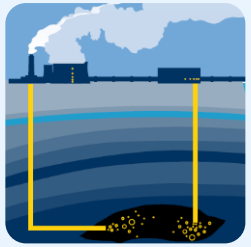




EVCP deployment option assessment – car park focus

Final Report

Stroud District Council

24/10/2022

elementenergy
an ERM Group company

Executive summary

Key takeaways:

Introduction	Stroud District Council (SDC) would like to deploy Electric Vehicle Charge Points (EVCPs) in their car parks which are distributed across the region. Currently, there are ~80 public EVCPs (~50 devices) in Stroud. In the short term Gloucestershire County Council (GCC) also plans to deploy on-street EVCPs in the region. SDC's deployment should consider funding availability and related eligibility criteria.
Ownership & operating models	There exists a trade-off between cost and ownership/contract length, with various ownership models available that distributes costs between the council and suppliers. An external operator model (full ownership for the Council, short term contract) is most likely to serve SDC's priorities.
Procurement approach	GCC's contract is the best procurement approach if funding can be secured. A significant contribution is required to cover full CAPEX costs, but would offer a shorter contract length with ownership staying with the Council.
Car park demand assessment	Car parks located close to amenities and major roads, with high utilisation and number of spaces have the highest charging demand. These high potential sites tend to be clustered in major towns, with often a maximum of one car park per town scoring high enough to be considered for deployment outside of those areas.
Timeline & next steps	Chargers could be deployed in three phases, with initial deployment prioritising both high demand and enabling equitable distribution for charging access across the region. The following phases build on this, increasing provision in highest demand towns and geographic spread to more rural areas. In the short term, SDC should ensure sites are eligible for funding and refine site selection further using site surveys.

CPO: charging point operator

Agenda

Background
Business and procurement models
SDC car park EVCP demand assessment
SDC deployment approach
Appendix

Objectives of Stroud District Council's EVCP car park deployment assessment

Objectives:

- SDC is investigating how it can support and accelerate the uptake of electric vehicles (EV) through the development of an electric vehicle charging infrastructure network within its district.
- SDC would like to better understand the role it can play in deploying charging infrastructure across their car park estate both in terms of the most appropriate procurement and ownership model and which sites EV charge points (EVCPs) should be deployed at
- This report investigate the tasks described above, split into 4 key chapters indicated (right)

Report Structure

1. Introduction
   - Overview of the charging market
   - Stroud Districts position in terms of charging infrastructure
2. Business and procurement models
   - Overview of possible ownership and operating models
   - Case study examples of contracts
   - Overview of possible procurement models
   - Recommendation of most appropriate approach
3. SDC car park demand assessment
   - Site assessment method
   - Scoring and ranking of car parks
4. SDC deployment approach
   - Phased car park deployment
   - Next steps for Stroud District Council

There are 4 key types of charge point categorised by charging speed: Slow, Fast, Rapid, Ultrarapid

Each charging type generally has a different use case and consumers will use a mixture of charge point types, currently the majority of charging (~75%[3]) is done at slow residential (on-street or 'at home' private) chargers.

Speed	Slow	Fast	Rapid	Ultrarapid
kW range:	3-6 kW AC	7-25 kW AC	50-120 kW DC	120-350 kW DC
Example:				
Approx. time to fully recharge:[1]	Overnight	4-6hrs	30 min - 1hr	<30min (350kW chargers can add 200km range in 8 minutes)[2]
Locations:	Mostly in public car parks and on-street and private residential charge points	Mostly in public car parks, on-street and highway stations	Varied locations, including motorway service stations, forecourts, car parks, city centres for taxis	Mostly at motorway services, and hubs such as Fastned and Ionity
Charging type:	Residential charging, work place charging or 'long stay' locations (train stations, hotels)	Residential or charging at a destination (retail, leisure, tourist attraction)	En-route charging or at a 'short stay' destination	En-route charging or 'topping-up'
Stroud District context:	Only appropriate in car parks used for long stay or overnight charging	Short stay car parks in town centres **– most appropriate**	May be appropriate at high turnover, high demand car parks	Not appropriate for SDC car parks

1 - Full recharge time is dependant on battery size and maximum charging speed 2 - All new vehicles can charge at 50kW max, but currently only the most expensive and/or newest vehicles have a charging speed >120kW. Currently no vehicles can charge at 350kW 3 - Element Energy for National Grid ESO (2019), Electric Vehicle Charging Behaviour Study

A number of grants are in place for Local Authorities to deploy local public infrastructure, focused on those without access to off-street parking

On-street Residential Charging Scheme (ORCS):

- Funding is available to **local authorities** to help with the costs of **procurement and installation** of on-street charge points for residential use
- To date over 140 local authority projects have received funding from the scheme
- Funding is available for **60% of the capital costs** up to a **maximum of £7,500** per charge point, unless electrical connection are exceptionally high in which case funding can be up to £13,000 – can be located **on-street or car parks**
- It is anticipated that local authority applications will vary in size, but would **not amount to greater than £100K** of OZEV funding, per project

Eligibility Requirements:

- Charge points must be located in **residential areas** and have a charging speed of **3.5-22kW**
- Local authorities will need to **demonstrate home charging is not an option** for the residents where the charge points are to be located
- The locations must meet **current or anticipated future demand**

Local Electric Vehicle Infrastructure (LEVI) scheme*

- LEVI was launched in 2022/23, with a **total fund £450m**
- Funding is for Local Authorities in England, funding larger schemes than ORCS. It is **likely to replace ORCS at the end of 2022/23 financial year** after the LEVI trial has taken place**
- In Q2 of 2022 9 LAs were chosen to be part of the £10m pilot scheme
- The projects must:
  - Support the transition to EVs in their local areas, with focus on those without off-street parking
  - Provide improvement in accessible EV charging provision that would not otherwise be met
  - Show innovation, either technologically or commercially
- **Funding will cover all CAPEX including hardware, installation, grid connection, parking bay and Traffic Regulation Order costs**

Technology requirements*:

- On-street slow and fast charge points
- Rapid charge points if installed as part of a wider project that includes on-street slow and fast charge points (will not fund rapid-only projects)
- Solar canopies and battery storage
- All charge points much have a minimum payment method such as contactless installed for chargers above 7.1kW

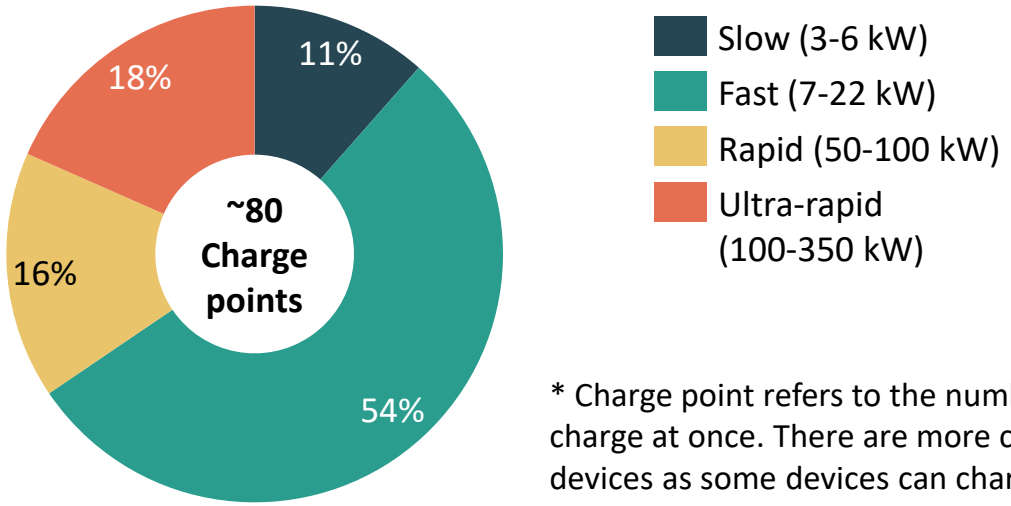
*Note requirements have been announced for pilot scheme in early 2022, final scope of scheme may change after the pilot has been undertaken. Source: LEVI, ORCS

** likely that projects will need to be complete by March 24

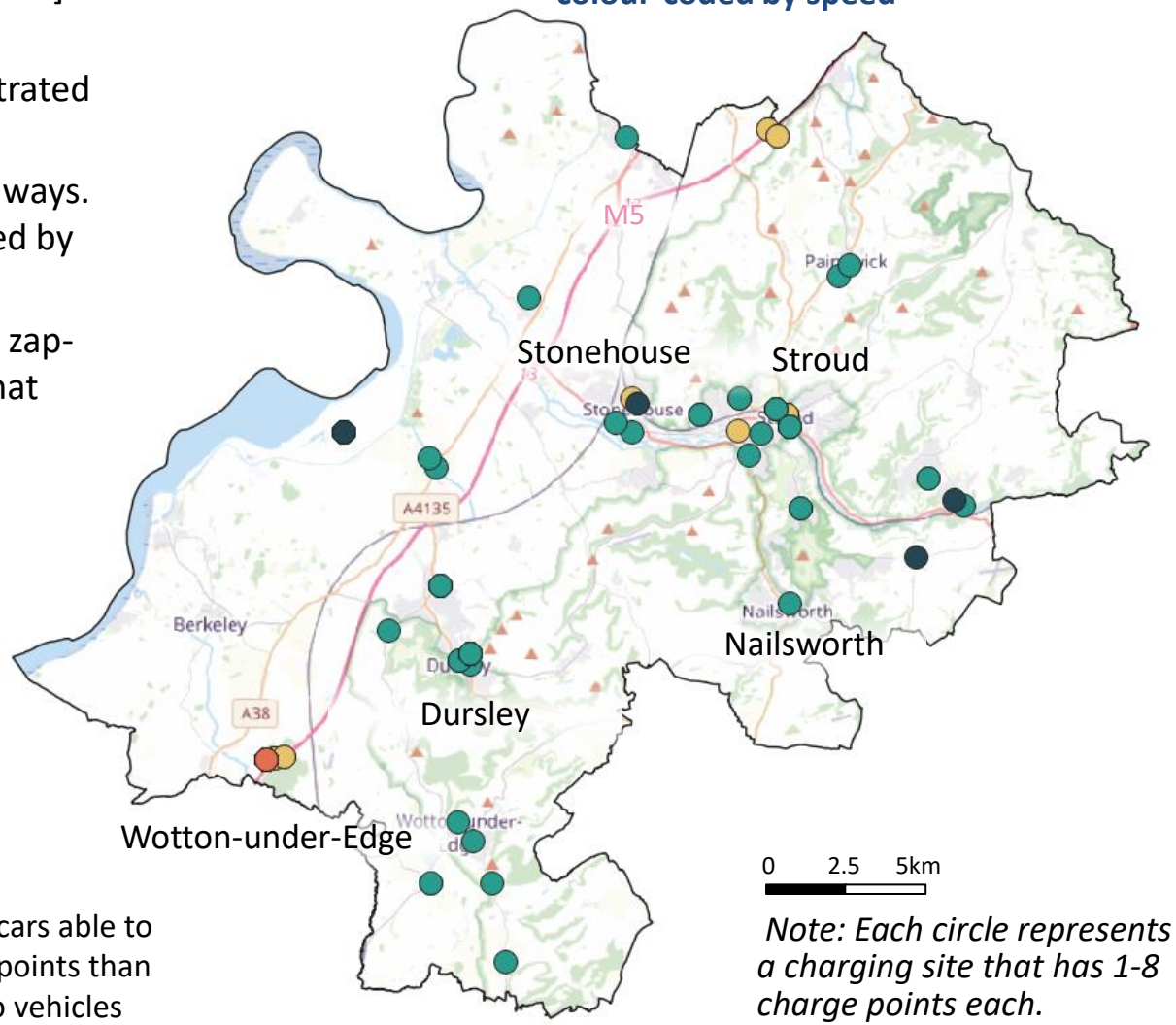
Current Deployment: There are currently ~80 electric vehicle charge points across the Stroud District

- Currently there are ~80 electric vehicle charge points (EVCPs) [50 devices]* in Stroud District area, more than half of these are fast charge points
- Fast and slow chargers are broadly distributed, but tend to be concentrated in the centre of major towns
- Rapid and ultra-rapid chargers are located along major roads and highways. With all ultra-rapid chargers located at a single site on the M5 operated by Gridserve and Tesla
- Over 40% of the charge points in Stroud are operated by zap-home or zap-work, meaning these are private home or workplaces charge points that are being rented out to the general public when not in private use

Current number of EVCPs in Stroud District by speed



The current distribution of Stroud District EVCPs, colour-coded by speed



Note: Each circle represents a charging site that has 1-8 charge points each.

