Dublin Local Authority
Electric Vehicle Charging Strategy

Enabling the transition to Electric Vehicles for the Dublin region

Executive summary

A report for Fingal
County Council,
Dublin City Council,
Dun Laoghaire
Rathdown County
Council & South Dublin
County Council

Executive Summary

Background and objectives

In 2019, Ireland's Climate Action Plan (CAP) targeted 100% electric vehicle (EV) sales with approx. 1 million EVs planned to be on the road by 2030. In 2021 a revised Climate Action Plan was published reiterating this ambition and in 2022 the Electric Vehicle (EV) Charging Infrastructure Strategy advises on a pathway for delivery of electric vehicle charge point infrastructure to support the delivery of the CAPs EV targets. The Dublin region represents 25% of Ireland's car fleet and so has a significant role to play in the decarbonisation of the country's transport system.

The four Dublin region Local Authorities (LAs) understand the need for a coordinated approach to deploying EV charging infrastructure in order to support and accelerate this transition. Climate Change Action Plans for the LAs also recognise their role in facilitating this infrastructure provision.

This report contains the 2022-2030 EV charging strategy that has been developed for the Dublin LAs. The objective of this study was to assess what infrastructure should be deployed and where, the number of charging points needed, the level of investment that will be required over the next 10 years, and to explore the roles the Councils could play in the infrastructure roll out.

Types of EV charging considered

The figure below summarises different types of EV charging and highlights those which the LAs can play a role in delivering, which are the focus of this strategy.

Type	Home charging	Neighbourhood charging	Residential charging hub	En-route charging	Destination charging	Workplace charging
Use case	Charging at home (driveway, garage, shared car park) typically overnight	Charging near to the driver's house, typically overnight	Charging in the driver's local area. In rapid case, similar to petrol refuelling	Charging along major routes or main roads in urban areas. Quick turnaround	Charging in car parks at the end journey. "Top up" charging	Charging while parked at workplace. Not strictly public charging
Key user groups	Residents with off-street parking	Residents without off-street parking	Residents without off-street parking, taxis, car clubs	All residents	All residents	Employees (particularly those without off-street parking)
Typical site	Driveway, garage, apartment block car park	In local area, near residents' home	Along urban roads public car park, forecourts etc.	Service station, forecourt, sites near main roads	Supermarkets, shopping centres etc.	Employee car park
Charging speed	Slow (3-7kW)	Slow to fast (3-22kW)	Varies but more likely rapid to ultra rapid (50-150kW)	Rapid to ultra rapid (50-350kW)	Slow to rapid (3-50kW), occasionally higher	Slow, 7kW
Led by	Resident	Council	Council or private sector	Council or private sector	Council or private sector	Private sector (unless Council site)

Not a focus of the strategy	Council led & key focus of strategy	Council may play a role hence a focus of strategy

Figure 1: Summary of EV charging types

Projected EV uptake in Dublin region

Two EV uptake scenarios were assessed: **CAP Ambition** which aligns with the 2030 CAP targets and **Medium** which is judged to be a more realistic trajectory. In the **Medium scenario**, for 2030 the region's EV stock is projected to comprise **120k cars, 12.5k vans, 2.5k taxis and 3k 2-wheelers.**

It is important to highlight that the majority of EVs will have access to off-street parking (driveways, garages etc.), so will be able to charge at home and not rely on the public charging considered in this report.

It is estimated that of the 138k EVs projected to be registered in the Dublin region in 2030, ca. 104k will have access to home charging and will only use public EV charge points (EVCPs) as a supplementary source of charging, while **ca. 34k will rely on public charging.**

Volume of EV charge points required

Based on the EV stock modelling outputs produced in this study and described above, a detailed assessment of EVCP volumes required to support the EV uptake was completed. The infrastructure required to meet the residential charging needs of drivers without access to home charging considered two approaches

- **Rapid hubs** – all residential charging demand met with rapid EVCPs, reflecting a future where vehicle recharging is similar to today's vehicle refuelling model

- **Mixed Technology** – rapid charging is deployed to meet residential demand in areas ranking in the top 50% for 'rapid hub suitability', slow-fast neighbourhood charging used in remaining areas

Figure 2 shows the 2025 and 2030 EVCP requirements based on these two deployment approaches at a LA level and a regional level. The CAP Ambition case is shown for comparison.

