INFRASTRUCTURE COORDINATION SERVICE

ARUP

Greater London Authority

Decarbonisation project – car park charging hubs

Considerations for Strategic Outline Business Case (SOBC)

To be read alongside the East London Subregional Phase 1 Local Area Energy Plan

October 2025

Contents

This Note was prepared by Arup on behalf of the Greater London Authority Infrastructure Coordination Service.

1. Introduction and context

Introduction and context

This document complements the final report of the Phase 1 Local Area Energy Plan (LAEP) for East London, by providing further evidence to contribute to business case development of one priority project that could be actioned immediately by all five boroughs. This report provides evidence that can underpin the development of a full Strategic Outline Business Case based on evidence developed by the LAEP and provides a use case for the data collection, analysis and engagement undertaken.

A multi-criteria analysis was undertaken to prioritise among a longlist of potential decarbonisation projects that the Phase 1 LAEP process has identified as relevant to the subregion.

Strong consensus among the boroughs selected **electric vehicle charging infrastructure** as the project to be developed, driven by an assessment of borough capability, capacity, and current progress, and suitability for development at a subregional scale. The fact that all boroughs had ongoing applications for LEVI funding provides an opportunity to build on and accelerate ongoing efforts.

When considering the deployment of EV charging infrastructure, it is essential to recognise competing priorities for land use in London. Modal shift towards active travel and public transport remains a critical policy objective, and these considerations must form part of decision-making when repurposing land for EV infrastructure.

Considerations for business case development

Business case development is the stage in which an identified measure or action, such as those suggested by a LAEP, can be taken forward for further definition and development, in order to access funding and move towards delivery. It is the intention that all priority projects identified in the process of local area energy planning can be efficiently and effectively moved through business case development into delivery.

The LAEP Business Case Template was developed by the Local Energy Accelerator Programme Delivery for the Greater London Authority (GLA), and builds on the HM Treasury's Five Case Model. The Five Case Model provides a framework for developing, demonstrating, and increasing confidence in the viability of a particular project by assessing and defining a project through the following lenses:

- **Strategic case:** definition of the project outcomes and demonstration of strategic fit, based on a robust evidence-based case for change;
- **Economic case:** assessment of the economic costs and benefits of the proposal to society;
- **Commercial case:** development of a robust and viable procurement solution;
- **Financial case:** demonstration that the project is fundable and affordable;
- **Management case:** demonstration that the project is capable of being delivered successfully.

This documents provides some of the key ingredients to be taken forward to develop the business case according to the approach mentioned above.

In assessing these considerations, it has become evident that further thinking and decisions need to be made in order to refine the project scope, particularly regarding the potential commercial delivery options and identification of sites. This report is intended to serve as strong evidence to support the further development of a Strategic Outline Business Case (SOBC)

1. Introduction and context

How to use this document

This document aims to support Boroughs in efficiently proceeding with business case development for the deployment of EV charge points across the subregion, **focusing on the potential for rapid or ultra-rapid charging hubs on borough-owned land**.

It is structured around the main elements of the Five Case Model.

1. **Introduction and context** – this section
2. **Strategic case** – summarises the evidence gathered as part of the Phase 1 LAEP process that supports the case for change of this project.
3. **Commercial and financial case considerations** – describes the options by which EV charging infrastructure is likely to be deployed across London, what role Boroughs could have, and which procurement options are available to them, so that Boroughs can decide on their preferred delivery model with a clear understanding of the risks, benefits and mitigation options.
4. **Economic case considerations** – describes the approach to be taken in order to undertake the options appraisal of different project configurations to select one that provides best value for money to society.
5. **Location selection** – while the precise location of charge points is most likely to ultimately be determined by a private charge point operator that is likely to focus on commercial attractiveness, particularly in the case for rapid+ charging which requires significant capital investment, we have provided a framework by which Boroughs can assess locations based on their wider benefits to society e.g. equity of access, air quality etc.
6. **Recommendations and next steps** – highlights the recommended actions to be taken next by Boroughs in order to move forward in delivery of EV charge points on their land.

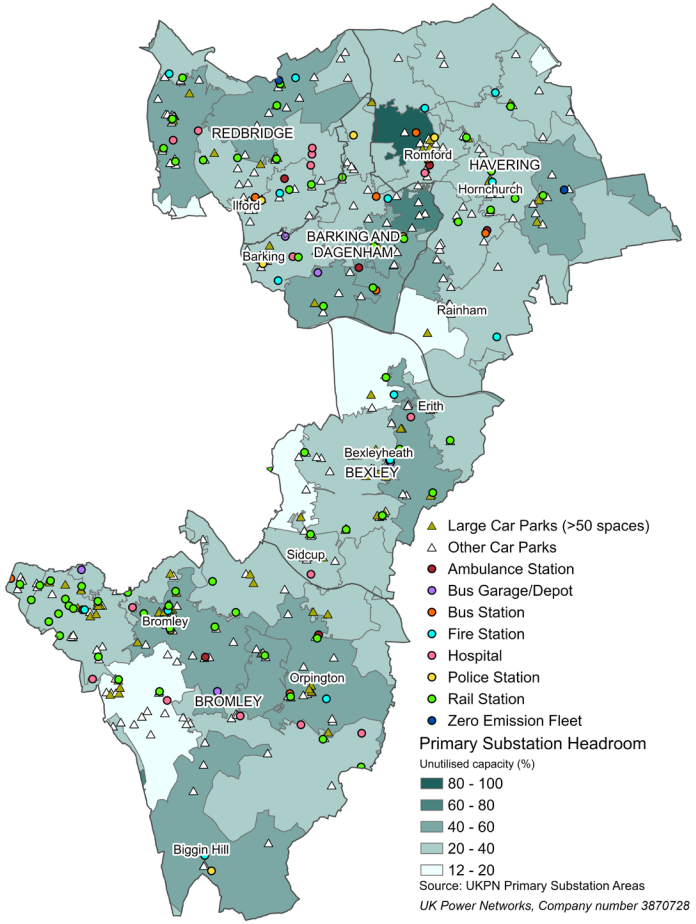


Figure 1.1: All transport hubs and car parks map with primary substation headroom

2. Strategic case
Strategic overview and alignment with Phase 1 LAEP

This initiative addresses a gap in borough-level EV infrastructure, particularly in the deployment of chargers within public car parks. Analysis of existing charge point data and borough-level strategies reveals that while on-street charging has seen incremental progress, car park based infrastructure remains underutilised despite its potential for high-impact deployment, and potential as a revenue stream for boroughs.

The strategy builds on momentum from recent borough engagements and aligns with existing policy ambitions. It is a timely intervention that leverages both local readiness and national funding opportunities, including LEVI and potential grant mechanisms for gully charging.

Analysis of the future need for EV charging across the subregion was undertaken in the Phase 1 LAEP, findings of which can be found in the final report. This analysis suggested that while there is progress in the deployment of EV charging infrastructure, a significant increase is required across all charger types in order to provide the infrastructure required for the decarbonisation of transport across the subregion.

The chart below and the map to the right demonstrate the scale of progress needed in order to align with the Mayor's Accelerated Green targets for 2030 and pathway towards net zero.

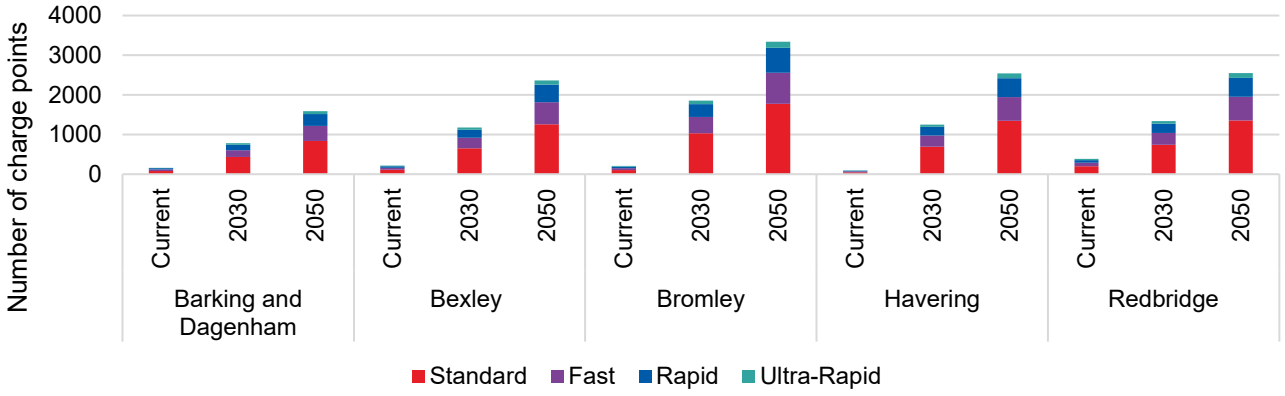


Figure 1.2: Number of current and future charge points for each borough with device types