* Charge point refers to the number of cars able to charge at once. There are more charge points than devices as some devices can charge two vehicles

Charge point data from October 2022, Source: National Charge point Registry and Zapmap

Future deployment: Gloucestershire County Council is already planning on deploying chargers in Stroud District Council area

Gloucestershire County Council has a contract with Connected Kerb to deploy on-street charge points across Gloucestershire

- Gloucestershire County Council (GCC) contract agreement is to deploy 7kW on-street chargers. Approx. 1/6 of these are likely to be within the Stroud District Council (SDC) area
- GCC is currently in the planning phase with phase 1 deployed in the short term
  - There are currently 4-6 streets identified with ~20-30 charging bays planned in Stroud District Council area (*still in development)*
  - Streets identified are in/around the Stroud, Sharpness and Berkeley areas
- Deployment has been part funded through ORCS, and part funded by GCC to cover the cost of the CAPEX

Connected Kerb charging point

- There needs to be coordination between SDC's car park deployment and GCC's on-street deployment to ensure equitable distribution across Stroud and avoiding competing with one another for demand
  - In many cases this will not be an issue due to the difference in use cases of the sites

CAPEX: Capital Expenditure

EVCP deployment may overlap with and support other SDC policies

In addition to contributing to SDC's 2030 net zero goal through lowering the barriers to zero emission vehicle use, the deployment of EVCP may support other SDC goals and programs as well.

Taxi electrification: Widespread availability of EV chargers would support greater investment in taxi fleet decarbonization efforts by increasing range flexibility. Incentives such as taxi-only chargers or providing access to SDC car parks can be considered.

SDC-owned housing: Deploying public EV chargers may especially serve tenants living in SDC-owned communal flat blocks or houses without parking.

Both of the above policies are likely to develop, and future EV deployment phases may need to take them into account.

In the following section, consideration was taken to distribute EV infrastructure across all major towns beyond the administrative centre of Stroud to ensure fair and equitable access to charging.

Agenda

- Background
- **Business and procurement models**
  - EVCP Operating models
  - Procurement options
  - Recommendations
- SDC car park EVCP demand assessment
- SDC deployment approach
- Appendix

In order to deploy charge points in district council owned car parks the most appropriate procurement route and ownership/operating model needs to be selected

In order to deploy chargers in Stroud DC council owned car parks Stroud DC needs to decide the most appropriate approach in terms of ownership and operation and best procurement approach

Operation and ownership:

- Ownership: This considers who owns the infrastructure both above ground (charger hardware itself) and below ground (cabling, grid connection etc.)
- Operation: Who operates the chargers once they have been deployed including – back office and software, billing, maintenance (both reactive and annual)

Procurement:

- As chargers are being deployed on public land a charge point operator (CPO) and contract needs to be chosen through a procurement route approved by the Council
- Stroud DC could develop their own procurement process or leverage existing contracts and frameworks which would streamline the process, requiring fewer resources from Stroud DC and accelerating the deployment process

Stroud have the option to access the Gloucestershire County Council framework, with Connected Kerb as Supplier, and have received a quote from a CPO. These are discussed in more detail next, followed by recommendations

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Various EV charging business models have been assessed

Brief overview of the EVCP business models

- **Own & Operate:** Council plan, own and operate the network and are responsible for maintenance. They retain all revenue and pay for hardware / software support in order to run the network. Council choose where EVCPs are installed and sets tariffs. *Note that this is generally not a preferred approach these days.*

- **External Operator:** Essentially Own & Operate but engage a 3rd party CPO contractor to provide a full O&M service, alleviating the Council of this responsibility

- **Concession agreement:** These vary from Council to Council. Supplier and Council agree a split of capital costs, ownership and risks. Supplier typically takes on full O&M responsibility. Council will receive a revenue share. Typically used to deploy relatively high EVCP volumes. The private sector provides some of the funding and takes on some of the commercial risk. The Council typically use government grant scheme, which can generally provide up to 75% of capex. Three different concession agreements have been considered.

- **Lease arrangement:** Supplier funds, owns, operates and maintains the EVCPs. This service is leased to the Council based on a long-term agreement. Council may be able to negotiate ownership of below-ground infrastructure. Suppliers will target commercially attractive locations.

EVCP: Electric Vehicle Charge Point

The typical split of cost breakdowns for fast and rapid EVCPs between the council and supplier has been indicated for key council business models

Business Models	Hardware	Install	Ground & Grid	Back office	Electricity	Maintenance	Private Sector funding CAPEX	Who gets revenue from EVCPs	Contract Length	Example
	CAPEX			OPEX						
Own & Operate	C	C	C	C	C	C	None	Council	-	
External Operator	C	C	C	S	C/S	S		Council gets majority and/or pays a service fee to the CPO	1-5Y	GCC
Concession 1	C	S	S	S	S	S	Part	Share to council	5-10Y	Birmingham
Concession 2	S	C	C	S	S	S		Share to council + significant min. payment		Nottingham
Concession 3	S	S	C	S	S	S		Share to council (and rent)		London
Lease model[1] (rapid)	S	S	S	S	S	S	All	Share to council or rent agreement	15-25Y	Real world CPO offer

Council (C) — Supplier (S)

- It is assumed **Council cost components would typically come from national funding schemes** (e.g. ORCS, LEVI, and in the past OLEV Taxi scheme, Go Ultra Low Scheme)
- For slow EVCPs, business models tend to offer operators limited risk on return (are grant funded and/or OPEX is fully covered by Council)
- Concession contracts are increasingly common rapid charging installations and typically used when suppliers are confident of profitability and deployment scale. The 3 concessions agreements considered here give examples of approaches taken by different Councils
- The GCC framework uses the External Operator model, the electricity cost is covered by the Supplier. GCC pays a service fee to the CPO to cover O&M costs and receives a portion of the revenue

1. Model can be flexible, e.g. SDC retains ownership of ground and grid works and electricity (everything behind the EVCP)

CAPEX: Capital Expenditure OPEX: Operational Expenditure O&M: Operation and Maintenance

Stroud have two short term options – they are real world examples of two possible business models

Gloucestershire County Council framework (Connected Kerb as Supplier)

- The GCC framework uses the ***External Operator*** business model
- The **CAPEX is fully funded by the council** through ORCS and internal funding
- The **Council** own all of the hardware, and the contract length is 3 years
- Connected Kerb covers the electricity cost and the **council pays them an annual fee** to cover the operation and maintenance
- Council receives a rebate from the gross revenue
- All chargers deployed are AC fast chargers

Real world example of a lease model offer from a Charge Point Operator

- The CPO offer uses the ***Lease*** business model
- The **CAPEX is fully funded by the CPO**
- **The CPO** owns all of the hardware and the contract length is 15 years
- **The CPO** covers all operational and maintenance
- Council gets a small rent payment
- Chargers can be AC fast or 50kW DC
- This offer however cannot be directly awarded to the CPO, a procurement process would need to take place which would involve a competitive tender

CPO: Charge Point Operator CAPEX: Capital Expenditure

Case Study: Gloucestershire County Council contract uses the external operator model

Stroud District Council can access GCC's framework and contract agreement with Connected Kerb

Gloucestershire County Council + Connected Kerb

Business model contractual arrangements:

- **Ownership:** Own all of the hardware (above and below ground)
- **Contract length:** 3 years with option to extend to 6 years –after 3 years contract can be re-evaluated
- **Site identification:** SDC would have overview and control of sites chosen sites and charger number
- **Financial contributions:** Significant financial contributions covering both CAPEX and SDC would pay an annual O&M contribution per EVCP
- **Revenue/rent:** GCC gets a rebate from the gross revenue

Pros:

- SDC would have full ownership of the above and below ground hardware
- Short contract length (3 years) and SDC receives a revenue share – after 3 years the contract can be renegotiated or extended
- High level of control of the deployment and operation including location, number of EVCPs and pricing of network (although this is also dependant on wholesale electricity prices)
- Easier to align with GCC's deployment plans and can deploy a consistent charging network on public sector land across SDC area (more details)
- Low levels of procurement resources required from SDC and can be done in an accelerated time frame (more details)

Cons:

- Council is limited to deploying Connected Kerb hardware which is 7-22kW (fast charger) this equates to 2-4hrs to fully recharge the vehicle
  - However, this charging speed is likely to be appropriate for most SDC car parks in Stroud based on their usage as destination and residential car parks
- SDC has to fully fund the CAPEX cost and make annual payment to Connected Kerb for the operation and maintenance of the charge points
  - A proportion of the CAPEX can be covered by government grants (see details) but the rest of the funding would need to be though SDC
  - There is a risk that if utilisation is very low that the revenue share to SDC will not cover the O&M cost SDC needs to pay to Connected Kerb annually

SDC: Stroud District Council GCC: Gloucestershire County Council EVCP: Electric Vehicle Charge Point
CAPEX: Capital Expenditure OPEX: Operational Expenditure O&M: Operation and Maintenance

Case Study: Real world example of a Lease agreement contract for deployment of chargers in SDC car parks

This offer is an example of the likely contractual arrangements if SDC entered into a lease agreement

Real world offer from a CPO

Business model contractual arrangements[1]:

- **Ownership**: The CPO owns all of the above and below ground hardware
- **Contract length:** Non-exclusive 15 year contract
- **Site identification:** Less flexibility than other business models
- **Financial contributions:** No financial contribution is required – all covered by the CPO
- **Revenue/rent:** Rent of £25 per bay per year

Pros:

- No financial contribution would be required, therefore there would be no financial risk
- A low level of organisation and resourcing will be required from SDC as the CPO is responsible for all aspects including installation, operation and maintenance
  - SDC would have some involvement as deployment is on council owned land

Cons:

- SDC would not have ownership of any of the hardware and the contract is very long – this does not allow for upgrades as technology improves or change of supplier if SDC was not happy with the CPO or technology
- Deployment is on SDC land so has control of the final sign-off of sites and charger numbers, however as the CPO is taking on all of the risk they are unlikely to be flexible to deploy at sites they don't view as having a good business case
  - This could mean that SDC cannot ensure equitable distribution of charging across the region
  - The proposed rent share is low, this may not be an issue when utilisation is also low but, as EV uptake and utilisation increases, there is no guarantee of a proportional increase in SDC rent
- There is no clear route to procurement, it may be possible to do a direct award or through a framework

