



Fife Electric Vehicle Strategy

Executive Summary Report

Produced by

Jacobs



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10th October 2024

Executive Summary

The proposed approach is for Fife Council to work with a Charge Point Operator to develop a commercial concession operating model to attract investment interest, allowing the expansion and development of a network of accessible EV chargers across all settlements in Fife.

Fife Council will work with the Charge Point Operator to seek grant funding to complement private sector capital investment.

1.1 Summary of Work and Development Strategy

This report was commissioned by Fife Council to provide an evidence base and strategy for the future expansion of Electric Vehicle (EV) infrastructure in Fife. It will also provide a focus on decarbonising the Council's fleet of vehicles.

The current commercial models typically used when procuring EV infrastructure in the UK have been outlined along with potential sources of funding available to Fife Council. Following this, a recommended commercial approach has been detailed. The Distribution Network Operator (DNO) costs have been calculated by Scottish Power Energy Networks (SPEN) and have been used to assess the total planned investment cost and the capital funding required.

The exact level of expected private sector investment capital is currently unknown. However, given the balance of infrastructure required to provide suitable coverage in both populated/urban and more rural areas of Fife, it is likely that there will be a need to secure grant funding where available. This is most likely via the Electric Vehicle Infrastructure Fund (Transport Scotland, supported by the Scottish Futures Trust (SFT)), to complement private sector capital investment. It is likely that there will be a requirement for the operator to subsidise operations for a number of years in order to fully address the forecast EV infrastructure requirements in Fife.

Fife Council does not have capital funding identified to fund charging post infrastructure. Likewise, the Council does not wish to take on the associated risk and on-going maintenance and management liability. Therefore, the most appropriate approach is a commercial concession model which will transfer the short to medium term risk to the private sector, with grant funding to support the upfront capital costs.

A joint venture approach is not recommended as this would require substantial upfront funding as well as technical input. Although this approach could perhaps provide more leverage and influence, it could be far more challenging to deliver, given the required input of the Council in working with the Charge Point Operators (CPOs).

It is recommended that as part of a concession approach, a portfolio of the required use cases is set out and the more commercially attractive locations (for example, Dunfermline, Glenrothes and St Andrews) are used to leverage commercial funding for the more rural areas. Contract terms should be agreed along this basis in order to encourage investment from CPO's that own, operate and manage EV charging infrastructure, by offering a balanced package of high demand on-routes sites near the M90 and A92 and the more rural, less lucrative sites. Contract terms, such as the length of contract and the associated Key Performance Indicators (KPI's), can be used to influence and enforce a balanced portfolio.

Initial engagement with CPOs has indicated that there is interest in operating within Fife and that there is potential for a portfolio-based approach to a concession model, mixing high and low utilisation sites. There is potential for grant funding to be used to reduce upfront costs for charging post providers, thus ensuring more low utilisation sites can be covered.

1.2 Strategy and Policy Review

There are many policies and strategies at a UK, Scotland, regional and local level that are creating an increasingly supportive framework for the transition to EV.

Key Scotland level Policies include:

- A Network Fit for the Future: Vision for Scotland's Public Electric Vehicle Charging Network (June 2023). Including a new £60 million funding scheme for Local Authorities over the next four years;
- National Transport Strategy Delivery Plan 2020 – 2022 (2020);
- Update to the Scotland Climate Change Plan 2018 – 2032 (2020); and
- National Transport Strategy (NTS2) Second Delivery Plan – 2022-2023 (2022).

Key local Policies include:

- Fife Council Declared Climate Emergency (2019);
- Climate Fife: Sustainable Energy and Climate Action Plan (2020-2030);
- Air Quality Strategy for Fife 2021-2025;
- Fife Local Transport Strategy (2023-2033);
- FIFEplan Supplementary Guidance (2018); and
- Fife Economic Strategy 2017-2027 (2017).

This strategy and policy review has shown that there is support for Fife Council's transition to EVs at all spatial levels, and an increasingly supportive and proactive policy and legislative framework is emerging. Specific aspects of the policies and strategies have also informed later sections of this document covering the evidence base and option development.