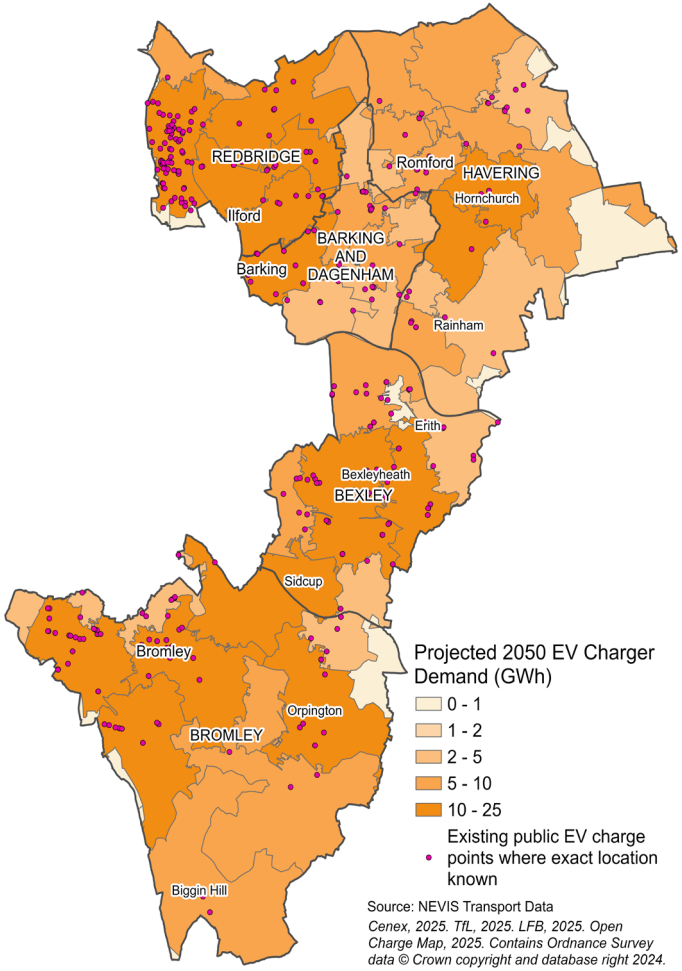


Figure 1.3: Projected 2050 EV charger demand with existing public EV charge points

2. Strategic Case
Further evidence for the strategic case

2. Evidence base and engagement

An initial site selection assessment was conducted to prioritise locations charging based on impact, feasibility, and equity. This included spatial mapping of EV ownership, grid capacity (e.g. UKPN headroom data), and proximity to underserved communities.

Borough bilaterals

Tailored engagements with each borough surfaced unique constraints and ambitions:

- Redbridge emphasised lamp column chargers and accessibility goals.
- Bexley prioritised strategic junctions and air quality zones.
- Bromley expressed concerns about visual impact and underutilisation.
- Barking & Dagenham sought support in mapping taxi/private hire demand.
- Havering shared early usage data and highlighted flexible parking restrictions as a key enabler.
- All boroughs have applications for funding from LEVI underway, which will target on-street charging in locations that promote equity of access.

The workshops validated shared challenges such as planning constraints, grid limitations, and procurement delays. It also reinforced opportunities for collaboration, including data sharing, joint mapping exercises, and alignment on delivery models.

Engagement confirmed that while on-street charging has a clear route to delivery through the LEVI fund, utilising council-owned land for the deployment of rapid charging could fill a gap in EV charge point delivery planning, and therefore could benefit from further development.

3. Progress and gaps

Targets and tracking

Existing charge points data shows uneven progress across boroughs. While Havering has begun rolling out slow chargers in car parks, others like Barking & Dagenham and Bromley are still in early planning stages or facing delays due to procurement and funding bottlenecks.

TfL has developed a ready-to-deploy model for rolling out rapid charging on its land, and has demonstrated interest in collaborating with Boroughs for development of their sites, with TfL managing the design, planning and delivery.

Gap analysis

Spatial mapping and policy reviews identified a consistent shortfall in car park based infrastructure. Despite their suitability for rapid and slow chargers, car parks can be overlooked due to planning complexity, grid constraints, or lack of validated site data. This represents a missed opportunity for scalable, equitable deployment.

4. Social purpose and revenue potential for Boroughs

The strategy supports inclusive access to EV infrastructure, while potentially providing a revenue stream. Boroughs like Bexley and Barking & Dagenham have highlighted the need to serve high-density areas with limited driveway access, while Bromley raised equity concerns around premature rollout in low-demand zones.

Revenue potential could also be significant. Havering's 90/10 revenue model demonstrates the viability of low-risk, slow charger deployments in car parks. Redbridge and Bexley are exploring gross revenue share systems and tariff models that balance affordability with borough income. Increased footfall in underused car parks and partnerships with private operators (e.g. Tesla hubs) offer further monetisation opportunities.

2. Strategic Case
Further evidence for the strategic case

5. Policy alignment

Local alignment
The strategy aligns with borough-specific transport and climate goals:

- Redbridge: Directly supports the borough's "3-minute walk" target for charger accessibility.
- Bexley: Integrates with air quality priorities and localised site selection models using UKPN data.
- Havering: Builds on their current rollout in public car parks and supports flexible parking enforcement to enable slow charging.
- Barking & Dagenham: Complements existing slow charger contracts with Connected Kerb and supports ambitions for rapid charging in car parks.
- Bromley: Addresses concerns around visual impact and underutilisation by focusing on car parks, which could be more acceptable to residents.

The strategy also complements borough-level LEVI applications by filling infrastructure gaps.

Given alignment with individual borough objectives, there is also an opportunity to leverage efficiencies in delivery through cross-borough collaboration, which could further attract private sector investment.

Wider alignment
At the regional and national level, the project supports:

- London-wide goals on decarbonisation, air quality, and equitable access to EV infrastructure.
- National objectives under the UK Government's EV Infrastructure Strategy, including the transition to zero-emission vehicles and the expansion of publicly accessible charge points.
- LEVI funding principles, particularly around value for money, social equity, and technological readiness.

6. Benefits, risks, constraints and dependencies

Benefits
- Improved access: expands EV infrastructure in underserved areas, especially for residents without off-street parking.
- Equity: prioritises deployment in high-density, lower-income areas (e.g. Bexleyheath, Barking).
- Emissions reduction: supports modal shift and cleaner transport.
- Revenue generation: enables boroughs to monetise underused car parks through charging fees and increased footfall.

Risks
- Delivery delays: procurement and DNO connection timelines may impact rollout.
- Stakeholder resistance: political and community reluctance, especially in boroughs like Bromley, may slow adoption.
- Site attractiveness: private charge point operators are likely to favour sites that have increased footfall and likely higher utilisation, which may not match locations prioritised by Boroughs for wider social benefits.

Constraints
- Planning permissions: varying borough policies and site-specific restrictions.
- Grid capacity: grid connection limitations, particularly for rapid or ultra rapid charger.
- Site availability: competing land uses and ownership complexities.

Dependencies
- Borough engagement: continued collaboration and data sharing are essential.
- LEVI funding cycles: timely access to funding and clarity on future rounds and their potential role in car park charging.
- Policy stability: national guidance on planning and EV infrastructure is needed to support long-term investment.

2. Strategic Case

Conclusion

A summary of the findings from investigating the strategic case is displayed in the table to the right.

Assessment of the strategic case suggests that deployment of EV chargepoints on council owned land such as car park could play a significant role in achieving decarbonisation targets across the subregion.

Next steps involve:

- Assessing the commercial and financial cases in order to establish a suitable delivery model
- Defining which type of charger is most suitable in which location, which is highly location-specific
- Compiling a full strategic outline business case in order to move towards a full business case development that can be utilised for procurement and delivery planning.

Borough	Deployment Progress	Identified Gaps	Policy Alignment & Readiness
Redbridge	LEVI pilot for 60 slow chargers; lamp column focus, working with CPO	Limited internal capacity; car park sites underexplored	Strong alignment with “3-minute walk” target; ready for spatial support
Bexley	110 lamppost chargers installed; 100 more planned, 79 sockets installed for off-street parking	Northern areas underserved; car park potential not fully mapped	Prioritising air quality and equity; ready for CPO evaluation support
Bromley	Early-stage planning; minimal public demand, high speed charging hubs in major roads	Lack of clear site strategy; resistance to on-street infrastructure	Interested in gully charging and private sector models; cautious but open to innovation
Barking & Dagenham	20 rapid chargers approved; 7 roads identified for deployment, 6 installed at energy centres	Site selection not data-validated; unclear EV ownership patterns in Barking	Keen on mapping and scoring tools; strong interest in car park-based rapid charging
Havering	Slow chargers rolling out in car parks; 90/10 revenue model	DNO connection challenges; limited flexibility in planning policy	Strong use case for LAEP and UKPN tools; open to further collaboration

3. Commercial and financial case considerations

Infrastructure may also be delivered via the LEVI fund, TfL's EVID and rapid hubs, and by private CPOs.

How charging infrastructure may be delivered in London boroughs

Beyond any future endeavours from the Local Authorities of Redbridge, Havering, Barking & Dagenham, Bexley, and Bromley, EV charging is likely to be otherwise delivered by a combination of public and private sector initiatives.

