UK-Level Report

Estimating the National Infrastructure Requirement and Cost of Police Fleet Electrification Across the UK

Prepared by Dynamon Ltd

on behalf of the Midlands Net Zero Hub

Final Report | *May 2026*

Contents

1. Executive Summary

The transition of UK police fleets to electric vehicles represents one of the most significant operational and infrastructure challenges facing the policing sector. With approximately 39,000 vehicles operating across 48 forces and more than 2,000 sites nationally, the scale of change required to support electrification is substantial, but not uniform.

While progress has been made in understanding the feasibility of electric vehicle deployment at an individual force level, there remains limited visibility of the likely scale of investment required, and the extent to which barriers vary across the policing estate.

This report provides a national-level estimate of the charging infrastructure likely to be required across the UK police estate, together with an indicative assessment of the associated costs. It has been developed as part of a broader programme of work commissioned by the Midlands Net Zero Hub (MNZH) in partnership with the Department for Energy Security and Net Zero (DESNZ), and Dynamon, working with 10 police forces with telematics capability. The detailed analysis of the 10 police forces has been scaled up to present a UK-wide analysis, with adjustments made to account for site complexity and geographical location across the UK landscape.

The report is intended to serve three purposes:

- Provide a more robust UK-level estimate of infrastructure need and associated cost than has previously been available, building from real telematics-led analysis and existing force-level studies.
- Set out the infrastructure likely to be required across police sites, including the expected mix of slow, rapid, and ultra-rapid charging and the proportion of sites facing different levels of intervention.
- Identify the remaining gaps, uncertainties, and next steps needed to move from broad national estimates to investable force-by-force and site-by-site plans.

1.1 Key Findings

Electrifying the UK police fleet will require approximately 18,285 chargers across around 2,035 sites, at an estimated total cost of £1.41 billion. Grid upgrades account for the majority of that cost (£1.16 billion, 83%), with charger hardware itself a comparatively modest £245 million (17%). The headline figures are summarised below with a full breakdown provided in Sections 6 and 7.

UK Wide Parameter	Result
Number of Forces assessed or estimated	48
Total number of chargers	18,285
Total cost of charger infrastructure	£245,351,073 (mid-range)
Total cost of grid upgrades	£1,161,620,886 (mid-range)
Number of Police Force locations electrified	~2,035
Total UK Police Force electrification cost	£1,406,971,958 (mid-range)
Total UK Police Force electrification cost	£1,320,580,743 (lower)
Total UK Police Force electrification cost	£1,507,416,969 (upper)

Five key findings have been drawn from this analysis:

1. The driver for electrification is operational, not aspirational. In time, ICE vehicles will no longer be available to procure, making electrification a market-driven operational imperative, not a policy choice.

2. The challenge is real, but uneven, with some sites able to support early-phase electrification with limited intervention; others will require substantial electrical upgrades, major site works, or alternative delivery models.

3. The barriers include hardware cost, grid capacity, reinforcement timelines, estate constraints, and operational practicality. All are equally significant for many sites, and dominate the cost stack.

4. Smart fleet management can materially reduce the bill. Optimised vehicle scheduling, load management, and duty cycle adjustment can cut the number of chargers and the scale of grid upgrades required, provided forces invest in the telematics and operational planning capability to support intelligent specification.

5. Early adoption makes most economical sense. This report shows how a phased approach and starting early will benefit fleets economically due to spreading capital investment across multiple years as well as being early in the potential queue to get grid upgrades, particularly at energy intensive sites.

This report does not provide a final answer for every force or every site. It is positioned as the next iteration in a longer evidence-building process. Its strength lies in combining available telematics-led analysis, published and shared force-level studies, and practical infrastructure assumptions into a transparent national view that can support funding discussions with government and relevant stakeholders.

A core principle throughout this report is transparency. For every major estimate, the methodology, assumptions, exclusions, and limitations are clearly stated so that the figures can be scrutinised, updated, and refined as more data becomes available.

1.2 Next Steps

Seven recommendations follow from this report, each developed further in Section 12.

1. Build a funding case to government departments and relevant national stakeholders by demonstrating both the scale of the challenge and the value of continued
2. detailed work.
3. Define emergency service sites as “Strategic Demand Sites” so they are prioritised in grid connection and upgrade queues and can keep serving their communities.
4. Improve telematics coverage and access to extend telematics-led analysis across more forces and strengthen the evidence base and reduce reliance on extrapolation.
5. Develop force-by-force and site-by-site phased transition plans that identify priority sites and align infrastructure deployment with vehicle procurement and funding timelines.
6. Progress engagement with DNOs and infrastructure stakeholders to firm up grid connection cost, feasibility and timescales – the single largest area of uncertainty in the estimate.
7. Explore regional collaboration and shared charging models with other blue light services and public sector partners.
8. Maintain a living evidence base, refreshing the national estimate as better data on cost, connections and site readiness becomes available.

2. Purpose of the Report

This report has been developed to answer two headline questions that are central to national planning for police fleet electrification.

2.1 What infrastructure is likely to be needed?

The report estimates the likely national charging requirement for police fleet electrification, including the broad mix of charger types expected to be required across the estate. This encompasses:

- Slow and overnight charging for routine operational vehicles with extended dwell periods at base.
- Rapid charging for operational resilience, mid-shift top-ups, and vehicles with shorter turnaround windows.
- Ultra-rapid charging for specialist or high-utilisation assets, including larger vehicles where faster energy delivery is operationally necessary.
- Typical infrastructure requirements by site type, recognising that the police estate is diverse in size, configuration, and operational function.
- The proportion of sites likely to need only limited change versus those requiring more substantial intervention, including grid reinforcement or estate adaptation.

2.2 What could this cost?

The report provides a national estimate of the cost of enabling police fleet transition, separating cost categories so that readers can understand what is driving the total. The cost narrative distinguishes between:

- Charging hardware procurement across all charger types.
- Installation, civil engineering, and site works required to deploy and connect charging infrastructure.
- Grid connection and reinforcement costs, which represent one of the largest and most variable cost components due to site specific requirements, meaning that these costs are indicative only.
- Allowances and contingencies to reflect uncertainty and site-specific variation.

The report is also explicit about what has not been included. Costs relating to vehicle procurement, driver training, organisational transition, staffing impacts, charging software and back-office systems, and other operational change costs are excluded where these have not yet been robustly quantified.

3. Strategic Context

3.1 Scale of the Challenge

Police fleet electrification is often discussed as a single national challenge, but the practical reality is considerably more varied. UK policing operates through 43 territorial forces in England and Wales, Police Scotland, the Police Service of Northern Ireland, and a number of national and specialist agencies. Together, these forces operate approximately 39,000 vehicles from more than 2,000 sites, ranging from small local stations with a handful of vehicles to large operational headquarters and custody suites supporting hundreds of fleet assets.

The UK Government has set clear expectations around the decarbonisation of fleets, supported by broader net zero targets and the phased end of new petrol and diesel vehicle sales. This means that internal combustion engine vehicles will, in time, no longer be available to procure. For policing, this shifts the question from whether to align with a decarbonisation target to how to maintain operational capability as the vehicle market transitions. Sustaining frontline fleets will require not only the procurement of electric vehicles but, critically, the deployment of charging infrastructure at scale across an estate that was never designed with electrification in mind, in within a timeframe that is becoming increasingly pressing.

Desktop modelling undertaken prior to this project indicated that electrifying blue light services could incur an upfront infrastructure cost of between £1.7 billion and £2.8 billion for police fleets alone, all within a collapsing and limited timeframe. This report seeks to refine that estimate using real operational data, telematics-led analysis, and a more granular understanding of site-level variation.

3.2 Difference Across Forces

Police forces differ significantly in ways that directly affect the cost and complexity of fleet electrification. Key factors include geography, fleet composition, operational patterns, site remoteness, existing electrical capacity, and estate constraints.

These differences mean there is no single infrastructure model that applies across all UK police forces. This report uses detailed electrification analysis from a representative sample of police forces to estimate UK-wide infrastructure requirements and costs. The national figures are therefore based on extrapolation from analysed forces rather than detailed modelling of every police force and site. The extrapolation methodology is described later in this report.

A key assumption is that the analysed forces are broadly representative of the wider UK policing landscape. This provides a practical basis for estimating the national scale of investment required.

However, this approach is inherently less accurate than undertaking detailed analysis for every individual force. While this report materially improves on previous high-level estimates by using a substantial force-level evidence base, it will not fully capture the specific operational and infrastructure characteristics of forces that have not been individually assessed. For the highest level of accuracy, infrastructure planning should ultimately be undertaken on a force-by-force and site-by-site basis.

