Electric Vehicle Charging Strategy for Bedford Borough

2024-2027

BEDFORD BOROUGH COUNCIL

October 2024

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Vision

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1. Vision

Our vision is that access to charging will not be a barrier to residents of Bedford Borough who switch to using electric vehicles.

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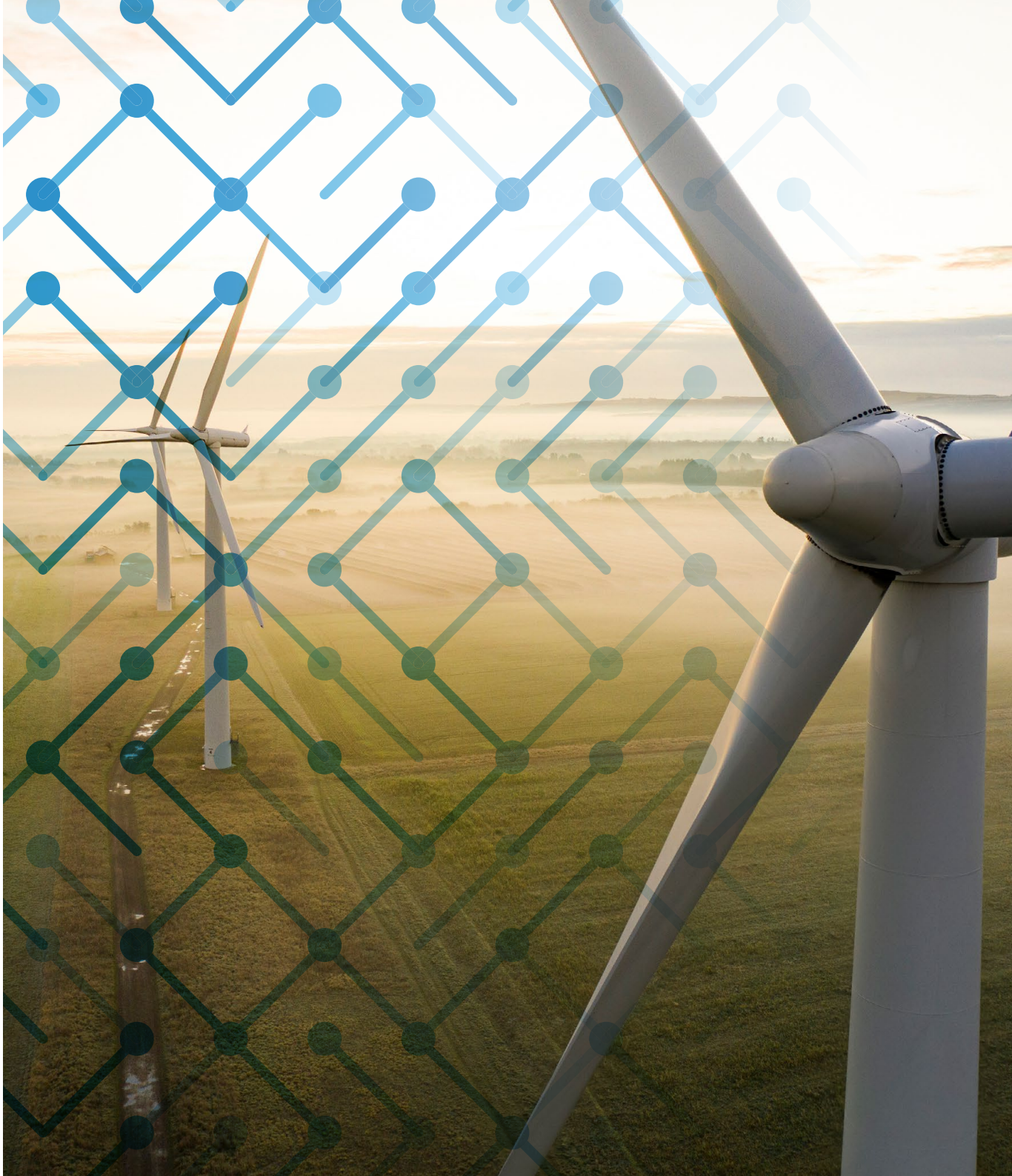
Introduction: the future of EV charging in Bedford



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2. Introduction: the future of EV charging in Bedford

It is now clearly very likely that a large-scale switch to electric vehicles (EVs) will take place. The harms arising from the fossil fuels that power internal combustion engines (ICE) are beyond doubt, and the policy direction in most developed nations away from them has now been firmly set.

However, it will be a slow process and is still in its early stages. EV technology is still developing, and current EV drivers are early adopters. There may be significant improvements to EV technology in the future, but we are currently in a period when no major new development is expected on the market at any scale for several years at least.

This strategy for EV charging in Bedford Borough therefore runs to 2027. In Bedford, as in the country as a whole, the rate of growth in EV ownership is steep, averaging over 10% quarter-on-quarter across 2022 and 2023 (see Figure 1). But they will remain a small proportion – fewer than one in five – of overall cars on the road during this strategy period (see Figure 2).

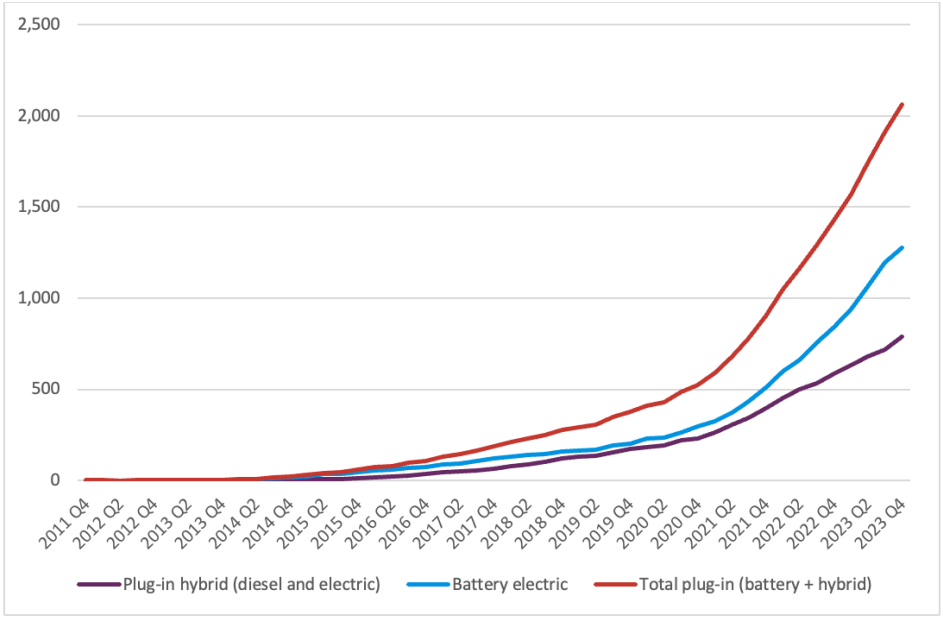

Figure 1: Privately owned licensed plug-in cars in Bedford Borough (determined by address of registered keeper), 2011 Q4 to 2023 Q4 (excluding range extended EVs)

The current generation of EVs is currently suitable for most journeys made by most motorists: cars being brought to market now commonly have a range of 200 miles or more, which is at the upper end of what most people will drive without a break and therefore an opportunity to recharge; and the bulk of road journeys are far shorter than that.

However, undeniably they still have limitations: recharging them is slower than refuelling an ICE vehicle, and needs more planning when done away from home. Making a long journey at short notice and with

only short breaks, while rarely required, is undeniably more difficult in an EV than in an ICE car. While prices are coming down and EV ranges are expanding, approaching parity with like-for-like ICE vehicles across many categories, this trend is being led by new cars: a used market for EVs comparable to the one that exists for ICE cars, which is where most car buyers shop, remains some way off. So they are not yet a seamless replacement for ICE cars, for many and perhaps most drivers.