Key players in this space include:

- *Central Government* – setting decarbonisation and vehicle transition targets, administration of grant funding (via DfT, OZEV, etc.) – *priorities include meeting national decarbonisation targets by enabling the EV transition and ensuring equitable access to infrastructure*;
- *Transport for London (TfL)* – the transport authority (also a large landowner in London) has plans to roll out charging infrastructure under its EVID programme and its Places For London joint venture – *priorities are multifaceted, including meeting local decarbonisation targets (e.g., London Net Zero by 2030) by scaling up access to infrastructure, ensuring inclusivity and accessibility of infrastructure, and, for Places for London, commercial returns at EV charging hubs.*
- *Local Authorities (LAs)* – LAs / Councils have a multi-faceted role in EV charging, setting local strategy, controlling local land and assets (e.g., lamp posts, bollards, car parks, kerbside), procuring local EV charging concessions and other contracts, controlling access to grant funding (e.g., LEVI), and handling planning and permitting.
- *Private Sector CPOs* – Chargepoint Operators (CPOs) are expected to deliver the bulk of required future investment in public charging infrastructure – CPOs may specialise by speed – e.g., AC (< 50kW, slow/fast) or DC (>= 50kW, rapid /ultra-rapid) – or by charging location / mode – e.g., on-street, destination, urban hub, enroute, etc. – *CPOs' main priories are to secure high-utilisation, high-return sites and roll out infrastructure in return for user tariff payments (typically volume-usage-based).*

Public Sector

- The **Local Electric Vehicle Infrastructure (LEVI) fund** supports **local charging projects** (mainly AC on-street and at residentially located car parks) by allocating funding to LAs, who can then use this for capital funding towards charging infrastructure (often co-investing / derisking a private-sector CPO's delivery) and for capability funding "to ensure that [LAs] have the staff and capability to plan and deliver charging infrastructure".
- The **Electric Vehicle Infrastructure Delivery (EVID) programme** is TfL's strategic programme for planning, funding, and delivering EV charging infrastructure across Greater London – this includes working with LAs, the GLA, and private sector CPOs.
- Beyond EVID, **Places for London**, TfL's property arm, has entered the public DC EV charging market under a more commercially-driven **joint venture with Fastned**, a leading European private CPO in the ultra-rapid space. Under this JV, TfL and Fastned are delivering ultra-rapid charging at TfL-owned land across London.

Private Sector

- The bulk of the required investment in public charging is expected be delivered by **private sector Chargepoint Operators**, especially in the DC charging space.
- An overview of AC vs DC charging technologies, typical charging speeds, charging location types, and dwell time considerations is provided on the next slide.

3. Commercial and financial case considerations

Sites with longer dwell times may be ill-suited for installation of DC (rapid and ultra-rapid) chargepoints.

Sizing the appropriate charging solution to the site

Phase 1 LAEP engagement has suggested that Boroughs are interested in considering commercial delivery options for the rollout of rapid+ charging infrastructure on council-owned land. However, rapid charging is not always the most cost-effective choice for all sites. On a broad level, there are two categories of EV charging speeds:

- **AC (alternating current)** – sometimes called "slow" or "slow and fast" charging, this includes speeds from infrastructure rated lower than 50kW in capacity; and
- **DC (direct current)** – "rapid" or "rapid and ultra-rapid" charging, this includes speeds of charging from infrastructure rated 50kW+.

Dwell time refers to the length of time that the typical vehicle remains in its parking bay at any given site. This is influenced by the type of site and reflective user behaviour of the driver.

- Longer dwell time behaviours may include overnight parking (e.g., on street outside a residence), all-day parking (e.g., at a workplace), parking while attending to an activity of 2hrs+, etc.
- Unless a manual valet system is in place, dwell time may extend beyond the active charging time at a chargepoint (after the vehicle finishes charging but remains parked in the bay), thus blocking the infrastructure from use by other potential users, limiting both utilisation and revenue.
- For the same installed capacity, you could install 2x 100kW chargepoints (200 kW) at Site A and around 9x 22kW chargepoints (198 kW) at Site B, but if the typical dwell time at both sites is 2 hours, you can only serve two customers at once at Site A vs nine customers at once at Site B.
- AC charging infrastructure is typically also less cost-intensive per chargepoint than DC infrastructure (e.g., £1.5-5k AC vs £15-40k DC).

Parameter	AC	DC
Technology	Alternating Current	Direct Current
Energy Conversion	Occurs in vehicle's onboard charger	Occurs in the chargepoint
Typical Speeds	Slow (3-6kW) Fast (7-22kW)	Rapid (50-100kW) Ultra-Rapid (150kW+)
Typical Charge Time*	Slow (~6-12 hrs) Fast (~2-5 hrs)	Rapid (<1 hrs) Ultra-Rapid (<15 min)
Typical Locations	• Private homes • Workplaces • Some depots • On-street • Public car parks • Some destinations	• Some workplaces • Some depots • Urban hubs • Destinations • Enroute / A-roads / motorways
Dwell Time	Suited for longer dwell times, such as overnight, throughout the workday, and for destinations or car parks with a dwell time of 2hrs+	Suited for shorter dwell times or heavier vehicles, such as at select workplaces and depots, dedicated urban hub sites, enroute settings, or car parks with short dwell times

AC vs DC Charging Modes

Source: Arup Analysis

Notes: * Indicative time to charge a 61kW battery from 20% to 80% assuming maximum charging speed during the full duration of the charge and no losses

3. Commercial and financial case considerations

Options for commercial delivery include (A) Lease, (B) Co-Investment, and (C) Turnkey investment.

The matrix of commercial delivery options

A. Lease – the Council leases out the site to a CPO, who will install and operate the charging infrastructure commercially:

- **Simple lease:** the landowner is paid a simple rent per bay with no exposure to or opportunity from demand risk; or
- **Revenue /profit share:** the landowner is paid a percentage of the returns from the charging operation (sometimes in addition to a lower rent per bay).

B. Co-Investment – the Council co-invests in the charging site with a (typically private CPO) partner, splitting costs and returns:

- **Low-control JV:** majority CPO; or
- **High-control JV:** majority Council.
- Co-investment may also be **targeted**, with the Council contributing, e.g., x% of capex or funding all the grid capex, etc., aimed at **de-risking the investment** to attract a CPO partner.

C. Turnkey – the Council invests in the charging site alone and may:

- **CPO managed service:** outsource some operations to a CPO for a fee; or
- **In-house:** operate the site in house.

At a very high level, the commercial delivery options for DC charging at publicly-owned car park sites can be grouped into three categories across a matrix of **control** and **complexity**. Overall, exerting **more control** over the charging solution requires a **greater upfront and lifetime investment** and **exposure to greater risk**, but may present the **opportunity for greater returns**.

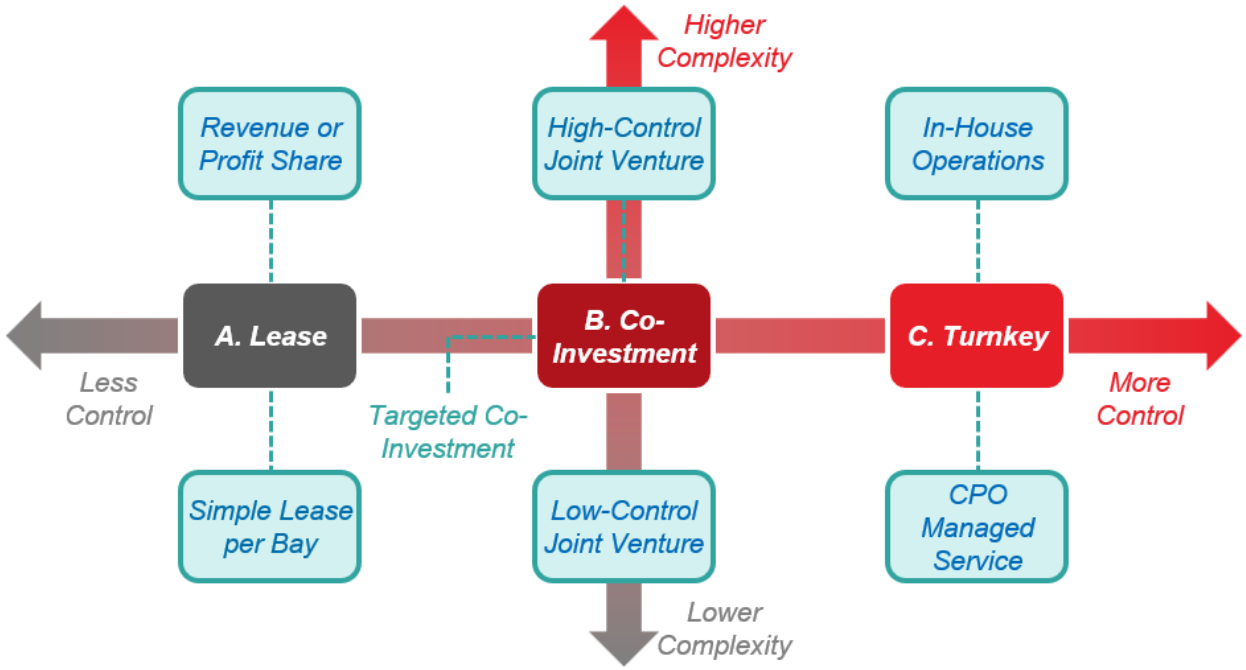


Figure 3.1: Commercial Delivery Options across the Matrix of Control and Complexity. Source: Arup

3. Commercial and financial case considerations

Both Demand Risk and Capital Risk would be lowest under a lease delivery model, but this model offers the lowest upside potential opportunity from utilisation and EV charging revenue growth.