1.3 Technology Review

New EV models are coming into the market with larger batteries, which means that ranges are longer than previous models. This is likely to reduce 'range anxiety' amongst consumers and assist with increasing uptake of EVs. However, for successful uptake, EVs must become more widely available and affordable.

The lack of EV production capacity is a global issue, originating in vehicle production plants and battery production facilities across the world. This has been compounded by a microchip shortage, which has also limited the global supply of all vehicle types. Further increases in battery and EV manufacturing facilities are required to bring forward the supply needed to meet ambitious targets for decarbonisation and EV uptake.

There has been a rapid evolution of charging technology with ultra-rapid public charging posts (150kW+) being rolled out. This means reduced times for charging vehicles on-route. Slow, fast, rapid and high-power charging posts suit different locations and charging behaviours. Slow and fast charging posts suit destination charging patterns, where the driver looks to recharge at a location that they will be leaving the car for a considerable amount of time. Rapid and high-power charging posts suit on-route charging, quick recharging at destinations, and supporting the taxi trade due to their high-speed capabilities.

1.4 Electric Vehicle Charging Baseline

The baseline situation for EV charging infrastructure has been analysed and trends have been identified. The current infrastructure in comparison with surrounding Scottish Councils is outlined in figure 1^[1]. This highlights that at an overall level, the current EV infrastructure provision in Fife is relatively good when compared to other parts of Scotland.

^[1] Data collated from the National Charge Point Registry and the National Records of Scotland Mid-2021 Population Estimates

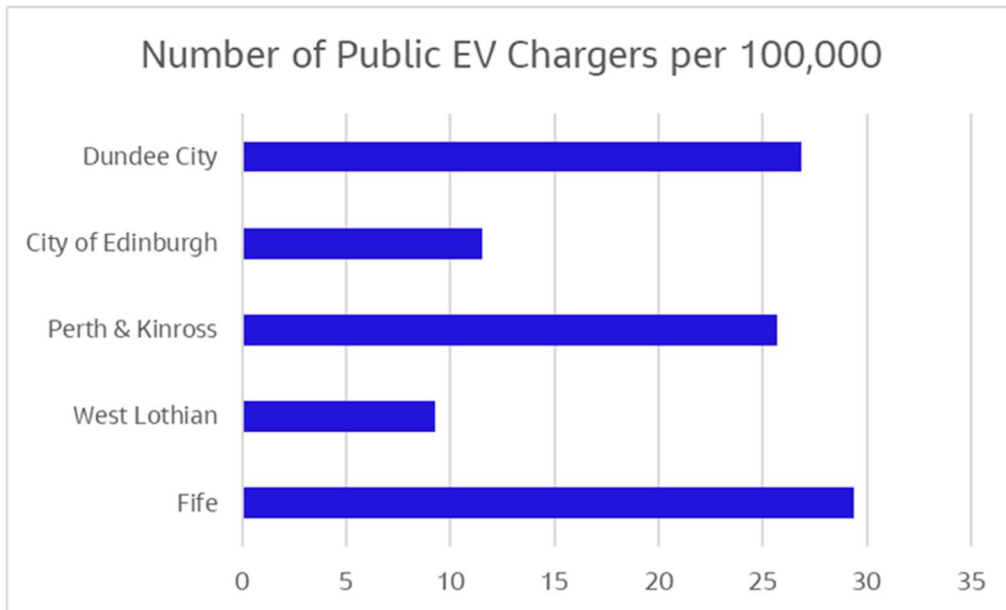


Figure 1 Comparison of EV charging infrastructure

The geographical locations of the current EV charging infrastructure provision are highlighted in figure 2. This shows that current provision is predominantly concentrated around the main settlements of Dunfermline, Glenrothes and Kirkcaldy whilst rural settlements have less coverage including Crail, Oakley and Tayport. However, each of these settlements has at least one charge point. Charging infrastructure is also located near to the main strategic routes, most notably on the M90 near the Queensferry Crossing.