		2025 EVCP requirement			2030 EVCP requirement		
Neighbourhood charge points **Rapid hub charging points**							
		Residential	En-route	Destination	Residential	En-route	Destination
Rapid hubs	Dublin City	65	19	280	247	55	1,065
	South Dublin	23	13	149	85	38	560
	Fingal	23	14	157	86	41	589
	DLR	23	11	135	85	33	509
	Total in Medium scenario	**133**	**57**	**722**	**504**	**166**	**2,723**
	Total in CAP Ambition scenario for comparison	206	92	1,126	802	265	4,363
Mixed technology	Dublin City	329 + 47	19	243	1,280 + 176	55	918
	South Dublin	176 + 12	13	129	685 + 47	38	481
	Fingal	169 + 13	14	110	658 + 49	41	514
	DLR	219 + 10	11	110	850 + 38	33	411
	Total in Medium scenario	**893 + 82**	**57**	**592**	**3,474 + 310**	**166**	**2,324**
	Total in CAP Ambition scenario for comparison	1,402 + 127	92	1,001	5,545 + 494	265	3,724

Figure 2: Summary of EVCP requirement in each LA across different deployment approaches

In the **Mixed Technology approach**, by 2030 3,474 slow-fast neighbourhood EVCPs and 310 rapid EVCPs would be required to meet residential charging demand associated with EVs that lack off-street parking. This would equate to ca. 50 x 6-charger rapid hubs for example. Residential deployment is where the LAs are likely to play a more significant role.

The Dublin region is also shown to need 166 en-route and 2,324 destination EVCPs respectively, which will likely be realised through a more significant share of private sector led deployment (forecourts, supermarkets, multi-storey car parks etc.).

The **Rapid hubs approach** offers a more efficient way of meeting demand and requires less infrastructure to be installed – 504 residential EVCPs needed by 2030 vs almost 4,000 (3,784) in the Mixed Technology approach. However, there are siting challenges that must be considered for rapid hub deployment.

Local Authority role in charging infrastructure deployment

There are several ways in which the four Dublin LAs could facilitate EV charging deployment. *It is not envisaged that the LAs would be responsible for any significant installation, operation or maintenance of EVCPs.* The roles the Councils could play vary in terms of risk, public funding requirement, resource requirement, complexity, responsibiliy, and Council control over aspects such as pricing and siting.

The figure below compares example business models for fast & rapid charging that could be explored by the LAs. It may be that a mix of business models is necessary, depending on the type of technology, location, and state of the market. *Note: it is expected that "Council" costs would be covered by public funding.*

Based on experience in other cities, the concession model is effective in achieving city or region wide deployment requiring large volumes, and offers flexibility in terms of the contractual arrangements around ownership, revenue shares etc. Combining this with a "Dublin region EV charging procurement framework" could be an attractive way of delivering some of the region's network.

