in the most deprived areas are

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<sup>36</sup> ONS (2011) 2011 Census Data - QS416EW - Car or van availability.

<sup>37</sup> Welsh Government (2014) National Survey for Wales - Transport

<sup>38</sup> Department for Transport, 2021. Travel by vehicle availability, income, ethnic group, household type, mobility status and NS-SEC.

<sup>39</sup> Department for Transport, 2021. Transport: Disability and Accessibility Statistics, England 2020  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1019477/transport-disability-and-accessibility-statistics-england-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1019477/transport-disability-and-accessibility-statistics-england-2020.pdf)

<sup>40</sup> Department for Transport, 2021. Vehicle Licensing Statistics: Annual 2020  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/985555/vehicle-licensing-statistics-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985555/vehicle-licensing-statistics-2020.pdf)

<sup>41</sup> Department for Transport, 2021. Transport: Disability and Accessibility Statistics, England 2020

<sup>42</sup> ONS, 2011. Census data QS701EW – method of travel to work <https://www.nomisweb.co.uk/census/2011/qs701ew>

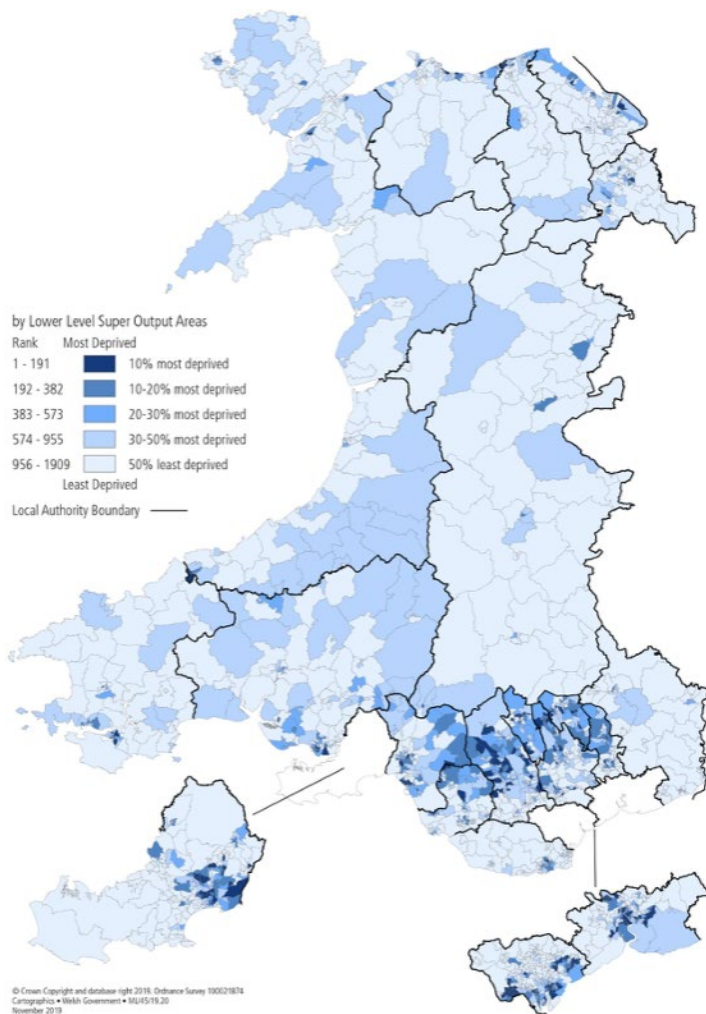
<sup>43</sup> Welsh Government (2014) National Survey for Wales – Transport. Available online at:  
<https://statswales.gov.wales/Catalogue/Transport>



likely to be the most reliant on taxi services that would enable people who experience socio-economic disadvantage to reach opportunities for education, training, and employment, as well as for social and cultural opportunities.

Welsh Index of Multiple Deprivation 2019

### Welsh Index of Multiple Deprivation



**Figure 2 Welsh Index of Multiple Deprivation (2019)<sup>44</sup>**

<sup>44</sup> Welsh Government - Welsh Index of Multiple Deprivation. Available online at: <https://gov.wales/sites/default/files/statistics-and-research/2019-11/welsh-index-multiple-deprivation-2019-results-report-024.pdf>

## 6. Assessment of equality impacts

This section assesses each of the EV charging portfolio elements against the equality indicators identified in Section 5 of this report (Table 5: Accessibility; Table 6 Affordability; Table 7 Safety). Recommendations on mitigation or how positive effects could be enhanced are set out in Section 7.

**Table 5 Equality effects identified in relation to accessibility**

Accessibility		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
Electric Vehicle charging Strategy – Facilitating the transition to net zero	The strategy sets the stage for the development of national standards which would improve accessibility for all users. This includes those with accessibility needs, such as those experienced by wheelchair users or users of other mobility aids. This would result in positive effects for disabled people and older people.	Focus on disability may miss accessibility needs of other groups such as women or older people.
	Locating charging infrastructure near amenities can help with journey planning as people are able to combine vehicle charging with other activities that they need, or want, to do. It also provides opportunities to use amenities such as cafes to simply sit and wait whilst their vehicles charge, providing a safe and comfortable waiting option. Having close amenities will remove some of the anxiety that some users such as disabled people, women, pregnant women and transgender people may be more likely to feel about charging their vehicles. It will also improve the charging experience for all users.	If the majority of charging infrastructure is located close to popular amenities, this may preclude locations in other places that would be helpful to some protected characteristics groups. For example, community halls and medical facilities and other locations that may be more frequented by protected characteristic groups such as disabled people, young people, pregnant women and women with young children. This would result in insufficient charging options at such locations.
	Where community led and not for profit initiatives are involved in provision of EV charging infrastructure this is likely to bring positive effects to economically deprived areas. There are often disproportionate numbers of people with protected characteristics in areas of economic deprivation who would therefore benefit.	Economic development as a result of EV infrastructure such as attracting new businesses and innovation, may not be equally distributed, resulting in the potential for some communities to be left behind in terms of these economic benefits in their areas. This would result in further economic differentiation between more economically deprived areas of Wales and richer areas.
	WG support for EV infrastructure in locations that are commercially unattractive would provide access for people within economically deprived areas of Wales. It would also be positive for access at	



Accessibility		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
	locations that serve facilities such as healthcare and community services that are used by people with protected characteristics, but which are unlikely to be commercially attractive.	
Electric Vehicle Charging Strategy – Action Plan	Working in collaboration with a wide range of community partners will mean that a range of opinions and needs are identified and integrated into the design and delivery of charging infrastructure. This would be positive for all protected characteristic groups.	
	The Action Plan sets out a commitment to integrate EV charging infrastructure that would also support sustainable transport options including public transport, active travel and car share schemes. These are considered to impact on wider determinants of health such as physical activity, access to employment and social networks (i.e. building blocks of health), the promotion of which would be positive for all people, but particularly those with protected characteristics and those who experience economic disadvantage who use these travel options more frequently than those who do not.	
	Enhancing charging provision on the strategic trunk road network (to include rapid chargers every 20 miles) will improve access for people with protected characteristics, but it would not be a disproportionate or differential effect.	
	The action to develop a Welsh quality standard for charging infrastructure will result in positive effects on protected characteristic groups, particular those with accessibility needs such as disabled people, pregnant women and women with young children requiring prams and pushchairs, as their needs will have been accounted for in the design, location and management of the facilities, therefore improving the user experience. [More detail given below under National Standards].	See below under National Standards
	Increasing access to information about electric vehicle charging for the general public will also be positive for protected characteristic groups provided that the information itself is accessible to these groups. However, it is unlikely to be a disproportionate or differential effect.	