Available utilisation information for the existing infrastructure has been analysed and shows that there is an overall low level of utilisation across the network which could be as a result of the location of chargers not closely aligning with the location of demand or not enough EV users on the network. The key figures from the ChargePlace Scotland back office for the Fife Council public charge points for 2022/23 are:

- 12.52% utilisation
- 44,041 charging sessions

The utilisation of the network has grown year on year since the first charge points were installed in 2013.

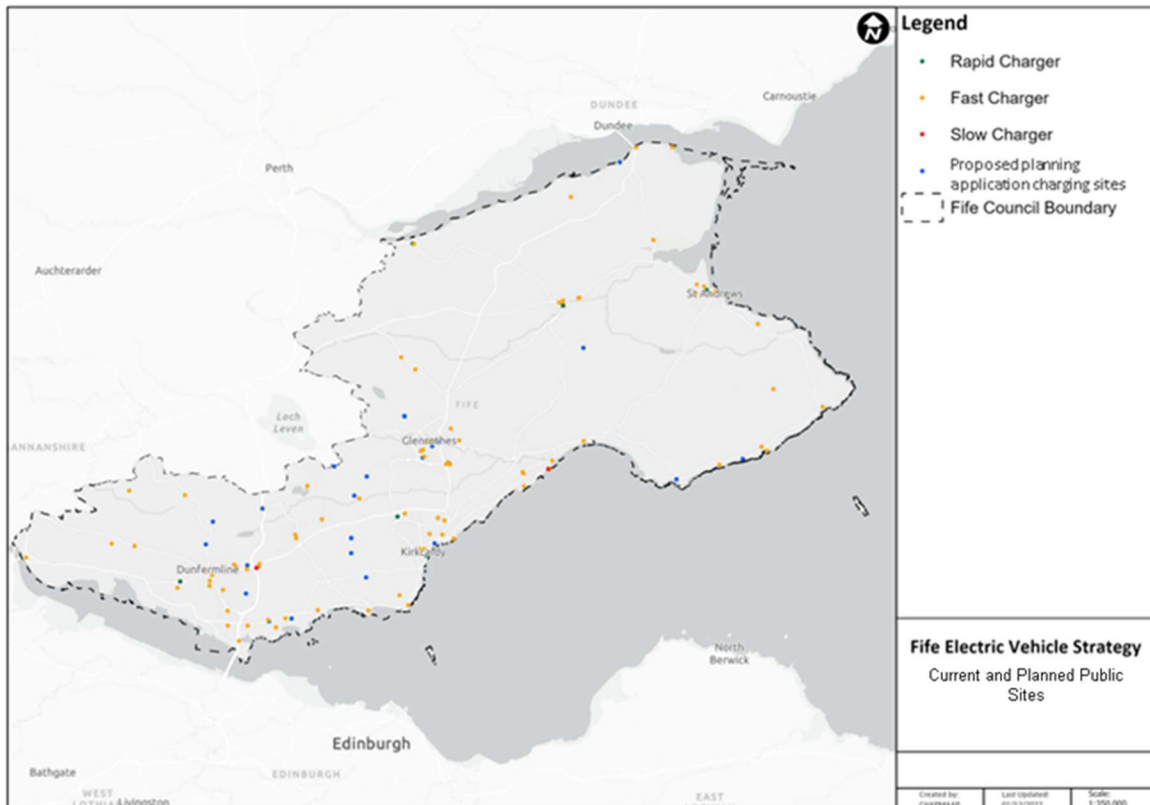


Figure 2 Existing and Planned EV charging infrastructure in Fife

1.5 Delivering an Accessible and Equitable Network

The accessibility and equitability assessment contained within the main report (section 5) highlights several key findings to be considered when providing EV charging post infrastructure. This includes:

- **Geographic balance:** The primary centres and secondary centres in Fife all have access to fast charging points. However, less than 40% of the smaller towns and villages in Fife have access to an EV charging point. New public EV charging post infrastructure will need to be delivered in a way that offers equal access to all;
- **On-Street and Off-Street Parking - the EV Charging Cost Disparity:** Analysis within the report states that on average, it is cheaper to charge an EV from home rather than using the public network. Consideration will be needed for areas with limited off-street parking so that charging can occur at a fair price. Notwithstanding this, given Local Authorities are now responsible for operating charge points without the benefit of Scottish Government funded subsidies, there is a need to balance a fair local price for residents against the risk of operating at a loss; and
- **Social characteristics:** Potential impacts on different social characteristics that could be impacted on, whether positively and/or negatively, by the installation of EV charging infrastructure. Such as ensuring that EV charging post infrastructure is accessible to all and impact on mobility vehicles.