Risks, mitigations, and opportunities [1/4]

Risk or Opportunity	(A) Lease	(B) Co-Investment	(C) Turnkey
Demand Risk: *Risk associated with the level of demand at the site vs what was expected.*	Lowest exposure to demand risk under the simple lease option but, equally, limited upside potential from utilisation growth (see opportunity below). *Mitigation(s):* • *Structure hybrid lease (base rent plus revenue- or profit-share).* • *Explore market receptiveness to indexing rent to site utilisation rather than to inflation (the latter is market standard).*	Can entail much higher exposure to demand risk, with this shared between the Council and CPO and most, if not all, returns stemming from user demand at the site. *Mitigation(s):* • *Include a lease element in the agreement with CPO partner on top of the co-investment to separate some returns from demand risk.* • *Phase roll-out of / investment in sites.* • *Set clear revenue-sharing formula with CPO.* • *See mitigations for Turnkey.*	Complete exposure to demand risk, with all revenue stemming from user demand at the site. *Mitigation(s):* • *Explore securing an anchor tenant (e.g., guaranteed fleet offtake).* • *Explore revenue stacking (e.g., retail opportunities at site).* • *Prioritise site design with high user awareness.* • *Monitor for competition sites before committing to investment.* • *Carry out due diligence on any demand or revenue projections.*
Capital Risk: *Risk associated with upfront investment into the charging site.*	Lowest exposure to capital risk, with upfront costs of developing the site for EV charging the responsibility of the CPO tenant. Equally, capped upside potential (see opportunity below).	Shared exposure with co-investment partner – Council funds would be an upfront investment with uncertain payback if site utilisation is low. *Mitigation(s):* • *Limit Council upfront investment by prioritising targeted co-investment over a higher control JV.* • *Target investment in areas of market failure (areas with low private CPO activity).* • *See mitigations for Turnkey.*	Complete exposure, with the Council paying all upfront costs – funds would be an upfront investment with uncertain payback if site utilisation is low. *Mitigation(s):* • *Pursue a phased deployment of sites.* • *Consider first investing in (a) pilot site(s).* • *Ensure full understanding of risk before pursuing this delivery model.*
Demand (and Revenue) Opportunity: *On the other side of the coin as demand risk, the upside associated with revenue potential from site utilisation or charging demand.*	Smallest opportunity for capturing upside potential from utilisation growth over time – this is especially capped under a fixed lease compared to under a lease with a revenue- or profit-sharing element.	With co-investment into the site, the Council would create an opportunity to secure a higher share of upside returns from utilisation growth at the site. The share of returns would likely depend on their share of the costs.	Exposure to 100% of demand risk and costs at the site would also secure 100% of the returns for the Council. Outsourcing O&M to a CPO contractor would increase costs for the Council but potentially lower capability risk.

3. Commercial and financial case considerations

Lease and Co-Investment models have higher Site Attractiveness Risk, while Capability and Capacity Risk is highest under a high-control Co-Investment model and under the Turnkey model.

Risks, mitigations, and opportunities [2/4]

Risk	(A) Lease	(B) Co-Investment	(C) Turnkey
Capability / Capacity Risk: *Risk associated with the level of capability (skills) and capacity (resources – e.g., people, budget) within the Council. Arup understands that Councils may have low capability and capacity to deliver and operate EV charging infrastructure compared to commercial CPOs.* See Value Chain.	Lowest exposure to capability / capacity risk under a lease option; risk mainly stemming from information asymmetry with private sector CPOs. *Mitigation(s):* • *Build knowledge of real estate value of potential charging sites.* • *Engage with private sector to understand range of commercial offers (e.g., revenue share %).*	Moderate to high exposure to capability / capacity risk under a co-investment model, with much greater risk under a high-control JV, where the Council would take a leading role in site control. *Mitigation(s):* • *Prioritise targeted co-investment over high-control JV options.* • *Critically assess in-house capabilities and capacities before entering any venture.*	Highest exposure to capability / capacity risk under a turnkey model, with all control taken by the Council. *Mitigation(s):* • *Outsource operations and maintenance to a CPO offering a managed service package.* • *Critically assess in-house capabilities and capacities before entering any venture.*
Site Attractiveness Risk: *Risk associated with the attractiveness of a site (typically stemming from expected demand or utilisation) to private-sector CPO potential tenant or co-investment partner. Risk may also stem from the size of the opportunity being insufficient to attract some CPOs' interest.*	Highest exposure to attractiveness risk, as the expectation is for the CPO to cover all investment. For the CPO's business case to stack up and enable them to invest in the site, they would expect a certain threshold of expected demand or utilisation based on their internal site selection model*. *Mitigation(s):* • *Explore budget for targeted co-investment to decrease the utilisation threshold required for the CPO to meet its target return.* • *Build an internal understanding of demand potential at sites.* • *Explore 'bundling' lower demand sites with higher demand sites for CPO investment (e.g., the CPO can apply for lease at four commercially attractive sites if they also roll out chargers at two less attractive sites).* • *Explore non-financial levers at the boroughs' disposal to de-risk CPOs' investment (e.g., longer lease terms are often attractive).*	Moderate to high exposure to attractiveness risk, as the costs will be split between the Council and CPO (though CPO returns and control are also reduced compared to in a Lease). *Mitigation(s):* • *Prioritise lower-control JVs and targeted co-investment over high-control JVs to bolster the opportunity attractiveness for CPOs (and their desired level of control and returns).* • *Critically examine the land portfolio available for development to determine if CPO partners might be attracted by potential for a larger framework agreement.* • *Explore site bundling to leverage CPO interest in high-demand-potential sites for securing Council objectives (e.g., equity of access – securing infrastructure at less commercially attractive sites).* • *Explore non-financial levers to de-risk opportunities for CPO partner(s) (e.g., planning permissions support).*	No exposure to site attractiveness risk, as any CPO role would be as a managed services outsourced O&M contractor (for which the Council would pay a fee), rather than as a tenant or commercial partner. *Mitigation(s):* • *N/A*

 ** These models differ from CPO to CPO but are typically driven by indicators including population, traffic, competition, current or projected EV uptake, housing stock / access to off-street charging, demographic data, etc.*

3. Commercial and financial case considerations

Exposure to Reputational Risk from third-party actions is highest when control is lowest, but risk exists under all models. Potential CPO partners may find a Lease more attractive due to its low Complexity.

Risks, mitigations, and opportunities [3/4]

Risk	(A) Lease	(B) Co-Investment	(C) Turnkey
Reputational Risk: *Risk associated with the reputation or standing of the Council stemming from the delivery or operations (e.g., uptime or availability of chargers, quality of infrastructure, affordability of tariffs) of the charging sites.*	If the CPO leaseholder delivers poor customer service, high tariffs, or poor uptime, the Council may take political flak despite limited control. *Mitigation(s):* • *Set KPIs (uptime requirement (~99%) and customer service response time standards) in lease, with penalties and / or a break clause for failures.* • *Require transparent reporting from CPO.* • *Potential CPO tenants may expect to have control over tariff setting; however, contractual terms like fair and transparent pricing expectations, benchmarking against competition prices, and adjustment mechanisms based on power costs may afford the landowner some protection.*	While the Council would have more control over reputational risk, some control would remain with the CPO co-investment or JV partner. Risk here could stem from misalignment of objectives between the Council and CPO partner. *Mitigation(s):* • *Articulate Council objectives in tender documents.* • *Consider reputation and alignment of objectives in setting selection criteria.* • *Should the CPO partner be the party responsible for site operations, consider including KPIs in contract with CPO.*	Lowest exposure to risk from partner or tenant performance. However, high reputational risk remains, with the Council now directly accountable for the delivery and operations of the site. *Mitigation(s):* • *Strongly consider outsourcing O&M to a reputable CPO under a managed SLA.* • *See mitigations for Lease model for KPIs and break clauses to include in SLA (e.g., uptime, customer service, etc.).* • *Benchmark tariffs against market competition to ensue fairness for the user while still prioritising commercial returns.* • *Critically assess in-house capabilities and capacities before entering any venture.*
Complexity Risk: *Risk associated with the perceived or actual complexity of the opportunity.*	Complexity is low for both the Council and the CPO. Lease arrangements are the standard model for most CPOs seeking land for DC public charging, and Councils are generally familiar with managing property leases. However, this simplicity comes with some trade-offs: low Council control may lead to **Reputational Risk** and / or **Market Failures Risk**. *Mitigation(s):* • *See mitigations for Reputational Risk (above) and Market Failures Risk (on the following slide).*	Complexity is moderate to high for the Council and the opportunity may be perceived as more complex than preferable by potential CPO partners, and thus less attractive. *Mitigation(s):* • *Explore early market engagement to test CPO appetite and co-design JV terms.* • *Engage with other public sector bodies on their experience delivering DC charging under JV (e.g., Places for London / TfL).* • *Pursue lower control co-investment opportunities, allowing CPOs a higher control position that may be more warmly received.* • *Keep JV governance (e.g., contractual KPIs) simple but effective.*	Complexity is high for the Council, with all delivery and operational responsibilities and associated risks falling on the Council. See **Capability / Capacity Risk**. *Mitigation(s):* • *See mitigations for Capability / Capacity Risk on the previous slide.*

3. Commercial and financial case considerations

Higher-control models would afford the Council more opportunity to fill gaps in infrastructure availability left by market failures, though the high cost of the Turnkey model may limit market intervention.