Accessibility		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
	Maximising synergies between charging hubs and other uses and activities such as renewable projects, car share, community transport or modal interchanges in towns linking rail, bus and local services with active travel infrastructure will bring positive effects for economically disadvantaged and rural communities which would be disproportionate to the benefits in areas that already have high (or higher) levels of service provision.	
Electric Vehicle Charging Infrastructure in Wales – National Standards	Accessibility requirements for wheelchair users and users of mobility aids in relation to the placement of charge points is disproportionately positive for disabled people, older people and people who may be using mobility aids temporarily. It would also benefit women/men with young children using prams and pushchairs.	There is no requirement for shelter to be provided over charge points to protect users from inclement weather conditions (particularly rain). For disabled people, older people and pregnant women, this would be disproportionately negative because they may require longer to set up the charging and may be less able to quickly (and conveniently) protect themselves against the elements. This lack of protection against the weather would reduce charging choice for this group of people.
	<p>Details are set out in the National Standard that dictate various elements of the streetscape of charge points. This includes details of road markings, traffic sign design, surface gradients, lighting, impact protection (for charge points) and security cameras.</p> <p>Welsh language is required on all signs, with Welsh before English, as required by the Welsh Language (Wales) Measure, 2011. Language is covered under race/nationality as a protected characteristic, therefore this requirement is positive for Welsh speakers and contributes towards maintaining and enhancing national identity. It will be differentially positive for communities that have Welsh as a first language and who may not have strong literacy in English (predominantly rural).</p>	Multiple languages on signs can be confusing and could disproportionately negatively affect older people and people for whom Welsh or English is not a strong language and for people who struggle with visual clutter.
	Standard design of traffic signs and road markings is set out within the National Standards. This will bring positive effects for everyone as it will become easier to quickly identify charging locations. However, it would be disproportionately beneficial for older people who show preference for consistency and familiarity and for people	New / unfamiliar signage could cause anxiety or put people off using this infrastructure.

Accessibility		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
	who get confused easily and/or are likely to experience anxiety about navigating a new or unfamiliar road layout.	
	Surface gradients are dictated by BSI standards in relation to accessible bays and dropped kerb access must be within 8m of the accessible bay. This is differentially beneficial for disabled people (wheelchair users, people using mobility aids) as well as people with young children using prams and pushchairs. However, this is only the case where access to these dropped kerbs is not impeded (by another parked vehicle for example).	
		It is recommended in the National Standards that impact protection should be provided at sites where the charge point is at higher risk of being impacted by a vehicle or where the charge points are high-powered and/or high value. Recognition is given that protection (bollards or bump stops) should not make access for people with mobility issues or wheelchair users difficult. However, no details are given on how these should be located to avoid this, therefore there is a possibility that installation of impact protection will not be achieved without restricting access. This would differentially negatively affect disabled people.
	Requirement for charge points to be added to the National Charge point Registry (NCR) will mean that information about the charge point will be available to the public through third parties. This will help people to make decisions about which charge point to use based on the information about the charge point included in the NCR. Disabled people and older people would find this particularly beneficial as they will be able to access information about whether particular charge points are accessible (whilst all should be, there may be reasons why it's not and this information helps inform customers).	
	Older people are less likely to utilise information available on a smartphone app to inform them of any issues related to the maintenance of charge points and are therefore less likely to have	

Accessibility		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
	<p>information to hand prior to traveling to a particular charge point. The regular maintenance of charge points is therefore disproportionately beneficial to this group where it ensures access is maintained.</p> <p>Effective customer support is important for everyone, but particularly for those who may be more likely to experience difficulties at charge points, such as those who have accessibility or language needs. This would be positive for disabled people, older people (who are more likely to struggle with technology) and those for whom English or Welsh is not their first language (and need additional support in either of these languages). Customer support will also be positive for those people such as women and transgender people who may be more likely to feel vulnerable if they need help in isolated locations due to an issue with a charge point.</p>	
Preferred Network	<p>Consideration of WIMD data within the preferred network modelling means that economically disadvantaged communities have been factored into the distribution of EV charging points. This means that whilst demand may not be currently there, and therefore would not present as commercially attractive to Charge Point Operators and Distribution Network Operators, such locations are not ignored and provision will be made for inevitable future demand.</p>	<p>People from economically deprived areas are more likely to have older electric vehicles or second-hand EV (as the market develops). This means that efficacy of the battery will be diminished, and more frequent charging will be required. This requirement should be modelled within the preferred network.</p>
Deliverability Plan	None identified	None identified

**Table 6 Equality effects identified in relation to affordability**

<b>Affordability</b>		
<b>Element of portfolio</b>	<b>Potential positive equality effects</b>	<b>Potential adverse equality effects</b>
Electric Vehicle charging Strategy – Facilitating the transition to net zero	Where community led and not for profit initiatives are involved in provision of EV charging infrastructure this is likely to bring positive effects to economically disadvantaged areas, which would benefit most. There are often disproportionate numbers of people with protected characteristics in areas of economic disadvantage who would therefore benefit.	Economic development as a result of EV infrastructure, such as attracting new businesses and innovation, may not be equally distributed, resulting in the potential for some communities to be left behind in terms of these economic benefits in their areas. This would result in further economic differentiation between more economically deprived areas of Wales and richer areas.
		Electricity rates are currently higher in on-street charging locations resulting in differentially higher costs for people without access to off-street (home) charging. Home charging is less likely to be a viable option for people in socially disadvantaged neighbourhoods as well as for those people who do not own their own home.
Electric Vehicle Charging Strategy – Action Plan	The commitment to support local needs through funding decisions would bring positive effects for all protected characteristic groups as their needs in the local area would be accounted for in the planning and provision of EV charging infrastructure.	
	Encouraging investment and innovation within local communities would benefit people living in economically disadvantaged areas, particularly where wider benefits are realised such as training and induced economic development and innovation.	
Electric Vehicle Charging Infrastructure in Wales – National Standards	Additional guidance mentioned in the National Standards (but with limited details) includes the need to plan for micromobility (e.g. e-bikes, e-scooters, e-skateboards) which would benefit people who do not have access to electric vehicles (more likely in economically disadvantaged communities). This would provide opportunities for people to access alternative sustainable transport more readily.	
	Open payment mechanism is to be used on charge points which does not require a membership or subscription. This will be positive for those who do not wish to sign up to such memberships/subscriptions or who find such requirements confusing or costly. This would disproportionately benefit older people, and economically disadvantaged people.	There is no requirement for cash payments to be an option which could be a disadvantage for some groups. Whilst it is unlikely that someone who has an EV does not have access to a bank account and payment card, there are some people who feel anxious using this method without strong assurances around security of payment.
	Use of a single payment metric will provide transparency and be easier for people to understand and compare tariffs across the	

Affordability		
Element of portfolio	Potential positive equality effects	Potential adverse equality effects
	network. This will reduce anxiety related to understanding how much a charge is likely to cost and will be differentially beneficial for people experiencing economic disadvantage who are more likely to be concerned about how much a charge event will cost them.	
Preferred Network	None identified	None identified
Deliverability Plan	None identified	None identified

**Table 7 Equality effects identified in relation to safety**

Safety		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
Electric Vehicle charging Strategy – Facilitating the transition to net zero	Improving elements of design such as lighting would have positive effects for disabled people as well as women, pregnant women, young people, older people, and transgender people who are more likely to feel unsafe in unlit (or poorly lit), isolated spaces.	
	Improving design so that EV charging infrastructure is easier to use (e.g. through supporting some of the weight of the cables, having cables at lower heights, preventing cables from dragging on the floor and having payment points at heights that do not require over stretching) will result in use of charging cables being safer to use for people with mobility difficulties, lower than average strength, older people, or people who are shorter than average height.	
Electric Vehicle Charging Strategy – Action Plan	Refer to National Standards effects	Refer to National Standards effects
Electric Vehicle Charging Infrastructure in Wales – National Standards	The requirement for charging locations to be sufficiently lit provides security and safety for users such as disable people, women, pregnant women, young people, older people, and transgender people who may be more likely to feel unsafe in unlit (or poorly lit) spaces.	If lighting is not designed to be inclusive, it may not result in improved safety or ease of use for users of charging points. For example, if lighting results in glare on payment screens from particular angles, this could lead to wheelchair users being unable to see the screens properly. Insufficient lighting could also result in people feeling unsafe by creating shadows which could be perceived as threatening. Whether this is a perceived threat or real, it would impact on the experience and sense of