4. Scope and Evidence Base

4.1 What Is Included

This report covers the estimated charging infrastructure requirement and associated capital cost for electrifying police fleets across the United Kingdom. The scope includes:

- All 43 territorial police forces in England and Wales, Police Scotland, the Police Service of Northern Ireland, and non-territorial/specialist forces: British Transport Police, Civil Nuclear Constabulary, Ministry of Defence Police.
- Charging hardware (slow, rapid, and ultra-rapid charge points – DfT charging speed categories).
- Installation, feasibility studies, site design, civil engineering, and site works.
- Grid connection and reinforcement costs.
- Indicative contingency allowances.

4.2 What Is Not Included

The following are explicitly excluded from the cost estimates in this report:

- Vehicle procurement costs (electric vehicles and any associated lease or financing costs).
- Electricity supply tariffs, energy costs, and standing charges.
- Ongoing operations, maintenance, and charge point management software (CPMS) subscriptions.
- Driver training, fleet management software, and organisational change management costs.
- Staffing impacts and operational redesign costs.
- Property acquisition or new-build construction unrelated to charging infrastructure.
- Battery energy storage systems (BESS) and on-site generation, although these are noted as potential cost-reduction options.
- Grid connection and - reinforcement costs associated with other changes to site energy demand or generation (e.g. heat decarbonisation, on-site generation or storage, or other electrification projects).
- Estate redevelopment not directly attributable to charging delivery.

4.3 Evidence Base

The national estimates presented in this report are built from three broad categories of evidence:

4.3.1 Direct Project Analysis

The project team has undertaken telematics-led fleet and infrastructure analysis for up to 10 police forces as part of this programme. This analysis uses real operational data, including vehicle duty cycles, energy demand profiles, and site-level infrastructure assessments, processed through Dynamon’s ZERO platform. These forces provide the most detailed and robust evidence base for the national estimates.

4.3.2 External Force-Level Studies

A number of force-level reports have been shared by Cenex. Named examples already available include Kent, Essex, Norfolk, and Suffolk. These reports have been used to strengthen the national estimates. Whilst other individual force fleet analyses may have been previously performed by external parties, these were not available to this study and therefore were not included.

4.3.3 Extrapolation for Forces with No Data

34 forces had not provided data or reports that could be used by Dynamon as part of this study. The data from the 10 forces studied by Dynamon and the additional forces studied by Cenex were combined and extrapolated to achieve the UK-wide picture. Of the 34 forces that were estimated, 3 of these were larger regional / principality forces and had significantly more vehicles, sites and covered a larger area than the typical England and Wales district-based forces. This meant that a volume scaling factor was applied to the three specific forces as part of the extrapolation process:

- Police Scotland: 7x multiplier
- Met Police: 10x multiplier
- Police Service NI: 4x multiplier

4.3.4 Grid and Connection Assumptions Informed by DNO Engagement

Dynamon met with multiple DNOs to gain an insight into the costs associated with grid and connection upgrades. The main connection costs can be broken down into bands dependent on the kVA required.

Base Upgrade Costs:

Band #	Lower kVA	Upper kVA	Connection Cost	Voltage
1	-	70	£7500	LV (existing)
2	70	200	£35,000	LV upgrade
3	200	500	£100,000	LV new / small HV
4	500	1,000	£225,000	11kV HV
5	1,000	2,500	£450,000	11kV HV
6	2,500	5,000	£1,250,000	11 / 33kV
7	5,000	99,999	£3,250,000	33 kV HV

Firm Connection Grid Upgrade Multiplier:

It is a common requirement for critical infrastructure to require a “Firm Connection”. This allows for redundancy in the grid supply by providing an additional connection ‘leg’ that works in parallel with the first. The total grid supply remains the same but can operate with only one of the two legs operational. This therefore requires additional cost above standard grid connections to be accounted for. The table below outlines the additional cost multiplier.

Firm Connection Type	Multiplier	Applies To
Standard	1.95	All grid upgrade connections

Distance to Network – Cable cost per meter

Cable Type	Cost Per Meter	Free Meters Included	Notes
LV Cable (Bands 1 – 3)	£150	30	Allowance included in band cost for first 30m
HV Cable 11kV (Bands 4-6)	£300	50	Allowance included in band cost for first 50m
HV Cable 33kV (Band 7)	£550	100	Allowance included in band cost for first 100m

5. Methodology

This report combines detailed force-level fleet electrification analysis with national-level extrapolation to estimate the UK-wide infrastructure requirement and cost of police fleet electrification.

5.1 Extrapolation

Detailed analysis has been completed for 14 police forces (10x by Dynamon, 4x externally) using telematics data, operational fleet information, and site-level infrastructure modelling. This analysis forms the primary evidence base for the national estimates presented in this report.

For each analysed force, the methodology included:

- Analysis of operational telematics data to understand vehicle duty cycles, energy demand, and dwell times
- Modelling of vehicle electrification feasibility and charging demand
- Estimation of site-level charging infrastructure requirements
- Estimation of associated infrastructure and grid upgrade costs

The individual analysis from the following forces informed this report:

1. West Yorkshire
2. Devon and Cornwall
3. Kent
4. Essex
5. South Yorkshire
6. Norfolk
7. Leicestershire
8. Nottinghamshire
9. Suffolk
10. Cheshire
11. North Yorkshire
12. Dorset
13. Northamptonshire
14. Lincolnshire

There are more forces who have completed individual analysis but these were not made available for this analysis. The analysed forces have then been used as the basis for estimating UK-wide infrastructure requirements and costs. Two different infrastructure modelling methodologies were included within the analysed force dataset.

- The Dynamon methodology was based on telematics-led optimisation of charger deployment, load management, and infrastructure utilisation, resulting in lower charger counts, lower peak power demand, and lower grid upgrade requirements.

- The Cenex methodology, used for Essex Police, Norfolk Constabulary, Suffolk Constabulary, and Kent Police, used more conservative infrastructure assumptions with higher charger provision and lower utilisation assumptions when compared against Dynamon's method. This resulted in materially higher estimated infrastructure and grid upgrade costs than those predicted by Dynamon.

- Other Police forces may have had individual analysis conducted and results shared, however the findings provided either did not include infrastructure rollout costings (vehicle feasibility only) or were simply headline total figures and were therefore not included in the assessment as an "analysed force".

The UK-wide estimates presented in this report combine both methodologies within the analysed force sample. This was considered preferable to relying solely on either approach in isolation. Using only the Dynamon methodology risked understating infrastructure redundancy and operational contingency requirements (without accurate data driven analysis for each of the police forces), while using only the Cenex methodology would likely overstate national infrastructure and grid costs. The combined dataset therefore provides a balanced central estimate between highly optimised and highly conservative infrastructure assumptions.

The analysis assumes that the forces assessed are broadly representative of an average UK police force. National totals have therefore been scaled linearly across the full UK policing landscape of 48 police forces and agencies. The extrapolation has only been used to estimate UK-wide totals. Individual estimates have not been produced for forces that have not been directly analysed.

Additional scaling has been applied for the three largest police organisations, which are not proportionally represented within the analysed sample:

- Metropolitan Police Service assumed equivalent to 10 average police forces based on the number of vehicles we are analysing for them under a direct project (analysis currently only undertaken on a small portion of the fleet and only currently includes vehicle feasibility and not charge infrastructure design)
- Police Scotland assumed equivalent to 7 average police forces
- Police Service of Northern Ireland assumed equivalent to 4 average police forces

These assumptions were derived from publicly available information relating to fleet size, estate scale, officer numbers, and operational footprint. No single definitive dataset exists covering relative force scale and infrastructure requirement across all UK police organisations.

5.2 Cost Breakdown

The report provides a breakdown of infrastructure costs for the analysed police forces and sites. Costs may be presented either as absolute values or percentage shares of total project cost, depending on the level of detail available from each project. For UK-wide estimates, these cost components are extrapolated using the methodology described above.

The cost categories used throughout this report are:

1. Charger hardware, installation, and commissioning
2. Grid connection base cost
3. Cable distance cost
4. DNO application and design fees
5. Site survey costs
6. Civils complexity uplift
7. Resilience uplift
8. Project management and contingency

5.3 Cost Assumptions

The cost assumptions used in this report are based on a combination of current UK supplier and installer pricing data, published guidance from Distribution Network Operators, and evidence from comparable infrastructure projects.

Where cost ranges are used rather than single point estimates, this reflects uncertainty in site conditions, grid requirements, and infrastructure installation complexity across the UK police estate.

All assumptions are documented in the accompanying Excel model and can be adjusted if additional data surfaces or adjustments are required.