1 - Source: CPO offer to SDC, April 22

SDC: Stroud District Council EVCP: Electric Vehicle Charge Point CPO: Charge Point Operator

In order for the most appropriate business case to be identified Stroud District Council's priorities have been considered

The preferred approach for Stroud District Council on a number of key contractual metrics has been discussed in order to identify the most appropriate business case

Stroud's priorities for EVCP contracts

Ownership: Owning the hardware would be beneficial for Stroud as at the end of the contract the hardware would be retained and could continue to be used, and SDC could control any upgrades

Contract length: A short contract length is highly preferable to allow SDC to have flexibility of both contractual agreements and the supplier. Long contract lengths do not allow changes of the technology based on usage or charging behaviour change over time

Control of EVCP siting: SDC will need to be involved in site identification as EVCPs are being deployed in Stroud owned car parks. Higher levels of control of sites allows Stroud to ensure equitable access to charging across the district particularly in areas that are likely to have a more challenging business case

Financial contributions: Stroud intends to apply for government funding schemes and these would cover at most 60% of the CAPEX, if more funding is required Stroud may be able to leverage internal funding

Potential returns for Council: Stroud would like to make some rent/ revenue from the chargers. However, currently utilisation is low outside of London, therefore in the short-term revenue share contracts will not yield high returns. This will improve as EV uptake increases

Data quality and access: Contracts should stipulate that data must be high quality and accessible, such as via an online portal – this will allow SDC to track utilisation and if additional chargers are needed and where

Comparison of EV charging business cases from a Stroud District Council perspective

	Assessment metric	Own & Operate	External Operator (*GCC framework*)	Concession (with private sector match funding)	Lease (*Real world CPO offer*)
Priorities for SDC	Ownership of the hardware			*Depends on contract may own some of the hardware if funding is offered by SDC*	
	Contract Length				
	Control of EVCP siting			*Depends on the agreement and volume of EVCPs being installed under contract*	
	Financial contribution from SDC				
	Potential returns for Council				
	Data quality and access				
Other important considerations	Risk of poor value for public investment in a low usage scenario				
	O&M responsibility				
	Technical complexity for Council		2		
	Contractual complexity				
	Control of tariff pricing				
	Dependency on supplier business case				
	Range of charging speeds available				
Combined assessment [1]		***Do not consider further***	***Best option for SDC***	***Second best option for SDC***	***Possible back-up***

1 – Reasoning on next slide

2 - If using the GCC contract the technical complexity is reduced as they have assistance from GCC and the contract has already been setup

Note: this assessment is most relevant to deploying EVCPs that are fast and rapid. For slow EVCPs, the business model options are more limited, and the choice would be largely driven by the nature of funding used

Depending on the level of funding Stroud can access, *external operator* best fits SDCs priorities with *concession* the next best option

Own & Operate	External Operator (GCC framework)	Concession with private sector match funding	Lease (*Real world CPO offer*)
High risk and very resource and capital intensive – unlikely to be an attractive option	O&M de-risked. SDC would own the hardware and contract length is short. Would be the most promising option for SDC if both government grant funding and sufficient additional funding is available	De-risked approach that could deliver a range of charging speeds and can offer groundworks ownership. Generally, there is a long contract length and low levels of control. This is a promising option if SDC can access government grant funding, but no further funding is available	Fully de-risked option which is quick and simple to set up. If supplier is willing to install at desired car parks (The CPO offer suggests this would be the case) then this is a possible option if no funding is available. It would not be ideal as SDC would have to compromise by having a long contract length and would not own the hardware
Do not consider further	***Best option for SDC***	***Second best option for SDC***	***Possible back-up***

Agenda

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There are a number of procurement approaches open to SDC which vary in level of involvement for the Council

Most involved tender process ← → *Least involved tender process*

Funded by ORCS/LEVI

1

Full Procurement (new tender)

- LA writes their own tender and allows any CPO to apply
- Generally a multi-stage process which requires significant resourcing from LA

Framework/DPS

2

Mini - competition

- Frameworks/DPS are generally free and accessible to all LAs – some are LA specific
- Number of CPOs register to framework for LA to choose from
- Mini-competitions via a framework /DPS are simplified and compliant procurement for LAs

3

Direct award via Procurement framework

- LAs can directly award a call-off contract to a CPO via a framework (not through a DPS)
- Typically direct awards can be justified if a supplier has been used before

4

Direct award outside of procurement framework

- For smaller contracts, LAs can choose to directly award a contract to a supplier
- Depending on the size of the contract, the LA may need to collect multiple quotes before selecting a supplier

Options for Stroud DC:

New procurement – new tender	**Use of: DPS, or ESPO, YPO, CCS, Proactis (SEBP) framework** *(Real world CPO offer)*	**Use of ESPO, YPO or CCS framework or Gloucestershire County Council Contract**	**New procurement – direct award**

A number of factors need to be considered when choosing a procurement approach

	New procurement – New tender	Dynamic Procurement System (DPS)	ESPO, YPO or CCS framework	Gloucestershire County Council Contract	New procurement – Direct award
Award type:	Competition needed			Direct tender without competition stage	
Resourcing required from SDC:	High	Moderate	Low	Very Low	
Contract value:	Large		Medium		Low **(<£25k)**
Length of tender process:	Long - up to 12 months	Variable - up to 6 months		Quick - up to a few months	
Control of business model:	Can select any business model		May have limited options on business model	Must use GCC agreed business model	Can select any business model
Choice of technology:	Access to a large number of suppliers		Limited to suppliers on each framework	Limited to using Connected Kerb	Direct award can be to any supplier
Conclusion:	Generally not a preferred option – requires significant effort of SDC part	Good option if no framework meets SDCs requirements – there is flexibility on the choice of CPO but it requires more effort from SDC than a framework	Good option, it gives more flexibility on business model and choice of technology but lower effort than using a DPS	Requires the least resources and over the shortest timeframe – **best option if business model and technology choice is appropriate**	Only for smaller contracts – could be used for a trial which later allows direct procurement through a tender

Agenda

- Background
- **Business and procurement models**
  - EVCP Operating models
  - Procurement options
  - **Recommendations**
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- SDC deployment approach
- Appendix

Considering the choice of business model and procurement together, the GCC contract is the best option for SDC if they are able to secure sufficient funding

Business models

Own & Operate	External Operator *(GCC framework)*	Concession	Lease
Do not consider further	Good option	Good option	Possible back-up

Procurement approach

New tender	DPS	ESPO, YPO or CCS framework	GCC framework	Direct award
Not a preferred option	Possible back-up	Second best option for SDC	Best option for SDC	Only for trials

Best Option for SDC's deployment: GCC contract

- Using GCC framework will offer significant procurement benefits as the resourcing and effort required by SDC is very low even when compared to the next best option
- The business model 'External operator' would allow SDC to retain control over the infrastructure / network as they would own the hardware and have a short contract length which is a priority
- SDC will have to use Connected Kerb hardware however, the chargers offered are 7-22kW and so appropriate for car parks in Stroud
- Another benefit over all other agreement is the deployment would align with GCC's deployment plans and can deploy a consistent public sector charging network across SDC and wider GCC area
- However, a **Key Consideration** is that GCC contract requires a significant contribution from SDC to cover the full CAPEX and SDC need to be confident that if the return from chargers does not cover the O&M charge that SDC has other funding that could cover this cost
- The next best option would be to use a concessions agreement and procure through a framework
  - This would allow ownership of at least the below ground hardware and a moderate contract length. Using a framework will reduce the level of involvement required in the tender process
- ***In general the balance is between the level of control and the funding available, the higher the level of funding SDC is able to bring the higher the level of control they are able to have over the network***

Agenda

- Background
- Business and procurement models
- **SDC car park EVCP demand assessment**
- SDC deployment approach
- Appendix

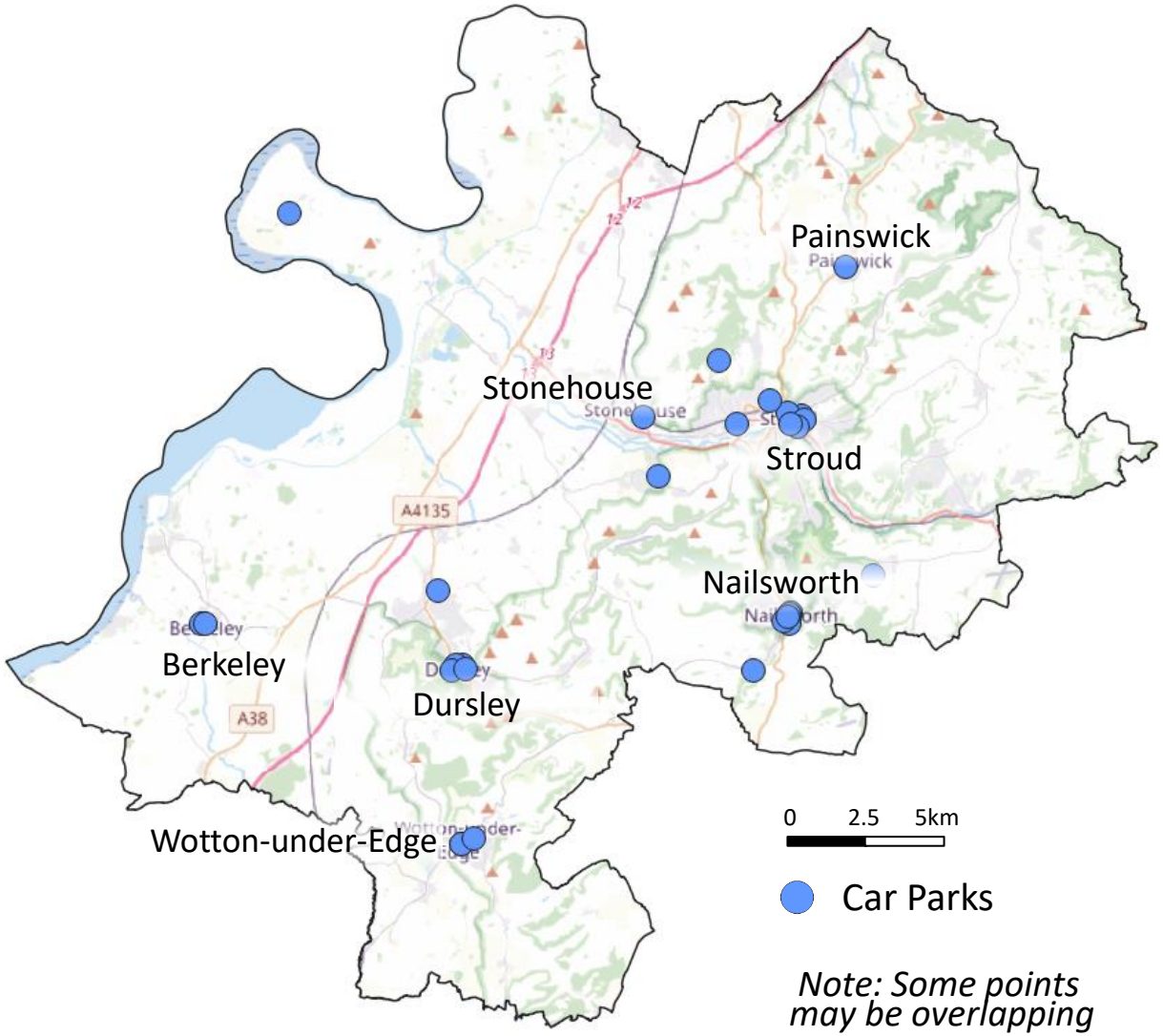
Stroud District Council owned car parks have been assessed to determine their relative attractiveness for deploying EVCPs

33 SDC-owned car parks were analysed throughout the Stroud district area as possible sites for EVCP deployment

A range of metrics were used to these car parks across the district as well within each town. A higher score indicates a higher EV charging demand. A combination of site score and distribution will be used to recommend deployment priorities.