1.6 Stakeholder Engagement

Stakeholder engagement exercises have been undertaken as part of the Fife EV Strategy development to explore the future of Fife's EV infrastructure and its place in the wider transport and environmental strategy.

An initial workshop was undertaken on 17th November 2022, with Fife Council officers; NHS Fife; and Jacobs Consultants. Further workshops were undertaken with key stakeholders such as Fife Council Environmental Health, Fife Council Planning, Fife Council Climate Change and Zero Waste, Fife Council Roads Network Management and SPEN.

Some initial discussions with CPO's has been undertaken through 1 to 1 conversations with Jacobs and: SWARCO, Ubitricity, Connected Kerb, Charge My Street, Osprey, For:EV, Urban Electric, Chargy, Trojan Energy, and Liberty Charge. These discussions covered the main technology options offered by each CPO as well as indications on whether they would be interested in operating/investing in Fife and the key considerations around this.

1.7 Public Consultation

Between 21st June and 19th July 2024, a public consultation survey was conducted to gather insights on various aspects of EV usage and infrastructure within the community. The survey received a total of 256 responses, primarily collected through an online platform. In addition, two respondents provided their feedback via email.

A summary of the key themes originating from the consultation are as follows:

- Approximately two thirds of respondents are active owners of EV's;
- Approximately one third of respondents use an EV for work;
- 54% of survey respondents are dissatisfied (including extremely dissatisfied) with the existing network provision in Fife;
- Approximately two thirds of the respondents agree with the strategy proposals to
 - work in partnership with a commercial charge point operator to both expand the network across Fife and support the existing network
 - increase the number of charge points across Fife with a mix of 7kW, 22kW and 50kW by increasing the number of charge points at some existing locations to create hubs and install charge points in locations that do not currently have a Council charge point.
 - have the same network operator across all Fife Council charge points with the same back office.
- Just over half of the respondents agree with the strategy proposals to
 - deliver new public EV charging infrastructure in a way that offers equitable access to all, for example in publicly accessible areas such as car parks.
 - that on-street charging provision is not proposed in this Strategy in the short term i.e. 0-5 years.
 - support and encourage commercial operators, Fife businesses and communities to install their own EV charging infrastructure.
- As well as the online platform, there was also the opportunity to directly respond to Fife Council via email. On this basis there were two detailed emails that were sent and they key points from these include the need to revise current legislation around private companies operating within public car parks; the need for consideration of on-street charging; and further consideration of disabled user needs as the network evolves.
- In addition to responses on specific topics, there was also a large number of possible locations for EV charging suggested by the public. These have been compiled for consideration in future expansions of the EV charging provision within Fife.
- Overall, the findings of the consultation align well with the measures proposed within the strategy, including on measures to increase the availability of charge points; and better network accessibility.

1.8

Geospatial Modelling

A forecast modelling exercise has been undertaken to provide future predictions around charging behaviour and subsequent infrastructure requirements. This is using Jacobs' in-house EV geospatial forecasting tool which has been used successfully in other areas of Scotland. This provides an estimate of the 2026 forecast EV demand by EV charging use case (trickle, fast, rapid) at a settlement level of disaggregation within Fife to give more context for the wider EV strategy and predicted infrastructure requirements.

The forecasting has been undertaken for three scenarios: 'Low', 'Medium' and 'High' uptake, by applying the Government's policy targets, banning different vehicle types in 2030 and 2035, and the varying levels of Ultra-Light Emission Vehicles (ULEV) / Plug-in Hybrid Electric Vehicle (PHEV) and Zero Emission Vehicles (ZEV) / Battery Electric Vehicle (BEV) uptake on the following basis:

- High – assumes an optimistic ZEV (BEV) uptake, at the upper end of the projected range, reaching 100% of all new car sales by 2030;
- Medium – assumes a more moderate ZEV (BEV) uptake, in the middle of the projected range, reaching 100% of all new car sales by approximately 2032; and
- Low – assumes that ZEV (BEV) uptake will be at the lower end of the projected range, reaching 100% of all new car sales by approximately 2035. This is the latest by which all new vehicles will be ZEV (BEV).