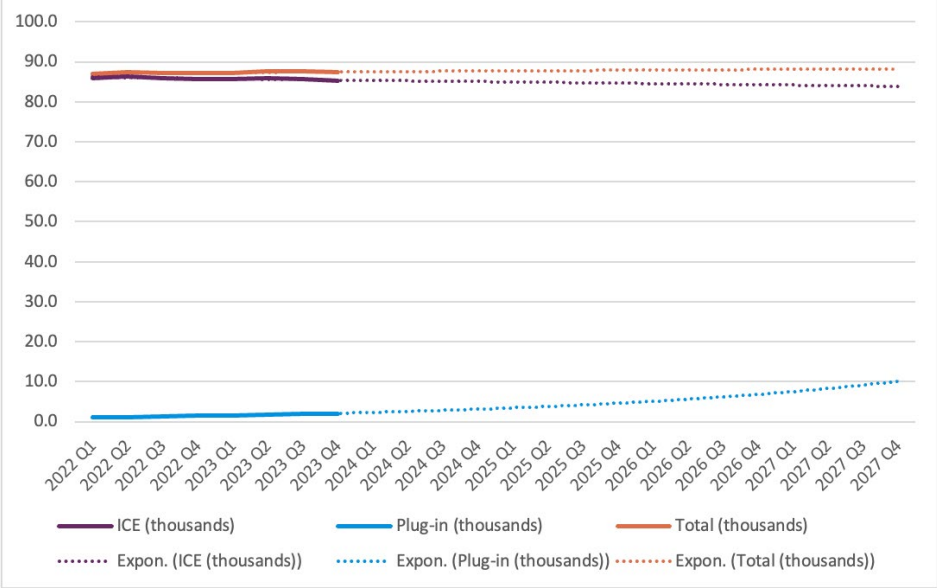

Figure 2: Private cars in Bedford Borough 2022-3, with trends to end 2027 (thousands)

We therefore have reasonably clear expectations for how the EV transition will develop in Bedford over the next few years. The proportion of EVs on the road will rise to somewhere around 15%. Their characteristics will be similar to the current generation of cars, with

incremental improvements. As now, people who have off-street parking will continue to install home chargepoints when they buy an EV. Under the measures in this strategy, there will be greater access to public chargepoints for people who have to park on-street. These chargepoints will be easier to use under the 2023 Public Charge Point Regulations, which will make it possible to use any operator's chargepoints from a single app, and will require all operators to provide helplines.[1]

Looking further into the future, there is more uncertainty. In the later part of the decade, it will be necessary to evaluate emerging trends and technologies, and consider what our approach should be approaching the 2030s. Long-term options for on-street charging are one area of uncertainty: while public chargepoints are likely to remain part of the mix, they cost markedly more than charging on a home electricity tariff that offers cheap overnight power. This price disparity will increasingly be an issue for consumers if it remains unchanged. There is therefore potential for gullies and sharing platforms to become more commonly used (discussed further in 6.12, below).

There is also uncertainty over the rate at which solar panels, electrified heating and battery bank systems will become more common in homes, and therefore prompt greater use of vehicle-to-home / vehicle-to-grid technology, where a car battery can feed electricity into a home or the wider grid at times of high demand, and recharge later when electricity prices are lower. EV car clubs may be making an impact on driver behaviour by the 2030s, or they may still be in their early days. Technological changes could make EVs, and particularly their batteries, easier and/or cheaper to produce, or improve batteries' energy density or charging times: if any step-change in technology is coming to market later in the decade this too might have implications for EV uptake and charging infrastructure requirements. Wider economic and geopolitical developments may also have an impact, for instance whether EVs from China are subject to stiff tariffs. There are therefore many reasons why it will make sense to review the situation in a few years' time, and not assume that a strategy developed now will continue to be workable if circumstances change.

1. Public Charge Point Regulations 2023 https://statutoryinstruments.parliament.uk/instrument/XMR7yL66

3.

Scope of this strategy

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3. Scope of this strategy

This strategy addresses charging for privately owned electric cars. It considers the needs of residents, visitors (to residents, to businesses, and to attractions and facilities in the Borough), people with special requirements (eg for disabled access), and the general public including all road users.

The strategy considers how Bedford Borough Council can support the transition to EVs in light of national government policy and emerging patterns of driving behaviour, but in the absence of any statutory requirement. It will particularly focus on aspects of EV uptake that the commercial market may not fully address, especially charging facilities for people who do not have off-street parking for their cars. Where residents have off-street parking, or their needs are being met by existing commercial offerings, we will not seek to act further.

Other types of vehicles can have charging needs quite distinct from private cars: faster charging may be required for some types of vehicles, while for some commercial uses the Council's role may need to be different than its role in respect of residents' personal cars. We will therefore address charging for other types of electric vehicle in our wider Local Transport Plan and its other supporting documents, including those on freight and different modes of public, active and shared transport. Topics to be addressed by those routes will include:

- Zero emission powered light vehicles used by businesses, for instance for last-mile or business-to-business deliveries
- The uptake of EVs within Bedford's taxi fleet
- Charging for other fleet vehicles that do not operate on a 'return to depot' basis
- The future use of zero emission buses in Bedford.

The deployment of higher powered chargepoints on the strategic road network (motorways and major A-roads) is being led by National Highways. In Bedford Borough, this pertains only to the A421 Bedford by-pass, and the short stretch of the A1 either side of the Black Cat Roundabout, plus a short stretch of the A428 that heads east from it. The latter elements are being redeveloped as part of the A428 Black Cat to Caxton Gibbet scheme, which is due to open at the end of this strategy period in 2027.[2]

We have been allocated funding under the Local Electric Vehicle Infrastructure scheme for both capital expenditure on new chargepoints (£1,010,000) and organisational capability to manage the programme, including engagement with residents and provision of information (£346,000).[3] This will provide most of the public funds deployed in delivering this strategy, and we will work with a commercial partner to deliver the new chargepoints, using an open procurement process.

This strategy will outline the different schemes and interventions that have been, will be and may be deployed in Bedford Borough. It was developed during 2023 and 2024, alongside our successful bid for LEVI funding and with the benefit of input from residents from an EV-specific online survey in autumn 2023, and a public consultation on an initial draft in 2024.

2. A428 Black Cat to Caxton Gibbet, National Highways https://nationalhighways.co.uk/our-roads/a428-black-cat-to-caxton-gibbet/

3. Local Electric Vehicle Infrastructure (LEVI) funding amounts and tranche allocations: capital, Office for Zero Emission Vehicles, updated September 2023 https://www.gov.uk/government/publications/local-ev-infrastructure-levi-funding-amounts/local-electric-vehicle-infrastructure-levi-funding-amounts-capital; and Local Electric Vehicle Infrastructure (LEVI) funding amounts: capability, ibid. https://www.gov.uk/government/publications/local-ev-infrastructure-levi-funding-amounts/local-ev-infrastructure-levi-capability-funding-amounts

4.

Charging provision

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4. Charging provision

4.1 Overview of EV and charging technology

The size of an EV battery is measured in kilowatt hours (kWh). This is roughly the same concept as the capacity of a fuel tank in a traditional car: the greater the capacity, the more energy the car can store, and the further it can go. But for both types of vehicle, efficiency is also a factor: different cars will travel different distances for the same number of kilowatt hours, or for the same number of litres of fuel. The individual driver's style of driving makes a difference for both as well.

A chargepoint with greater power will charge an EV more quickly. So, for example, if a driver connects their car to a 7kW chargepoint, and wants to take it from close to zero charge to a full charge of 40kWh, in principle it will take the chargepoint just under six hours to charge the battery fully. A 22kW charger could provide the same charge in just under two hours.

There is further complexity when considering types of chargepoints. They can offer alternating current (AC) or direct current (DC): AC chargers are lower power, and the car has to convert the AC into DC, using an inverter, in order to charge the battery. This can mean, for example, that an EV that is fitted with an 11kW inverter will only be able to take 11kW of charge even if it is attached to a 22kW AC charger. In this scenario, the car will take longer to charge than its battery capacity and the charger's power rating will suggest that it should.