6. National Infrastructure Requirement

This section presents the core infrastructure findings for police fleet electrification across the UK. The estimates are derived from the evidence base and methodology described in Sections 4 and 5.

6.1 Indicative Breakdown of charge points required

The analysis seeks to identify not only the total charging requirement but the operational role each charger type is expected to serve. This distinction is important because it directly influences cost, grid impact, and site design.

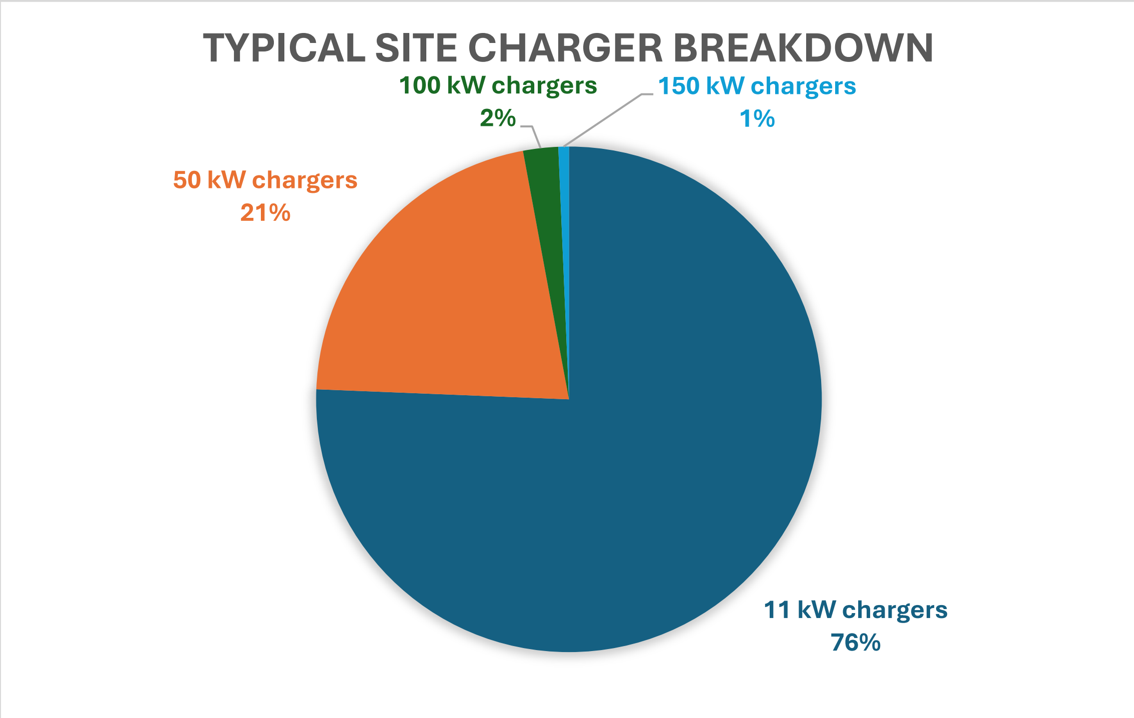


Figure 1. Pie chart showing the charger breakdown at a typical site.

The emerging hypothesis from the analysis is that most police sites are unlikely to require exclusively high-power charging solutions. Instead, many sites may operate effectively with a mixed infrastructure approach combining:

- Overnight slow charging (7–22 kW) for routine operational vehicles with extended dwell periods at base, which is expected to form the majority of the charging requirement by volume.
- Rapid charging (50 kW) for operational resilience and vehicle turnaround, particularly for response vehicles that may need to return to service quickly between shifts.
- Ultra-rapid charging (100–200 kW) selectively deployed for specialist or high-utilisation assets, and potentially at shared or regional hub locations.

6.2 Mix of Slow, Rapid, and Ultra-Rapid

The table below outlines the estimated number of chargers needed across each speed type from the analysis. Charger categories "Slow", "Rapid", "Ultra-Rapid" follows recognised naming convention by Department for Transport.

Charger Rating (DfT standard charger thresholds)	Number of chargers required	Percentage Mix
Standard (7kW – 22kW)	13,830	75.6%
Rapid (50kW)	3,922	21.4%
Ultra Rapid (100 – 200kW)	533	3.0%

6.3 Number and Share of Sites Requiring Grid Upgrades

This analysis assumes that all charging infrastructure is delivered using new or upgraded grid connections. The project team did not have consistent access to existing site electrical capacity data, base electrical demand, or confirmed spare network headroom across the police estate. As a result, it was not possible to robustly determine where existing supplies could accommodate additional EV charging demand without reinforcement. A conservative approach has therefore been adopted to avoid understating infrastructure costs at a national level.

This assumption is likely to overestimate costs at smaller sites installing limited numbers of chargers, where spare electrical capacity may already exist and where chargers could potentially be connected to the existing supply without significant reinforcement. However, the financial impact of this overestimation is relatively limited because the connection costs associated with small charging deployments are comparatively low.

For larger charging installations, significant electrical upgrades or dedicated new connections are expected to be required in most cases regardless of existing site capacity. The assumption therefore has minimal impact on the estimated costs for larger operational sites, which represent the majority of national infrastructure cost.

Of the 298 sites analysed by Dynamon, the Grid upgrade requirement breakdown is as follows.

- LV Upgrade: 70 – 200 kVA – 227 sites (**76.2%)**
- LV new / small HV – 63 sites (**21.1%)**
- HV new (11kV) – 8 sites (**2.7%)**

Grid connection and reinforcement is one of the most significant variables in the national infrastructure requirement. Sites are expected to fall into three broad categories:

Site Category	Description	Likely Intervention Level
Low complexity	Existing electrical capacity likely sufficient for early transition phases. May accommodate slow charging within current supply.	Minimal
Moderate complexity	Some electrical upgrade work likely required (e.g. new three-phase supply, distribution board upgrade, or minor DNO connection) but achievable within standard infrastructure delivery programmes.	Moderate
High complexity	Significant electrical, estate, or operational constraints. Likely to require a new or substantially upgraded HV connection, substation works, or major site adaptation.	Significant

6.4 Likely Needs Across Different Kinds of Sites

The national infrastructure requirement is not evenly distributed. Larger operational sites with higher fleet concentrations and more intensive vehicle utilisation patterns will generally require more substantial infrastructure and higher-power charging. Smaller stations with lower fleet numbers and longer overnight dwell periods may be serviceable with relatively modest installations.

The analysis also highlights that infrastructure need is driven not only by fleet size but by operational pattern. A site with a high proportion of response vehicles requiring rapid turnaround will have a different infrastructure profile from a site dominated by administrative pool vehicles, even if the total fleet size is similar.

7. National Cost Estimates

This section presents the headline UK-level cost estimate for enabling police fleet electrification through charging infrastructure deployment and associated grid works. Costs are presented in GBP(£), exclusive of VAT, and exclude costs such as vehicle procurement and ongoing operational costs as outlined in section 4.2.

7.1 Charger Procurement

Power Rating	Number of chargers required	Hardware procurement cost totals
11 kW	13,830	£24,893,422
50 kW	3,922	£70,596,957
100 kW	410	£14,348,975
150 kW	123	£6,149,561

Per-charger costs scale non-linearly with power. A 7 kW AC unit can typically be installed for around £1,000–£2,000, while a 200 kW DC unit may cost £70,000–£125,000 once hardware, civils, and commissioning are included. The step change occurs above 50 kW, where DC power conversion, dedicated cabling, and often HV connections become necessary.

The following table summarises indicative per-unit costs by charger power rating:

Power Rating	Type	Hardware (per unit)	Installation (per unit)	Total per Unit
7 kW	AC, single-phase	£500–£900	£500–£1,200	£1,000–£2,100
11-22 kW	AC, three-phase	£1,200–£2,500	£1,500–£3,500	£2,700–£6,000
50 kW	DC rapid	£12,000–£25,000	£8,000–£20,000	£20,000–£45,000
100 kW	DC ultra-rapid	£25,000–£45,000	£15,000–£30,000	£40,000–£75,000
150 kW	DC ultra-rapid	£40,000–£65,000	£20,000–£40,000	£60,000–£105,000
200 kW	DC ultra-rapid	£50,000–£80,000	£25,000–£45,000	£70,000–£125,000

7.2 Installation and Site Works

Power Rating	Number of chargers required	Installation + commissioning + site adders
11 kW	13,830	£51,169,811
50 kW	3,922	£63,929,466
100 kW	410	£10,167,274
150 kW	123	£4,095,607

Installation costs are highly site-dependent and include groundworks, trenching, cabling from distribution boards or feeder pillars to charging units, concrete foundations, bollard protection, bay markings, signage, and electrical commissioning.