The majority of the car parks are in major towns such as Stroud, Berkeley, Dursley, Nailsworth, and Wotton under Edge.

They are often clustered in the town centre close to the majority of local activity at areas such as shops, bus or train stations, schools, religious institutions, parks and leisure centres, they present a unique opportunity to offer accessible EV charging for most of the residents in the district.



A 3-stage process was used to assess relative attractiveness of SDCs car parks

33 Stroud District Council (SDC) owned car parks were assessed based on attractiveness for EVCP deployment using a combination of measurements and metrics to account for site- and region-specific variances.

Assessment measurements

- Data for 9 assessment metrics were collected from the SDC, the UK government and public sources
- Measurements were a mix of quantitative and qualitative datasets, based on suitability
- For example: amenity count within 300m, high, medium or low utilisation

Define metric scoring

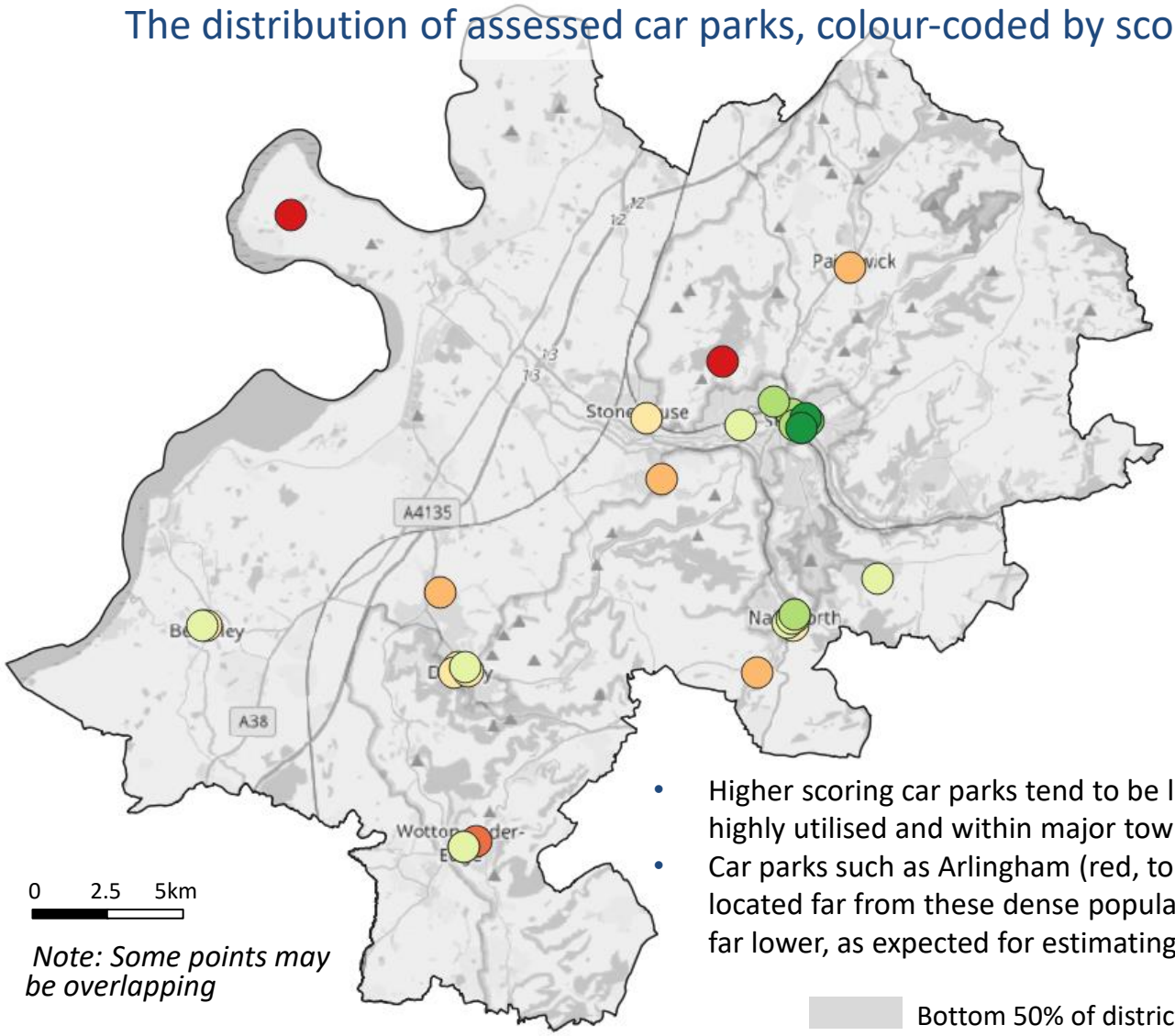
- Each metric was scored for 1, 2 or 3 points each, with higher scores indicating greater attractiveness
- Thresholds were custom selected based on the distribution of data for each metric to deliver a split of:
  - 20% score 3 points (likely used for EV charging)
  - 40% score 2 points
  - 40% score 1 point

Weighting and overall score

- After individual metric scores were calculated for each site, suitable weights were applied for each metric based on strength of charging attractiveness
- The weighted metric scores were synced to give each site an overall assessment score out of 3, resulting in a car park attractiveness ranking

A score from 1-3 was calculated for each car park, and ranked from highest to lowest across the district

The distribution of assessed car parks, colour-coded by score



Note: Some points may be overlapping

- Higher scoring car parks tend to be large, highly utilised and within major town centres
- Car parks such as Arlingham (red, top-left), located far from these dense populations rank far lower, as expected for estimating demand

Bottom 50% of district ranking

Rank	Car park name	Town	Total Score
1	Church Street	Stroud	2.675
2	London Rd Surface	Stroud	2.625
3	Parliament Street	Stroud	2.55
4	Cheapside	Stroud	2.4
5	Nailsworth Old Market East	Nailsworth	2.25
6	Stratford Park	Stroud	2.25
7	Rowcroft	Stroud	2.225
8	MSCP (London Rd) Long Stay	Stroud	2.175
9	Dursley Castle Street	Dursley	2.15
10	Cainscross Car Park	Cainscross	2.125
11	Berkeley Library Car Park	Berkeley	2.1
11	Nailsworth New Market Road	Nailsworth	2.1
13	Minchinhampton Friday Street	Minchinhampton	2.075
13	Nailsworth Old Market West Long Stay	Nailsworth	2.075
15	Nailsworth Bus Station	Nailsworth	2.025
15	Nailsworth Old Market Lay-by	Nailsworth	2.025
15	Wotton under Edge Short Stay	Wotton under Edge	2.025
15	Wotton under Edge Long Stay	Wotton under Edge	2.025
19	Dursley May Lane	Dursley	1.975
20	Stonehouse Car Park	Stonehouse	1.95
21	Dursley Castle Street/Parsonage Street	Dursley	1.925
21	Dursley Water Street	Dursley	1.925
21	Nailsworth Comrades	Nailsworth	1.925
24	Nailsworth Old Market West Short Stay	Nailsworth	1.9
25	Berkeley Marybrook Street	Berkeley	1.875
26	Nailsworth Town Hall	Nailsworth	1.85
27	Painswick	Painswick	1.775
28	Kings Stanley	Kings Stanley	1.75
29	Horsley Car Park	Horsley	1.675
30	Cam Chapel Street	Cam	1.625
31	Wotton under Edge Potters Pond	Wotton under Edge	1.55
32	Randwick Car Park	Randwick	1.375
33	Arlingham Car Park	Arlingham	1.25

Regardless of car park, scores tended to increase as the size of the town they were located within increased

Car parks were ranked within their towns to identify attractive sites across the district:

Town Rank	District Rank	Car park name	Score
Stroud			
1	1	Church Street	2.675
2	2	London Rd Surface	2.625
3	3	Parliament Street	2.55
4	4	Cheapside	2.4
5	6	Stratford Park	2.25
6	7	Rowcroft	2.225
7	8	MSCP (London Rd) Long Stay	2.175
Berkeley			
1	11	Berkeley Library Car Park	2.1
2	25	Berkeley Marybrook Street	1.875
Dursley			
1	9	Dursley Castle Street	2.15
2	19	Dursley May Lane	1.975
3	21	Dursley Castle Street/Parsonage Street	1.925
3	21	Dursley Water Street	1.925
Nailsworth			
1	5	Nailsworth Old Market East	2.25
2	11	Nailsworth New Market Road	2.1
3	13	Nailworth Old Market West Long Stay	2.075
4	15	Nailsworth Bus Station	2.025
4	15	Nailsworth Old Market Lay-by	2.025
6	21	Nailsworth Comrades	1.925
7	24	Nailsworth Old Market West Short Stay	1.9
8	26	Nailsworth Town Hall	1.85
Wotton-under-Edge			
1	15	Wotton-under-Edge Short Stay	2.025
1	15	Wotton-under-Edge Long Stay	2.025
3	31	Wotton-under-Edge Potters Pond	1.55
Rural and remaining areas*			
1	10	Cainscross Car Park	2.125
2	13	Minchinhampton Friday Street	2.075
3	20	Stonehouse Car Park	1.95
4	27	Painswick	1.775
5	28	Kings Stanley	1.75
6	29	Horsley Car Park	1.675
7	30	Cam Chapel Street	1.625
8	32	Randwick Car Park	1.375
9	33	Arlingham Car Park	1.25

Bottom 50% of district ranking

*Note: Towns or areas with only one car park were grouped and ranked together to provide and prioritise charging options in less population-dense regions

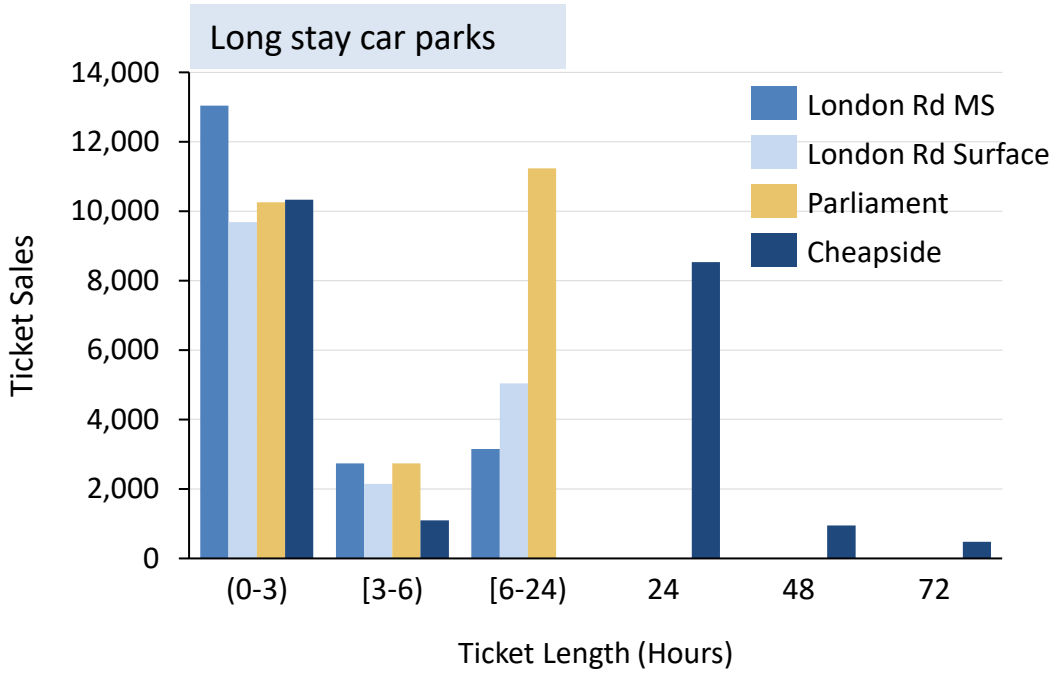
Stroud: All 7 car parks ranked in the district-wide top 8

Town Rank	District Rank	Car park name	Town	Score
1	1	Church Street	Stroud	2.675
2	2	London Rd Surface	Stroud	2.625
3	3	Parliament Street	Stroud	2.55
4	4	Cheapside	Stroud	2.4
5	6	Stratford Park	Stroud	2.25
6	7	Rowcroft	Stroud	2.225
7	8	MSCP (London Rd) Long Stay	Stroud	2.175

- As the largest town in the district Stroud has the highest population density, increasing all overall scores. The lowest score still ranked 8th of 33 car parks in the district.
- Due to town-wide low EV uptake, low distance to major road, high current provision, and high trips, all car parks scored similarly on these factors. As a result, intra-town rankings such as Church St. and London Rd Surface tended to be determined by higher utilisation and number of nearby amenities. Car parks therefore often ranked lower as their distance to the town centre increased (ex. Stratford Park).