DC chargers are higher power, and the car can take the charge direct into its battery without conversion. So, a 43kW charger will be able to charge a 40kWh battery fully in just under an hour.

Generally speaking, the higher the power of the chargepoint, the more it will charge the user for electricity. Table 1 illustrates how the costs of different types of chargepoints compare, and also provides a comparison to an efficient petrol car (less efficient petrol cars will of course be much more costly to run).

Car + fuel	Fuel price	Assumed efficiency	Price for 100 miles
EV: overnight EV domestic tariff	8p/kWh	247Wh/mile	£1.98
EV: standard speed public chargepoint	50p/kWh	247Wh/mile	£12.35
Petrol car (efficient)	£1.42/litre	50mpg	£13.01
EV: fast public chargepoint	65p/kWh	247Wh/mile	£16.05
EV: rapid public chargepoint	79p/kWh	247Wh/mile	£19.51
Petrol car (inefficient)	£1.42/litre	25mpg	£26.02

Table 1: Illustrative energy price comparison for EVs using different types of chargepoint, and petrol car. Prices all available in or near Bedford Borough, 15 July 2024.

It is also generally the case that higher power chargepoints are more expensive to install: they cost more to manufacture, and require more heavy duty and expensive connections to the grid.

4.2 Current patterns of charging

For drivers who can install a chargepoint at their home and charge their car off the street, charging is not necessarily a significant barrier to EV uptake. A report by the Competition and Markets Authority in 2022 found that the market appears to be meeting the needs of EV owners who have off-street parking: people who can install a chargepoint at their home are doing so when they switch to EVs.[4]

Estimates of the proportion of households in Bedford that lack off-street parking, and therefore rely on on-street parking, vary. One estimate, using data from Zapmap and the Ordnance Survey, puts the figure at 38%.[5] Another estimate, compiled by the Department for Transport and using data from RightMove, puts it at 18%.[6] A third, using the EV:Ready tool developed by the consultancy WSP, suggests 27.5%.[7] We do not hold data that would enable us to arrive at a more authoritative estimate, but whichever of those figures is closest to the truth, it is clear that a substantial minority of Bedford residents do not have the option of charging an EV in an off-street parking space.

4. Electric vehicle charging market study, Competition and Markets Authority, March 2022 https://www.gov.uk/cma-cases/electric-vehicle-charging-market-study

5. National map of EV Charge Point Coverage, Field Dynamics / Zapmap, updated 2022 https://onstreetcharging.acceleratedinsightplatform.com/

6. Developing Your Strategy, National EV Insight & Support (NEVIS), September 2023 https://nevis.cenex.co.uk/repository/access-to-off-street-parking (login required)

7. EV:Ready report provided to Bedford Borough Council by England's Economic Heartland; subscription service

4.3 Notes on terminology

Charging infrastructure can vary in its physical characteristics: for example, some operators offer a single post with two sockets, from which two cars can be charged, while others have one socket per post and therefore one car can be charged at a time per post. In some cases, particularly for rapid chargepoints, several sockets might be available on one post or cabinet to accommodate different types of connector, but only one can be used at a time. In different datasets or on different websites the same infrastructure might be shown as one, two or three chargepoints.

To avoid ambiguity, the discussion of Bedford Borough's provision below will count chargepoints in terms of the number of cars that can be charged at once. One chargepoint will mean provision for charging one car at a time, irrespective of the number of physical sockets or posts that are present.

Totals for current and future provision in Bedford Borough are therefore presented using this convention: one chargepoint = provision for charging one EV.

The array of different types of charger is complex, and different chargers are appropriate for different situations and uses. Chargepoints are classified by their power, which is in kilowatts (kW). The below table summarises the broad categories of charger as defined by speed, although there is some variation between different organisations about how each category is defined (for instance a 7kW 'standard' charger as shown in the table may be referred to as 'fast' in some literature).

Chargepoint Type	Maximum Power Output
Slow	3.7kW
Standard	7.9kW
Fast	49kW
Rapid	149kW
Ultra-rapid	150kW and over

Table 2: Chargepoint types and power outputs[8]

The Public Charge Point Regulations 2023 define a public chargepoint as one that is primarily intended for use by members of the general public, including chargepoints in public car parks and excluding chargepoints for occupiers of or visitors to residential premises. References to 'public chargepoints' in this strategy are therefore in line with this definition: this does not mean that these chargepoints must be provided by public sector bodies, and a distinction will be made when needed between public chargepoints as defined in the Regulations, and publicly funded or provided chargepoints.

4.4 Current provision in Bedford

To date, Bedford Borough Council has provided standard and some rapid chargepoints in town centre car parks, plus on-street chargepoints (mostly standard) in some residential locations known to lack off-street parking. These are operated for us by two chargepoint operators (CPOs), BP Pulse and Connected Kerb.

We are just one provider of chargepoints in Bedford Borough. Various retailers, workplaces and other sites also offer chargepoints. Additionally, some private residents make their home chargepoints available on online sharing platforms, for other people to use.

8. Resources for local authorities on electric vehicle chargepoints, Energy Saving Trust https://energysavingtrust.org.uk/service/resources-for-local-authorities-on-electric-vehicle-chargepoints/

The number of available chargepoints therefore changes frequently: retail and shared home chargepoints in particular have increased in number even in the nine months between the writing of the first and final drafts of this strategy, with around fifty such chargepoints newly available over that period. Table 3 offers a snapshot of the situation at the start of July 2024.

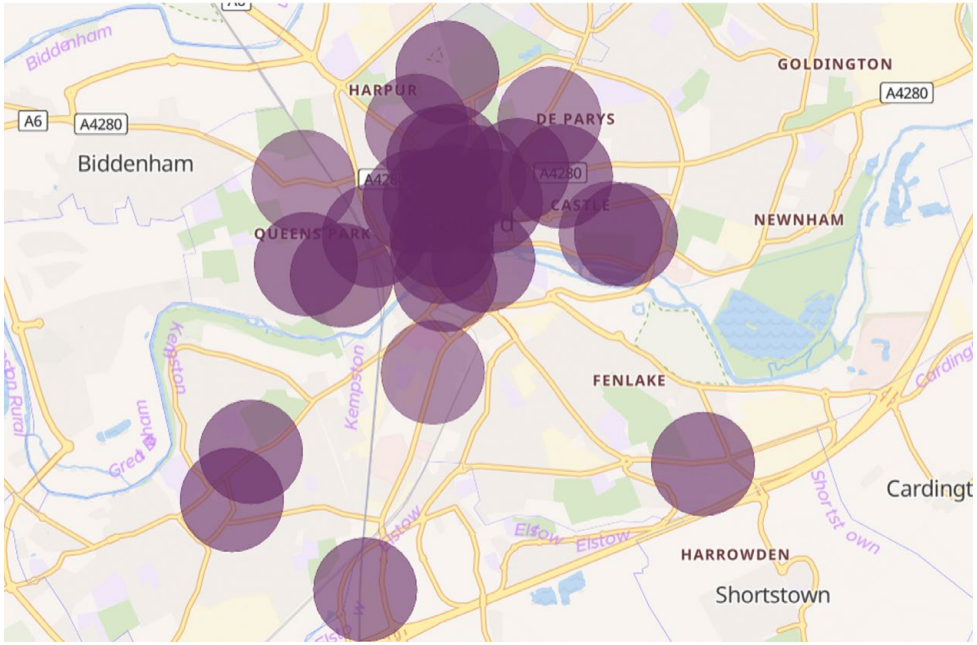
Category	Speed	Number
Council, car park	Slow	2
Council, on-street	Slow	4
Workplace / visitor / other	Slow	5
Council, car park	Standard	46
Council, on-street	Standard	38
Commercial, customer car park	Standard	12
Workplace / visitor / other	Standard	41
Shared home	Standard*	16
Commercial, customer car park	Fast	32
Workplace / visitor / other	Fast	16
Council, car park	Rapid	8
Council, on-street	Rapid	8
Commercial, customer car park	Rapid	20
Workplace / visitor / other	Rapid	5
Commercial, customer car park	Rapid / ultra-rapid	12
Workplace / visitor / other	Rapid / ultra-rapid	4
* Home chargepoints are typically standard, but not all sharing platforms make data for individual chargepoints publicly available		

Table 3: Total non-domestic chargepoint provision in Bedford Borough, as of July 1 2024[9]

9. Sources: Bedford Borough Council, Zapmap, Chargefinder, Open Charge Map

Parking charges or other restrictions may apply to some sites: for example, some chargepoints in retail car parks may be exclusively for the use of that outlet's customers, although this does not automatically bar them from being officially classified as public chargepoints. The available data does not enable us to say which of the chargepoints can be categorised as public chargepoints under the 2023 Regulations: all of the Council provision certainly is, but some restrictions on workplace or customer chargepoints may be too strict to allow them to be technically classified as public chargepoints.