Safety		
Element of portfolio	Potential positive equality effects	Potential negative equality effects
		safety of users, particularly those who may be more likely to feel vulnerable.
	<p>Desirable characteristics (but not required) for charge points is that they are close to amenities such as shops, cafes, supermarkets and toilets to improve feelings of a safe environment. This would differentially benefit protected characteristic groups, particularly disabled people, women, older people and transgender people, all of whom may be more likely to have feelings of being unsafe in unfamiliar surroundings.</p> <p>Whilst this is identified as a benefit to feelings of safety within the National Standards it also brings benefits for people who find walking/wheeling long distances to amenities difficult and therefore values closeness of amenities. This includes older people and disabled people.</p>	Lighting is only identified as being desirable to be operational throughout the night. The absence of lighting would differentially negatively affect protected characteristic groups who may be more likely to feel vulnerable using charging points at night without lighting. This includes disabled people, women, older people and transgender people who may be more likely to feel unsafe in unlit and unfamiliar surroundings.
	<p>The requirements to maintain charge points to promote positive user experience will be disproportionately positive for disabled people and older people who are more likely to rely on familiar charge points and need to have confidence that they are continually well maintained. Where charge points are not well maintained, these groups are likely to be the first group who would struggle to continue using them, e.g. if the ground surrounding the charge point becomes uneven, wheelchair users and older people would be the first group of people to be disadvantaged by this as a result of making access more difficult (i.e. making it harder to use wheelchairs and being a potential trip hazard).</p> <p>People who live in economically disadvantaged communities would also benefit disproportionately as sites in economically disadvantage areas may be more likely to be damaged through vandalism or misuse than in other areas and therefore likely to require more maintenance.</p>	
Preferred Network	None identified	None identified
Deliverability Plan	None identified	None identified

## 7. Recommendations and action plan

Table 8 sets out specific recommendations that should be considered now to address the potential adverse equality effects identified in the assessment, and to secure and enhance the potential positive effects for protected characteristic groups and for groups experiencing socio-economic disadvantage. All of these actions would contribute towards reducing or removing potential adverse equality effects, strengthen potential positive equality effects and help to ensure that, where possible, the strategy promotes equality of opportunity. The outcome of the EqIA will be used to develop guidance for future use when designing specific charge points and surrounding ‘service areas’.

All actions are recommended to be carried out. However, where these are of particular priority, these are identified in the table.

**Table 8 Recommended actions**

EV charging action/ component	Recommended action	Responsibility	Timescale	Priority action?	Part of EV charging portfolio implementation it applies to				
					EV Strategy	EV Action plan	National standards	Preferred network	Deliverability plan
Collaborative working  (Governance)	Ensure that the Charge Point Operator working group includes representatives from groups/individuals representing protected characteristic groups. This will help to capture as wide a range of views and needs as possible.	Welsh Government (WG)	Q2 2023	X	X	X			X
	Local needs assessments (identifying local EV requirements) should be done in consultation with local businesses and local community groups. This should include representatives from protected characteristic groups.	Local Authorities with support from WG/TfW	On preparation of a local needs assessment	X		X	X		X
Availability of information  (design)	Information that is provided about charge points and electric vehicles in general should be provided in accessible formats and distributed appropriately and equally to all communities. This may require different approaches being required in different locations with different formats (e.g. digital and non-digital).	Charge Point Operators (CPOs)	On installation of a charge point	X		X	X		X



EV charging action/ component	Recommended action	Responsibility	Timescale	Priority action?	Part of EV charging portfolio implementation it applies to				
					EV Strategy	EV Action plan	National standards	Preferred network	Deliverability plan
Signage – Welsh/English  (design)	Signs must be designed consistently and clearly to avoid confusion and delay in comprehension for those who do not speak Welsh and find multiple languages on one sign confusing. Consider having different colours or fonts to distinguish between languages to aid quick referencing when driving.	CPOs	On installation of a charge point		X	X			X
Signage – design  (design/ governance)	Promote the standard signage designs to EV owners (e.g. when they purchase an EV) to make sure that everyone is familiar with it and understands what it means. Without this communication, it is possible that people do not recognise the intended meaning and/or lead to a lack of confidence in accessing charging infrastructure.	CPOs  Vehicle sales operators/ TfW service desk	On installation of charge points/ at point of vehicle purchase		X	X			X
OZEV EV charging regulations  (governance)	The Welsh National Standards will meet (or be more ambitious than) the UK Regulations (which is positive), but care should be taken to make sure that variations in Wales do not disadvantage people with protected characteristics or who are economically disadvantaged, e.g. CPO charging more in Wales per unit of electricity than in England.	WG? DNO?	Ongoing review of alignment			X			X
	Consideration of how to make on-street charging equitable in cost to home-charging is required. This would make charging costs more equitable across society.	WG (but controlled by UK Government)	2023	X					X
Range of charge  (modelling)	The second-hand market of EVs will make ownership of EVs more financially accessible (particularly for people who experience economic disadvantage). However, range of older batteries is lower which means they will need to be charged	WG/CPOs	2023				X	X	

EV charging action/ component	Recommended action	Responsibility	Timescale	Priority action?	Part of EV charging portfolio implementation it applies to				
					EV Strategy	EV Action plan	National standards	Preferred network	Deliverability plan
	more frequently. This future lower range capacity should be accounted for within modelling predictions.								
Charge point co-location with amenities  (Modelling/ design)	<p>When locating charge points close to amenities a review should be carried out to make sure that these amenities are accessible to people with protected characteristics, particularly older people and disabled people. Additional weighting should be given to amenities that have a high patronage from people with protected characteristics (e.g. health centres, community halls, education facilities). Moreover, those charge points which are built with new amenities (e.g. cafes, community spaces) should ensure the new amenities are responding to local need and not leading to displacement.</p> <p>This added ‘social value’ component of delivering charge points should be integrated into the Deliverability Plan. There should be an option for phased delivery of these wider social values to account for any additional costs that result.</p>	CPOs	Ongoing	X	X	X		X	
Integrate EV charging infrastructure with other sustainable transport options  (governance)	Future proof EV infrastructure to allow for charging of public transport, active transport (e-micromobility) and car share schemes. Whilst these areas are still in their infancy, planning for equitable access of these charging options should be maintained.	WG/TfW	Ongoing	X	X	X	X	X	X

EV charging action/ component	Recommended action	Responsibility	Timescale	Priority action?	Part of EV charging portfolio implementation it applies to				
					EV Strategy	EV Action plan	National standards	Preferred network	Deliverability plan
Dropped kerbs  (design)	Include design requirements that prevent dropped kerbs from being blocked by parked vehicles or street furniture.	WG / Tfw	2023	X		X	X		X
Impact protection  (Design/governance)	Design guidance should be provided in relation to impact protection in order to prevent creating access restrictions for wheelchair users and people using mobility aids.	WG / Tfw	2023	X		X	X		X
Lighting  (design)	Lighting should be designed to be inclusive (e.g. to avoid glare on payment screens from lower angles) and to not inadvertently create insufficiently lit environments that generate feelings of being unsafe.	WG / Tfw	2023	X		X	X		X
Shelter provision  (Design)	It is recommended that options for providing covered charge points at some locations are explored (which could include solar canopies). This would improve user experience for everyone, but particularly wheelchair users, older people and those who use mobility aids. This would be more applicable in locations where there is no option of other amenities that could be utilised during the period of charging.  Consideration should be given to how the planning approval process could be used to maintain standards and encourage the use of canopies.	WG / Tfw	2023			X	X		
Location close to amenities  (Governance)	The decision to locate EV charging infrastructure close to amenities such as shops and cafes is recommended. However, where this is not possible, consideration should be given to providing rapid chargers. This is especially the case in rural	WG/CPOs/ DNO	2023 - ongoing				X	X	X

EV charging action/ component	Recommended action	Responsibility	Timescale	Priority action?	Part of EV charging portfolio implementation it applies to				
					EV Strategy	EV Action plan	National standards	Preferred network	Deliverability plan
	locations where people would be potentially isolated with nowhere to wait for long periods of time. Different requirements in rural areas needs to be considered.								
Health equity	Health equity of EV charging infrastructure has not currently been considered. For example, economically disadvantaged areas are generally disproportionately affected by higher air pollution than affluent areas. Increased uptake of EVs, alongside associated charging infrastructure, will result in improved air quality, therefore if EVs are predominantly being owned by people in affluent areas, health impacts from poor air quality will continue to disproportionately affect economically disadvantaged communities who do not own EVs.	WG	2023 - Ongoing		x			x	

### 7.1 Future reviews of EqIA

The various elements of the EV portfolio will evolve over time as the market can, and does, change quickly. The EqIA should be reviewed and updated to mirror any changes within the portfolio. It is anticipated that this would be required, but not limited to, the following dates:

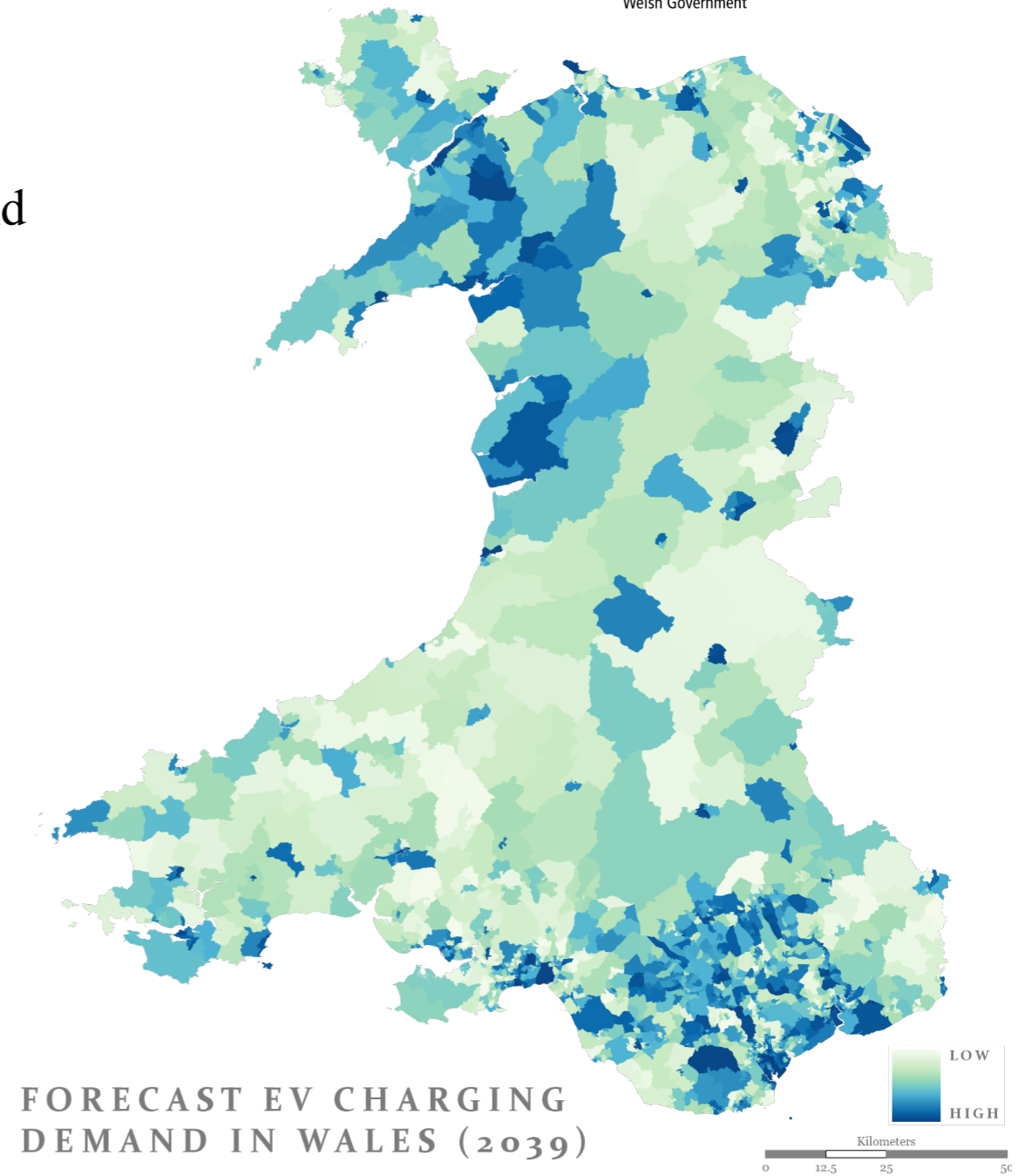
- 2024: To align with the start of regular review and update of the phased programme of interventions in order to establish whether any equality issues begin to arise and need to be mitigated.
- 2030: The EV Charging Infrastructure Strategy covers the period up to 2030, therefore a review of the equality impacts that have been lived as the charging network rapidly expands up to this point would be helpful. 2030 also represents the date that introduces the ban on new wholly diesel and petrol car sales which may result in shifts in the market that lead to equality impacts. Whilst these kinds of changes have been anticipated in this assessment, there may be different opinions, lived experiences or new issues revealed over the next few years which would be captured by a review of the EqIA.

Welsh Government

# Electric Vehicle Charging Infrastructure Programme Strategic Outline Business Case: Commercial, Financial and Management Cases

Executive Summary

Final Arup report to the Welsh Government  
February 2023



## Reliance on Our Advice and Reports

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This report is produced to the Strategic Outline Business case (SOBC) level, the scoping stage. At this stage the costs and affordability figures are indicative only.

This report and the capital expenditure (CAPEX) estimate results included in the Financial Case (the Results) has been prepared by Arup specifically for and under the instructions and requirements of Welsh Government in connection with the Electric Vehicle Charging Infrastructure Strategy for Wales, under the Schedule 2b contract dated 28 February 2022.

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## Glossary of terms

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AIE	The European Association of Electrical Contractors	TfW	Transport for Wales
CE	Consumer Efficiency (demand scenario)	Tx	Transformation
CP	Chargepoint	ULEVs	Ultra Low Emission Vehicles
CPO	Charge point operator	WelTAG	Welsh Transport Appraisal Guidance
DfT	Department for Transport	WG	Welsh Government
DNOs	Distribution Network Operators	WLGA	Welsh Local Government Association
ESG	Environmental, Social, and Governance		
EVCi	Electric Vehicle Charging Infrastructure		
EV	Electric Vehicle		
GS	Government on-Street (demand scenario)		
LA	Local Authority		
LSOAs	Lower Super Output Areas		
MSOAs	Middle Super Output Areas		
OEM	Original Equipment Manufacturer		
RD	Rapid Dominant (demand scenario)		
SOBC	Strategic Outline Business Case		
TfL	Transport for London		

# Executive summary

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# Introduction and context

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## Executive summary

### Introduction

#### Purpose of this document

The purpose of this report is to explore how the Electric Vehicle Charging Infrastructure Strategy for Wales and accompanying Action Plan will be delivered in practice, to be referred to as the Electric Vehicle Charging Infrastructure Programme, as WG sets out to accelerate the roll-out of electric vehicle charging infrastructure across Wales. This report has been prepared for Welsh Government.

In 2021, Welsh Government launched the Electric Vehicle Charging Strategy for Wales (the Strategy), which sets out the vision for electric vehicle charging in Wales, outlining the current context, future charging needs, and how these can be met.

Welsh Government (WG) commissioned Arup to produce the three cases relevant to the deliverability of the Strategy to the Strategic Outline Business Case (SOBC) level, for the Electric Vehicle Charging Infrastructure (EVCI) Programme for Wales:

- **The commercial case** introduces key aspects of the charging market – including the EV charging value chain and a spectrum of potential business models. The case presents the results of a capability and capacity assessment of the public sector, capturing: existing and aspirational capability to deliver the Strategy, the roles to be played by different bodies in that delivery, barriers to strategy roll-out and interventions to overcome, and plans for engagement with the private sector.
- **The financial case** focuses on the total capital costs of the EV charging infrastructure roll-out required to meet future EV demand projections. The financial case presents a high-level estimate of the range of total capital cost of installing all on-route and destination charging infrastructure in Wales, agnostic of which body (whether public or private sector) is taking financial responsibility.
- **The management case** explores how the programme will be overseen, managed and delivered in the next phase, and subsequently. By defining and putting in the place the necessary management plans in place, such as programme management and risks management, this provides the reassurances the programme is achievable and that WG, Transport for Wales (TfW) and other delivery partners have the capacity to deliver the programme, which in this case, is the EV Charging Infrastructure for Wales Strategy.

The development of the three cases above are aligned with HM Treasury’s Green Book and the Welsh Transport Appraisal Guidance (WelTAG).