Stroud car park users typically stay for 1-3h per visit

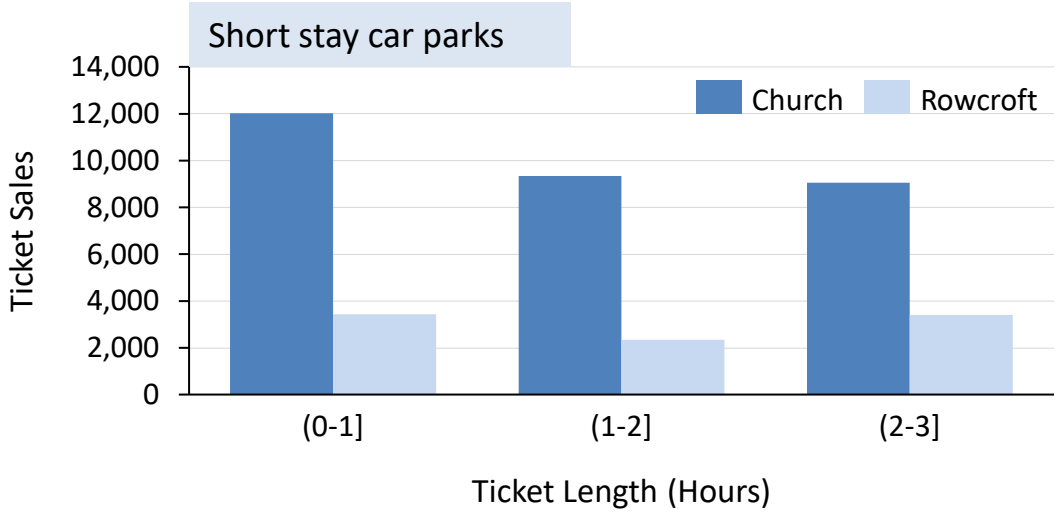
- Within Stroud, all car parks except Stratford Park are fee-paying. SDC provided all ticket purchase data from September 2020 to identify usage trends and determine the appropriate technology to deploy.
- Assuming drivers tend to purchase ticket lengths based on their dwell times, information regarding car park utilisation was inferred.
- The majority of drivers purchased tickets in the <3h range regardless of car park, even for car parks that allow longer stays. Within the <3h range, more users tend to stay for <1h, but are generally well distributed.



Conclusion

Charging sites, power offerings and usage should cater more to short term stays. Specifically fast (7-22kW) or rapid charging (50-100kW) is appropriate for a 1-4h dwell time, as they offer sufficient power.

For car parks with a greater range of use such as Parliament St, utilisation of chargers could be tracked to predict the charging speed for future deployments, to avoid overinvesting in high power charging or underinvesting in slow charging, resulting in low usage.



Figures based on ticket purchase data from September 2021 – September 2022

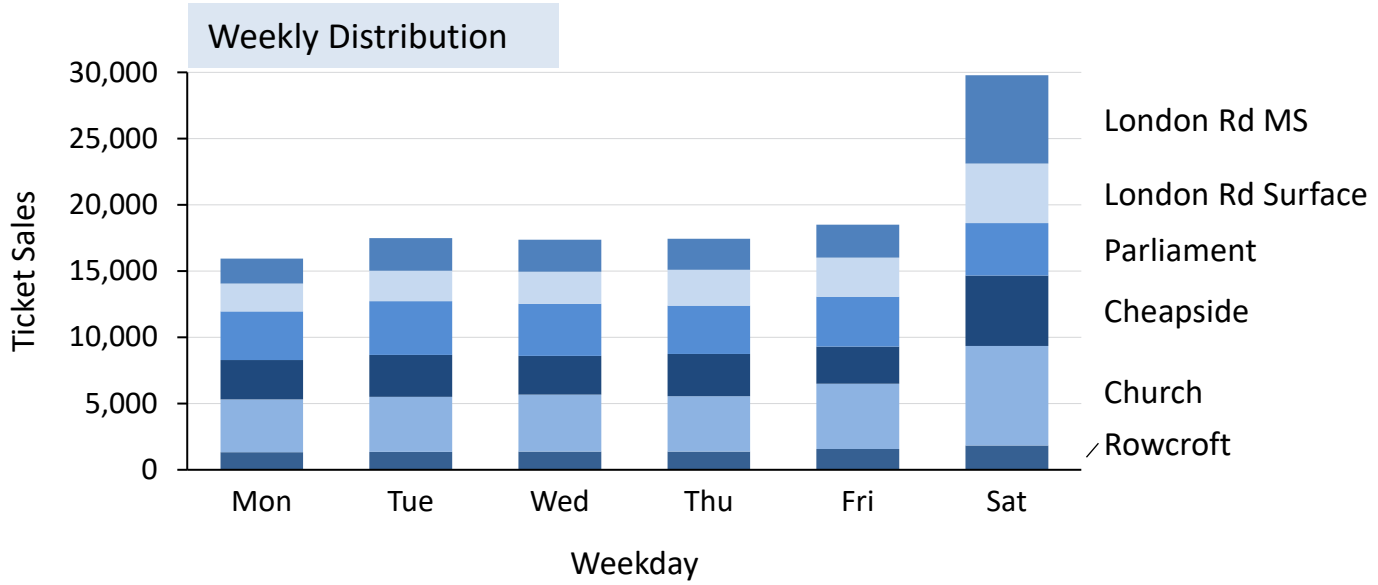
Note: 22kW should be deployed as double headed chargers which can charge two vehicles simultaneously (at 7-11kW) as few EVs can charge at 22kW AC

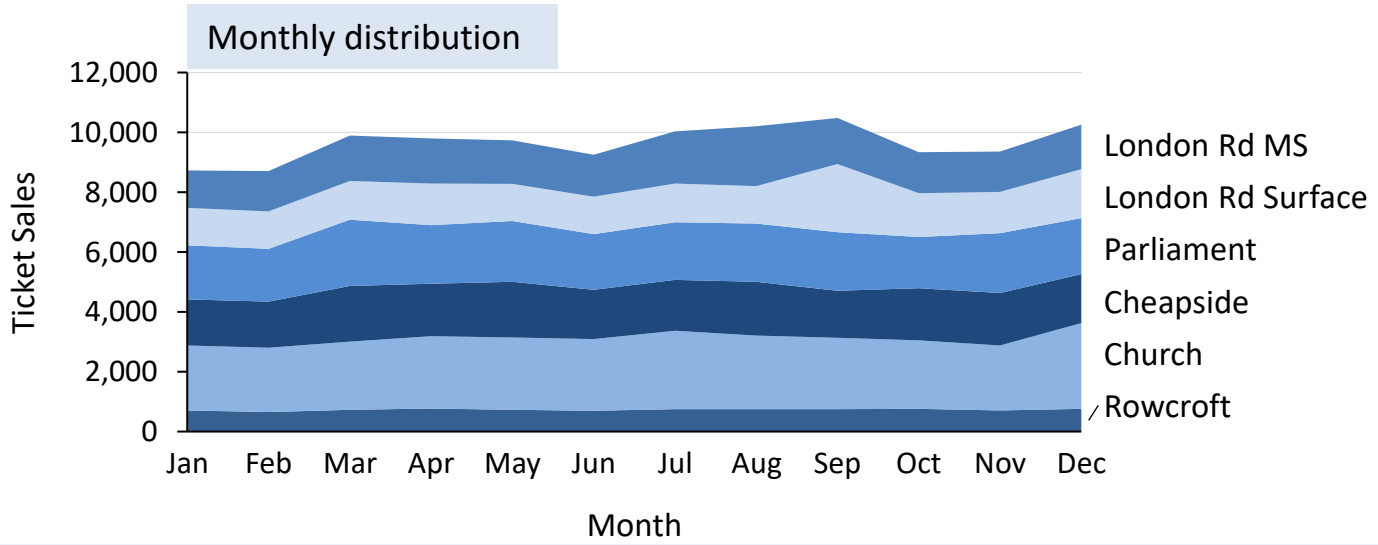
Stroud car parks experience a high usage spike on the weekends

- These figures show how Stroud carpark utilisation changes within the week and year.
- On Sundays all car parks are free, hence no ticketing data
- Car parks are generally used consistently throughout the year and during the week, with a 70-100% rise during the weekends.