Risks, mitigations, and opportunities [4/4]

Risk	(A) Lease	(B) Co-Investment	(C) Turnkey
Market Failures Risk: *Risk associated with the Council's ability to address areas of market failure under each delivery model. While Arup expects the majority of investment in public DC charging to come from the private sector, some areas of market failure may occur (e.g., at sites of low projected utilisation but high strategic importance for equity of access, etc.).*	CPOs are unlikely to prioritise less commercially attractive sites under a pure lease model, meaning this delivery model may not address areas of market failure where public intervention is most needed. *Mitigation(s):* • *See mitigations for Site Attractiveness Risk (two slides previous).* • *Critically assess areas of market failure within borough (e.g., infrastructure gaps).* • *Consider reserving certain sites for council-led or co-investment delivery to cover areas of market failure.*	Under a co-investment delivery model, Councils would have more opportunity to address market failures stemming from **Site Attractiveness Risk** by prioritising targeted investments. *Mitigation(s):* • *Critically assess areas of market failure within borough (e.g., infrastructure gaps).* • *Prioritise co-investing in sites where private sector CPOs may need support in de-risking their own investment (e.g., sites with a high grid connection, lower projected demand but a strategically important location, etc.).*	Under a turnkey model, Councils would have complete control over where to roll out infrastructure, and thus, ability to target gaps left by market failures. However, with the higher risk and investment hurdle of this model, paired with limited budgets, Councils may risk limiting the breadth of their influence on the sector. *Mitigation(s):* • *Consider Turnkey only for strategically critical sites where the private sector has shown clear aversion towards investment.* • *Critically assess in-house capabilities and capacities before entering any venture.* • *Ensure full understanding of risk before pursuing this delivery model.*
Strategic Objectives Risk: *Risk associated with the Council's ability to control or influence items of importance to their strategic objectives. Arup understands these objectives may be in development, but may include encouraging local EV uptake, improving access to public charging infrastructure, addressing market failures, and / or pursuing a commercial return on investment.*	Critical to the selection of a delivery model is a clear strategy – what are Councils looking to achieve in the public DC charging sector and what aspects of this strategy are non-negotiable? What appetite for risk exists? Are Councils looking for a commercial return or is the main priority to improve access to infrastructure? *Action Item(s):* • *Set strategic targets (e.g., total infrastructure to be rolled out under this venture).* • *Set an 'MVP' for sites to be delivered – this may include the size of the site, safety and accessibility considerations, speed of charging to be offered, clean energy requirements, etc.* • *Set non-negotiables for engagement with CPOs (where are the Councils willing or unwilling to compromise?).* • *Build a clear understanding of investment requirement, return potential, and risk under each delivery model.* • *Build knowledge of real estate value of potential charging sites.* • *Build knowledge of utilisation or demand potential (or indicators thereof) of potential charging sites.* • *Engage with private sector to understand range of commercial offers (e.g., revenue share %).* • *Critically assess in-house capabilities and capacities*		

3. Commercial and financial case considerations

Councils should identify where they have Capability and to get involved along the Value Chain.

The EV Charging Value Chain

There are many specialised activities involved in the delivery and operation of DC public charging sites – these may change depending on the particulars of the project but typically include most of the EV Charging Value Chain set out below. Given their specialised nature, when CPOs deliver sites, they often outsource some of these activities (which activities are outsourced will depend on the business model of the CPO).

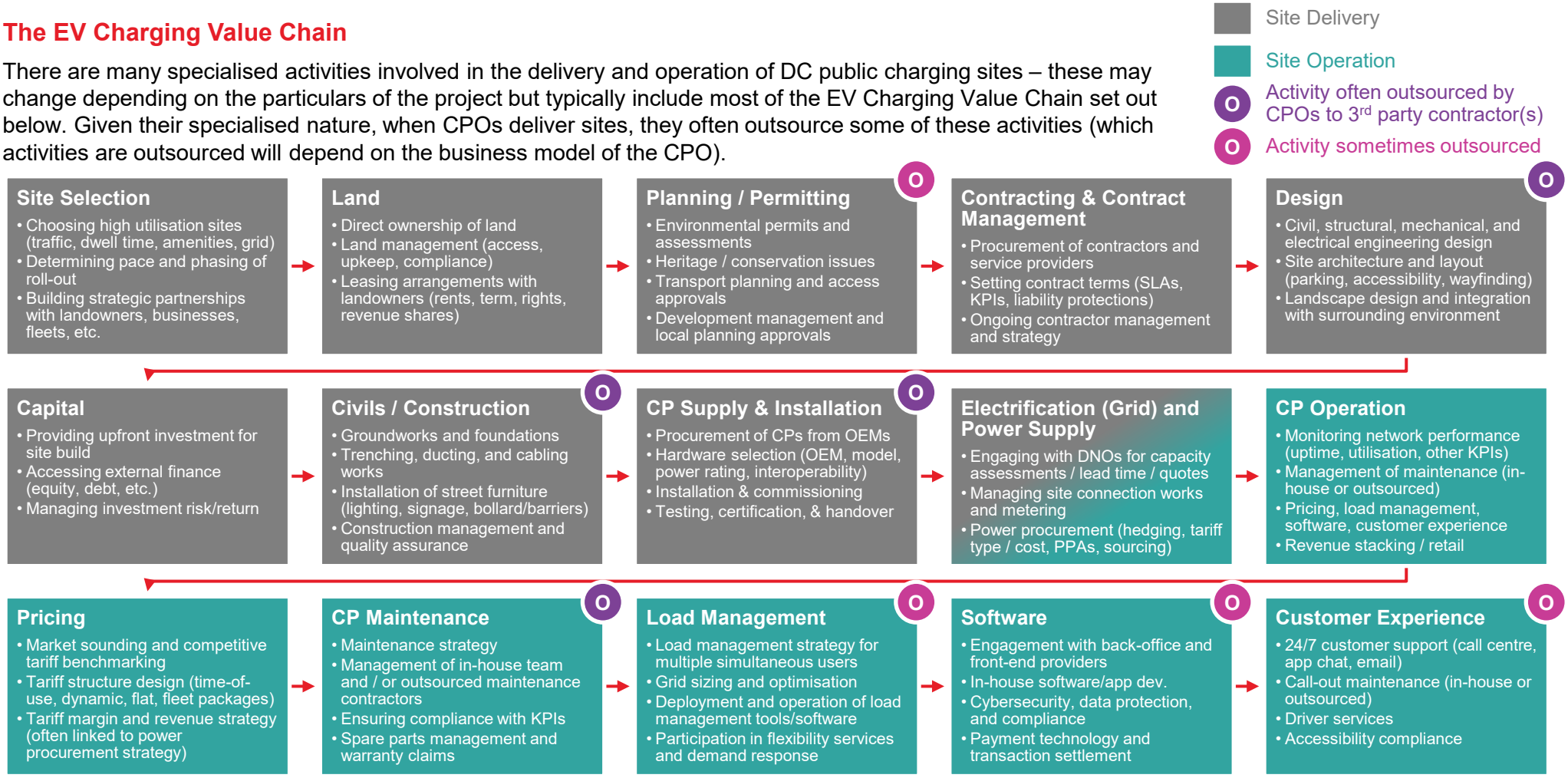


Figure 3.2: EV charging value chain. Source: Arup

3. Commercial and financial case considerations

Private sector CPOs are interested in securing high-utilisation locations. Arup has seen significant range in contractual terms between landowners and CPOs from opportunity to opportunity.

Working with Private-Sector CPOs

The two most important elements impacting CPOs' roll-out strategies are land and grid:

- **Land** – locations for rolling out charging infrastructure with high demand for public charging and high utilisation potential; and
- **Grid** – adequate grid connections to support installed charging infrastructure at costs and lead times that do not disrupt the CPO's investment case.

While individual LAs may have low ability to impact grid costs and constraints faced by CPOs, they do have access to land opportunities.

What are CPOs looking for?

- **High Demand** – at any site, CPOs tend to look for high demand or utilisation potential (depending on the type of site / charging mode, this may be indicated by high population, high traffic on nearby roads, proximity to major roads, attractiveness of nearby or co-located destinations, local building stock access to off-street parking, and local demographics);
- **Commercial terms** – when entering leasing arrangements, Arup has seen CPOs seek a range of terms that may depend on the value of the land and both the negotiating position and relationship of the parties involved:
  - **Fixed rents** – driven by land value, fixed rents can differ more significantly on a site-by-site basis – rent payment tends to be per bay or per CP;
  - **Profit sharing** – where leases include revenue- or profit-sharing terms, Arup has seen revenue-share benchmarks in the range of 3%-12% and profit-share benchmarks in the range of 5%-25% - terms tend to range contract-to-contract, but landowners may be in a better position to negotiate if they are also taking some risk as co-investors.
  - **Term** – 10-15 years is typical of leases in England, but Arup has seen leases up to 25 years – CPOs may find longer lease terms more attractive.
- **Operational control** – private sector CPOs may prefer opportunities where they are afforded higher operational control in running the EV charging site, including making strategic decisions like tariff setting;
  - **Tariffs** – Potential CPO tenants may expect to have control over tariff setting; however, contractual terms like fair and transparent pricing expectations, benchmarking against competition prices, and adjustment mechanisms based on power costs may afford the landowner some protection and influence.