Figure 1: Electric Vehicle Charging Infrastructure Strategy for Wales  
Source: Welsh Government, 2021

## Executive summary

### The EV market today

#### Wales currently has fewer EVs, and fewer chargepoints than other parts of the UK

Wales currently has a relatively low level of EV uptake per capita, compared to other regions of the UK. Installed charging infrastructure is also low, especially for On-Route rapid and ultra-rapid charging, creating gaps in the minimum viable network of charging required for longer trips.

There are 1,310 public CPs installed in Wales, with eight battery electric vehicles (BEVs) or thirteen plug-in vehicles (BEVs, plug-in hybrids, other) per CP. 3.7% of public UK CPs are installed in Wales, where 2.2% of BEVs and 2.1% of all EVs are licensed.

Among UK regions, Wales ranks 10th in number of installed CPs, 2nd in CPs per licensed BEV, 3rd in CPs per licensed EV (BEVs and others), 6th in CPs per capita, and 10th in EVs per capita (out of 12 major UK regions). Lower levels of public charging infrastructure can have a dampening effect on EV uptake.

	# CPs	# BEVs /CP	# EVs /CP	# People /CP	# People /EV
Greater London	11,272	5	9	799	91
South East	4,606	24	40	2,001	50
Scotland	3,562	8	14	1,535	110
West Midlands	2,617	14	22	2,278	105
South West	2,438	30	46	2,321	50
East of England	2,303	17	35	2,722	77
North West	2,253	24	46	3,270	71
Yorkshire and the Humber	1,952	18	32	2,831	89
East Midlands	1,847	13	23	2,634	112
Wales	1,310	8	13	2,420	183
North East	1,069	8	12	2,508	203
Northern Ireland	352	17	29	5,385	184

**KEY:** Less infrastructure More Infrastructure

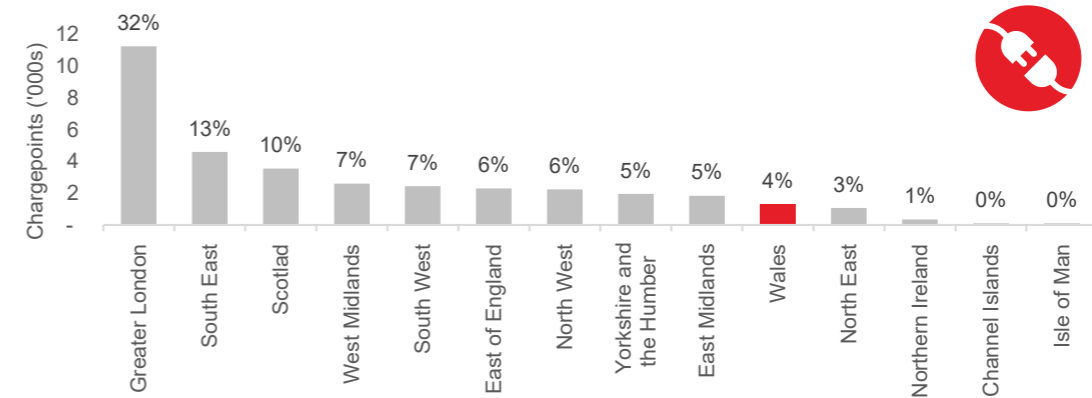


Figure 2: UK public chargepoints by region

Source: ZapMap August 2022

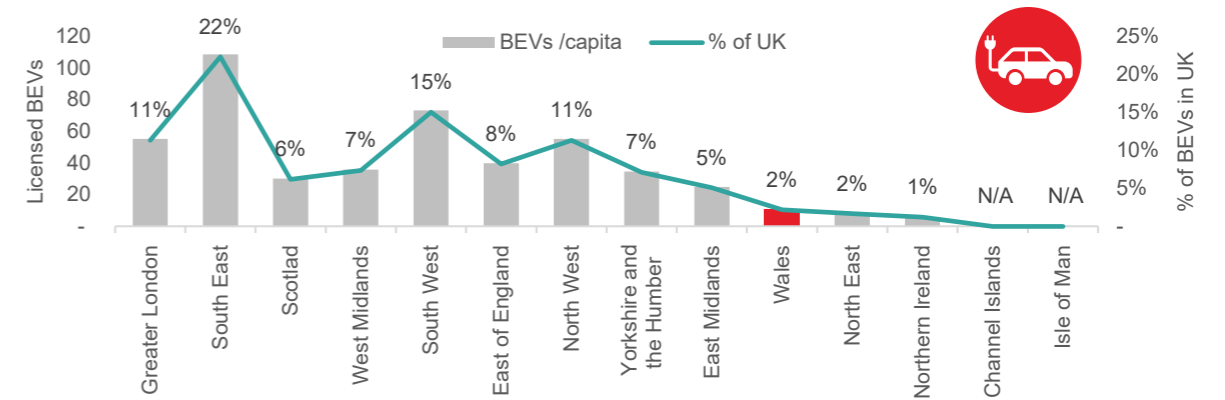


Figure 3: UK battery electric vehicles (BEVs) by region

Source: DfT, 2022

## Executive summary

### The EV market: future development and challenges

#### The current pace of EV charging roll-out in Wales is too slow and government intervention is needed to achieve the aims of the Strategy

Based on Arup modelling, to fulfil demand, the projected number of fast chargers needed across Wales will reach around 34,000 chargers by 2030. As of August 2022, Wales currently has 1.2% of this total installed. Furthermore, around 4,000 rapid chargers are projected to be needed by 2030, with 1.7% of this total installed so far.

DfT statistics currently show the growth of the number of licensed EVs in Wales is outpacing the growth of publicly-available chargers by a factor of almost three. Between October 2019 and July 2022, the number of licensed EVs increased by 305%, yet the number of publicly-owned chargers increased by 125%.

Key strategy elements include encouraging transport decarbonisation, delivering at high standards, and equality of coverage and access.

Given the impending 2030 ban on new wholly diesel and petrol car sales, the pace of delivery will need to accelerate significantly if the WG is to deliver sufficient and equitable accessibility to a CP across Wales, as per the Strategy.

As such, continuing with current trends and levels of intervention is highly unlikely to be enough to deliver the charging infrastructure needed to meet current and future demand.