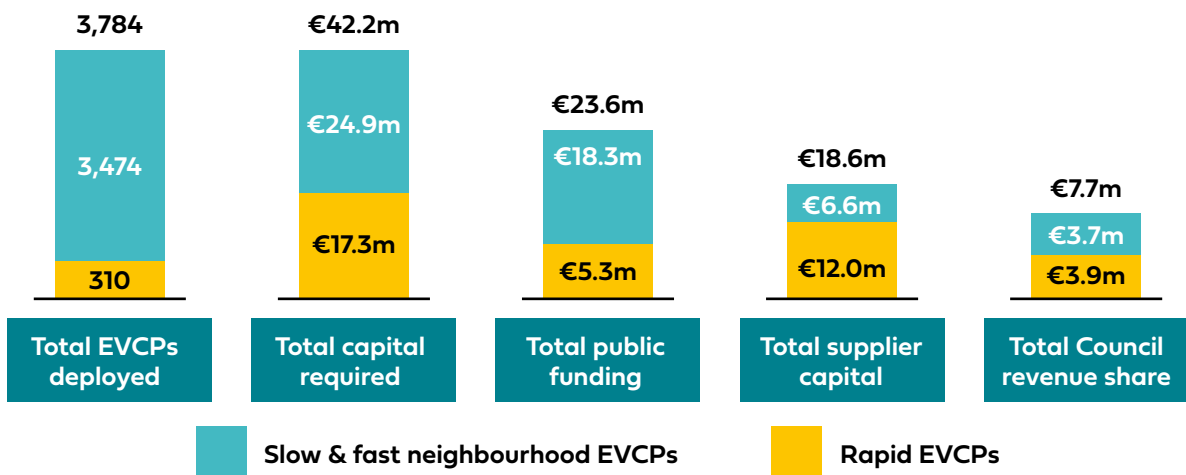| Example rapid charging business models	CAPEX			OPEX			Council revenue approach	Contract length
	Hardware	Install	Ground & Grid	Back office	Electricity	Maintenance		
Private sector match funding	Typically split Council (or Gov) 75% and supplier 25%			Supplier	Supplier	Supplier	Varies	Varies
Concession A	Council	Supplier	Supplier	Supplier	Supplier	Supplier	Share to Council	
Concession B	Supplier	Council	Council	Supplier	Supplier	Supplier	Share to Council + min. payment	5-10 years
Concession C	Supplier	Supplier	Council	Supplier	Supplier	Supplier	Share to Council	
Lease model	Supplier	Supplier	Supplier	Supplier	Supplier	Supplier	Share to Council	15-25 years

Figure 3: Comparison of different fast & rapid charging business models

Investment required for EV charging infrastructure

The high-level business case associated with deploying **residential charging** across Dublin region was assessed based on an assumed concession agreement (list of assumptions provided in the full report).

This provides an indicative view of the level of investment required out to 2030 and the potential public funding needed. The results are shown below. *Note this assumed Council-led deployment delivers all residential charging, but in reality, a share of this may be realised by the private sector as EV uptake grows and the business case improves.*

Business case for residential charging in Dublin region. Based on assumed concession arrangement. Values are cumulative out to 2030.
Curtailed Medium uptake, Mixed Technology approach.

Slow & fast neighbourhood EVCPs	**Rapid EVCPs**

Note: based on assumed concession contracts for slow, fast & rapid charging derived through business case analysis for each technology. Business model amended post-2025 to reflect improved market conditions – public funding reduced, and revenue share introduced for slow and fast charging. Revenue share always set at 10%. **Results are indicative.**

Figure 4: Summary of 2021-2030 business case for residential charging in the Dublin region

The analysis highlights the challenging business case associated with public EVCP infrastructure and explains why deployment typically requires public funding support. This is the result of low EV uptake to date and in turn low utilisation of EVCPs. The business case of rapid charging is more attractive than slow and fast charging, but still tends to need some public funding. There must be a balance between return on investment aims and the need to transition to EVs and achieve net-zero carbon.