Conclusion

- Peak usage leads to high EVCP competition in certain periods and underuse in others. Charging provision should therefore be fitted for more common usage periods (non-weekend), and regulated during peak periods to avoid oversupply.
- Regulation can be through policies such as an overstay fee to ensure higher turnover and revenue for vehicles plugged in but not charging.
- Enforcement of EV-only spaces may also be needed during busy days to prevent ICE vehicles from blocking charging access





Berkeley: 5 more parking spaces led to a 14 rank jump for Berkeley's Library Car Park

Town Rank	District Rank	Car park name	Town	Score
1	11	Berkeley Library Car Park	Berkeley	2.1
2	25	Berkeley Marybrook Street	Berkeley	1.875

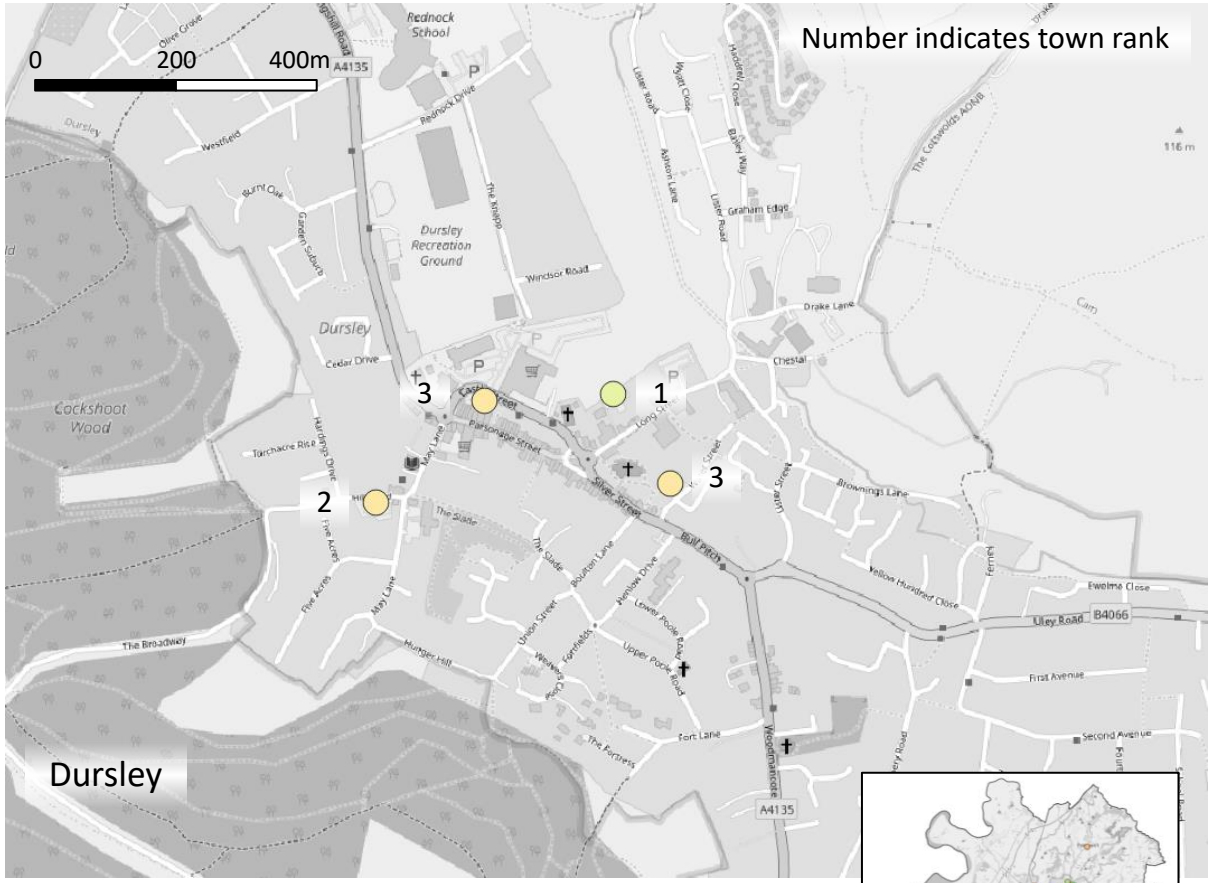
Bottom 50% of district ranking

- Berkeley's two car parks scored exactly the same on all factors due to their close proximity to each other, with one exception: total number of parking spaces. Berkeley Library offers 29 spaces, while Marybrook Street offers 24.
  - This may seem marginal, but as both are highly utilised car parks, with minimal on-street parking and no other public car parks, a 20% increase in spaces makes Berkeley Library a far more desirable site for EVCP deployment
  - There is a higher likelihood of an EV driver within the pool of visitors, and less competition for parking spaces with non-EV drivers due to more spaces overall

Dursley: Castle Street's larger capacity and proximity to major road sets it apart from others

Town Rank	District Rank	Car park name	Town	Score
1	9	Dursley Castle Street	Dursley	2.15
2	19	Dursley May Lane	Dursley	1.975
3	21	Dursley Castle Street/Parsonage Street	Dursley	1.925
3	21	Dursley Water Street	Dursley	1.925

Bottom 50% of district ranking

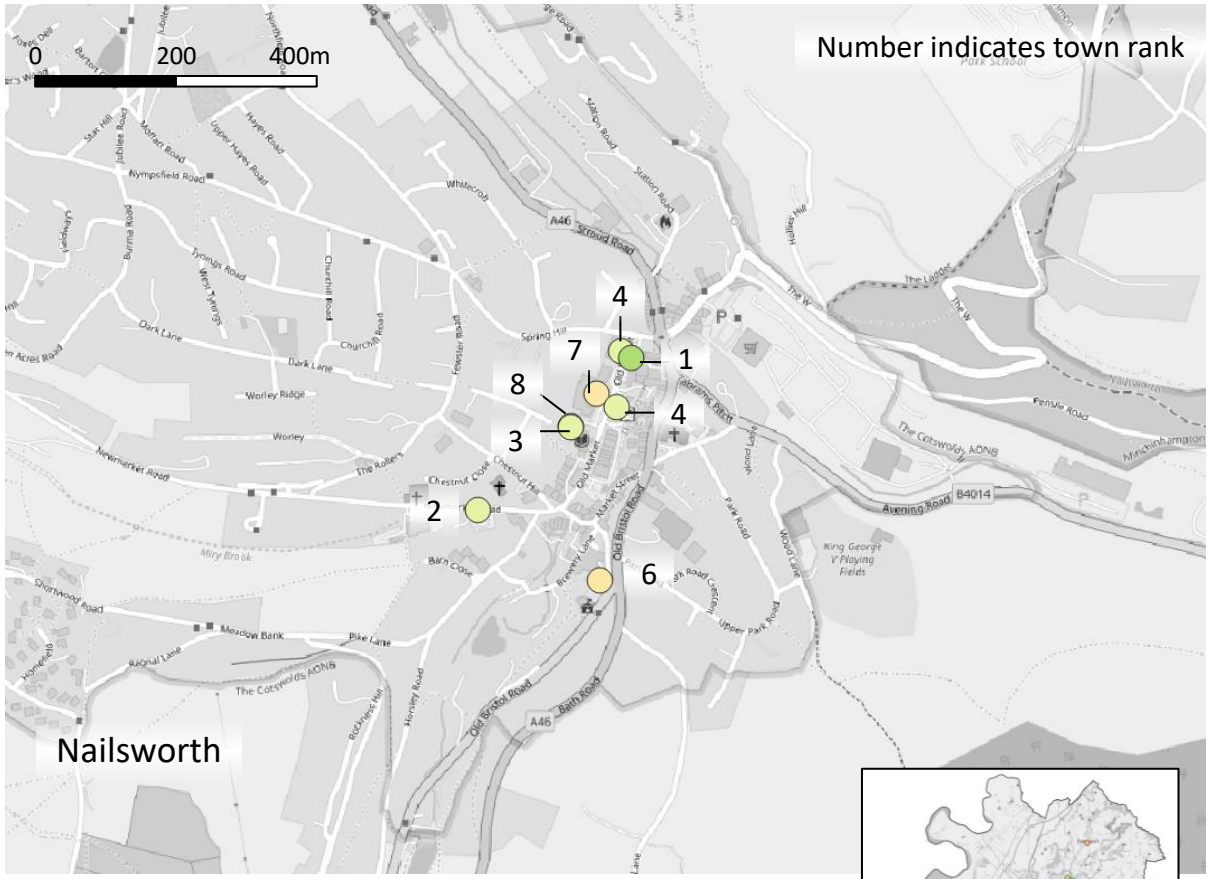


- Dursley's car parks broadly scored lowered on current provision, traffic and trip data, and high on utilisation. The top two car parks were differentiated by their higher number of parking spaces (~50) compared to the bottom two (~20).
- The gap between Castle Street and May Lane can be explained by the latter's further location from the main street. More off-street parking was available, lowering parking demand for the area.
- May Lane is 60m farther from the major road than Castle Street. Although they may seem to be located close together, this distance on foot may be an inconvenience for EV drivers walking home or to amenities nearby while their vehicle charges.

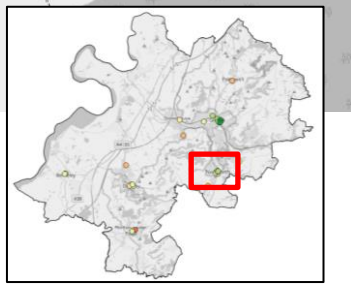
Nailsworth: Although offering a high number of car parks, their close locations led to a narrower range of scores

Town Rank	District Rank	Car park name	Town	Score
1	5	Nailsworth Old Market East	Nailsworth	2.25
2	11	Nailsworth New Market Road	Nailsworth	2.1
3	13	Nailworth Old Market West Long Stay	Nailsworth	2.075
4	15	Nailsworth Bus Station	Nailsworth	2.025
4	15	Nailsworth Old Market Lay-by	Nailsworth	2.025
6	21	Nailsworth Comrades	Nailsworth	1.925
7	24	Nailsworth Old Market West Short Stay	Nailsworth	1.9
8	26	Nailsworth Town Hall	Nailsworth	1.85

Bottom 50% of district ranking



Note: Some points may be overlapping



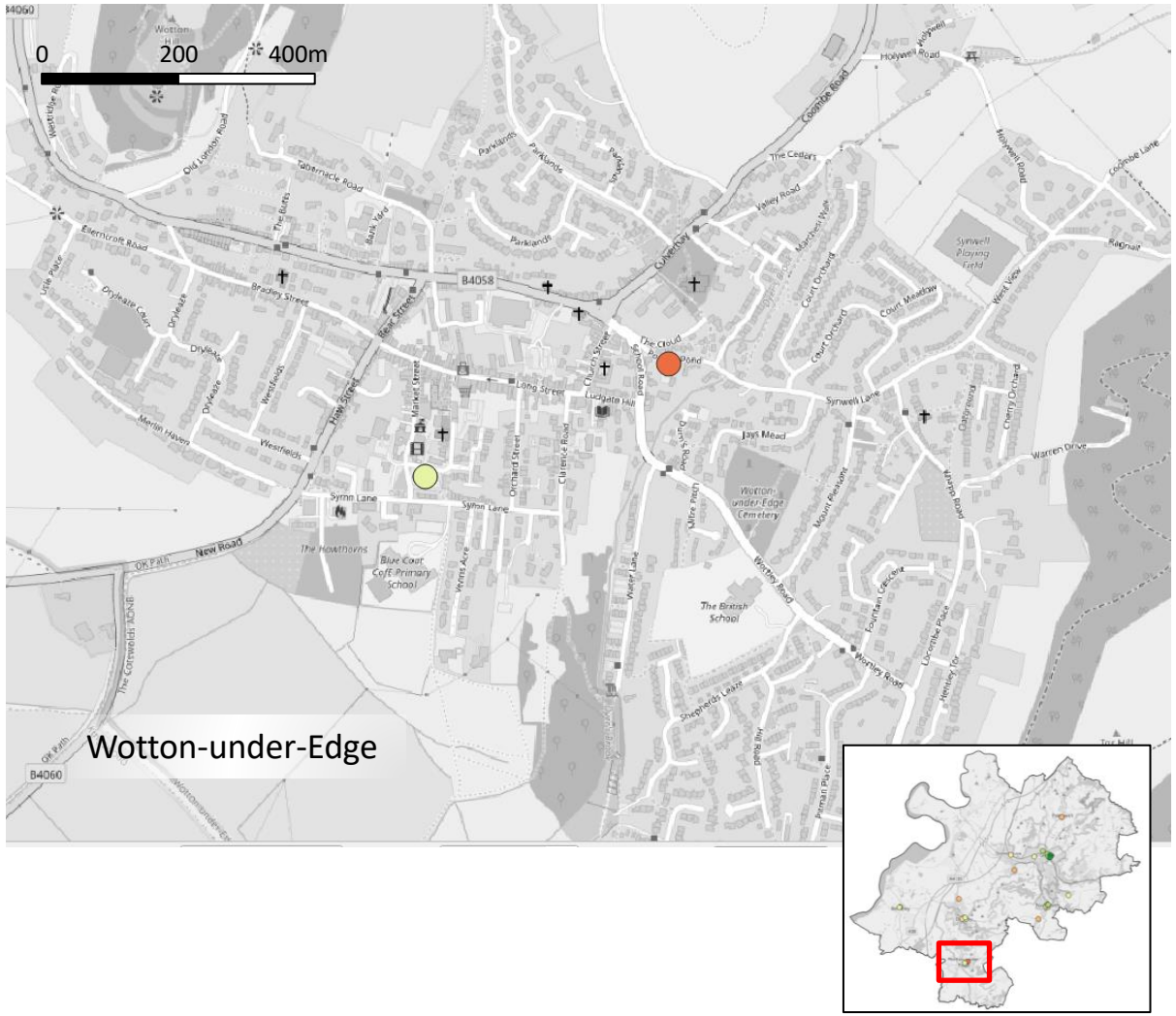
- Nailsworth may offer 8 car parks, but they are mostly clustered in one shopping area, leading to similar scores in most metrics. Old Market East is ranked first primarily because it offers 44 parking spaces.
- This proximity also offers an opportunity: A charger can service drivers from all nearby car parks. Thereby car parks may vary widely in district score, but have fewer differences in real use. Similarly, interchangeable demand may also result in small on-site differences affecting use (ex. Proximity to the bus station) that was not accounted for in this model. Despite these similar scores, the diversity of qualitative characteristics (ex. long or short stay) also offers flexibility for SDC to decide on the type of chargers and the type of drivers they want to service (see slide)