For larger deployments, the balance shifts: at low power levels the hardware and labour are roughly comparable in cost, while at higher power levels the hardware dominates and installation is primarily about delivering sufficient power to the unit.

7.3 Connection and Reinforcement Costs

Connection Size	Number of Connections	Base Connection Cost (inc Firm connection)	Site Survey + cable cost + DNO fee
Up to ~70 kVA	-	-	-
70–200 kVA	1550	£321,590,844	£56,918,590
200–500 kVA	430	£97,237,335	£15,796,789
500 kVA – 1 MVA	48	£12,510,398	£1,853,199
1–2.5 MVA	7	£2,225,950	£264,743
2.5–5 MVA	-	-	-

Grid connection is the single most variable component of any electrification project and frequently the largest line item. Costs depend on the capacity required, the voltage at which the connection is made, the distance from the existing network, and whether wider reinforcement is needed.

The following table summarises indicative connection costs by capacity:

Connection Size	Voltage Level	Indicative Cost	Typical Lead Time
Up to ~70 kVA	LV (existing)	£0–£10,000	Weeks
70–200 kVA	LV upgrade	£15,000–£60,000	3–6 months
200–500 kVA	LV new / small HV	£60,000–£150,000	4–9 months
500 kVA – 1 MVA	11 kV HV	£100,000–£350,000	6–12 months
1–2.5 MVA	11 kV HV (major)	£300,000–£1,000,000	9–18 months
2.5–5 MVA	33 kV HV	£1,000,000–£5,000,000	18–24+ months

7.4 Allowances and Contingencies

Given the inherent uncertainty in national-level cost estimation, the report includes scenario-based contingency allowances. These reflect the variability in site-specific conditions and the possibility that a proportion of sites will face complications not captured in the central estimate.

The scenarios reflect the complexity of the site, expressed via their Geography as; suburban, rural, or urban. Full records of all assumed site complexities and multipliers can be found in the included cost model spreadsheet.

In addition, the resilience uplift reflects the nature of specifying the charge requirements needed to deliver effective charging in the most efficient way to meet current vehicle charging needs. Forces will need resilience to cover additional demand from potentially expanding fleets and failure redundancy across installed charger infrastructure.

Costs related to inflation across the period of the project are not adjusted for and must be applied to maintain accuracy should these results be used to calculate future costs.

Contingency	Analysed Forces (10)	Estimated Forces (38)	TOTAL
Civils Complexity Uplift	£368,490	£4,667,180	£5,035,670
Resilience Uplift	£31,726,500	£401,838,027	£433,564,527
Project Management + Contingency	£15,705,232	£198,917,609	£214,622,841

7.5 Site complexity Mix

The chart below sets out the assumed split of sites by geography which underpins the civils complexity uplift applied in the modelling.

Suburban sites account for the largest share and therefore drive much of the headline cost, but it is the rural and urban categories that are anticipated to introduce the greatest variability around the central estimate. Rural sites, in particular, are likely to be the most divergent: while fewer in number, they are more exposed to weaker grid capacity, longer connection distances, and higher per-site civils costs, meaning a relatively small shift in their assumed mix or complexity can have a disproportionate effect on the total. Urban sites carry their own pressures around space constraints and connection competition, but tend to cluster around a narrower cost range.

A more granular, site-specific analysis of the rural cohort is therefore likely to yield the largest refinement in confidence around the national figure, even though suburban sites dominate by volume.

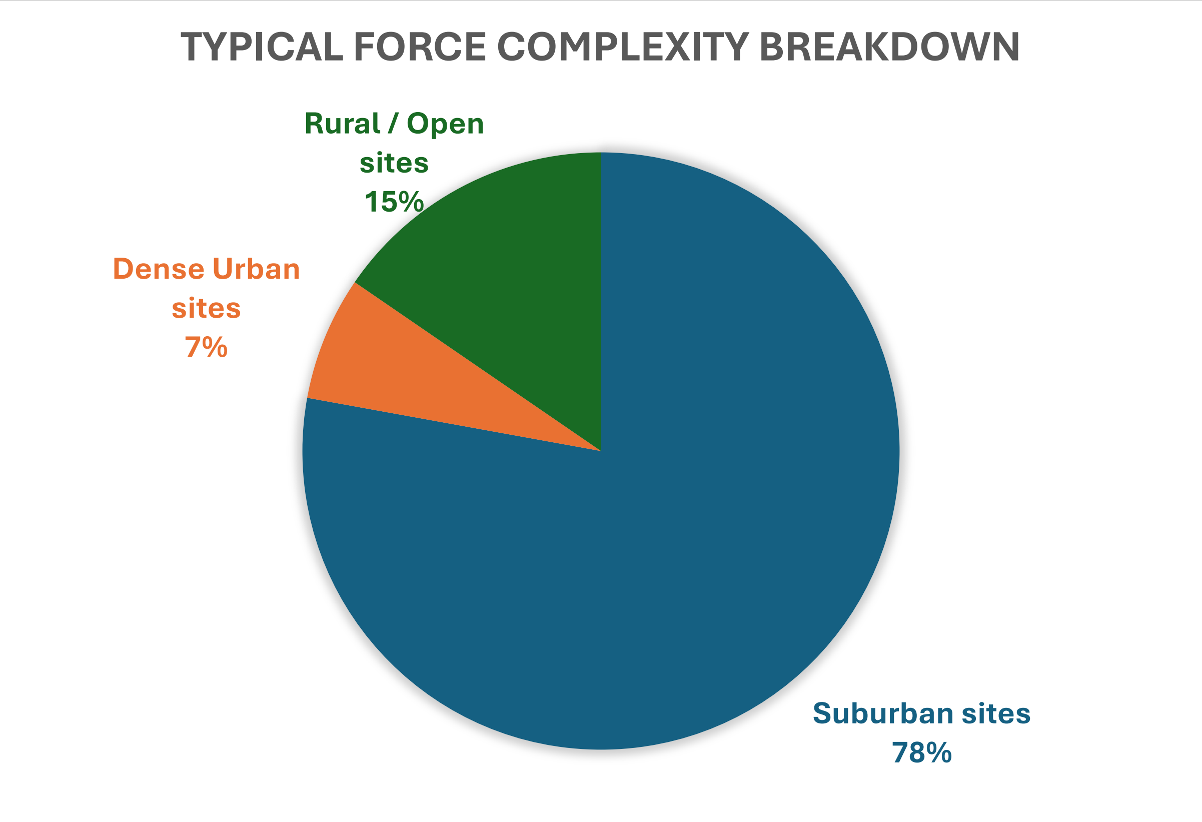


Figure 2. The typical split of site complexity per force.

7.6 National Cost Summary

The report presents a typical cost scenario based upon a weighted typical peak demand (85^{th} Percentile) with charger management required. This approach helps provide a meaningful national estimate for funding and planning purposes, which presents an efficiently costed solution that includes built-in resilience and redundancy. In addition, the variability of charger hardware and charger installation costs shown in section 7.1 (charger procurement) have been utilised to calculate a lower and upper range estimate for analysed forces, externally assessed forces and the full UK wide estimate.

Cost Item	Cost / Number	Lower cost range	Upper cost Range
Site-level total (from Site Outputs)	£102,956,522	£96,634,762	£110,306,682
Number of Forces assessed	10		
Additional Forces Total	£195,492,075	£183,488,426	£209,448,432
Number of Additional Forces assessed	4		
Estimated Forces Total	£1,108,523,361	£1,040,457,555	£1,187,661,855
Number of Forces estimated	34		
Scale Factor Police Scotland	7		
Scale Factor Police Service NI	4		
Scale Factor Met Police Service	10		
COMBINED TOTAL	**£1,406,971,958**	**£1,320,580,743**	**£1,507,416,969**

8. Typical Site Examples

This section illustrates the national findings through practical examples of what the transition might look like at individual sites. These examples are intended to make the headline cost figures more tangible and credible, particularly for non-technical audiences.

8.1 Site Which Is Infrastructure Ready

Small police station with moderate fleet: 15-25 vehicles

A smaller police station with an indicative fleet size of 15 to 25 vehicels, moderate fleet utilisation and existing electrical headroom may only require limited overnight charging infrastructure to support early transition phases. With a charger-to-vehicle ratio of approximately 0.3–0.5 (reflecting that not all vehicles are on-site simultaneously and overnight charging windows allow sequential use), a deployment of around 8 chargers can comfortably serve this fleet size. In this scenario, the primary barrier is likely to be charger procurement and installation cost rather than major reinforcement.