Public Charging Utilisation

Utilisation of public charging is still relatively low, with UK chargepoints utilised on average for "around 3 hours per day or 11% of a 24-hour period" (Zapmap, July 2025). On average, public DC charging is utilised for fewer sessions per day but for a shorter duration per session compared to AC charging (please see the top right chart on the following slide). More specific utilisation data tends to only be available via third-party data aggregator subscriptions – e.g., Zapmap Insights.

3. Commercial and financial case considerations

Data is publicly available from Zapmap, including some indicators of potential DC charging returns.

Key DC Public Charging Market Data

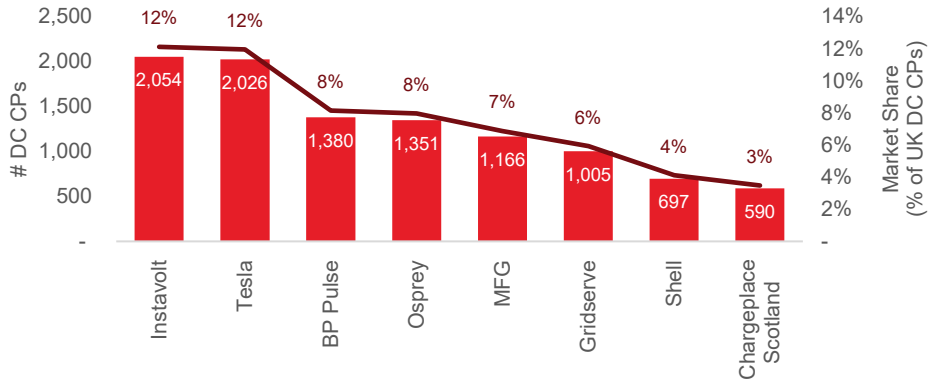


Figure 3.3: Top 10 UK Public Rapid / Ultra-Rapid CPOs by Number of DC Chargepoints (CPs)

Source: Zapmap (as of 31-07-25) Note: Market share refers to percentage of 16,937 UK total rapid and ultra-rapid (DC) devices

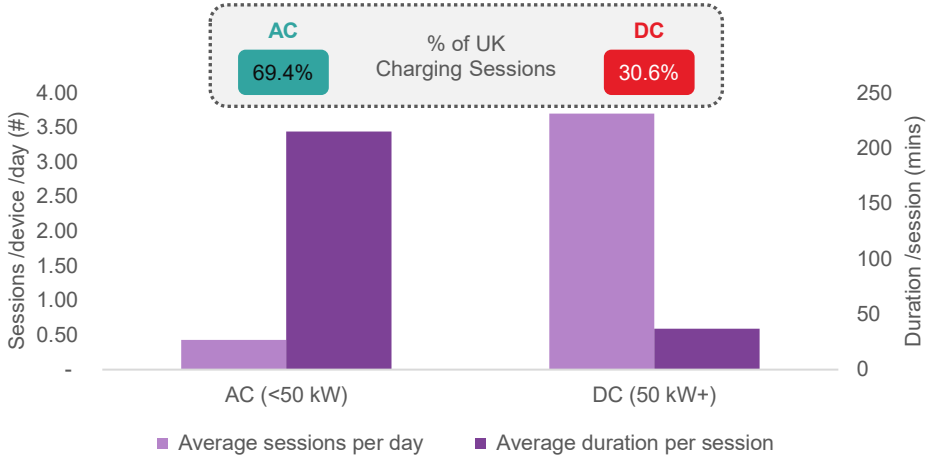


Figure 3.4: UK Average Public Charging Utilisation (July 2025)

Source: Zapmap (as of 31-07-25)

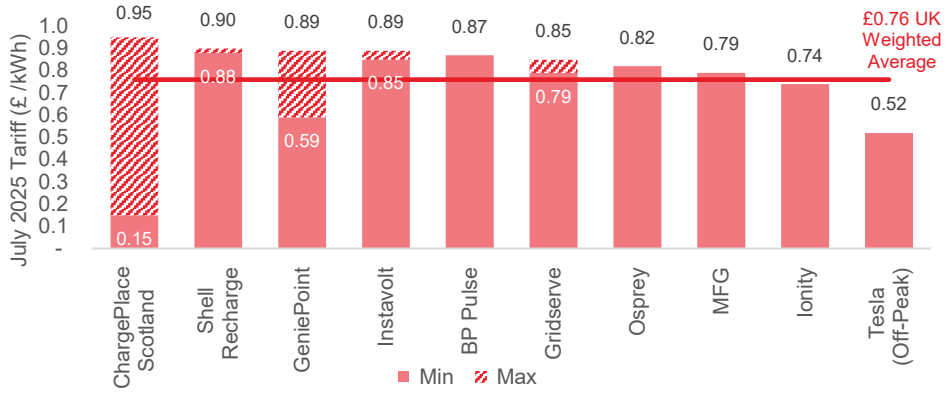


Figure 3.5: Top 10 UK Public Rapid / Ultra-Rapid CPO Network Tariffs (July 2025)

Source: Zapmap (as of 31-07-25) Note: Weighted average incl. all Zapmap DC charging tariff data (not just top 10 CPOs)

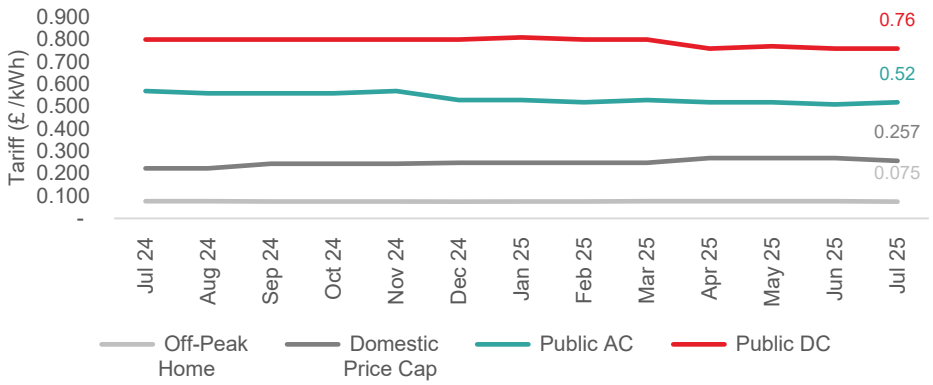


Figure 3.6: Average UK Private (Domestic) and Public Tariffs (July 2024-July 2025)

Source: Zapmap (as of 31-07-25)

4. Economic case considerations

Economic case overview

This section seeks to highlight the factors that would need to be considered in order to undertake an economic appraisal of a potential charger roll out programme, once this has been defined according to some of the factors mentioned in the previous pages, such as location and commercial delivery model. This economic appraisal would then feed into the economic business case, within the HMT Government five case model.

While the economic case has not been developed in full for this particular project, the fact that the sector is one that is growing fast in London suggests that the economic case is positive.

Purpose of the economic case

The economic case seeks to demonstrate the value for money to society of investing in charging infrastructure at council-owned car parks. It evaluates the costs and benefits of options available to determine which provides the best value for money to society.

Criteria for appraisal of options

The following criteria may be used to assess different project configuration options:

- Contribution towards decarbonisation goals by accelerating uptake of EVs
- Contribution towards more equitable access to EV charging
- Contribution towards improving air quality
- Is likely to be highly utilised
- Delivers value for money

Longlist of options for assessment

- Do nothing
- Install slow or fast chargers only (AC, <50kW)
- Install rapid or ultra-rapid chargers only (DC, >50kW)
- Install a combination of AC and DC
- Procurement model: public-private partnership with a CPO, or borough-led delivery

Shortlisting

As described above, the type of charger (capacity) most suitable to a site will depend on dwell time, which is highly location-specific.

The appropriate procurement model depends on borough capacity and appetite for risk. Bothof these aspects must be considered in order to be able to shortlist and then select the most suitable option.

Assessing costs

- Capital cost, including grid connection charges (£40-60k per chargepoint – Arup benchmark)
- Operating costs, including cost of electricity, and maintenance
- Opportunity cost, e.g. loss of parking revenue
- Costs of operating the programme: borough officer time required to develop and deliver the project

Assessing benefits

- Carbon savings
- Air quality improvements
- Revenue from charging fees and/or parking bay leasing fees
- Revenue from advertising
- Economic uplift from increased footfall at car parks

4. Economic case considerations

Economic Appraisal

An example calculation of potential **indicative** costs and revenues over a 40-year period is presented for different charger types and levels of utilisation for **one** car park space charger. Time-based utilisation assumptions have been used, over a period of 12 hours of car park open time:

- Low: 8% time, reflecting current baseline or underused sites
- Medium: 20% time, representing average UK usage
- High: 50% time, optimistic growth or strategic location

The utility cost of electricity has been taken from DESNZ Green Book retail cost prices. Capex costs are presented with a wide range to capture the significant uncertainty range in grid connection and other costs.

The purpose of these hypothetical figures is to illustrate the scale of potential costs and revenues. In a joint venture or leasing arrangement, any revenue to Boroughs would come from the difference between total revenues and total costs, which as can be seen, only appear likely in medium or high utilisation sites with rapid or ultra rapid chargers, or high utilisation of slower chargers.

These figures illustrate the impact of utilisation on revenues, confirming the importance of site selection in assessing the business case.