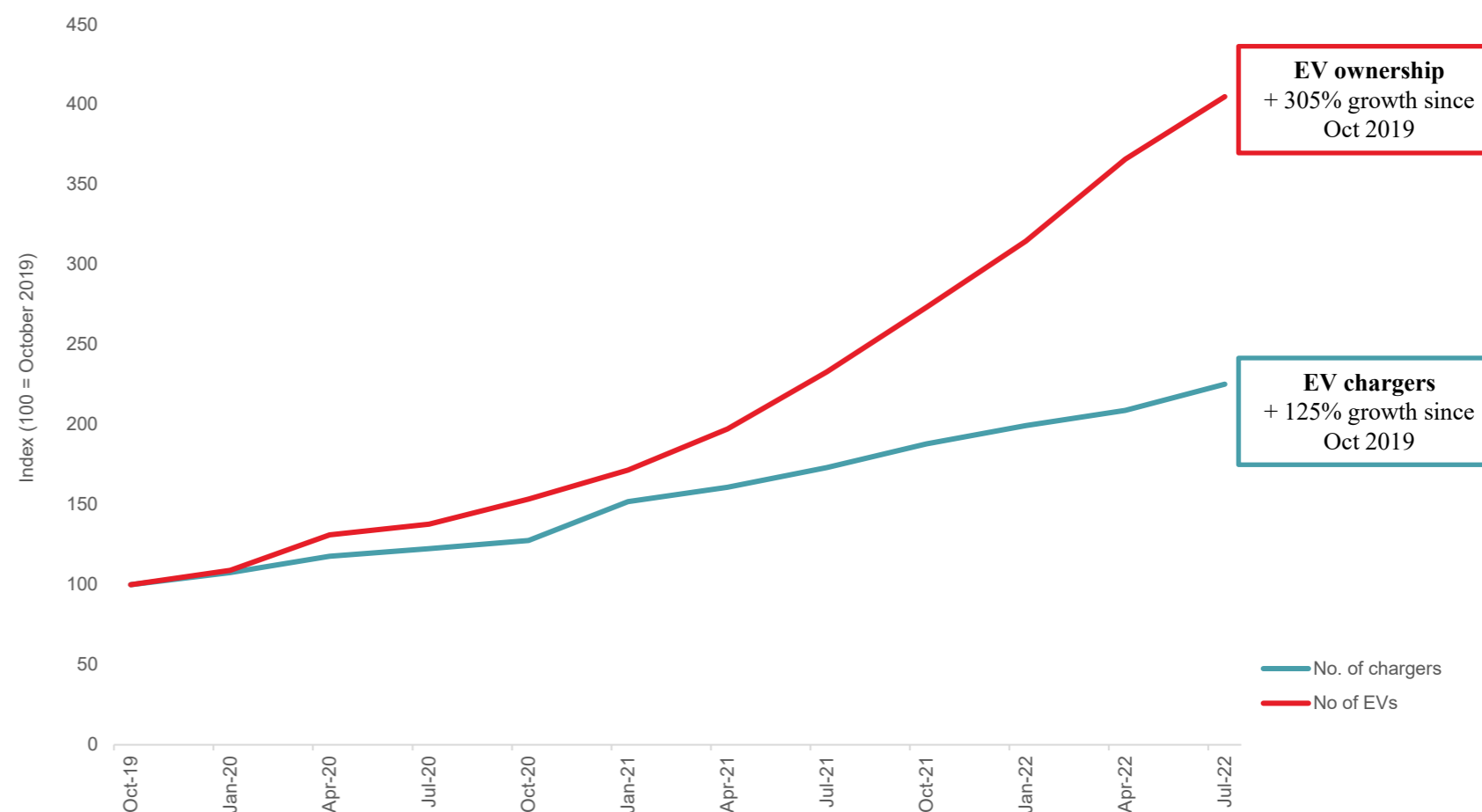


Figure 4: No. of EV chargers vs no. of licensed EVs in Wales (base index = 2019)

Source: DfT, as of October 2022

# Key findings of the commercial, financial and management cases

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## Executive summary

### Key findings of the Strategic Outline Business Case: commercial, financial and management cases

#### Commercial case [1/2]

Arup expects that the majority of charging will be delivered and funded by the private sector; however, where private sector roll-out would lead to opportunity gaps in the WG strategy, Arup recommends considering intervention through policy, selected subsidies, plans and developments. WG has a choice about the areas of the value chain in which to intervene, the role it will play and the funding or benefits funding it will provide – these should be considered on a case-by-case basis.

- Emerging recommendation
- Potential pathway
- Not recommended
- Not applicable

Opportunity Type:	Key Take-Aways	Sites Developed on Private Land by Private CPOs	Sites Developed in PPP on Private Land	Sites Developed on Public Land by Private CPOs	Sites Developed in PPP on Public Land	Sites Developed on Public Land by Public Sector
<span style="color: green;">*</span>	<b>Policy Intervention</b> The Welsh Government's main role across all opportunities lies in policy-based interventions that remove barriers, promote decarbonisation, and incentivise investment. These policy interventions can support both the private sector and other public sector bodies.	●	●	●	●	●
<span style="color: black;">A</span>	<b>Subsidy / auction / franchise</b> Out of all Welsh public sector bodies, the Welsh Government has the most capacity – skill and resource – to financially intervene. This should be considered on a case-by case basis, with specific and targeted beneficiaries, with a special focus on closing equality gaps.	<i>Consider on a case-by-case basis where equality gaps emerge – all financial intervention should be targeted (specific sites, capex types, or areas) and balanced against other public needs.</i>			<i>Access to grants can help Local Authorities capture local opportunities.</i>	
<span style="color: black;">A</span>	<b>Plan and lease / licence</b> On publicly-owned land that is well suited to EV charging, public sector delivery entities (TfW and Local Authorities) could plan sites and lease them out to private CPOs. The public sector could also offer planning support to private investors to help de-risk and incentivise.	<i>Planning support can be offered by the public sector to help de-risk private investment</i>		●	●	●
<span style="color: black;">A</span>	<b>Develop and lease / licence</b> On publicly-owned land that is well suited to EV charging, public sector delivery entities (TfW and Local Authorities) could plan sites and develop sites, then lease them out to private CPOs. This option is more capital intensive, with not much public sector capability.	●	●	●	●	●
<span style="color: red;">B</span>	<b>Low-control JV</b> In a low-control JV, public sector delivery entities could have a degree of control over charging outcomes at the site, without taking on the full investment risk (however, still facing demand risk). Operations should largely be outsourced to private CPOs.	●	●	●	●	●
<span style="color: red;">B</span>	<b>High-control JV</b> In a high-control JV, a private sector partner would likely expect significant public sector investment, and the public sector would face demand risk. Operations should largely be outsourced to private CPOs, but the public sector could offer support (e.g., user experience).	●	●	●	●	●
<span style="color: red;">C</span>	<b>Own and appoint operator</b> The private sector could retain full ownership of a charging site on suitable public land and outsourcing site operations to a private sector CPO. This would require significant capital investment and full exposure to demand risk.	●	●	●	●	●
<span style="color: red;">C</span>	<b>Own and operate</b> Arup does not recommend this option to be deployed on a wide-scale basis, as it is in conflict with the Welsh Government's low appetite for operational risk. Select opportunities – especially in the On-Route network could be owned and operated by TfW.	●	●	●	●	●

## Executive summary

### Key findings of the Strategic Outline Business Case: commercial, financial and management cases

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#### Commercial case [2/2]

Next steps should include socialising the EV charging strategy, engaging with the private sector and tailoring the approach to intervention.

#### Capability of the public sector

Public sector capability is strongest in planning, finance, power supply, and contract management activities. Significant gaps exist in public sector site design, CP installation and civils, operation, and maintenance capability.

#### Next Steps:

##### 1. Roles across the Public Sector

Roles of the public sector should include:

- **Welsh Government** – oversight and socialisation of the EV charging strategy, setting standards, monitoring strategy progress, policy intervention, and financial intervention.
- **Transport for Wales** – delivering and monitoring the strategy at On-Route sites and rail station car parks, and providing delivery support to LAs and Welsh Government.
- **Local Authorities** – delivering and monitoring the strategy locally, at destinations and on-street, with support from TfW.

##### 2. Engagement with the private sector

To understand the size and scope required public sector intervention, further engagement with the private sector is required. How much infrastructure will the public sector roll out? Where will this be located and who will it serve?

##### 3. Prioritisation of Delivery

Arup recommends that two elements of the delivery strategy be prioritised first (before moving on to others): the **on-route network** and **destination /on-street charging in built-up areas**. These elements will have the most short-term benefit for users in Wales, providing a strong cross-national network and catering to users who have a greater need for public charging.

#### 4. Approach to Intervention

There is no “one size fits all” business model or approach to public sector intervention. Different locations, modes, and sites will require different amounts and types of intervention. The table opposite outlines key take-aways from Arup’s emerging recommendations around business models to be employed on a targeted basis. Arup recommends that procurement take into account steps to mitigate identified barriers to strategy implementation – including flexible procurement, and larger opportunities and longer contractual terms that reflect the appetite of the private sector.



## Executive summary

### Key findings of the Strategic Outline Business Case: commercial, financial and management cases

#### Financial case

The financial case suggests a total capex cost of between £351 to £1,550m for On-Route and Destination charging by 2040. This analysis is agnostic of which body is taking financial responsibility.

#### Financial case modelling

The financial case presents a high-level estimate of the cost of installing all On-Route and Destination charging infrastructure in Wales, agnostic of what body is taking financial responsibility. The case includes on On-Route and Destination charging only. Capital costs include grid connection and substation costs, equipment supply and installation, planning, and civils. The range of results is wide because of uncertainties inherent to the development of the EV charging market – in terms of EV uptake, total demand, user behaviour, and both location and speed of charging

From the minimum to maximum range across all scenarios and sensitivities, capex reaches **£351 to 1,550 million by 2040**, with no growth after that point, with £114 to 689 million spent on On-Route charging and £236 to 861 million on Destination charging. By this point On-Route chargepoints number 1.1 to 6.5 thousand and Destination 6.4 to 61.8 thousand, with a total of **7.4 to 68.4 thousand**. Charging capacity reaches 141 to 1,165 MW, spread across 968 to 23,500 sites.