- Predominantly overnight charging using 7–22 kW AC chargers.
- Limited or no requirement for rapid or ultra-rapid charging.
- Limited smart charging technology required as vehicles will plug in overnight.
- Minimal civil engineering works beyond cabling, foundations, and commissioning.
- Grid connection likely serviceable within existing supply or with minor LV upgrade.
- Phased transition feasible within existing estate constraints.

Indicative all-in cost: **£40,000–£80,000** for a deployment of approximately 8 chargers at up to 22 kW.

8.2 Site Which Requires Site Adaptation for New Charging

Medium-sized divisional headquarters: 50-80 vehicles

A medium-sized operational site with an indicative fleet of 50 to 80 vehicles and higher vehicle utilisation may require a combination of overnight charging and rapid charging capability. With a charger-to-vehicle ratio of approximately 0.2–0.3, a deployment of around 14 chargers can support this fleet through a combination of overnight slow charging for the majority of vehicles and rapid top-up charging for high-utilisation response and patrol vehicles. Some electrical upgrades may be required, but these may still be achievable within standard infrastructure delivery programmes.

- Mixed of slow (22 kW) and rapid (50 kW) charging model.
- Moderate electrical upgrade requirements, potentially including a new HV connection or substantial LV upgrade.
- Increased operational scheduling considerations to manage peak demand.
- Potential benefit from smart charging and load management to reduce connection capacity requirements.
- Some site adaptation works, including trenching, additional hardstanding, or reconfiguration of parking areas.

Indicative all-in cost: **£220,000–£430,000** for a deployment of approximately 10 AC chargers and 4 DC rapid chargers.

8.3 Site Which Is Constrained and Requires Major Grid or Site Adaptation

Large operational headquarters or custody suite: 150-250 vehicles

A large or strategically critical operational site with an indicative fleet of 150 to 250 vehicles may require substantial reinforcement, estate redesign, or operational adaptation to support full electrification. With a charger-to-vehicle ratio of approximately 0.3–0.5, this translates to a deployment of 50–120 chargepoints across a mix of power ratings. These sites represent the most complex and costly elements of the national requirement.

- High concentration of slow (22kW), rapid (50 kW) and ultra-rapid (100–150 kW) charging to support response vehicles and high-utilisation assets.
- Major grid reinforcement requirement, potentially including a new 11 kV HV substation (typically a new 1-3 MVA connection capacity).
- Constrained estate footprint requiring creative design solutions, potentially including underground cabling, compact substation designs, or phased deployment.
- Significant operational dependency on charging reliability, requiring consideration of resilience measures such as dual-feed connections or standby generation.
- Potential role as a regional or shared charging hub serving multiple blue light services.

Indicative all-in cost: **£1,050,000–£2,200,000** or more for the deployment of 30-50 AC chargers (11-22kW), 15-40 DC chargers (50kW) and 5-15 ultra-rapid chargers (100-150kW), depending on the scale of grid reinforcement and resilience requirements.

9. Regional and Collaborative Opportunities

9.1 Context

One of the emerging themes from police fleet electrification work is that infrastructure planning may benefit from being considered at multiple geographical levels simultaneously.

Historically, fleet infrastructure has often been planned at an individual depot or organisational level, with each site treated as a largely self-contained infrastructure challenge. While this approach remains appropriate for many operational requirements, electrification introduces new considerations around grid capacity, infrastructure utilisation, resilience, and capital efficiency which may create opportunities for greater regional coordination.

This is particularly relevant for higher-power charging infrastructure. While lower-power overnight charging may often remain most practical at force-owned sites, rapid and ultra-rapid infrastructure may in some circumstances benefit from a more collaborative approach, particularly where:

- multiple public sector organisations operate within overlapping geographies
- sites face similar grid constraints
- infrastructure utilisation profiles are complementary
- higher-power infrastructure would otherwise be duplicated across nearby sites
- resilience requirements create value in shared backup infrastructure

The cluster analysis workstream within this programme has therefore been designed to explore whether collaborative infrastructure approaches could reduce infrastructure cost or improve delivery feasibility in selected regions.

9.2 Shared Infrastructure

The analysis undertaken for this report suggests that shared charging models may offer meaningful opportunities to reduce cost and improve infrastructure utilisation in selected locations. The concept is not that all infrastructure should be shared, but rather that different charging functions may be delivered through different models:

- Lower-power, lower-cost overnight charging would typically remain on-site at force-owned depots, supporting routine operational charging.
- Higher-power rapid and ultra-rapid charging could in some cases be delivered through shared hubs, serving multiple blue light services and potentially other public sector fleets.
- Where sites are geographically proximate, shared grid connections and substation infrastructure could reduce the per-organisation cost of high-power connections.

The potential cost reduction from shared infrastructure models is estimated at 15 - 30% of per-organisation costs where co-location is operationally viable. This assumes that the scenarios where sharing should be considered fall in the highest cost areas of the transition - higher powered charger units and higher grid infrastructure estimates. However, the operational feasibility of shared models depends on a number of factors including geographic proximity, compatible shift patterns and vehicle turnaround requirements, governance and cost-sharing arrangements, and willingness of partner organisations to commit to long-term shared investments.

9.3 Cluster Analysis Example

As part of the broader programme of work, three locational depot clusters comprising police, fire, ambulance, and local authority depots have been analysed to test the business case for shared charging infrastructure. The regions chosen for detailed analysis include Nottinghamshire, West Yorkshire, and South Yorkshire, selected to represent different geographic and operational contexts.