The distribution of electric vehicles in Fife is shown in figure 3, forecasted through to 2040 using the geospatial modelling tool. Figure 3 shows that the greatest increase in vehicle numbers occurs in the 2025 to 2030 period.

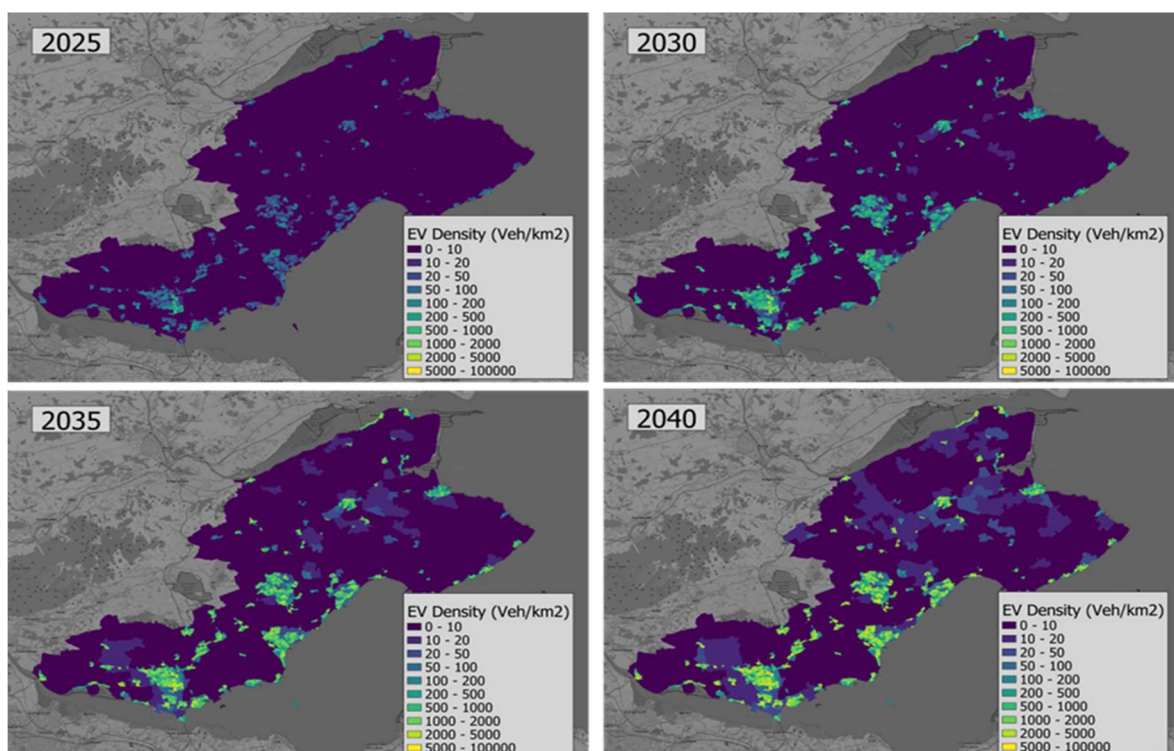


Figure 3 Forecasted distribution of EV's in Fife from 2025 to 2040

Figure 4 shows the overall forecast energy demand for Fife across the different scenarios, ownership and vehicle types. The total energy demand reaches approximately 400 GWh in total overall ownership and vehicle types.