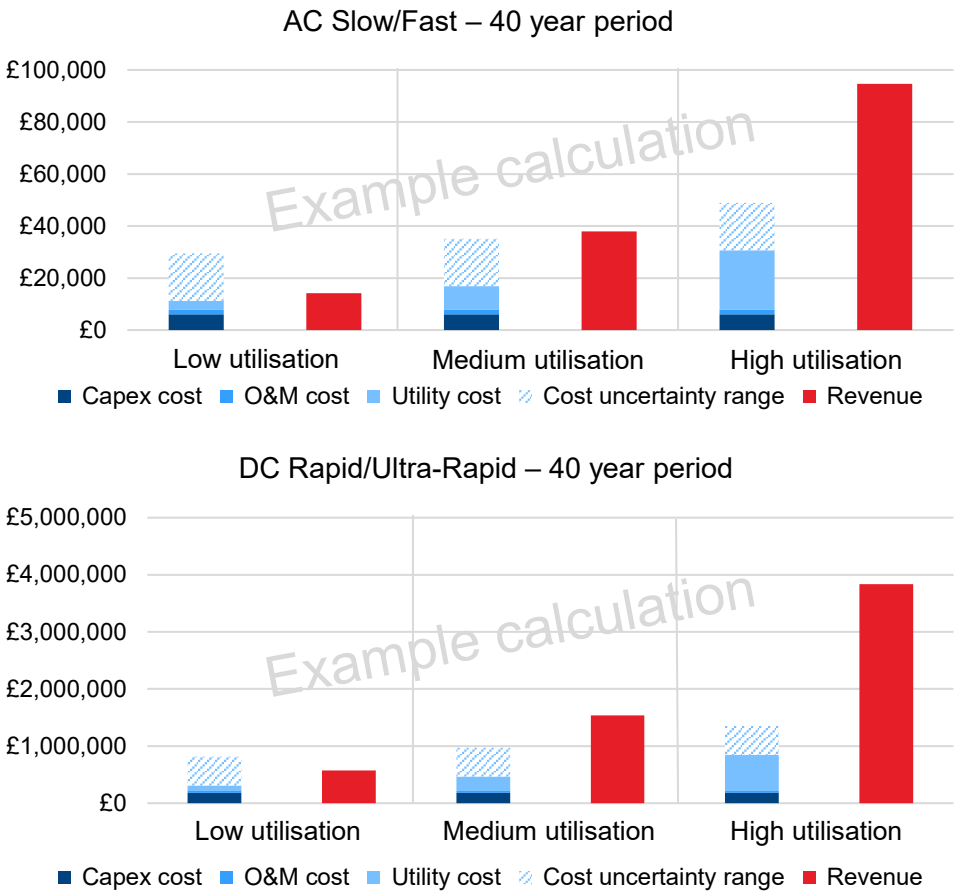


Figure 3.7: Illustrative costs and revenues for one AC and DC charge point. Source: Arup

Assumptions	AC
Capex cost	£1.5K-5K
Lifetime	10 years
Average charge duration	215 minutes
Average tariff	£0.54/kWh

Assumptions	DC
Capex cost	£30K-100K
Lifetime	7 years
Average charge duration	37 minutes
Average tariff	£0.79/kWh

Note: These figures are illustrative only and do not capture the full range of possible costs, which need to be assessed on a case-by-case basis.

5. Location selection

Prioritising factors

As described in Section 4 above, location selection will most likely be determined by CPOs who are likely prioritise high utilisation and ease of connection to the grid. However, boroughs may have the potential to influence this process, particularly if they have an evidence base to demonstrate contribution to other more social goals, such as air quality and equity of access.

To this end, we have developed a “heat map”, shown on the right, that shows hotspots of where EV charging would most efficiently target a combination of criteria. These criteria are described in the table adjacent, and could be adjusted to reflect Borough priorities.

This mapping exercise enables the prioritisation of locations based on:

- High EV ownership but few charge points
- Adequate substation capacity
- High housing density with limited off-street parking
- Poor air quality or lower PTAL scores (indicating transport equity need)

Input Layer	Scoring guidance	Weight
Number of EV chargepoints in 2030	Lower number = higher score	17%
Land ownership	More council-owned land = higher score	17%
Substation headroom	More headroom = higher score	17%
Number of EV vehicles in 2030	Higher number = higher score	9%
Large car parks	More area within 500m of large car parks = higher score	9%
PTAL values	Lower PTAL= higher EV need	9%
Planned TfL rapid charging	More area within 500m planned CP = higher score	9%
Housing density	Higher density = higher demand for shared charge points	4%
Air quality (NO_2/PM_{10}) from LAEI 2022	Higher pollution area = higher score, prioritise areas with low air quality	4%
Index of Multiple Deprivation (IMD)	More deprived = higher score	4%

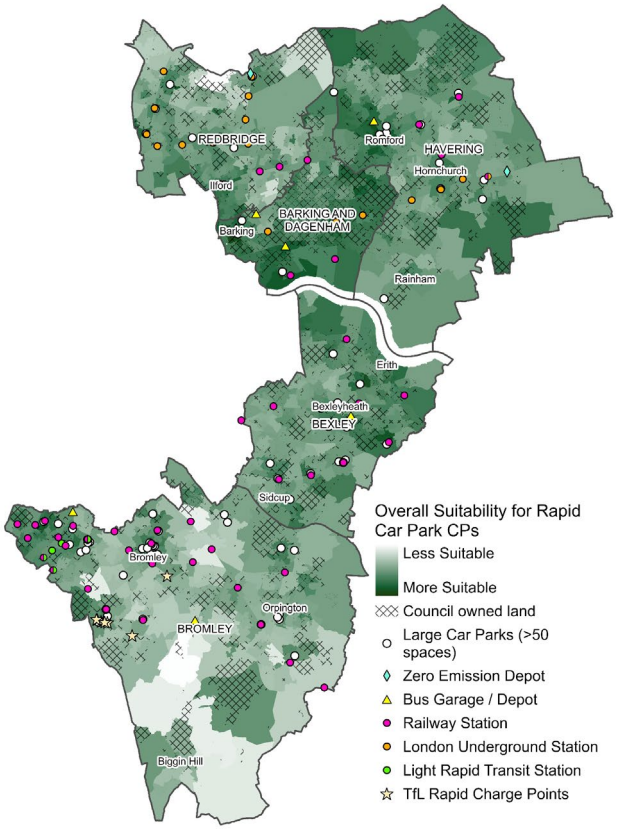


Figure 5.1: Overall EV charging location suitability map including large car parks

5. Location Selection
Opportunity Areas

Borough opportunity mapping

To identify priority sites, two datasets were combined:

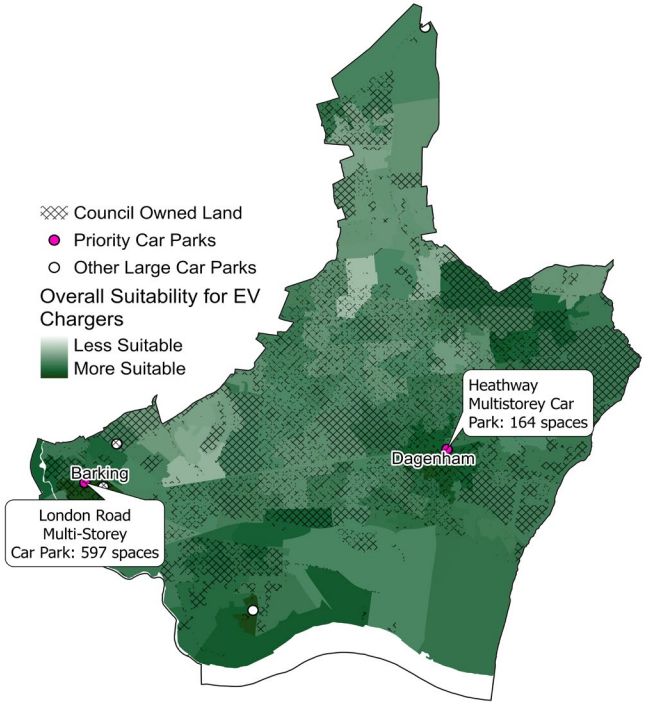
- **EV Suitability Map** – highlights areas with high potential for EV charging based assessment outlined on previous page.
- **Large Car Park Dataset** – includes location and ownership details for car parks across the five boroughs.

Approach:

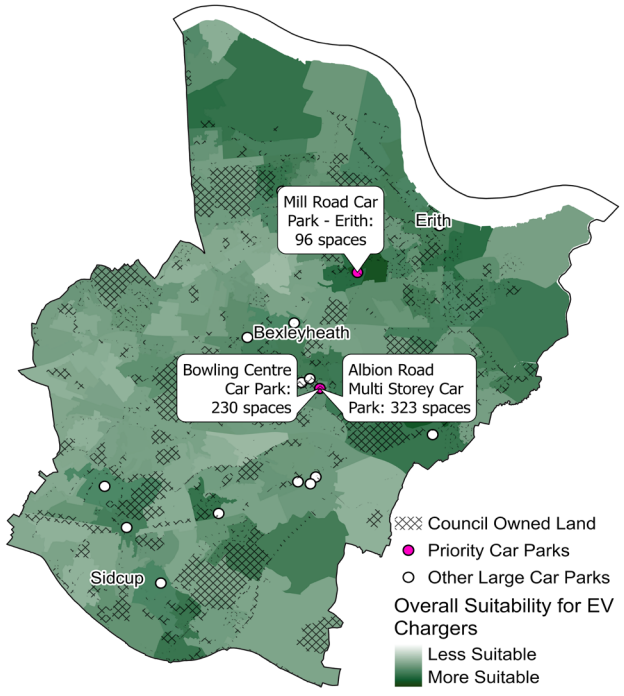
1. Mapped all publicly owned car parks in each borough against the EV Suitability Map.
2. Overlaid additional indicators such as proximity to busier areas where utilisation is expected to be higher.
3. From this combined analysis, selected two to three priority car parks per borough for potential deployment of rapid or ultra-rapid EV charging hubs.