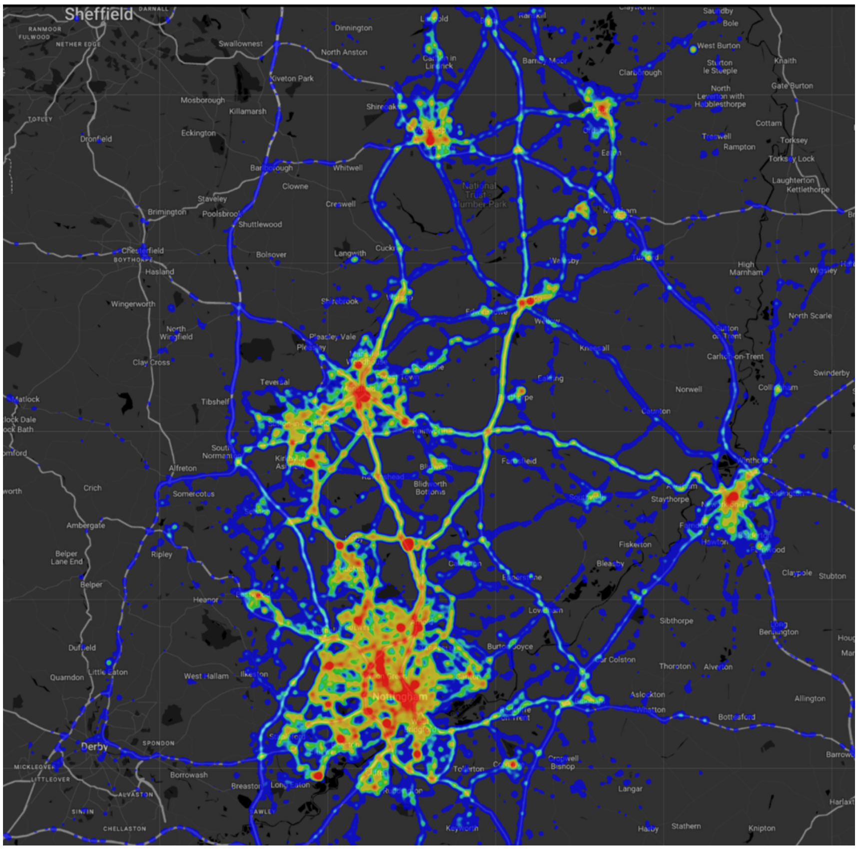


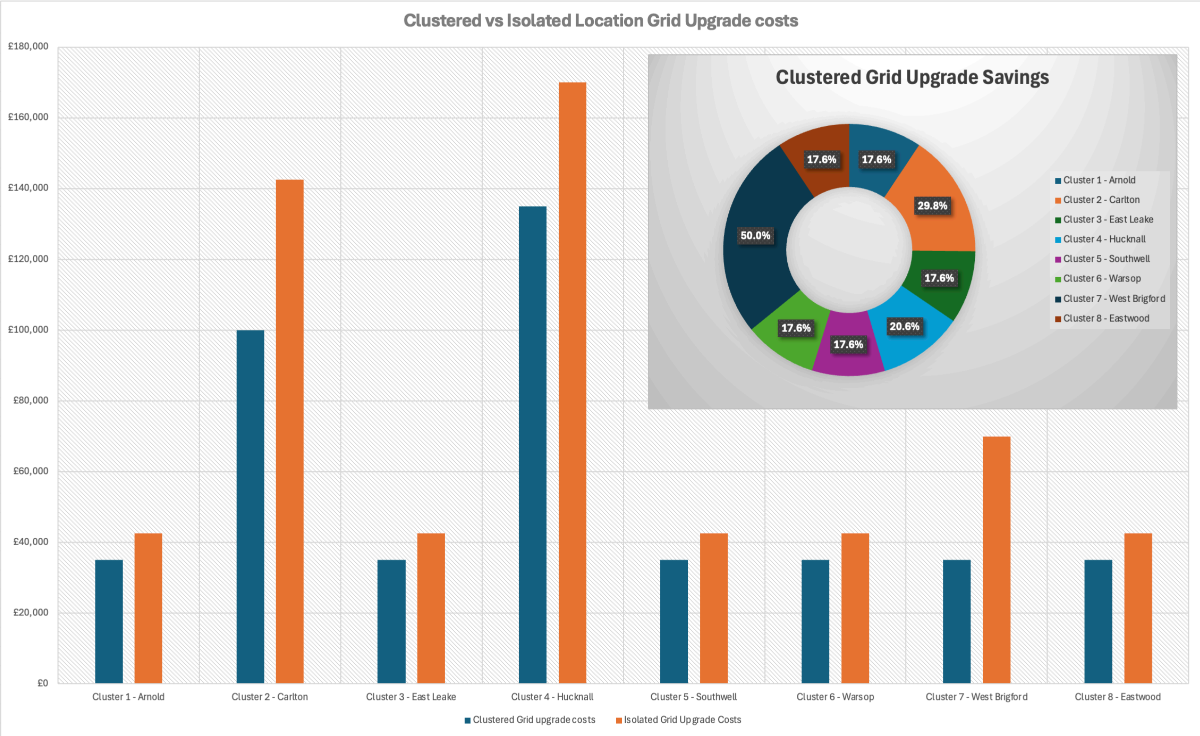
Figure 3. Heatmap highlighting part of the geospatial analysis undertaken to identify potential cluster locations.

The clustering analysis uses detailed geospatial and energy demand data to identify potential shared charging sites across blue light services. This involves mapping the geographic proximity of depots from different services, modelling the combined energy demand profiles, and assessing whether co-located or shared infrastructure could reduce overall grid connection costs and charger duplication.

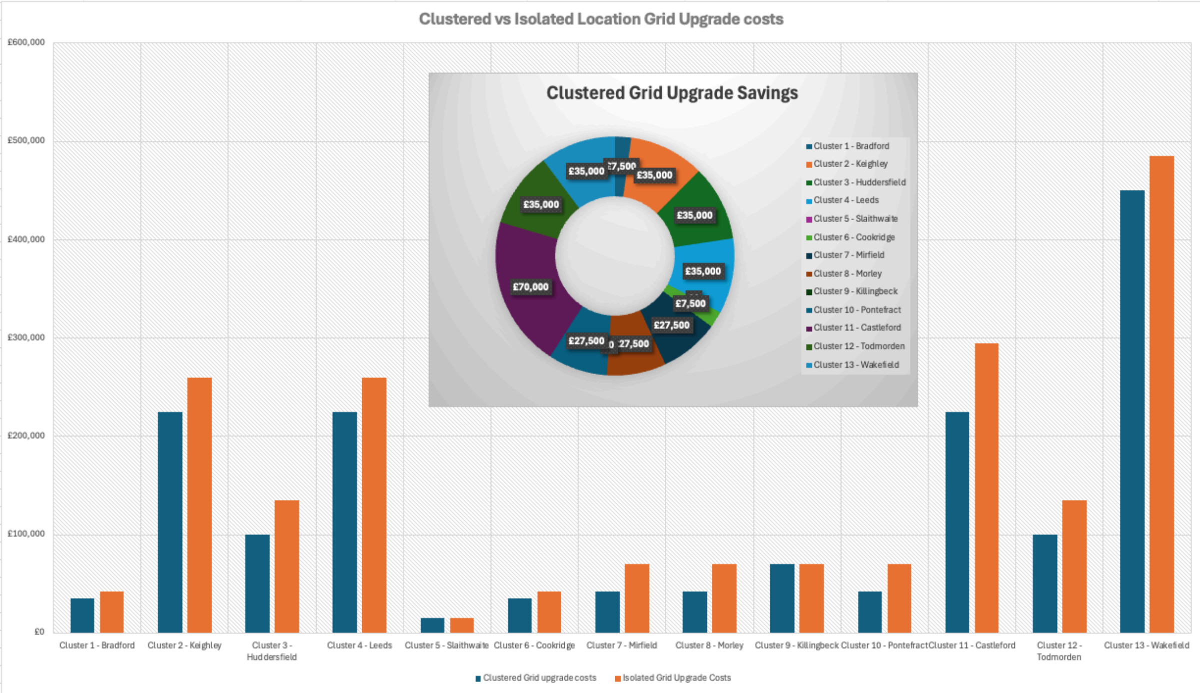
Operational continuity is one of the primary concerns blue light forces express when thinking about vehicle electrification. With that in mind, an assumption was made within the clustering analysis that charge point infrastructure would not be diversified and shared, only grid connection and grid supply infrastructure would be shared, allowing forces to maintain the original location and quantity of planned charge point equipment. Further analysis of charger numbers and duplication (or under-use) of chargers at co-located sites could identify further costs savings from sharing the charger infrastructure itself.

The full clustering reports for each region can be reviewed separately however a summary is included below.

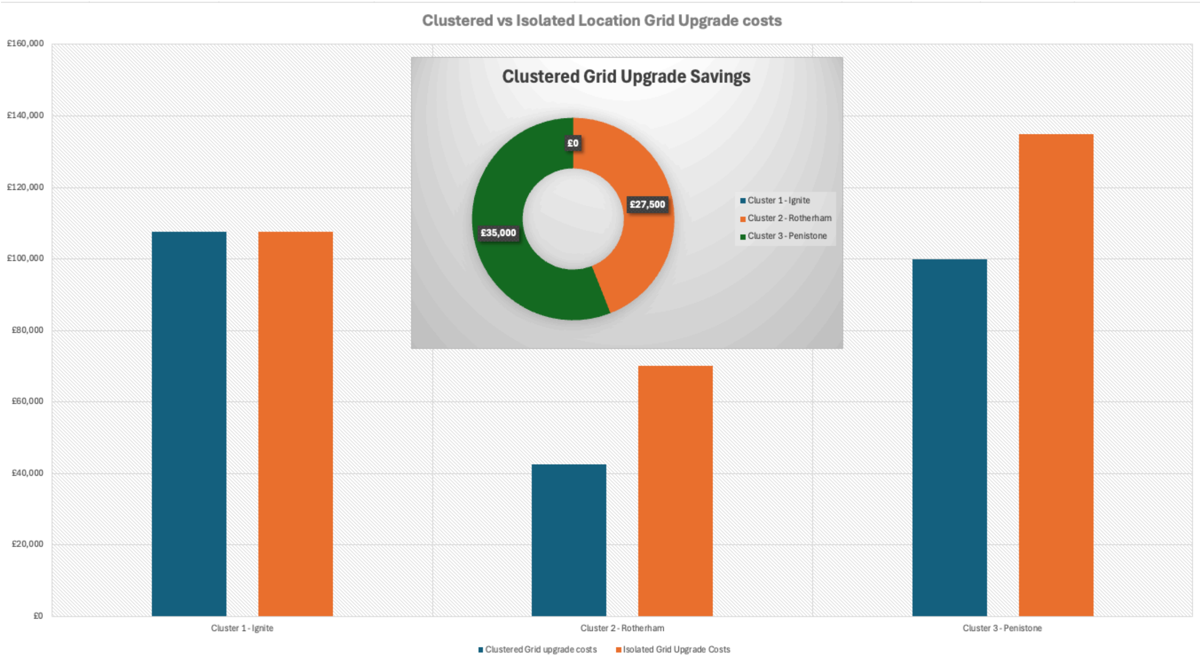
Nottinghamshire Cluster Analysis (8 shared sites suitable for clustering)



West Yorkshire Cluster Analysis (13 shared sites suitable for clustering)



South Yorkshire Cluster Analysis (3 shared sites suitable for clustering)



Cluster Analysis Summary

Cluster Force	% Grid upgrade savings within shared sites	% Grid upgrade savings across entire force	Total reduction in Grid Upgrade costs
Nottinghamshire	25.2%	4.5%	£300,000
West Yorkshire	17.6%	3.1%	£667,875
South Yorkshire	20.0%	1.0%	£125,000
UK Wide extrapolation	**20.1%**	**2.9%**	**£12,573,372**

The cluster analysis work is presented in this report as an illustrative strategic option rather than a fully operationally validated deployment model. Its value lies in demonstrating the infrastructure and cost trade-offs, while acknowledging that operational changes would need to be considered locally before any shared model could be implemented. From the 3 forces assessed for clustering, the grid upgrade savings potential varied significantly. A wider study of each force would be required to make an accurate comparison.