Geographic deployment strategy & recommended approach

Comprehensive geospatial analysis was carried out in order to identify priority areas for EVCP deployment throughout the region. This used a range of relevant data sets including off-street parking provision (derived through EE modelling), traffic flow, public amenities, taxi ranks, and car clubs. The recommended deployment approach is shown in Figure 5.
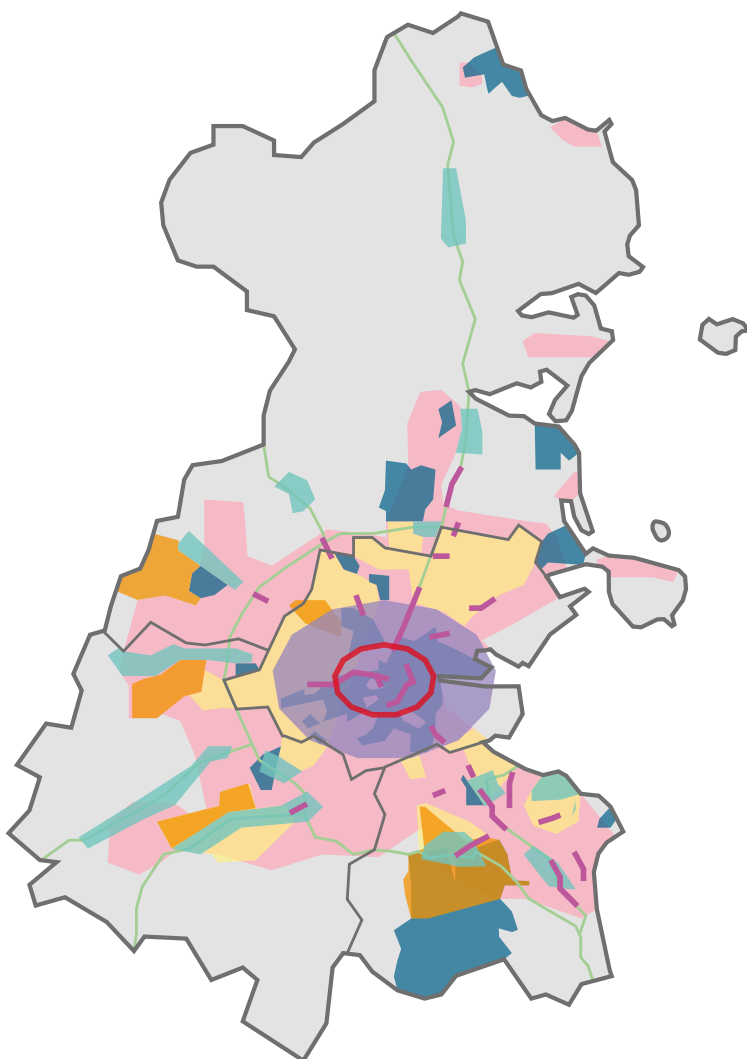
The deployment approach presented is based on the following key principles:

·   **Rapid (hub) charging is the preferred model** and should always be the first-choice solution

·   **Slow-fast neighbourhood EVCPs should only be used as a second-choice option** where there is a definite need, but rapid charging is not possible. This is partly due to their potential for inhibiting modal shift by making residents less likely to move away from private cars. This is in line with public realm and long stay parking policies.

·   **Charging infrastructure siting should be demand-led** and where possible aim to aggregate demand across user groups, with a particular focus on vehicle types that align with longer term modal shift ambitions such as e-taxis and car clubs

·   **EVCP deployment should leverage a range of location types** in order to develop a comprehensive charging network in a timely manner, including private car parks, en-route forecourts, and "low hanging fruit" opportunities such as Council-owned car parks

·   **Charging infrastructure should align with wider mobility schemes in the region** (e.g. BusConnects and associated Park & Ride plans) such that it supports rather than hinders modal shift and the decaronisation of Dublin region's transport system

The Department of Transport's Electric Vehicle Charging Infrastructure Strategy 2022–2025 considers neighbourhood EVCPs to be the main solution for those without access to private home charging. Due to the nature of the Dublin region (considerable space constraint in places) and Dublin's aim to encourage a shift away from private car use in the city centre, the Dublin LA strategy considers a different priority. Namely, rapid (hub) charging will be prioritised over slow-fast neighbourhood chargers.