Caveat for Redbridge: No publicly owned car parks in dataset. As a result, some highlighted sites in high-suitability areas may be privately owned, limiting immediate action by the borough. Recommendation: Redbridge should use the suitability map to identify high-potential zones and cross-reference these with its own asset register to confirm which car parks are under borough control.

Barking and Dagenham

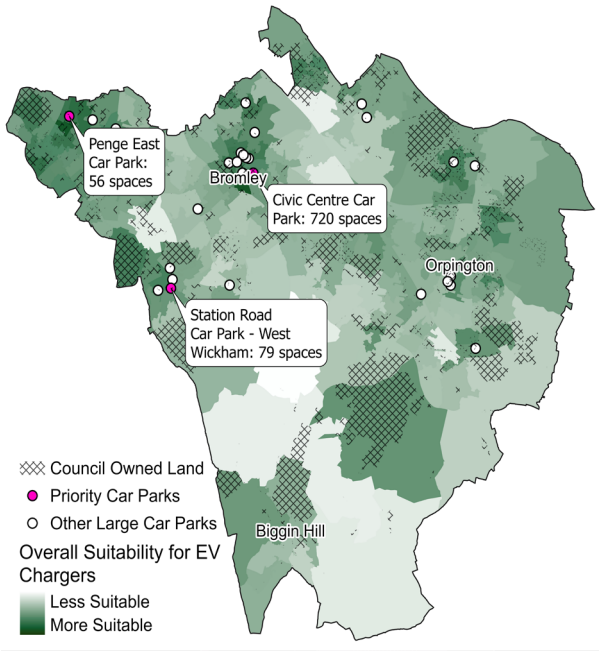


Bexley

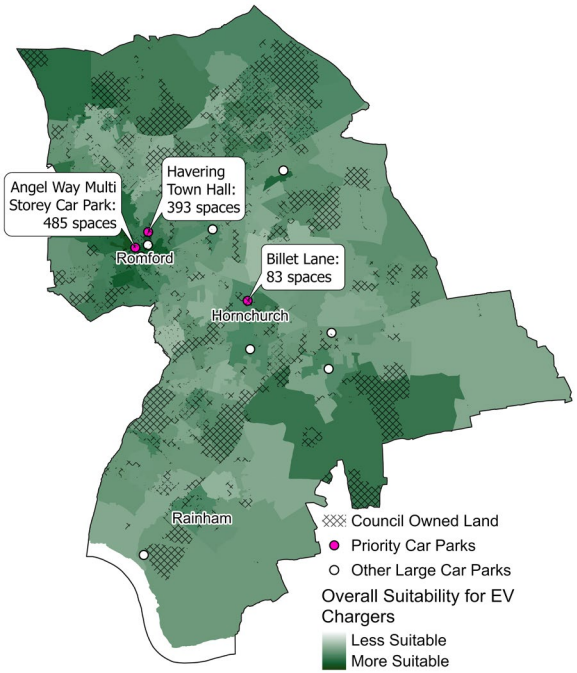


5. Location Selection
Opportunity Areas

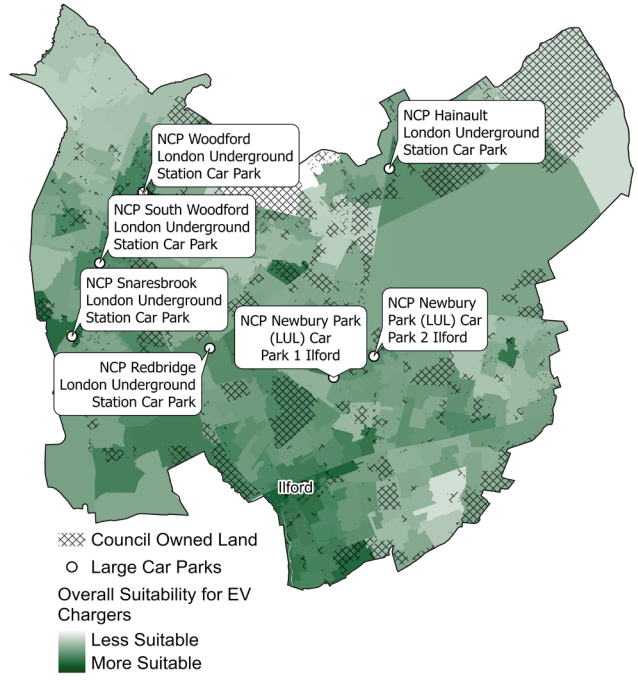
Bromley



Havering



Redbridge



6. Recommendations and next steps

Arup recommends Councils continue to develop their understanding appetite for risk and to set out clear objectives for their potential entry into the public DC EV charging market.

Recommendations and Next Steps

Next steps

The key next step for selecting a commercial delivery model to pursue is to build a greater internal **awareness of risk** and the Councils' appetite therefore. Second, greater clarity on the Councils' key **objectives** is required.

High cost of investment (capital risk) – Arup has seen investment requirement benchmarks of **£40k to £60k per chargepoint** upfront cost for delivering DC (50kW to 150 kW) charging at a carpark- or destination-type site. This **does not include the costs of operating the site**, the most significant of which would be that of electricity.

- 50%-60% of this is made up by hardware cost with the remainder civils and installation cost.
- Civils and installation cost includes site preparation works (signage, bollards, etc.), chargepoint installation (groundwork, trenching, site preparation, electrical installation, commissioning).
- This benchmark includes grid costs but does not include additional structures (e.g., canopy, shelter, retail building, etc.). Grid connection costs differ significantly on a site-by-site basis and benchmarks should be used with caution in reflection of this risk.

Recommendations

Councils should expect the private sector to deliver the bulk of future public EV charging investment, especially for public DC charging infrastructure, which has historically been more attractive to CPOs backed by private finance.

Based on our understanding of Borough capacity, **a Lease delivery model** may be the most appropriate to pursue, because of the higher exposure to risk implied by the other two models, with any **public finances to be targeted towards areas of market failure**.

If the Councils are looking for slightly more exposure to risk and higher upside potential, a targeted co-investment model could be pursued. However, a greater understanding is required of the Councils' appetite for risk and their objectives in getting involved in the public DC EV charging market via any delivery model.

Arup recommends that the Councils develop their views on risk and clarify their objectives before selecting a delivery model.

Action: Run an internal workshop with finance, legal, and sustainability teams to assess risk tolerance and preferred delivery approach. Use case studies from other London boroughs and GLA guidance to inform discussions. Engage with other boroughs to explore collaboration opportunities that could unlock efficiency gains.

Assess Council-Owned Land and Demand Potential

Mapping the Council's land portfolio is essential to identify viable sites for EV charging. This includes car parks and other assets assessed against EV Suitability Maps, utilisation hotspots, and can also make use of UKPN's Chargepoint Navigator tool.

Action: Develop a portfolio of sites using LAEP DataHub layers, borough asset registers, and the shortlist in this report. If internal GIS capability is limited, consider engaging consultants.

Engage with TfL and Places for London

TfL's partnership with Fastned through the Places for London JV offers potential alignment with Council objectives and shared experience.

Action: Initiate discussions with TfL and Places for London, sharing the Council's site portfolio and exploring joint delivery opportunities.

6. Recommendations and next steps

Arup recommends Councils continue to develop their understanding of risk and their appetite therefore, as well as to set out clear objectives for their potential entry into the public DC EV charging market.

Recommendations and Next Steps

Understand Cost and Return Potential

A high-level financial model should be commissioned to estimate CAPEX, OPEX, and potential revenue under different delivery models for shortlisted sites.

Action: Use benchmarks provided in this report (£40k–£60k per DC charger) and request indicative quotes from CPOs.

Clarify Objectives and Commercial Priorities

Define what success looks like for the Council's involvement in EV charging, whether financial returns, social equity, or environmental benefits.

Action: Document objectives in a short internal position paper before market engagement.

Formalise "Red Lines" for Private Sector Engagement

Agree on non-negotiables such as minimum service levels, pricing controls, or branding requirements.

Action: Work with legal and procurement teams to draft a standard set of terms.

Explore Early Market Engagement

Soft market testing will help gauge interest and refine commercial terms.

Action: Issue a questionnaire to CPOs and potential partners, including site details and preferred delivery models (lease, co-investment), and request feedback on commercial terms.

All these actions could be undertaken at an individual borough level or as part of a multi-borough collaboration exercise to maximise efficiency and market leverage. A joint approach could increase interest from private partners given the larger scale of the opportunity.

ARUP