Provision by Bedford Borough Council is at a combination of on-street and car park locations. The oldest chargepoints were installed in car parks over a decade ago, and are now included among those managed by BP Pulse. The standard chargepoints run by Connected Kerb were installed under the On-street Residential Charging Scheme and are targeted at areas where the housing stock lacks off-street parking.



Map 1: All current chargepoint provision by Bedford Borough Council, as of July 1 2024 (showing 400m radius, or approx. 5 minute walk, from each site)

4.5 Current charging behaviours in Bedford

Most EV charging is currently done at home and at workplaces: according to EV:Ready, these locations account for 85% of the energy delivered to EVs.

As part of the development of this strategy, we ran a survey of residents who already use EVs in Bedford Borough. The survey was promoted on the Bedford Borough Council website, in email newsletters, via a press release and by targeted social media advertising. In total, 277 EV drivers responded to the survey, 226 of whom use plug-in battery cars.

The results strongly suggest that charging in Bedford broadly follows the national pattern: as shown in Table 6, most EV drivers who responded to our survey in 2023 report that they charge at home, with all other options used considerably less.

Method	% of EV drivers
At home, when the car is parked off the street and on a driveway, in a garage, or similar	86
Using chargers on motorways and/or A-roads, for instance at service stations	46
Using public on-street chargers (not in a car park)	26
In a car park run by Bedford Borough Council	22
In a business's car park (such as a shop or a hotel)	21
At work, using a chargepoint my employer or client provides	19
Using chargepoints at other people's homes, including using an app (e.g. Co-Charger)	4
At home, when the car is parked on the street	3
Other	4

Table 4: Charging methods used by plug-in battery EV drivers in Bedford Borough (EV Survey 2023)

Method	% of EV drivers
Using public on-street chargers (not in a car park)	67
Using chargers on motorways and/or A-roads, for instance at service stations	52
In a car park run by Bedford Borough Council	24
In a business's car park (such as a shop or a hotel)	27
At work, using a chargepoint my employer or client provides	24
Using chargepoints at other people's homes, including using an app (e.g. Co-Charger)	6
At home, when the car is parked on the street	6
Other	6

Table 5: Charging methods used by plug-in battery EV drivers in Bedford Borough, excluding those with off-street parking (EV Survey 2023)

Of the survey respondents who do not charge at home using off-street parking, more than half use on-street chargepoints, with chargepoints on major roads the next most popular option. On-street chargepoints are currently significantly more popular than chargepoints in Council-run car parks.

There is not an absolute divide between drivers who charge in their off-street parking and drivers who use public chargepoints: the majority of respondents who used public chargepoints (either on-street or in a car park) also charged at home off-street.

We expect on-street public chargepoints to be an important option for EV drivers over the medium to long term, and for usage of them to increase. Whether they remain the primary option for drivers who have to park on-street is hard to predict: gullies or other options (see 6.12 below) may come to be preferred, particularly if they give access to cheap overnight tariffs and public chargepoints continue not to.

Usage data from our own chargepoints is a further source of information about charging behaviours in the Borough, although the data is 'noisy' and exhibits considerable fluctuations over time. However, we were assisted by the LEVI Fund Support Body who provided analysis of this data, and it does offer some insight. It showed, for instance, that the Connected Kerb standard chargers in residential areas are overwhelmingly being used by repeat users, suggesting they are meeting the charging needs of local residents who lack off-street parking, as intended.

Among the standard and slow chargepoints in town centre car parks, location appears to be a major driver of usage. The standard and rapid chargers at Greyfriars are both the most heavily used of their type anywhere in the town, almost certainly as a direct result of the heavy use made of the car park. The slow chargepoints at De Parys Avenue are also very heavily used, apparently because of their highly central location.

There has been a rising trend in energy delivered across our chargepoints as a whole, although this is stronger for rapid chargepoints than standard devices. Within this pattern however, the number of plug-in events has increased: the greater amount of energy is therefore delivered over a larger number of shorter charging sessions. None of the rising trends is so pronounced as to reflect the steep increase in EV ownership shown in Figure 1: the large overall share of EV charging done at home and at workplaces explains this.

There is no strong suggestion in the data of any set of chargepoints approaching their maximum capacity and needing to be either expanded with additional chargepoints on the same site or supplemented with more chargepoints nearby. Overall therefore provision of public chargepoints appears to be running ahead of demand, as intended. Our main focus for this strategy period is therefore to introduce chargepoint capacity in areas of the Borough not covered by existing provision.

4.6 User satisfaction with current charging provision in Bedford

Our 2023 survey was devised specifically to explore views on our current provision, so that we can draw learning from it for this strategy. We did not ask residents who do not own EVs whether a lack of public chargepoints is a barrier to using an EV, as this has been well documented already, and we had already identified the need to remove this barrier as a key purpose for this strategy.

Respondents who reported that they do not use Council charging provision, either on street or in car parks (65% of respondents who drive any form of EV), gave varied reasons for not doing so (see Table 8). Some have other options that simply suit them better, but a feeling that they do not offer good value for money was cited by 40% of these respondents. The inconvenience of current locations, fear of chargepoints being fully occupied, and a preference for fast chargers were each expressed as a factor by at least one in four. Low awareness of the availability of our provision was the least commonly cited theme in responses.

Option	%
Other ways to charge my car suit me better	49
They are poor value for money	40
Their locations aren't convenient for me	29
I prefer to use faster chargers	25
I'm concerned they will all be occupied by other cars when I try to use them	24
It's not convenient to charge my car away from home	18
I don't know much about them	8
I wasn't aware they were available	6

Table 6: Reasons given by survey respondents for not using Council chargepoints

Respondents who reported using public chargepoints (95) rated them positively, on balance, in terms of reliability and ease of use (see Figure 3), although dissatisfaction with availability was a clear theme in free-text comments. Respondents answered negatively, on balance, in respect of value for money.

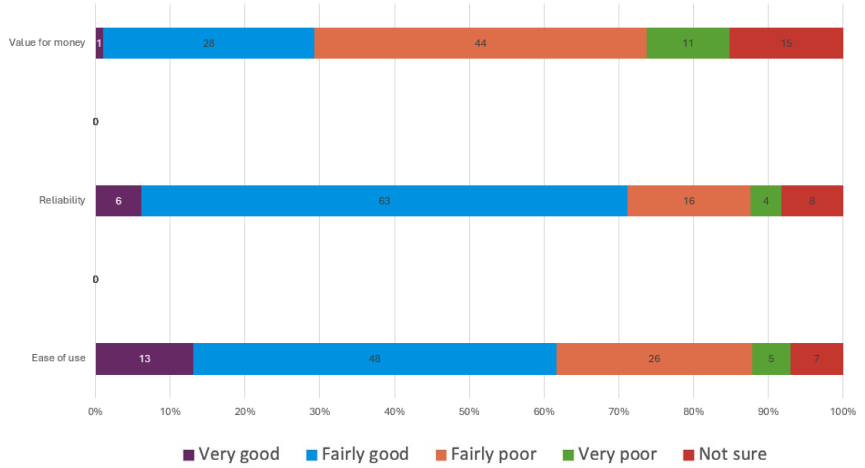


Figure 3: Survey respondents' views of public chargepoints in Bedford in respect of ease of use, reliability and value for money (%)

Respondents who had concerns over reliability and value for money gave further details in their comments (see Boxes 2, 3 and 4). We also asked specifically about the types of problem people had encountered (Figure 4). While we did not duplicate these questions in our later consultation, the theme emerged clearly again in respondents' comments.