Overarching recommended deployment approach for Dublin region to 2030

Showing the areas recommended for priority / targeted deployment and indicating what types of charging are most suited to different parts of the region. Areas with overlapping layers likely to present more promising deployment opportunities.

Definition	Key user groups
Rapid hub charging for multiple user groups within Canal Cordon	Residents without private parking, taxis, car clubs, commuters
High public charging reliance - rapid hub charging recommended	Residents without private parking, taxis, car clubs, commuters
High absolute public charging demand	Residents without private parking
Priority areas for rapid en-route charging assessment	Residents without private parking, taxis, car clubs, commuters
Rapid hub deployment potential to be investigated	Residents without private parking, taxis, car clubs, commuters
Destination charging opportunities	Residents without private parking
Medium public charging reliance	Residents without private parking
Rapid en-route charging along major roads and arterial routes	Taxis, car clubs, commuters
Potential rapid en-route charging forecourts site opportunities	Taxis, car clubs, commuters
Not a priority deployment area - analysis shows high share of residents have access to off-street parking hence would be able to charge at home	

Figure 5: Overview of the recommended EV charging deployment approach

Strategy delivery & next steps

A deployment roadmap has been developed and is in Figure 6 at the end of the Executive Summary. This details key recommended activities that will enable the delivery of EV infrastructure in the Dublin region. Engagement has taken place with a total of 25 stakeholders over a number of key sectors including: charge point operators, landowners, car OEMs, fleet operators, public funding bodies and other governmental organisations. This engagement has allowed refinement in the strategy delivery covering both procurement approach and technology choice.

The strategy accounts for potential risks that may impact EV charging between now and 2030. Some of the most significant are listed below, along with how this is mitigated within the strategy proposed.

· **Limited public sites for rapid charging** – strategy highlights fuel station forecourts that could make attractive hub sites as well as private cars parks that could be leveraged

· **Lower than expected public funding support** – focus is on demand-led deployment of rapid EVCPs (where possible), ensuring the best value for money possible

· **COVID-19 impacts such as constrained car market and reduced commuting** – strategy keeps vehicle stock constant for 2 years to consider reduced turnover. Priority areas chosen based on multiple user groups, limiting the impact of a reduction of commuter charging

Table 1 outlines some of the key short-term next step recommendations included in the strategy split into 5 key themes: procurement & Council role, site identification and deployment, integration with national & local strategy, communications and actions to aid private sector deployment. A full list of recommendations is found in the full report.

Table 1: Selection of key next step recommendations (see longer list in the report)

Category	Next step recommendation
Procurement & Council role	The 4 LAs should agree on the role they wish to play in the deployment of infrastructure. Key part of this will be agreeing on preferred business models. It is recommended that LAs, where they consider it to be necessary and appropriate, consider offering LA sites and/or grant funding to charge point operators to support residential deployment.
	Allocate resource to set up a procurement framework for charging infrastructure that all 4 LAs can use. It is estimated that at least 1FTE will be required alongside support from each of the LAs.
	Decide the chosen technology split for each LA, and if the framework should be separated into a rapid hub charging and slow-fast neighbourhood charging framework.
Site identification and deployment	Each LA need to decide if they have LA owned sites that they are willing to offer and develop a short list
	Councils should use the first 6 months to start assessing low hanging fruit deployment opportunities in high priority areas.
	Engage with ESB Networks as early as possible regarding grid constraint issues and opportunities throughout the Dublin region, and establish effective communication channels to be used throughout the deployment.
	The Councils should develop a system for collecting, tracking, and mapping resident EVCP requests.
Integration with national & local strategy	The LAs should assess if planned EVCP deployment can make use of DoT funding schemes; ongoing consultations and dialogue with Department will be needed to secure appropriate funding
	Engage with Council representatives for all relevant mobility and development schemes in early-stage planning work, as well as colleagues in relevant departments (Planning, Roads, Housing etc.)
Communications	Continued communications need to take place between key stakeholders for example with fleets in order to anticipate demand
	Develop a FAQ page for residents and site owners/suppliers
Aid private sector deployment	Due to the long timeframes involved in LA procurement approach, in the short term, LAs must aid private sector deployment through removing national and local deployment barriers due to LA regulations and processes
	The Dublin LAs should use their position to lobby for changes in EV policy and incentives and national level regulations to ensure an accessible and equitable charging landscape