#### Legend:

- Central case results
- Range of min to max results (sensitivities applied to *Central Case* demand)
- Range of min to max results (sensitivities applied to all demand scenarios)

#### Next Steps

We recommend the following next steps:

1. **Refine the range of results:** consider location-specific costs, like grid connection; excluded costs, like land and opex; and evaluate LSOA-level demand and indicative costs.
2. **Engage with the private sector to understand plans:** form a view of private sector roll-out that will happen without intervention to identify gaps; collaborate with the private sector to align investment to the preferred network.
3. **Determine the phasing of roll-out:** prioritise intervention in the on-route network and public local charging in built up areas; evaluate the effects of roll-out phasing on public and private financial investment into public charging.
4. **Determine the size & scope of the funding envelope:** once the range of results, private sector engagement, and phasing have been considered, determine the size of the government funding envelope – how much is the public sector willing to invest? What non-financial actions could be taken to reduce the need for financial intervention? In what aspects of the public charging value chain is the government willing to invest?
5. **Explore options for financing:** once the public funding envelope has been determined, explore the means for financing and detailed commercial approach – this might include bundling sites and using Financial Transaction Reserve.

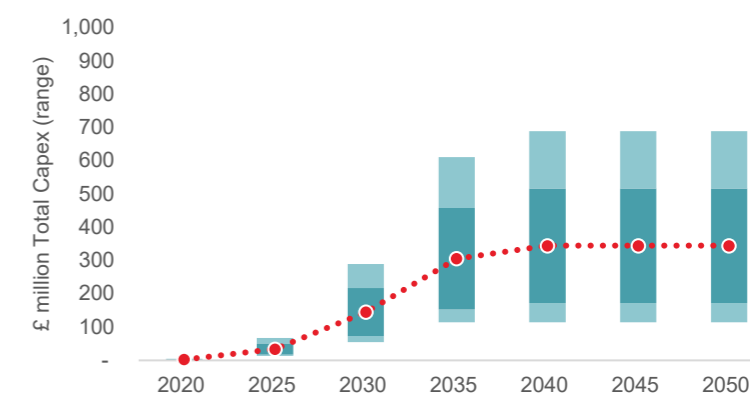


Figure 5: Total capex (£ million, range of results): on-route

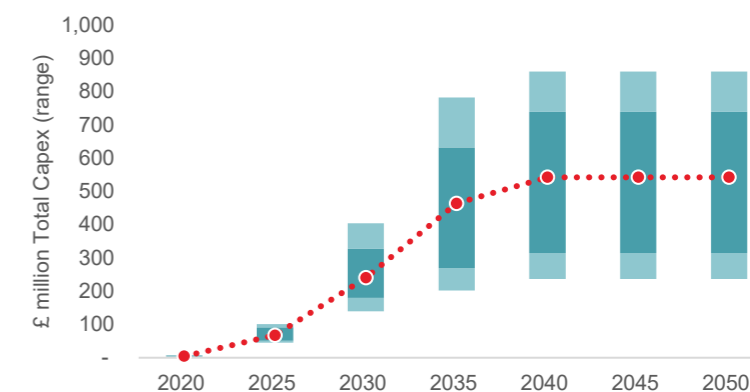


Figure 6: Total capex (£ million, range of results): destination



## Executive summary

### Key findings of the Strategic Outline Business Case: commercial, financial and management Cases

#### Management case

The management case outlines the key considerations when delivering and managing the programme of interventions needed to facilitate and deliver the preferred network.

The scale and complexity of delivering the EVCI programme necessitates a strong and effective management structure which determines how WG and delivery partners will deliver and manage the EVCI programme. This is a significant step-up from the WG resources that are devoted today. Key findings includes:

- The **need for a PMO** to manage and deliver the EVCI programme is imperative to delivering the preferred network in line with policy objectives. Furthermore, portfolios and projects will need to be identified - Figure 7 sets out an illustrative example of a proposed EVCI portfolio structure.
- **Governance arrangements needs to be in place** to oversee and be clear on accountability for the programme, An assurance framework will need to be created to provide independent assurance that the programme is meeting the intended outcomes, and that programme risks and control issues are managed effectively.
- **Monitoring and Evaluation** is critical in understanding the progress of the EV charging roll-out, and whether policy objectives and KPIs are met.
- A programme **risk register and management plan** needs to be developed within the next six months, identifying key risks as early as possible and identify mitigation measures, minimising disruptive impact on the programme.
- A **communications and stakeholder engagement plan** should be developed jointly by WG and TfW, ensuring engagement and messaging is streamlined with the private sector and the public, avoiding duplication of efforts between different parties, as well as raising public awareness of progress and EV charging infrastructure in Wales.

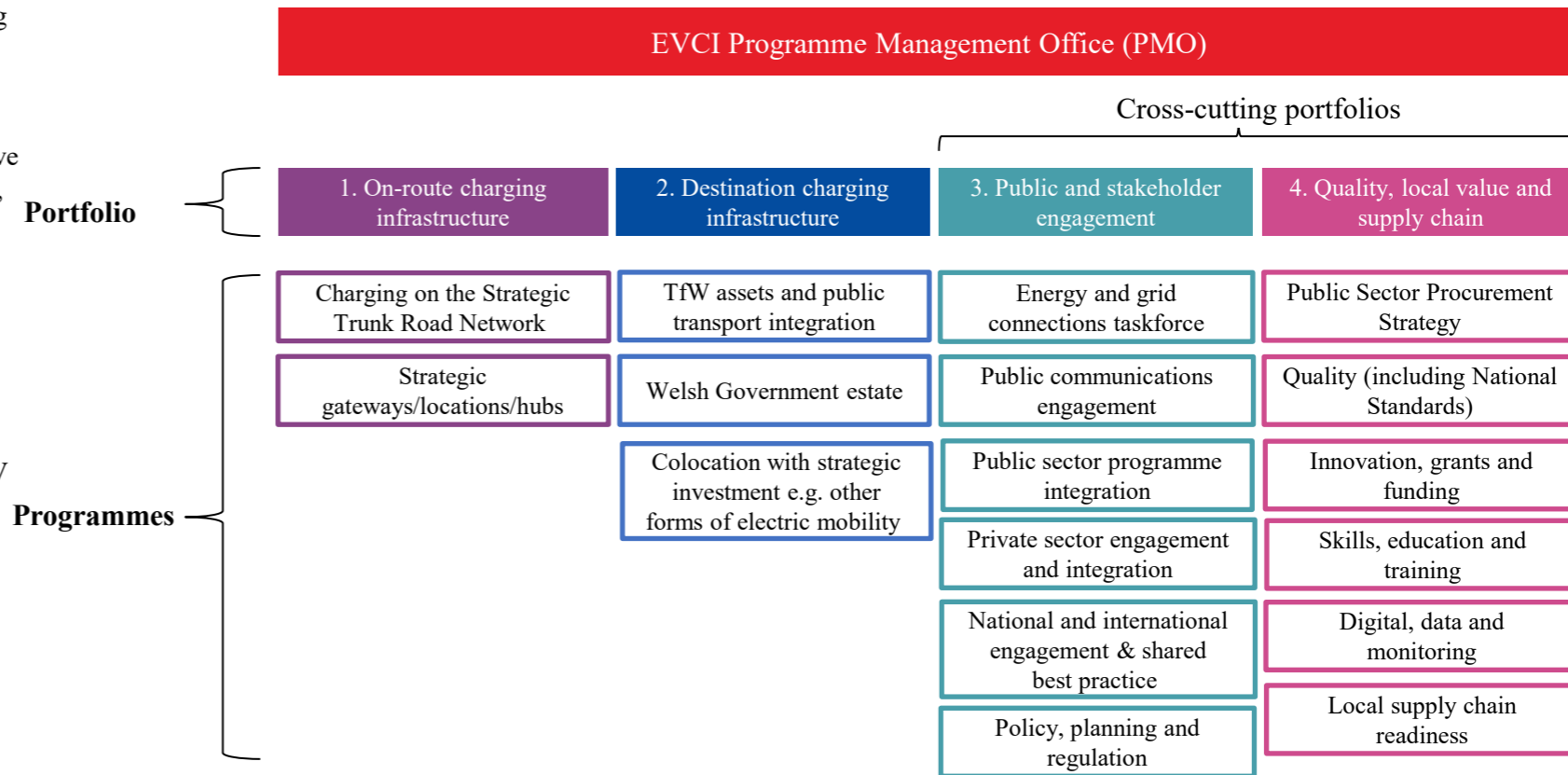


Figure 7: Illustrative example of the proposed EVCI portfolio structure

# Roadmap for accelerating the roll-out of EV charging infrastructure in Wales

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## Executive summary

### Roadmap for accelerating the roll-out of EV charging infrastructure in Wales

#### Next steps: priorities for Welsh Government and delivery partners

The findings of this report suggests that more work and development is needed to implement the EVCI programme in the next phase, harnessing the work done to date (e.g. National Standards, early market engagement). To achieve this, a programme-level roadmap has been developed, setting out actions across five key priorities for WG and delivery partners for the next 3-5 years, to deliver successful acceleration of EV charging infrastructure across Wales, and meet the defined KPIs set by the Strategy. The roles and responsibility of WG, TFW, local authorities and the private sector are summarised on the right.