"Very unreliable: we don't come to know if it's working till we reach there. Payment is difficult as don't prefer apps and the pay as you go is not reliable as well."

"There doesn't seem to be any communication with BP Pulse and their machines when they aren't working."

"Very poor availability."

"Range of chargers is poor, the prices are too high and they are not well maintained."

"Outsourcing all EV charging to BP, which EV drivers call BP No Pulse as they often do not work, you have to top it up rather than pay as you go etc. Puts people off using them."

"Not enough chargers. Too regularly broken / not in use. Too expensive. Too slow."

Box 1: Comments from survey respondents about chargepoint reliability

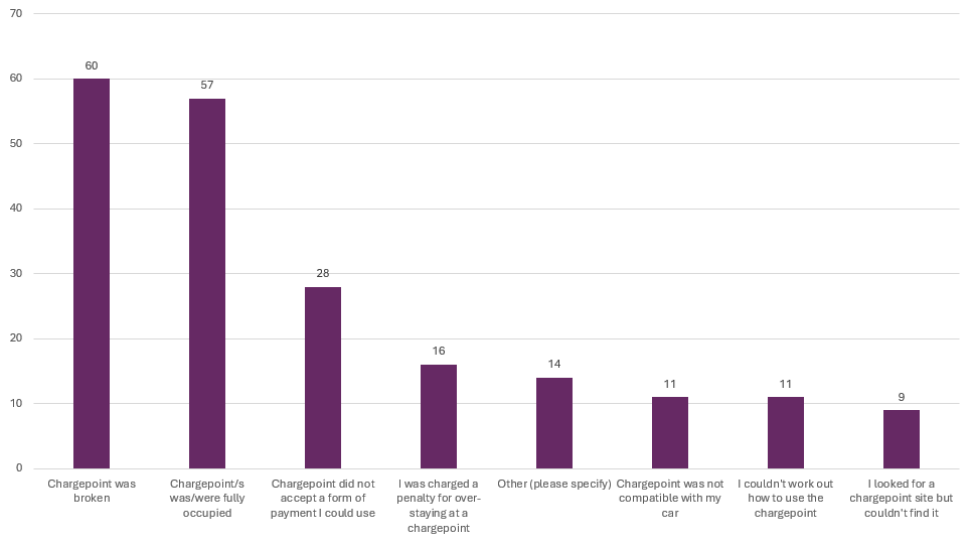


Figure 4: Problems with chargepoints reported by survey respondents

"Charger would not release my cable."

"Chargepoints not regularly serviced, especially BP Pulse, and I had to report broken ones numerous times. Have also had problems with it starting charging, then stopping."

"Chargepoint delivered lower power than expected."

"The speed at the charger dropped when another car was plugged in."

Box 2: Comments from survey respondents outlining other problems encountered with chargepoints

"The BP Pulse chargers are good but very over priced compared to the Tesla super charger network. I often find myself driving to Wyboston lakes to use the chargers there as it still works out cheaper than using my local ones."

"More on-street chargepoints are needed especially in Kempston area. Currently there is one location advertised as a charge station but doesn't even have a charger installed and has been this way for a long time (near Co-Op). Another location only provides 3kW chargers and parking is a nightmare (near Tesco Express). Cost of using BP Pulse network is also very high."

"Also, the EV parking lot by Riverside seems a bit of a rip-off if you have to pay to park as well as charge. The parking charges there are more expensive than other parking garages in town which also offer charging."

"Costs to charge are far too expensive, I used to use them whilst they were free as an incentive to shop in town, but since the prices went crazy I don't bother any more so don't go into town. I go to retail parks instead with easier and free parking. I would welcome the availability of reasonably priced charging points."

"The cost of charging is too high. Greater incentives should be provided such as free parking if you use a chargepoint in a council owned car park. More street chargers should be made available but they should be cheaper to use (30p a kWh)."

Box 3: Comments from survey respondents about value for money

Regular surveys will be carried out during this strategy period to evaluate user satisfaction with our new and existing provision. We anticipate conducting two per year, and using or adapting the questions from the 2023 survey to give comparable data on reliability, ease of use and value for money, enabling us to monitor changes over time. This measurement of user satisfaction will be in addition to monitoring of the performance of the CPO against key performance indicators in our contract with them (see 6.3 below).

5.

Planning for future demand

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5. Planning for future demand

5.1 Our overall approach

Our priority is to ensure that access to charging, particularly for people who have to park their cars on-street, is not a barrier to switching to an EV. We know that EV drivers will remain a minority in Bedford Borough during this strategy period, but we want to ensure that anyone who opts to switch to an EV will not be stopped from doing so by a lack of access to charging.

This requires us to ensure that there is an equitable minimum of charging capacity for residents across the Borough, rather than trying to install capacity to meet a forecast of future total need by a certain date. The level of uncertainty over the future use of EVs in any event makes it impossible to produce a forecast of that sort with any confidence.

This strategy therefore identifies areas of Bedford Borough where provision will be appropriate, across several categories. It also proposes an approach to prioritising sites for selection: we will engage with local residents near each potential site, and work with our new commercial provider when they are appointed, to identify exactly where each new set of chargepoints should go. There will also continue to be the opportunity for communities to request provision and tell us about any need we have not so far identified.

Residential charging will be our priority: we will not prioritise providing charging for visitors, for example to shops. We will monitor and evaluate provision on an ongoing basis, to identify whether there are emerging hot spots where existing provision is becoming inadequate.

5.2 Chargepoint speeds

We detected some appetite for faster chargepoints in responses to our survey in 2023. While our LEVI funding cannot be used for substantial numbers of fast or rapid chargepoints, including some fast provision could be permissible, and there is no restriction on installing faster chargepoints outside the LEVI framework. The public consultation on our draft strategy therefore asked respondents what balance of chargepoint speeds they would like to see, taking into account that fast chargepoints are more expensive, both for drivers to use and for chargepoint operators to install.

We found a strong preference for faster chargepoints among respondents who only drive ICE vehicles (see Figure 5). However, this may reflect a lack of familiarity with using an EV day-to-day, and concern that recharging should be accomplished as quickly as possible, like refuelling with petrol or diesel. There were also more respondents among this group who did not feel confident about expressing a view.

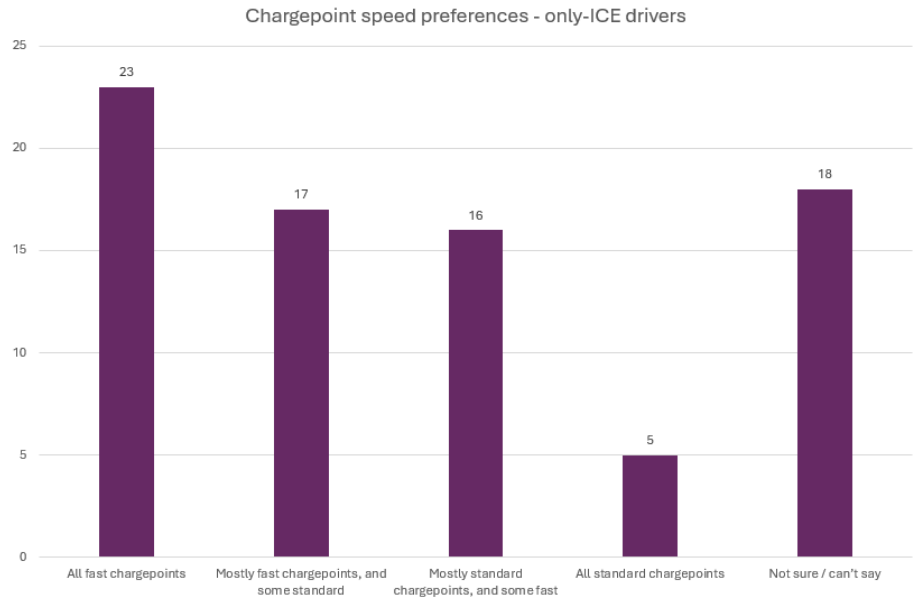


Figure 5: Preferences for chargepoint speeds among survey respondents who only drive ICE vehicles