Short-medium term ← → | **Medium-long term** ← →

| 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |

Easy wins

- Assess opportunities in priority areas
- EVCPs installed at strategic easy win sites
- Deploy at publicly owned facilities using procurement frameworks
- EVCPs installed at most key public transport hubs
- Deployment at publicly owned facilities continues to help efficient expansion of network across region

Neighbourhood & en-route charging

- Priority residential charging areas assessed in more detail to identify most viable technology – rapid charging at top of hierarchy
- Residential feasibility assessments expand to medium and lower priority areas
- High quality urban rapid sites identified and assessed - focus is on aggregating demand. Suitable sites likely to provide both residential and urban en-route charging.
- Run exercise to identify / assess potential genuine rapid hub sites
- Develop a shortlist of LA sites and apply for grant funding from DoT/ ZEVI
- Regional rapid charging procurement framework developed
- Rapid charging suppliers selected
- Tenders run for batches of sites in priority areas and EVCPs deployed
- Optimum sites developed
- Comprehensive rapid charging offer in suitable priority areas
- Residential rapid deployment expands across region – tenders mix sites of different quality to enable development of less commercially attractive areas
- 1st genuine rapid hubs developed
- Rapid hubs developed along arterial routes providing strategic en-route facilities
- Comprehensive rapid charging network throughout region
- Neighbourhood market assessed, and optimal solution identified
- Depending on resource available and speed at which framework tenders are being run, assess the potential to engage a supplier to deliver significant volume of EVCPs in set time frame, using mix of public (where possible) and private sites. For example, deploy 200 rapid EVCPs in 2 years.
- Regional slow charging procurement framework developed
- Slow charging suppliers selected
- Tenders run for whole street deployments in priority areas rapid charging not viable
- Neighbourhood charging supplements rapid offer, giving full coverage in priority areas
- Neighbourhood EVCPs deployed where rapid charging not viable in medium & lower priority areas
- Neighbourhood charging plugs the gaps throughout region where rapid charging not viable but public residential charging is needed

Support

- Remove local regulatory barriers and processes to private sector deployment and lobby to remove national barriers
- Continued engagement with ESB Networks – to remove grid connection barriers and identify sites early that have no grid constraints
- Private sector engaged and encouraged to deploy charging at car parks, rapid en-route charging at petrol forecourts and charging in areas with poor residential charging business case
- Track, log and map resident requests for EVCPs to build picture of clusters forming – this will inform siting work
- Track EV and EVCP grant recipient locations using data from ZEVI to assess where clusters of demand are forming – this will inform siting work