#### Roadmap: 5 key priorities



**1. Establish a PMO to govern delivery arrangements, set standards and monitor progress**



**2. Provide support and guidance to enable local authorities (and private sector) to deliver the preferred network**



**3. Engagement with the private sector to ensure we optimise the delivery of the preferred network and foster public-private sector collaboration**



**4. Develop the mechanisms, knowledge and tools to deliver the preferred network**



**5. Leverage the resource and mechanisms necessary to rapidly deliver the network in line with policy objectives**

#### Role and responsibility

Delivering the preferred network within the required timescales will depend on the joint effort of the public and private sector, with the following key players:



Llywodraeth Cymru  
Welsh Government

#### Welsh Government – Strategic Oversight and Policy

Oversight of the EV Charging Infrastructure Strategy, setting standards, monitoring strategy progress, policy intervention and financial intervention.



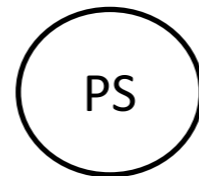
#### Transport for Wales– Delivery Partner

Delivery and monitoring the strategy at the on-route network, providing delivery support to local authorities and Welsh Government.



#### Local Authorities – Delivery Partner

Delivery and monitoring the strategy locally, at destinations and on-street sites, with support from Transport for Wales.

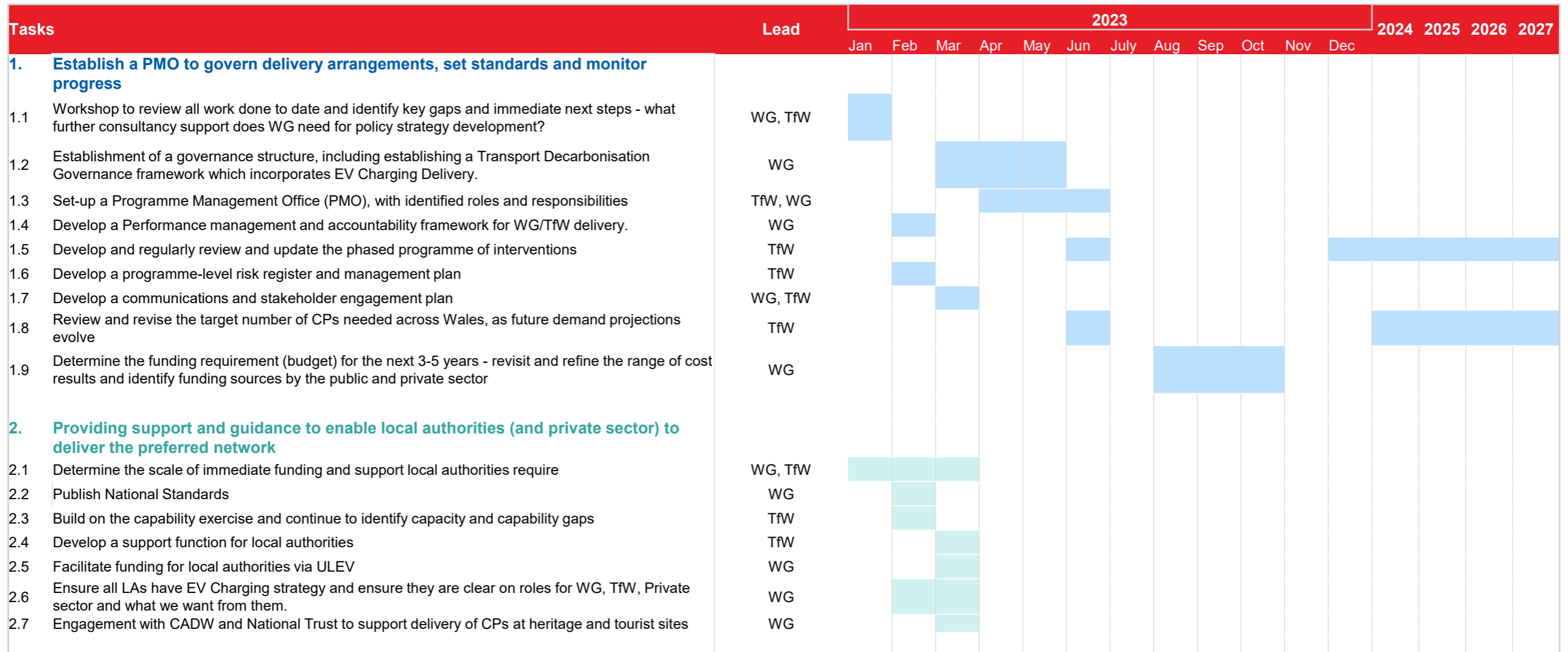


#### Private Sector– Delivery of the Preferred Network

The private sector will largely install and operate the preferred network, public sector intervention is targeted where market failure has been identified (e.g. TFW delivering charge-points at commercially unviable on-route sites).

## Executive summary

### Roadmap for accelerating the roll-out of EV charging infrastructure in Wales



## Executive summary

### Roadmap for accelerating the roll-out of EV charging infrastructure in Wales

Tasks	Lead	2023												2024	2025	2026	2027
		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec				
<b>3. Engagement with the private sector to ensure we optimise the delivery of the preferred network and foster public-private sector collaboration</b>																	
3.1 Market engagement with CPOs to understand the private sector's plans and priorities for future investment	TfW	█	█	█													
3.2 Establish a cross interest public and private CP Task & Finish Group	WG		█	█													
3.3 Develop engagement and comms capability with Private Sector.	TfW			█	█												
3.4 Set target for PS delivery, and identify required public sector intervention to complement PS delivery	TfW				█												
3.5 Create open access to Datamap Wales to allow private sector to utilise data for infrastructure roll-out	WG											█	█	█			
3.6 Undertake a supply chain and opportunities review	WG				█	█	█	█									
<b>4. Developing the mechanisms, knowledge and tools to deliver the preferred network</b>																	
4.1 WG to review and establish policy levers and remove barriers to EVCI installation and operations. This includes review of regulations to support the provision of home and workplace charging in new builds and refurbishments	WG					█	█	█									
4.2 Develop funding and financing options, including FTR options	WG	█	█														
4.3 Establish Commercial Procurement Framework - design and delivery	WG																
4.4 Explore alternative procurement solutions, such as procuring a consortium of private sector partners to deliver the preferred network over the next 2-5 years. This could be structured as a Challenge Fund.	WG			█	█	█	█										
4.5 Future proofing the grid network - regular engagement with DNOs to ensure current infrastructure can serve the preferred network	TfW				█					█				█	█	█	█
4.6 Develop and implement communications campaign (target audience: end users, the public), linked to Behaviour Change work, to raise awareness of EVs and CP rollout.	WG							█									
4.7 Identify locations suitable for renewable generation and energy storage, assisting power provision for the charging network	WG				█					█			█	█	█	█	█

## Executive summary

### Roadmap for accelerating the roll-out of EV charging infrastructure in Wales

Tasks	Lead	2023												2024	2025	2026	2027	
		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec					
<b>5. Leverage the resource and mechanisms necessary to rapidly deliver the network in line with policy objectives</b>																		
5.1 Delivery of the on-route network, with TfW supporting where required (e.g. providing planning support and coordination or delivering CPs in commercially unviable sites)	Private Sector, TfW																	
5.2 Delivery of destination and on-street charging in built-up areas, with local authorities supporting where required	Private sector, LAs																	
5.3 Monitor progress of the EV charging infrastructure roll-out	WG																	
5.4 Knowledge sharing and applying lessons learnt through regular public-private group engagement	WG, TfW																	

ARUP