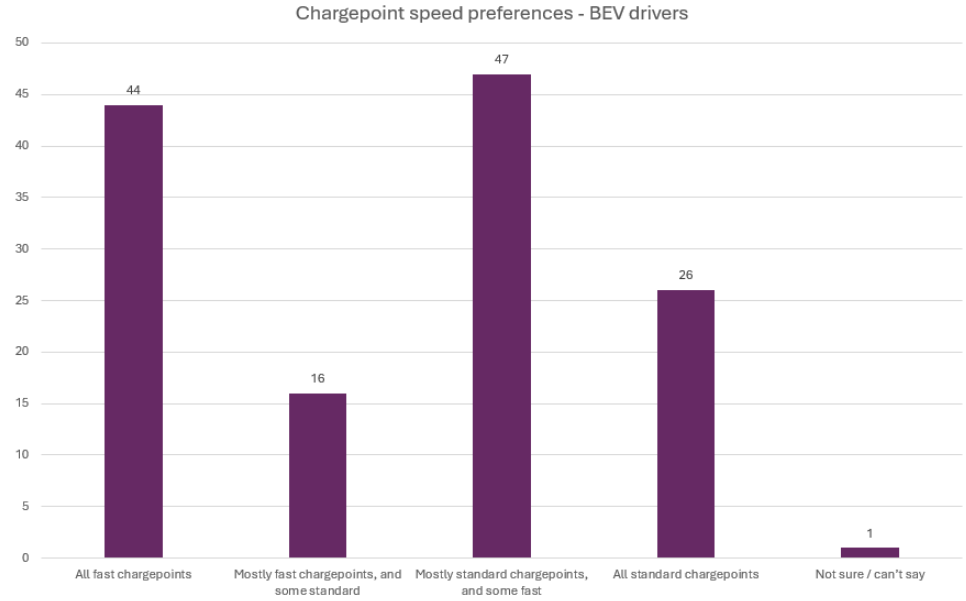


Figure 6: Preferences for chargepoint speeds among survey respondents who drive battery EVs

However, drivers with experience of EVs also expressed some appetite for faster charging. Among respondents who drive battery EVs, there was something of a split of opinion: most were happy with provision of entirely or mostly standard chargepoints, but a sizeable minority wanted only fast chargepoints installed. Most wanted at least some fast provision.

Among hybrid drivers, the pattern of preferences was strikingly different again: they were overwhelmingly most comfortable with provision of mostly standard chargepoints, but wanted some fast.

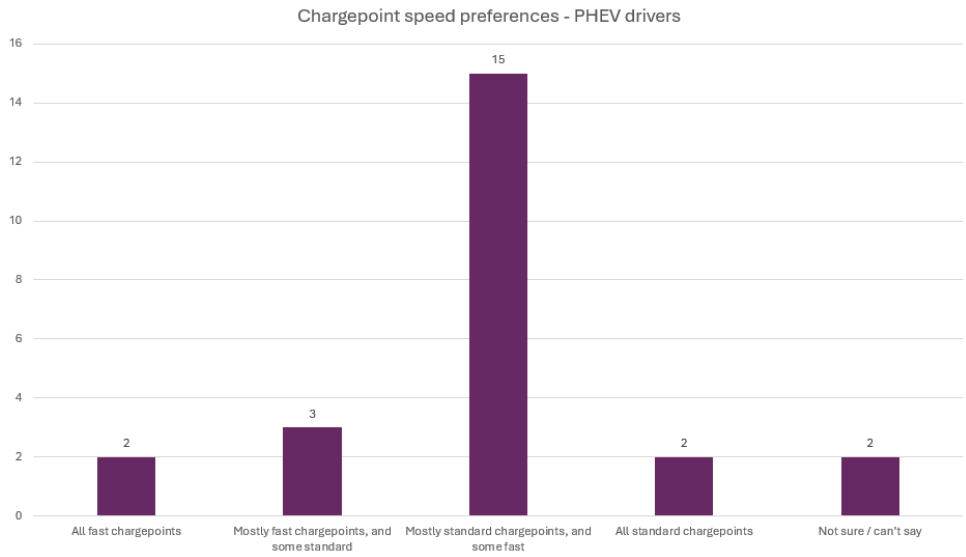


Figure 7: Preferences for chargepoint speeds among survey respondents who only drive plug-in hybrid vehicles

We will therefore seek to include some faster chargepoints in the new provision. However, this will not be at the expense of providing an equitable level of chargepoint coverage across the Borough. We will prioritise our LEVI funding for standard chargepoints, and ensure that villages and other locations that may be less commercially attractive to chargepoint operators get the chargepoints they need.

Additionally, we will include a provision in the contract with our commercial partner to allow and incentivise them to install extra chargepoints that offer higher charging speeds (which could be fast, rapid or higher), at their own expense and commercial risk, at locations where they identify consumer demand for them. We will encourage this in our tendering process and make clear that, while the standard chargepoints remain the key deliverable, we will look for proposals for faster chargepoints as part of the value that the CPO will add to the contract.

5.3 Our approach to placing chargepoints on the street

5.3.1 Impact on parking

The placement of chargepoints in the street is crucially important to ensuring they are easy to use for drivers, and also that they do not inconvenience residents and road users. We will continue with the approach we have used for our previous chargepoint installations, and assess the requirements and characteristics of each site individually: we will not impose inflexible templates for installations irrespective of the nature of a site.

We will look for sites that will minimise the effect on local parking provision. In areas where people park on-street, competition for that parking is strongest outside front doors, as people like to be able to park outside their home, or at least in sight of it. We therefore favour sites away from frontages, often around a corner and along the side of a house, where there is often less competition for parking. Sites on roads that have off-street parking, but are directly adjacent to areas without it, can also be well suited, as the charging bays will not be on parts of the road regularly used for residential parking.

The impact of EV charging bays on local parking will reduce as EV usage grows. When more cars are EVs, the movement of cars in and out of charging bays will become part of the regular churn of cars in and out of parking spaces along a street. While EV usage is still low however, we recognise that assigning road space for EV charging can affect the overall level of parking available. Most new installations will be for four or six bays to serve multiple streets, so proportionally the number of spaces affected will remain small. In some areas where streets are tight and busy, and demand for on-street charging may remain low for some time, we recognise that decisions over where, or even whether, to install chargepoints may be finely balanced. This could be true of both villages and some parts of the urban area. We will listen to the views of local residents at all sites, not least the very challenging ones.

5.3.2 Impact on the footway

We will require our chargepoint operator to ensure that new installations enable us to meet our statutory and policy obligations, and that they comply with the Department for Transport's Guide to Best Practice on Access to Pedestrian and Transport Infrastructure when installing new chargepoints.[10] This includes ensuring chargepoints do not cause obstructions for pedestrians: section 4.2 of the guide requires footways and footpaths to be 2m wide, so that two wheelchair users can pass, or 1.5m if this is not feasible due to physical constraints, so that a wheelchair user and pedestrian can pass each other. Where obstacles such as lamp posts or EV charging points are present, 1m is acceptable providing the length of such a restricted space is no more than six metres, but we will require 1.5m to be maintained as a minimum unless there are pressing difficulties on a site that render it impossible. (See section 6.8 below on accessibility requirements for chargepoints themselves, including when there may be a need for build-outs.)