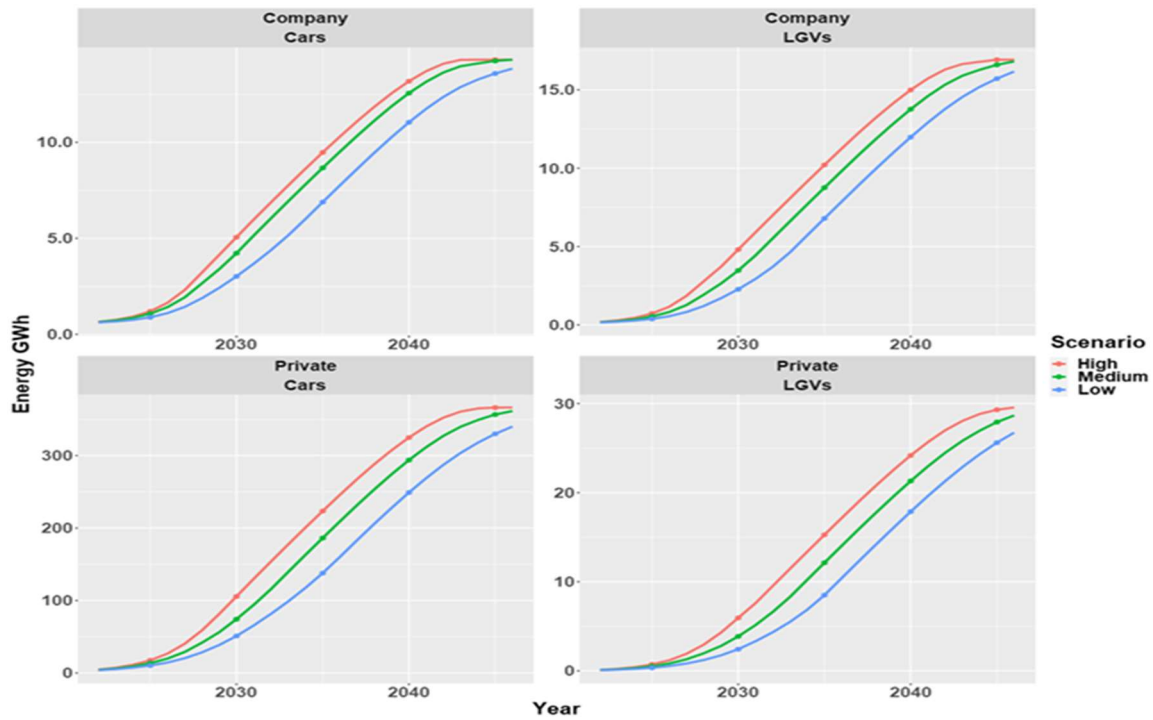


Figure 4 Forecasted energy demand across scenarios, keepership, and body type

1.9 Strategy and Recommendations

Based on the evidence and analysis provided within the report, a range of measures that could contribute towards an EV strategy for Fife has been provided, alongside an assessment of whether these measures are most appropriate to be taken forward in the short, medium, and long term. This has been undertaken using a Red-Amber-Green (RAG) assessment, indicating the level of effectiveness and deliverability of the measure with green being the most straightforward/impactful and red being more complicated/difficult to implement.

Theme	Potential Measures	Effectiveness	Deliverability	Cost Level	Sequencing
Increase number and distribution of charging points	Increase provision of rapid charging infrastructure on the public network to support taxis in convenient locations.	Green	Green	High	Medium/Long-Term

Theme	Potential Measures	Effectiveness	Deliverability	Cost Level	Sequencing
	Support charging infrastructure for buses.			High	Medium-term
	Provide charging points at car parks or on-street for key destinations			High	Short-term
	On-route charging points on the Major Road Network			High	Short-term
	Provide charging points to support residents with limited access to off-street parking provision and charging, focused on community hub locations.			Medium	Short/Medium-Term
	Provide off-street charging points to support residents with limited access to parking provision and home charging			High	Short-Term
	Encourage and where possible support the introduction of charging forecourts			Very High (for funding of hubs by LA) or Low for engaging commercial partners	Short-Term
	Continue to provide fleet chargers for the council's own fleet as necessary.			Medium	Short-term