Legend:
- Council controlled buildings / car parks
- Rapid charging deployment
- Neighbourhood charging deployment
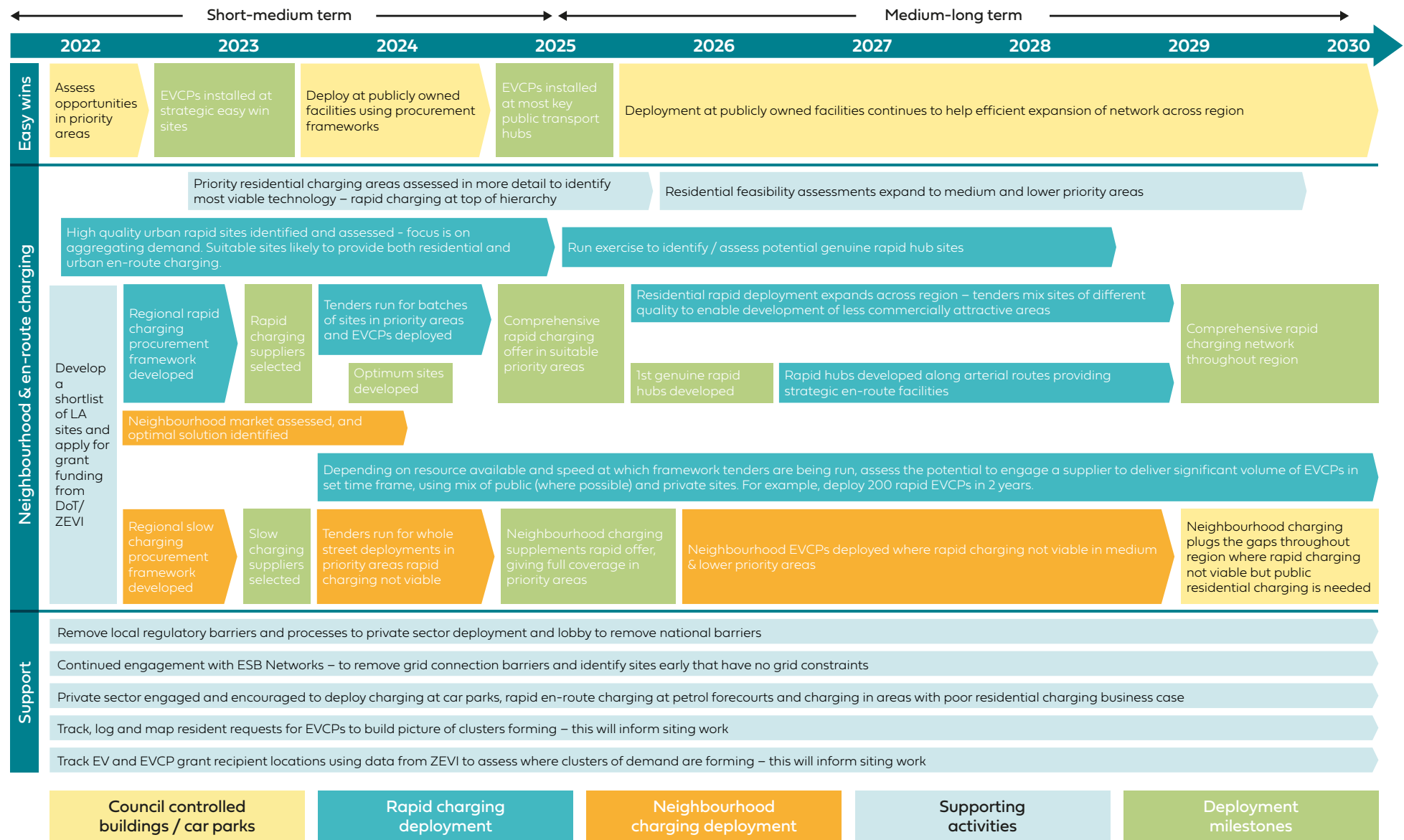- Supporting activities
- Deployment milestones

Figure 6: Summary of proposed charging network deployment and delivery roadmap. DoT= Department of Transport, EVCP = Electric Vehicle Charging Point and ZEVI= Zero Emission Vehicles Ireland

About this strategy

This short report is the executive summary of the strategy report – the full report is available online, on the website of the Dublin Local Authorities.

The work was funded by the four Local Authorities (Fingal County Council, Dublin City Council, South Dublin County Council and Dun Laoghaire Rathdown County Council), Smart Dublin and Dublin Climate Action Regional Office. These parties made up the Steering Committee and appointed Element Energy to deliver the work. The modelling work started in 2020, and a large consultation exercise was undertaken in 2021.

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