We will also require our chargepoint operator to ensure that new installations comply when possible with the code of practice BS 8300-1:2018: Design of an Accessible and Inclusive Built Environment.[11]

10. Inclusive Mobility: A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure, Department for Transport, December 2021 https://assets.publishing.service.gov.uk/media/61d32bb7d3bf7f1f72b5ffd2/inclusive-mobility-a-guide-to-best-practice-on-access-to-pedestrian-and-transport-infrastructure.pdf

11. BS 8300-1:2018 Design of an accessible and inclusive built environment. External environment - code of practice, British Standards Institute, 2018 https://www.thenbs.com/PublicationIndex/documents/details?Pub=BSI&DocID=320519

5.3.3 Areas with off-street parking

Chargepoints for private use are not eligible for LEVI funding, and we do not anticipate using other Council funds for them either. However, we are aware that some residential developments have off-street parking, but present other difficulties for charging an EV. This can be because the dwellings are flats, or because the parking is in a court, garage or other location slightly removed from the property. In these situations, connecting the car to a charger on the dwelling's domestic electricity supply can be difficult.

We do not propose to prioritise areas containing developments of this sort for the provision of public on-street chargepoints. Very often, charging provision can best be made by the freeholder or management company, if there is one; public funds cannot be used for private parking arrangements of this sort. In other instances, the careful installation of a gully may solve the problem: gullies are commonly envisaged as connecting a car parked on the street in front of a house to a domestic chargepoint, but there's no reason in principle why one couldn't be used to connect to a parking space at the rear of a house. Installing on-street chargepoints using public funds would not be appropriate in these situations.

We will however provide information to residents about their possible options in these scenarios. Numerous chargepoint companies have solutions for flats or parking courts, and we will signpost to possible solutions and advice for securing them, including on dealing with freeholders or management companies.

As noted in section 8 below, it is now the case that new residential developments must include provision for EV charging, under Approved Document S for the Building Regulations 2010. We therefore do not expect to provide on-street public chargepoints in residential areas developed since the amended Regulations came into force in 2022.

5.4 Categories of sites for new chargepoints

For this phase of provision, we have identified several types of priority area to serve with new chargepoints:

- Urban areas with on-street parking that are not currently served by chargepoints
- Local centres, where clusters of shops serve large surrounding residential areas, as designated in Local Plan 2030
- Villages likely to see demand for chargepoints grow during the strategy period.

The number of sites we can add, and number of chargepoints at each site, will depend on how far we can make our funding go: we believe we have enough funding to serve all the proposed areas, bearing in mind that some sites will be commercially attractive and therefore entirely funded by our CPO. But we will not be able to confirm this until we have detailed costings for each site. Our proposed locations, as outlined in section 5.5 below, are therefore only proposals. While they indicate the level of new provision we want to install, we can't at this stage guarantee that all proposed locations will get chargepoints.

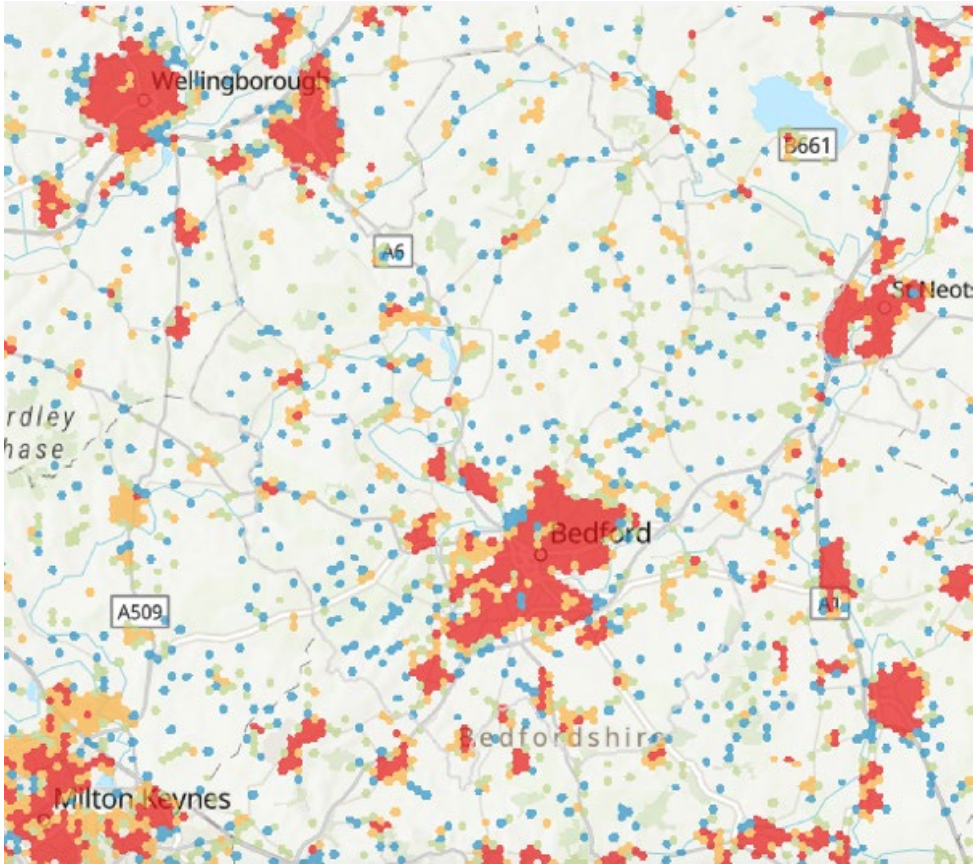
5.5 Identifying new chargepoint locations

5.5.1 Data and forecasting tools

Forecasting tools can be a useful way to sense-check whether we have correctly identified areas where demand is likely to be high. Different tools offer significantly different forecasts of numbers of chargepoints needed at different times, often in varying scenarios for higher or lower EV uptake. No single set of these forecast numbers is robust enough to be relied on as a projection of absolute numbers of chargepoints required, but taken together they give a good idea of which areas are likely to see higher or lower demand, relative to each other. We have therefore considered the data offered by two such tools.

The National EV Insights and Support (NEVIS) service is made available to local authorities as part of the LEVI Fund Support Body (which includes the consultancy Cenex, Energy Saving Trust and PA Consulting). It provides data, maps and modelling relating to EV uptake, and offers forecasts for local authorities of requirements for EV charging infrastructure, taking into account projections of EV uptake, energy requirements for different EVs, and predicted charging behaviours.[12]

The EV:Ready tool discussed above provides a second set of forecasts. It uses data modelling to generate projections of EV uptake, and need for EV chargepoints. It takes account of data covering existing patterns of EV uptake, housing stock (including whether houses have off-street parking), and socio-economic factors that are associated with EV uptake. This provides a forecast for EV uptake over time, and offers high uptake and low uptake scenarios, depending on variables such as the rate at which EV prices come down.



Map 2: EV:Ready low uptake forecast for chargepoint demand in 2030

12. NEVIS Insights toolkit methodology https://nevis.cenex.co.uk/reports/documents/methodology (login required)

The outline of likely chargepoint locations below focuses on chargepoints provided using LEVI funding. It is possible that a small number of chargepoints may be provided through other funding, for instance if new developments include some communal chargepoints in addition to those provided for new dwellings. In 2023-4 we allocated £30,000 of Council funds to install chargepoints, and similar small contributions for specific schemes may be possible in future outside the LEVI framework.

In all cases, the inclusion of a location on our longlist does not guarantee that chargepoints will be installed there. Our in-depth examination of each potential site, working with our commercial partner, may find that chargepoints cannot be installed for a variety of reasons, such as:

- Technical difficulty with making a grid connection
- Insuperable site constraints (e.g. no specific site can be found with adequate space, or permission to use such a site can't be obtained)
- Prohibitively high cost (whether of grid connection, highway works required, or something else)
- Absence of forecast demand.

In areas where we have identified need, we will always look for a suitable site, and if our initial selection proves impractical we will examine and consider further site options in the area as necessary. Higher costs arising from challenges with particular sites are part of what the LEVI funding is for, to ensure that areas are equitably served by chargepoints. But in rare instances it may be necessary to accept that provision in a particular area is not feasible. Our agreement with our chargepoint operator will include a change management process to govern how we will amend our plans in these circumstances, and we will seek to provide alternatives such as chargepoints in nearby areas and information to residents on other options.