Theme	Potential Measures	Effectiveness	Deliverability	Cost Level	Sequencing
	Support charging infrastructure for HGVs.			N/A	Long-term
	Charging infrastructure to support shared mobility / micro-mobility e.g. e-car clubs picking			Medium	Short-term
Engagement with the District Network Operator	Continuous engagement and joint working with SPEN. Investigation of potential for distributed renewable energy solutions.			Low	Continuous engagement recommended
Local Policy Changes	Local policy evolution e.g. contract procurement and reviewing parking standards.			Low	Ongoing

1.10 Site Assessment

A site assessment has been undertaken to estimate the most efficient use of the council owned car parks throughout Fife in order to meet future EV charging demand. An initial long list of 165 available Council owned car parks was identified, which was then narrowed down to a shortened list of sites using the 2026 EV charging demand at a settlement level, qualitative assessments and detailed feedback from Fife Council. This will need to be monitored continuously between the development of the strategy and the implementation and operation of charge points. This assessment focused on outlining a proposed charging approach by primary centres, secondary centres and small towns. The shortened list (80 sites, of which 60 are new) is outlined below. Please note some of these are existing sites and the table below is additional provision. Sites with existing charge points are highlighted in blue.

Proposed Site			Proposed Charging Mix		
Location	Settlement	Number of Spaces	7 kW	22 kW	50 kW
Aberdour Station Car Park	Aberdour	69	1	1	2

Crail Road Car Park	Anstruther	31	2	0	0
Anstruther Harbour Car Park - East Basin Car Park	Anstruther	97	0	1	1
Station Road (A) Car Park	Auchtermuchty	26	3	1	2
Parking area off Wilson Avenue	Blairhall	Approx 22 (unmarked)	1	0	0
Beacon Leisure Centre Car Park	Burntisland	TBC	2	0	1
Links Place Car Park	Burntisland	TBC	1	0	0
Cairneyhill Primary School (Community Use) Car Park	Cairneyhill	Approx 20	2	0	0
Station Road Car Park	Cardenden	46	2	0	0
Bog Well Car Park	Ceres	46	2	1	0
School Road Car Park	Coaltown of Balgonie	31	1	0	0
Central Park Car Park	Cowdenbeath	91	0	0	2
Foulford Street Car Park	Cowdenbeath	18	4	0	0
Stenhouse Street Car Park	Cowdenbeath	139	0	2	2
Bridge Street & High Street Car Parks	Cowdenbeath	92	2	1	0
Marketgate South Car Park	Crail	19	2	1	0
King George V Park/King George's Field Car Park	Crossford	Unmarked	1	2	0
Fluthers Car Park	Cupar	247	0	0	2
Bonnygate Car Park	Cupar	166	0	2	0
Dalgety Bay Leisure Centre	Dalgety Bay and Hillend	116	0	2	0
Dalgety Bay Station Car Park	Dalgety Bay and Hillend	194	0	2	2
St. Davids Harbour Car Park	Dalgety Bay and Hillend	40	2	0	0

Leys Park Road Car Park	Dunfermline	441	4	2	4
Walmer Drive Car Park	Dunfermline	276	0	6	4
Woodmill Street 1 Car Park	Dunfermline	191	2	4	2
Glen Bridge Car Park	Dunfermline	156	0	4	1
Viewfield Terrace Car Park	Dunfermline	116	0	2	0
Carnegie Birthplace Car Park	Dunfermline	40	2	2	0
Woodmill Street 2 Car Park	Dunfermline	28	2	1	0
Hospital Hill Car Park	Dunfermline	24	0	0	2
Pittencrieff Park Car Park	Dunfermline	98	0	4	2
Rolland Avenue - Surfaced Area (Housing)	East Wemyss	4	1	0	0
Main Street Parking Bays opp. Kingslaw (Housing)	East Wemyss	4	0	1	0
The Vennel Car Park	Elie and Earlsferry	12	1	1	0
Back Wynd Car Park	Falkland	91	0	1	0
Glamis Centre (East & West) Car Park	Glenrothes	N/A	4	0	0
Flemington Road Car Park	Glenrothes	N/A	1	0	0
Queens Street Car Park	Inverkeithing	32	2	0	2
Keltyhill Road Car Park	Kelty	46	3	0	0
Main Road Car Park	Kelty	26	0	2	1
Walker Street Car Park	Kincardine	67	2	0	2
Nethergate Car Park	Kinghorn	16	2	0	2