Wotton-under-Edge: The joint short and long stay car park is far better suited due to its hybrid nature and central location

Town Rank	District Rank	Car park name	Town	Score
1	15	Wotton-under-Edge Short Stay	Wotton-under-Edge	2.025
1	15	Wotton-under-Edge Long Stay	Wotton-under-Edge	2.025
3	31	Wotton-under-Edge Potters Pond	Wotton-under-Edge	1.55

Bottom 50% of district ranking

- Wotton-under Edge is a unique town as the top two car parks are actually one site divided into short and long stay*
  - As a result, adding EV infrastructure here could offer a charging option to both car parks as drivers can easily change dwell time
- Scoring wise, Potters Pond is a third the size of Wotton-under-Edge short and long stay, as well as farther from town amenities. More off-street parking is also offered as Potters Pond is situated relatively close to residential areas



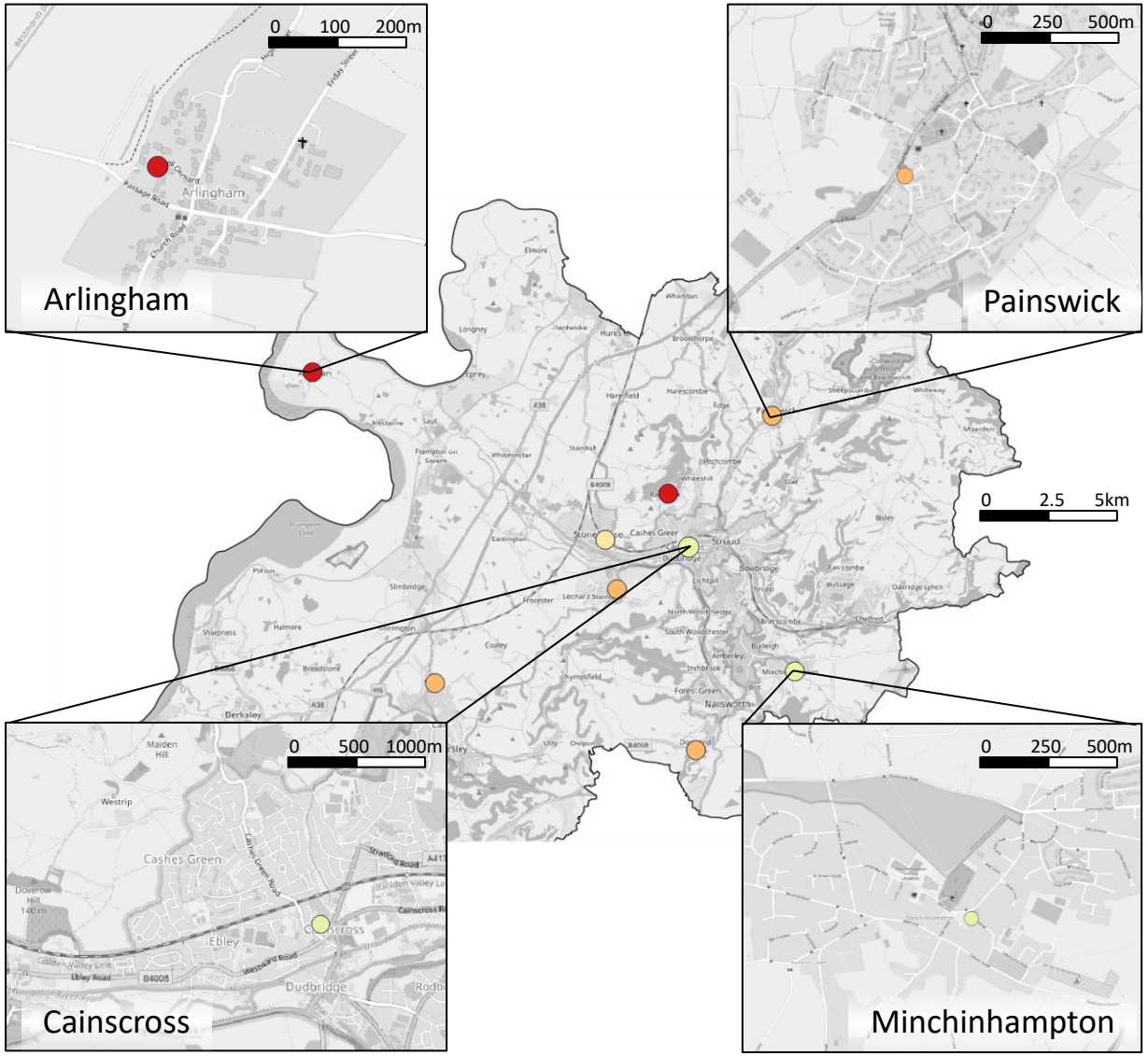
*Note: If combined, the two car parks' district wide ranking would not change as their increased capacity is still below the next score threshold.

Rural and remaining sites: Regardless of site characteristics, the car park's town location is the biggest determinant of scores

Group Rank	District Rank	Car park name	Town	Score
1	10	Cainscross Car Park	Cainscross	2.125
2	13	Minchinhampton Friday Street	Minchinhampton	2.075
3	20	Stonehouse Car Park	Stonehouse	1.95
4	27	Painswick	Painswick	1.775
5	28	Kings Stanley	Kings Stanley	1.75
6	29	Horsley Car Park	Horsley	1.675
7	30	Cam Chapel Street	Cam	1.625
8	32	Randwick Car Park	Randwick	1.375
9	33	Arlingham Car Park	Arlingham	1.25

Bottom 50% of district ranking

- All remaining car parks were generally centrally located within their towns. Yet the entire towns themselves often lacked the factors (amenities, distance to major road, traffic flow) considered in the analysis. For example, Arlingham had zero amenities in the categories considered
- The less traffic and trips into the town, the lower demand and therefore score, hence all rural regions tended to score lower in the district



Similar scoring car parks were re-ranked with greater priority for short stays, multiple occupant uses, and additional deployment factors

- After assessing the model outputs, qualitative characteristics for car parks with the same score were also considered. For example, short stay was prioritised over long stay for car parks with the same score due to their stronger EV infrastructure business case. Local additional demand indicators such as explicit resident requests for charging can also be taken into account.
- Car parks that served multiple groups of occupants were also prioritised to offer charging options to more people
- Some car parks may be eliminated due to additional deployment factors, such as funding or competing construction plans.

Adjusted ranking

Final Rank	Car park name	Town	Score	Stay Length[1]	Occupants
1	Church Street	Stroud	2.675	Short	Residents, shoppers
2	London Rd Surface	Stroud	2.625	Long	Residents
3	Parliament Street	Stroud	2.55	Long	Residents, commuters
4	Cheapside	Stroud	2.4	Long	Residents, commuters
5	Nailsworth Old Market East	Nailsworth	2.25	Short	Residents, commuters, shoppers
6	Stratford Park	Stroud	2.25	Long	Residents, visitors
7	Rowcroft	Stroud	2.225	Short	Shoppers
8	MSCP (London Rd) Long Stay	Stroud	2.175	Long	Commuters, shoppers
9	Dursley Castle Street	Dursley	2.15	Short	Residents, commuters
10	Cainscross Car Park	Stroud	2.125	Long	Residents
11	Berkeley Library Car Park	Berkeley	2.1	Long	Residents, commuters
12	Nailsworth New Market Road	Nailsworth	2.1	Long	Residents, commuters
13	Minchinhampton Friday Street	Minchinhampton	2.075	Long	Residents, commuters
14	Nailworth Old Market West Long Stay	Nailsworth	2.075	Long	Residents, commuters, shoppers
15	Nailsworth Bus Station	Nailsworth	2.025	Short	Residents, commuters, shoppers
16	Nailsworth Old Market Lay-by	Nailsworth	2.025	Short	Residents, commuters, shoppers
17	Wotton under Edge Short Stay	Wotton under Edge	2.025	Short	Residents, commuters
18	Wotton under Edge Long Stay	Wotton under Edge	2.025	Long	Residents, commuters
19	Dursley May Lane	Dursley	1.975	Long	Commuters
20	Stonehouse Car Park	Stonehouse	1.95	Long	Residents, commuters, shoppers

Cheapside has been identified in the NDP (Neighbourhood Development Plan) as a potential development site

Closed from 9pm – 6am and all day Sunday, may be ineligible for ORCS funding

Cainscross shares similarities with another potential car park (Ebley Mill, Ebley Wharf, Stroud, Gloucestershire. GL5 4UB). Its score and ranking can be assumed to be similar if Ebley is included in future EV deployment plans

Lower scoring car parks were excluded from this qualitative analysis as their model scores already relegated them to later deployment stages

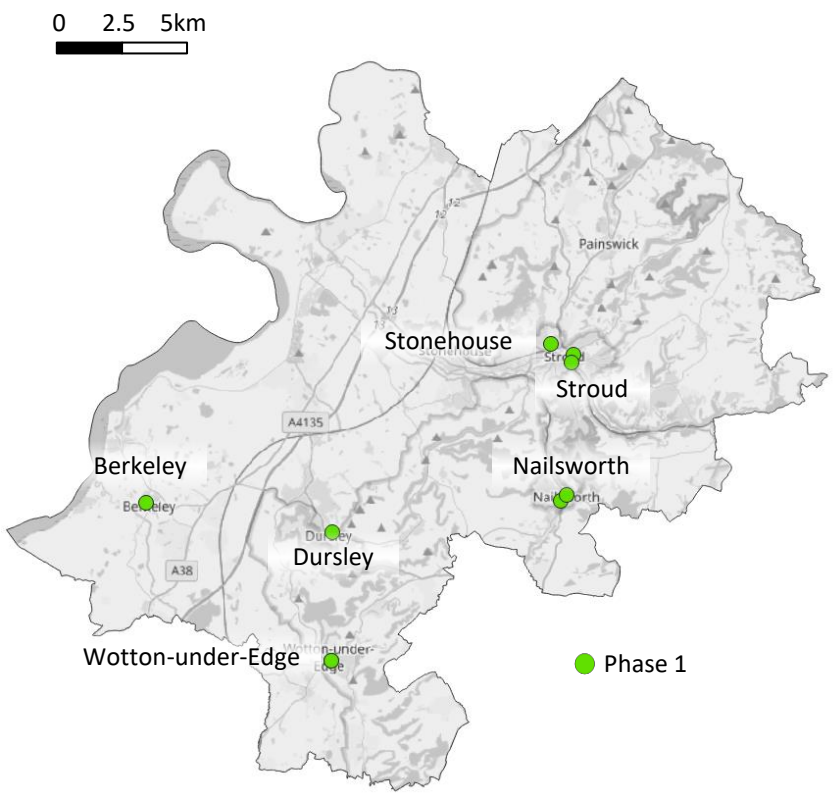
1. Short stays are defined as equal to or less than 3 hours