The cluster work package begins to lay the foundation for collaboration between stakeholders. However, key questions from the cluster work include:

- Where collaboration may be operationally viable based on geographic proximity and compatible demand profiles.
- Where grid constraints may encourage shared approaches by concentrating high-power demand at optimally located sites.
- Where collaboration may reduce duplication of the most expensive infrastructure, particularly high-voltage connections and substation works.
- Where operational realities may limit sharing opportunities, for example due to security requirements, access restrictions, or incompatible shift patterns.

9.4 Operational Considerations for Shared Infrastructure

The meetings and analysis conducted during this project have highlighted several operational factors that influence the suitability and design of shared charging infrastructure:

- Vehicle registration and identification: Shared sites serving multiple organisations may require systems for vehicle identification, access control, and usage tracking to ensure fair allocation and cost recovery.
- Dwell times and scheduling: The viability of shared rapid charging depends on vehicles from different services having compatible turnaround requirements. Where dwell times are short and unpredictable, shared infrastructure must be sized for peak concurrent demand.
- Security requirements: Blue light sites, particularly police premises, may have security constraints that limit access by personnel from other organisations. This can restrict the practical co-location of charging from different services at sensitive sites.
- Distance between adjacent sites: The distance between offices where people are based and where vehicles are charging should be considered to ensure there is no impact on response times for vehicles.
- Blended delivery models: The emerging view from project discussions is that the most realistic model is often a blended one, with lower-power overnight charging

retained on-site for routine use, and higher-power shared infrastructure used for faster turnaround or more demanding duty cycles. This approach reduces the need to duplicate expensive high-power infrastructure at every site while preserving operational practicality.

The report should also acknowledge that collaboration opportunities may extend beyond policing itself. In some areas, there may be opportunities to coordinate infrastructure planning with:

- other emergency services
- local authorities
- public transport operators
- logistics and freight operators
- private sector charging providers

Examples of these discussions are already beginning to emerge in parts of the UK, including conversations around shared access to charging infrastructure developed by external fleet operators.

10. Key Constraints, Exclusions, and Limitations

This section explicitly states the constraints, exclusions, and limitations that apply to the estimates in this report. Transparency in this area is essential so that readers can properly interpret the findings and so that future iterations of the analysis can be improved systematically.

10.1 Data Gaps

- Not all 48 UK police forces have been directly analysed. The national estimate relies on extrapolation for forces outside the project scope and those without telematics capability.
- Telematics coverage varies between forces. Some forces have comprehensive telematics across the fleet; others have partial coverage or no telematics at all.
- Site-level electrical infrastructure data (existing supply capacity, fuse ratings, available headroom) was not uniformly available for all sites.
- Data sharing from multiple police forces and external consultants is ongoing. While efforts to collect and consolidate reports aim to cover most UK forces, the completeness of the dataset continues to evolve and some forces may only be represented through extrapolation in this edition of the report.

10.2 Excluded Costs

The following cost categories are excluded from the national estimate and should be considered separately in any full programme cost assessment:

Excluded Item	Reason for Exclusion
Vehicle procurement costs	Outside the scope of this infrastructure-focused report.
Staffing and operational redesign	Limited evidence base; requires force-by-force assessment.
Charging software platforms (CPMS)	Significant supplier variation; costs are operational rather than capital.
Estate redevelopment unrelated to charging	Difficult to attribute directly to fleet electrification.
Training and change management	Not yet robustly quantified at a national level.
Electricity tariffs and energy costs	Operational cost; outside capital infrastructure scope.
Battery storage and on-site generation	Noted as cost-reduction options but not included in baseline estimate.
Inflation	This is a future predicted value that would dilute the accuracy of the given output. Inflation must be accounted for if required.

10.3 Methodological Limitations

- Extrapolation from analysed forces to the full UK estate introduces uncertainty, particularly for forces with atypical fleet compositions or uncommon geographic characteristics.
- Grid connection and reinforcement costs are the largest area of uncertainty. The estimates used in this report are based on published guidance, historic project data, and industry benchmarks rather than site-specific DNO quotations.
- The cost ranges presented reflect current market conditions (2026 pricing). Hardware, installation, and connection costs may change over the programme period due to market dynamics, supply chain pressures, or changes to Ofgem connection charging policy.
- Operational changes that may be required to support electrification (such as changes to shift patterns, vehicle allocation, or duty cycle management) have not been fully modelled.

11. Key Learnings

Throughout the program, key stakeholders have expressed thoughts on the electrification challenge. The following key learnings have emerged from the analysis undertaken for this report:

11.1 National Estimates Are Possible, but Must Remain Transparent

A national cost estimate is useful and necessary for policy discussions and funding applications, but it should not be presented as fully precise. The strength of this report comes from clearly stating how figures are derived, what is included and excluded, and where uncertainty is greatest. This allows the estimate to be updated and refined as more data becomes available.

11.2 A Mixed Charging Model Is Likely

Most sites will not require a uniform bank of high-power chargers. The analysis suggests that a mixed approach, combining overnight slow charging for routine use with selective rapid and ultra-rapid provision for operational resilience, is likely to be both more practical and more cost-effective than a one-size-fits-all deployment strategy.

11.3 Early Adoption Makes Most Economical Sense

The key points highlighted in this report show how a phased approach and starting early will benefit fleets economically due to spreading capital investment across multiple years as well as being early in the potential queue to get grid upgrades, particularly at energy intensive sites.

11.4 Blue Light Operations Carry Specific Cost Drivers

Emergency service operations face cost pressures that distinguish them from typical commercial fleets. These include the need for charging resilience and redundancy, space-constrained estates, leased buildings requiring landlord consent, and 24/7 operational availability that limits the use of timed or flexible connections. These factors typically add 15–35% to the cost of an equivalent commercial depot electrification.

11.5 The Transition Challenge Is Real, but Uneven

The scale of infrastructure change required varies significantly across the police estate. Some sites are substantially closer to readiness than others, and the nature of the barrier differs between locations. A useful reframing for stakeholders is to move beyond the generic statement that electrification is difficult and instead identify what the specific barrier is at each type of site.

11.6 The Barrier Is Not Only The Charger

For many sites, the true challenge sits behind the charger itself. Available grid capacity, reinforcement timelines, estate constraints, and operational practicality may all be as important as, or more important than, charger procurement cost. The grid connection and reinforcement component is frequently the largest single cost item for medium and large sites.

11.7 The Scale May Be More Manageable Than Sometimes Assumed

One important finding from the analysis is that a meaningful proportion of the estate may be able to support at least some early-phase electrification with relatively limited infrastructure intervention. While the national total cost is substantial, the distribution of that cost is uneven, and a phased approach targeting the most ready sites first could deliver early progress while more complex sites are planned in detail.

11.8 Smart Fleet Management Can Significantly Reduce Infrastructure Requirements

The analysis demonstrates that the relationship between fleet size and infrastructure need is not fixed. Smart fleet management, including optimised scheduling, load management, and duty cycle adjustment, can materially reduce the number of chargers required and the scale of grid upgrades needed. This means that the transition may be more affordable than initial desktop estimates have suggested, provided that forces invest in the operational planning and telematics capability needed to support intelligent infrastructure specification.

11.9 Early Adoption Makes Most Economical Sense

The key points highlighted in this report show how a phased approach and starting early will benefit fleets economically due to spreading capital investment across multiple years as well as being early in the potential queue to get grid upgrades, particularly at energy intensive sites.

12. Recommendations and Next Steps

This report is intended not only to describe the current position but to support the next phase of action. The following recommendations are prescribed to ensure this work continues.

12.1 Seek Additional Funding and Resourcing

This report should support a funding case to government departments and relevant national stakeholders by demonstrating both the scale of the challenge and the value of continued detailed work. The expanded Depot Charging Scheme, which can cover up to 70% of charging infrastructure cost up to £1 million per site, could represent an opportunity for some sites and portions of fleets.

In addition, the report should be used to approach The Home Office and DESNZ to provide indicative figures for Blue Light UK wide roll-out in support of future government decision making around grant and incentives in the EV space.