Lochty Avenue Car Park	Kinglassie	16	1	1	0
Church Street	Kingseat	Approx 10 (unmarked)	1	0	0
Whyte Melville Road Car Park	Kirkcaldy & Dysart	444	4	0	2
Oswald Wynd Car Park	Kirkcaldy & Dysart	92	4	0	0
Strathearn Road Car Park	Kirkcaldy & Dysart	72	3	0	2
Victoria Road Car Park	Kirkcaldy & Dysart	64	2	0	0
Brodick Road Car Park	Kirkcaldy & Dysart	61	2	0	2
Mid Street Car Park	Kirkcaldy & Dysart	50	2	0	0
Birnam Road Car Park	Kirkcaldy & Dysart	30	2	0	0
Coal Wynd/Dunnikier Road Car Park	Kirkcaldy & Dysart	27	2	0	0
Wilson Avenue Car Park	Kirkcaldy & Dysart	20	2	0	0
Kirkcaldy Rail Station - Station Road Car Park	Kirkcaldy & Dysart	132	2	0	0
Nicol Street Car Park	Kirkcaldy & Dysart	67	2	0	0
Greenside Car Park	Leslie	44	1	0	0
Mansfield Road Car Park	Leslie	50	1	0	0
Leuchars Railway Station Car Park	Leuchars and Guardbridge	151	0	2	0
The Temple Car Park	Lower Largo	50	2	2	2
Betson Street Car Park	Markinch	29	2	0	0
South Street/Viewforth Car Park	Methil, Leven & Buckhaven	113	4	0	1

Wellesley Road Car Park	Methil, Leven & Buckhaven	30	2	0	0
Methil Brae Car Park	Methil, Leven & Buckhaven	24	2	0	0
Ossian Crescent Car Park	Methil, Leven & Buckhaven	20	2	0	0
Forth Street Car Park	Methil, Leven & Buckhaven	51	2	0	0
North Street Car Park	Methil, Leven & Buckhaven	31	2	0	0
Cupar Road Car Park	Newburgh (Fife)	49	3	2	0
Battery Road Car Park	North Queensferry	24	1	0	0
Oakley Campus Car Park	Oakley, Carnock and Comrie	N/A	1	0	1
High Street Car Park	Pittenweem	10	1	1	0
Aberlour Street 1&2 Car Park	Rosyth	37	2	0	0
Main Street Car Park	Saline	13	1	1	0
Tarvit Terrace (Housing)	Springfield	19	1	0	0
Argyle Street/Doubledykes Road Car Park	St Andrews	199	4	2	0
Petheram Bridge (A) Car Park	St Andrews	206	0	0	2
Hope Place Car Park	St Monans	14	1	0	0
The Glebe parking area	Strathkinness	N/A	1	0	0
Strathore Road Car Park	Thornton	26	1	1	0
Thornton Railway Station Car Park	Thornton	49	1	0	0
Greig Institute Car Park	Windygates	N/A	1	0	0

SPEN have also provided connection costs for supplying power to each of the identified sites in the short list. This has identified that there are a number of sites which would require a significant reinforcement cost to enable EV infrastructure to be installed there, namely:

- Whyte Melville Road Car Park
- Dalgety Bay Station Car Park
- The Temple Car Park
- Woodmill Street 1 Car Park
- Leys Park Road Car Park
- Walmer Drive Car Park

The latter 3 are all in Dunfermline, which outlines the challenges in the power supply in that area.

1.11 Application in SFT Feasibility Model

Using the geospatial modelling, forecast utilisations have also been estimated for the proposed EV infrastructure and this has been used to populate the EVI Feasibility Model (version 4.1) as provided by SFT.

The provided SPEN costs (£954,000) have also been included to give a realistic indication of the cost for the portfolio of sites within Fife, this results in a total planned investment cost of £4,542,361. Assumptions within the EVI Feasibility Model have been discussed and agreed with SFT and the current capital funding output required to install all the outlined infrastructure in Fife is £3,406,771.