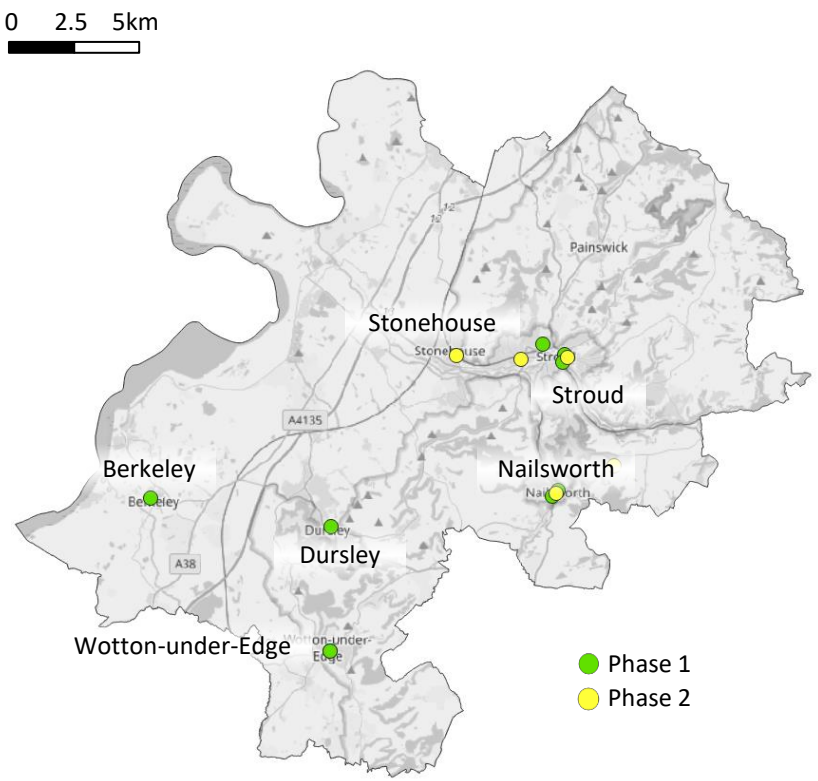
Agenda

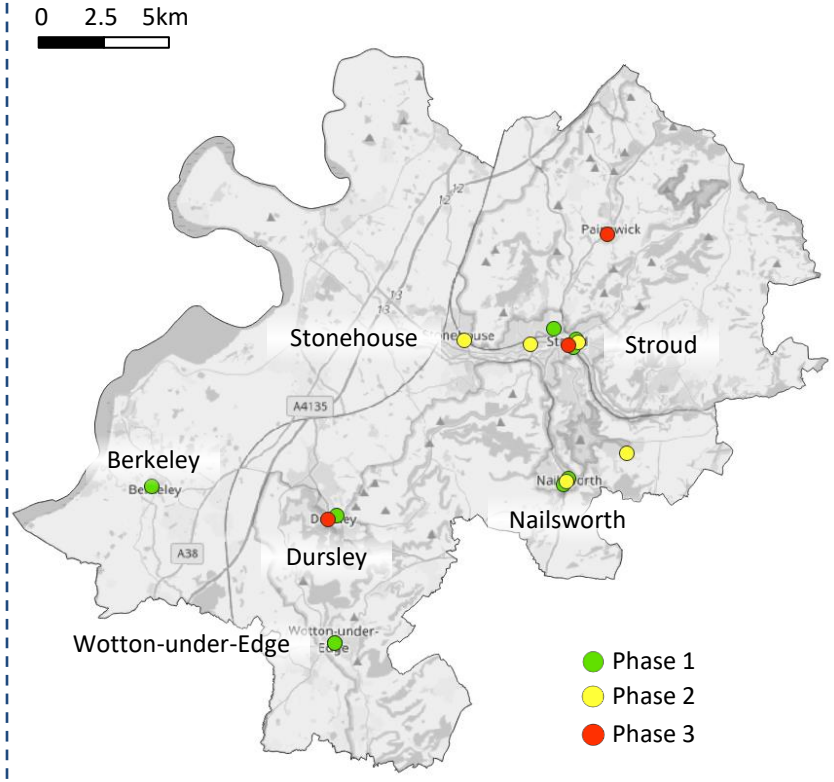
- Background
- Business and procurement models
- SDC car park EVCP demand assessment
- **SDC deployment approach**
- Appendix

Earlier deployment phases prioritise higher demand to ensure utilisation, and later expand into broader areas for fair distribution

2022 Phase 1 2024 Phase 2 2026 Phase 3 2028+







Phase 1 car parks are sites that have scored highly for demand in the desk based assessment. SDC should track utilisation of these EVCPs, revenue, and potential barriers to inform later phases.

Further deployment stages are provisional, as SDC can use insights from Phase 1 and adjust the number and location of sites accordingly.

Reassess to determine if deployment is required in remaining car parks

Locations of any proposed EVCP sites were determined by desk-based assessments, and may shift as they are further refined by site visits and grid considerations.

Initial deployment both prioritises high demand sites as well as enabling equitable distribution and therefore access to charging across the region

Town	Phase 1		Phase 2		Phase 3	
Stroud	Church Street	2.675	Parliament Street	2.55	Cheapside	2.4
	London Rd Surface	2.625				
	Stratford Park	2.25				
Berkeley	Berkeley Library Car Park	2.1				
Cainscross			Cainscross Car Park	2.125		
Dursley	Dursley Castle Street	2.15			Dursley May Lane	1.975
Nailsworth	Nailsworth Old Market East	2.25	Nailsworth Old Market West Long Stay	2.075		
	Nailsworth New Market Road	2.1				
Minchinhampton			Minchinhampton Friday Street	2.075		
Painswick					Painswick	1.775
Stonehouse			Stonehouse Car Park	1.95		
Wotton-under-Edge	Wotton-under-Edge Short Stay	2.025				
	Wotton-under-Edge Long Stay	2.025				

Stroud District Council should take the following actions in the next 6 months

Short Term next steps for Stroud District Council

Discussions:

- Continue discussions with GCC to ensure equitable deployment across Stroud
- Present car park assessment and deployment approach to other departments within SDC
- Track government funding schemes (ORCS and LEVI)

Procurement:

- Liaise with GCC to find out more about their framework agreement with Connected Kerb
- Investigate the level of funding available for charging beyond government grants
- Decide on the chosen procurement approach and preferred ownership and operational model

Deployment:

- Once procurement approach and CPO has been finalised, the CPO should carry out on the ground site surveys – assessing factors such as grid connection, site size
  - This may lead to some high scoring sites requiring extensive grid connection upgrades
- Filter out any sites with unfeasible grid connection costs or other issues, and select either close sites or those in the same town with reasonable score
- Consider requests from residents and how these align with desk based assessment and site surveys when deciding upon most appropriate sites for deployment

Agenda

Background

Business and procurement models

SDC car park EVCP demand assessment

SDC deployment approach

Appendix

EV charging demand potential was estimated using 9 indicator metrics split across 2 categories

	Charging Demand					Site Attractiveness			
Metric	Total trips (within 1km)	Traffic flow on nearest major road	Availability of off-street parking (within 300m)	EV uptake (# of EVs in postcode district)	Current provision (# of charge points)	Distance to major road	Amenities[1] (within 300m)	Car park utilisation	Number of parking spaces
Rationale	The estimated number of car trips occurring daily in an MSOA shows vehicle activity volume, indicating the potential pool of EV users.	Higher nearby throughput of vehicles can indicate higher charging needs, particularly as EV uptake increases.	Residents without access to off-street parking will be reliant on public charging.	A high volume of EVs within 1km of the car park indicates local charging demand.	More approved or already deployed EV chargers within 1km of the car park offers alternative charging options	Sites located closer to a major road are more attractive as they are more convenient to reach.	Amenities offer an additional incentive to visit an area as well as an activity to do during charging, thus increasing charger usage if nearby.	Well used car parks have a more reliable throughput of vehicles and likely to have higher and consistent demand for charging.	Non-EV drivers are less impacted when deploying EVCPs in car parks with a higher volume of spaces. Larger car parks also have higher long-term deployment potential.
Scoring	↑ Trips **↑ Score**	↑ Traffic flow **↑ Score**	↑ Availability of off-street parking **↓ Score**	↑ EV uptake **↑ Score**	↑ Current provision **↓ Score**	↑ Distance to road **↓ Score**	↑ Amenities **↑ Score**	↑ Utilisation **↑ Score**	↑ Number of spaces **↑ Score**

Note – in the weighting scenarios, EV uptake, current provision and distance to nearest major road are weighted low relative to other metrics, as traffic flow was similar for all car parks within a town, and therefore lowered scoring variation needed to determine priority areas, and EV uptake and provision weighted lower due to the early-stage nature of EV deployment to date in the district.

1. Amenities considered are cafes, clothing shops, convenience stores, fast food shops, restaurants, and supermarkets.

Indicator metrics were weighted based on regional relevance

Metric	Weights
Total parking spaces	22.5
Car park utilisation	22.5
Off-street availability	12.5
Amenities	12.5
Total trips	7.5
Traffic flow	7.5
EV uptake	5.0
Distance to major road	5.0
Current provision	5.0
TOTAL	100.0%

The 9 indicator metrics were divided into 4 weight classes based on relevance:

High: The total number of parking spaces and utilisation offered the most direct estimate of car park popularity and ability to accommodate both EV and non-EV drivers.

Medium: These indicators were often correlated with the type of user visiting the car park as well as town size and location, they may not fully demonstrate locals' willingness to visit, but remained useful general indicators.

Low: EV uptake and current provision remained low across the district, thereby lowering their weight increased score variation, allowing for easier ranking. Major road distance was also lowered to be more inclusive of farther towns.

Glossary

Abbreviation / Term	Description
CAPEX	Capital expenditure
CCS	Crown Commercial Service
CPO	Charge point operator
DPS	Dynamic Procurement System
ESPO	Eastern Shires Purchasing Organisation
EV	Electric vehicle
EVCP	Electric vehicle charge points
GCC	Gloucestershire County Council
ICE	Internal combustion engine
LA	Local authority
LEVI	Local Electric Vehicle Infrastructure (scheme)
O&M	Operation and maintenance
OLEV	Office for Low Emission Vehicles
OPEX	Operational expenditure
ORCS	On-street residential charging scheme
OZEV	Office for Zero Emission Vehicles
SDC	Stroud District Council
SEBP	South East Business Portal
VCIS	Vehicle Charging Infrastructure Solutions
YPO	Yorkshire Purchasing Organisation