12.2 Define Emergency Service Sites as "Strategic Demand Sites" for Electrical Connections

In areas where grid connection and upgrade queues prohibit police sites from connecting in time to operate an increasing amount of electric vehicles, police sites may not be able to operate from and deliver service to the local community. The government should seek to a way to ensure the sites to be prioritised to ensure public interests are met.

12.3 Improve Telematics Coverage and Access

One of the clearest findings emerging from the work to date is the importance of high-quality operational data. Telematics-led analysis provides a significantly stronger evidence base for infrastructure planning than high-level fleet assumptions alone. Expanding telematics coverage across additional police forces would improve the accuracy of future national estimates and reduce the reliance on extrapolation or proxy modelling.

Engage with Telematics providers to support with electrification. Expanding telematics to include detailed analysis of the use of electric vehicles in the fleet (including the impact of driver style) and operational impacts will help the roll out of infrastructure. With this supporting future integration between telematics and smart-charging as a secondary consideration.

12.4 Develop Force-by-Force and Site-by-Site Plans

The national estimate provides a strategic overview, but delivery will ultimately depend on much more detailed planning at force and site level. Each force should develop a phased transition plan that identifies priority sites, sequences infrastructure deployment, and aligns with vehicle procurement timelines and available funding.

12.5 Progress Engagement with DNOs and Infrastructure Stakeholders

The next stage of work should strengthen the evidence on grid connection cost, connection feasibility, and likely timescales. This should include obtaining Budget Estimates from relevant DNOs for representative sites, engaging with DNO strategic planning teams to understand network capacity and reinforcement programmes, and exploring the use of

Independent Connection Providers (ICPs) to reduce connection costs and compress timelines.

The project has already begun conversations with DNOs for cost and timeline estimates. This engagement should be escalated where necessary to ensure that assumptions used in the national cost model are validated against real connection offer data. Transparency in grid cost assumptions is essential, as this is the single largest area of uncertainty in the national estimate and the component most likely to be scrutinised by government funders.

Conversations with stakeholders such as NESO/NGED highlighted further work to feed force plans and timescales back in to their teams to help them gauge regional requirements and requests for information to inform future upgrades etc.

12.6 Explore Regional Collaboration and Shared Charging Models

There is a credible case for further work on shared or partially shared infrastructure, including collaboration with other blue light services and public sector partners. The cluster analysis work undertaken as part of this programme under work package 3.1, summarised in this report, provides an initial evidence base that can be developed further. Forces in geographic proximity should be encouraged to explore joint infrastructure planning.

12.7 Maintain a Living Evidence Base

All assumptions in this report have been documented in a form that allows later updating. As better information becomes available on charger cost, connection cost, grid constraints, or site readiness, the national estimate should be refreshed. This report should be treated as a living document that improves with each iteration rather than a static endpoint.

The Dynamon ZERO software is available to all fleets who had analysis completed as part of this project. The cost assumptions and calculation model (Appendix B) can also be made available on request.

13. Conclusion

The electrification of the UK police fleet is achievable, but it is neither a single national project nor a uniform one. It is the sum of 48 force-level transitions, shaped by very different fleets, sites, geographies and grid conditions. The evidence assembled in this report gives the first defensible national view of what that transition involves.

The headline figures should be read in that spirit. A national infrastructure requirement of the order of £1.4 billion is significant, but it is not unmanageable when set against the size of the estate it supports and the timescales available. The expanded Depot Charging Scheme could cover a portion of eligible site costs, and smarter fleet management, shared infrastructure between blue light services, and earlier engagement with DNOs all have the potential to compress both cost and delivery risk.

What the analysis makes clear is that the principal barrier is not hardware. It is the combination of grid connection cost and timeline, site-level complexity, and the quality of the evidence base on which planning decisions are made. Each of these is addressable, but only with sustained engagement between forces, DNOs, and other key stakeholders.

Blue-Light decarbonisation incurs greater complexity than typical private fleets. Authority spec levels of redundancy and resilience leads to higher costs. The discussion around how

Blue-Light EV infrastructure rollout (and supply of EV charger hardware) is prioritised against other industries still needs to be had.

The immediate priorities are therefore practical: expand telematics coverage so future estimates rest on data rather than extrapolation, secure Budget Estimates from DNOs to validate the largest single area of cost uncertainty, and translate the national picture into force-by-force and site-by-site delivery plans. With those foundations in place, the figures presented here can move from indicative to operational, and the police service can transition its fleet on a timeline and budget that are both credible and defensible.

14. Acknowledgements

This study was funded by the Department for Energy Security and Net Zero (DESNZ), whose support made the work possible. It was commissioned by the Midlands Net Zero Hub and delivered by Dynamon Ltd.

We would like to thank the organisations and partners who contributed evidence, data, and expertise to this report, including Cenex, UK Telematics, Airmax, Blue Light Commercial, and the Association of Police and Crime Commissioners. We are grateful to the participating police forces, Distribution Network Operators, and members of the project steering group for their engagement throughout the study.

15. Appendix

15.1 Appendix A: Evidence Sources

The following table summarises the evidence sources used in developing the national estimates.

Key:

Dynamon Study: Direct force analysis undertaken using telematics-led fleet and infrastructure analysis as part of this programme. This analysis uses real operational data, including vehicle duty cycles, energy demand profiles, and site-level infrastructure assessments, processed through Dynamon's ZERO platform.

External Study: A number of force-level reports have been shared by Cenex and other contributors. These reports have been used to strengthen the national estimates.

Extrapolation: 34 forces had no data. The data from the 10 forces studied by Dynamon and the additional forces studied by external parties were combined and extrapolated to achieve the UK-wide picture.

Police Force	Evidence Source
Avon and Somerset	External Study
Bedfordshire	Extrapolated
British Transport Police	Extrapolated
Cambridgeshire	Extrapolated
Cheshire	Dynamon Study
City of London	Extrapolated
Cleveland	Extrapolated
Cumbria	Extrapolated
Derbyshire	Extrapolated
Devon and Cornwall	Dynamon Study
Dorset	Dynamon Study
Durham	Extrapolated
Dyfed-Powys	Extrapolated
Essex	External Study
Gloucestershire	Extrapolated
Greater Manchester	Extrapolated
Gwent	Extrapolated
Hampshire	Extrapolated
Hertfordshire	Extrapolated
Humberside	Extrapolated
Kent	External Study
Lancashire	External Study
Leicestershire	Dynamon Study

Lincolnshire	Dynamon Study
Merseyside	Extrapolated
Metropolitan Police	Extrapolated
Ministry of Defence Police	Extrapolated
Norfolk	External Study
North Wales	Extrapolated
North Yorkshire	Dynamon Study
Northamptonshire	Dynamon Study
Northumbria	Extrapolated
Nottinghamshire	Dynamon Study
Police Scotland	Extrapolated
Police Service of Northern Ireland	Extrapolated
South Wales	Extrapolated
South Yorkshire	Dynamon Study
Staffordshire	Extrapolated
Suffolk	External Study
Surrey	Extrapolated
Sussex	Extrapolated
Thames Valley	Extrapolated
Warwickshire	Extrapolated
West Mercia	Extrapolated
West Midlands	External Study
West Yorkshire	Dynamon Study
Wiltshire	Extrapolated

15.2 Appendix B: Cost Assumptions and Cost Calculation Model

The file listed below (available upon request) contains all the cost assumptions used for hardware, installation, grid connection and contingencies. In addition it contains the working model**:**

Police_Fleet_Infra_Cost_Model-Modified-v3.xlsx

15.3 Appendix C: Glossary

Term	Definition
AC Charging	Alternating current charging, typically at 7 kW (single-phase) or 22 kW (three-phase). The vehicle's onboard charger converts AC to DC.
DC Charging	Direct current charging, typically 50 kW and above. The charger itself converts AC to DC, enabling faster charging rates.
DNO	Distribution Network Operator. The company responsible for the local electricity distribution network.
HV	High Voltage. Typically 11 kV or 33 kV for the purposes of grid connections.
LV	Low Voltage. Typically 400V (three-phase) or 230V (single-phase).
kVA	Kilovolt-ampere. A measure of electrical capacity.
MVA	Megavolt-ampere. 1,000 kVA.
BESS	Battery Energy Storage System.
CPMS	Charge Point Management Software.
ICP	Independent Connection Provider. An accredited alternative to the DNO for delivering connection works.
IDNO	Independent Distribution Network Operator.
MNZH	Midlands Net Zero Hub.
DESNZ	Department for Energy Security and Net Zero.
ZERO	Dynamon's fleet electrification analysis platform.