5.5.2 Local centres

Our Local Plan 2030 uses a town centre hierarchy, which identifies numerous local centres, beyond the main town centres of Bedford and Kempston. These are classified as 'urban centres' in the urban area and 'key service centres' outside it, and together can be referred to as 'local centres'.[13] These contain substantial shopping areas, albeit smaller than the main town centres, that serve surrounding residential areas. Chargepoint provision in these areas would therefore serve residents, and visitors to a small extent (bearing in mind that the shops mostly do not attract shoppers from outside the adjacent residential areas).

Urban centres	Key service centres
Castle Road	Bromham
Church Lane	Clapham
Ford End Road	Great Barford
Midland Road (west)	Sharnbrook
Tavistock Street	Shortstown
	Wilstead
	Wixams
	Wootton

Table 7: Local centres in Bedford Borough

Of these centres, Midland Road (west) and Tavistock Street are already served by existing provision both in car parks and/or on-street, as is much of the Castle Road area. However, there are some gaps in this provision: portions of the Castle Road, Embankment and Greyfriars areas are not in easy reach of on-street provision, for example. These are addressed in section 5.5.3, below.

13. Policy 77S 'Hierarchy of town centres', Local Plan 2030, ibid.

If one or more of the local centre areas proves to contain so little housing without off-street parking that there will be very little demand for chargepoints, we may opt not to install any. However, as all of these areas are identified as important centres in our Local Plan, at this stage we are including all for consideration. We received feedback that the area to the rear of the shops would be more appropriate in Church Lane than the car park at the front, and will specify this when assessing the site.

5.5.3 Residential areas that lack off-street parking

In addition to areas served by existing chargepoint sites, numerous locations within the urban area of Bedford are partly or mainly made up of housing that does not have off-street parking. This can be Victorian terraces or similar, modern blocks of flats, or more modern housing where parking is not allocated, and/or is located some distance from the house, so that a private chargepoint on the house is not practical.

We have provisionally identified areas that match these descriptions, and which do not coincide with the local centres listed above, by a desk review using mapping and GIS resources. The approximate locations are shown in Table 8 (post codes are roughly central to the area to be served, but do not necessarily directly denote streets lacking off-street parking or the precise location of any future chargepoint site).

At some of the other locations, where there are shops or retail parks with large parking areas in easy walking distances of large numbers of homes, we may be able to work with retailers to secure the provision of chargepoints that are available for local residents as well as their customers. We will explore these options as we develop proposals for individual sites.

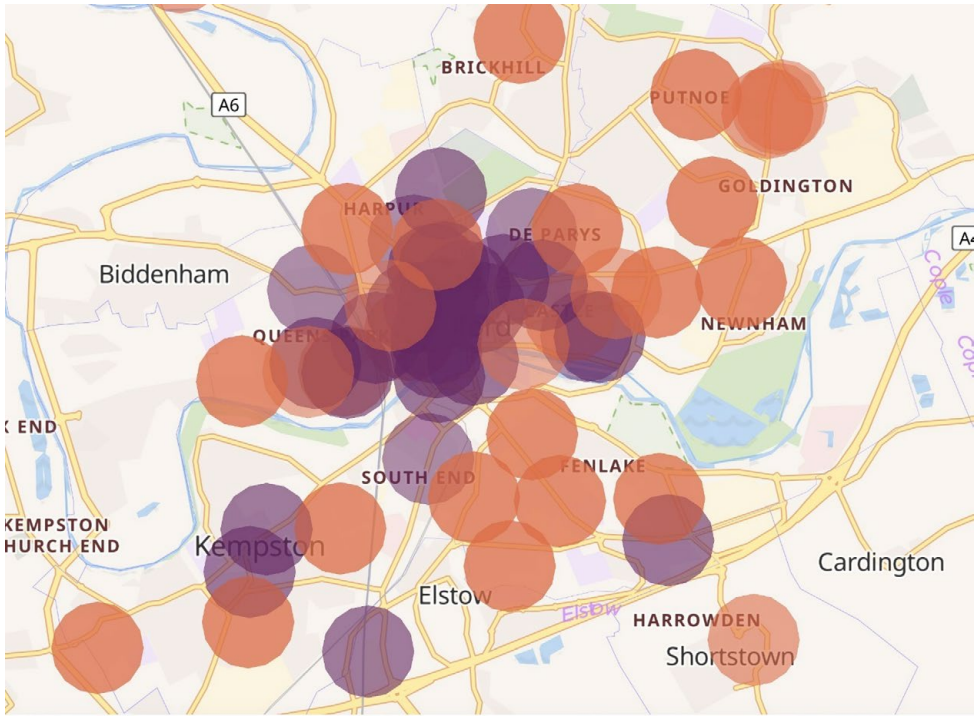
Description	Post code (approximately central to area)
Barkers Lane	MK41 9SL
Elstow Road	MK42 9LX
Fenlake Road / Faldo Road	MK42 0ET
London Road	MK42 0PR
North-eastern Kempston	MK42 8NS
Northern Poets area	MK40 2AU
Putnoe Church End	MK41 9HB
Wendover shops / Wendover Drive	MK41 9QB
Western Kempston	MK42 7DJ
Orchard Road area, eg The Alders	MK42 7JR
Devon Park area	MK40 3DU
Gostwick Road / Moor Lane	MK42 9UR
Kenilworth Walk / Harlech Close	MK41 8LH
Leith Road / Bamford Road / Lovell Road	MK42 0NB
Martham Road / Ranworth Walk / Ormesby Rd	MK40 4NE
Needwood Road area eg Milburn Road	MK41 0PE
Queen Street / Cavendish Road	MK40 2HL
Severn Way flats	MK41 7DD
Embankment*	MK40 3PD
Rosamund Road*	MK40 3UG
Conduit Road	MK40 1EQ
Chestnut Avenue+	MK40 4HQ

* Between them, these two sites may serve the parts of the Castle Road area that are not currently in easy reach of chargepoints; if so, installing chargepoints centrally within the area will not be necessary

+ This site could be in addition to, or instead of, the proposed area to the west, depending on an assessment of need

Table 8: Residential areas of the Bedford and Kempston urban area that lack off-street parking

As with the local centres, if detailed investigation by our CPO produces advice that there is little or no need for chargepoints in any of these areas, we may opt not to install them.



Map 3: Current (purple) and proposed (orange) chargepoint coverage in the main urban area, including local centres (showing area covered by 400m radius, or approx. 5 minute walk)

5.5.4 Urban mobility hubs

We anticipate that mobility hubs will increasingly become part of the transport landscape in Bedford following the development of our Local Transport Plan. The exact nature of these will be decided in the future, but for a small number of central sites we see merit in expanding existing chargepoint provision, where it is already well used, in anticipation of a car club and potentially other facilities being added later. In particular, we envisage expanding provision in this way at St Peter's Street car park, and at the Bus Station (potentially relocating the heavily used provision at Greyfriars car park). This will be subject to engagement as part of the implementation phase.

5.5.5 Villages

The larger villages in Bedford Borough are mostly identified above as key service centres. However, many of the rural parishes contain one or more other settlements that are slightly smaller than these local centres.

In these villages, there can often be a small amount of housing that lacks off-street parking, and sometimes a more substantial amount. Charging provision may therefore be necessary for these residents, and for visitors to the villages. These chargepoints may attract relatively low user numbers, but as rural residents often travel longer distances and more frequently by car, they may still deliver substantial amounts of energy.

Owing to the layout of many villages, we anticipate that on-street sites for chargepoints will often be difficult to find, other than perhaps in a few larger villages where there have been relatively substantial modern developments. We will therefore explore options including using car parks at village halls and similar sites. This may offer the advantages of easier grid connections and wall-mounted chargepoints, which will reduce cost. Input will be sought from parish councils, local residents, the organisations that own and manage village halls, and other relevant property owners.

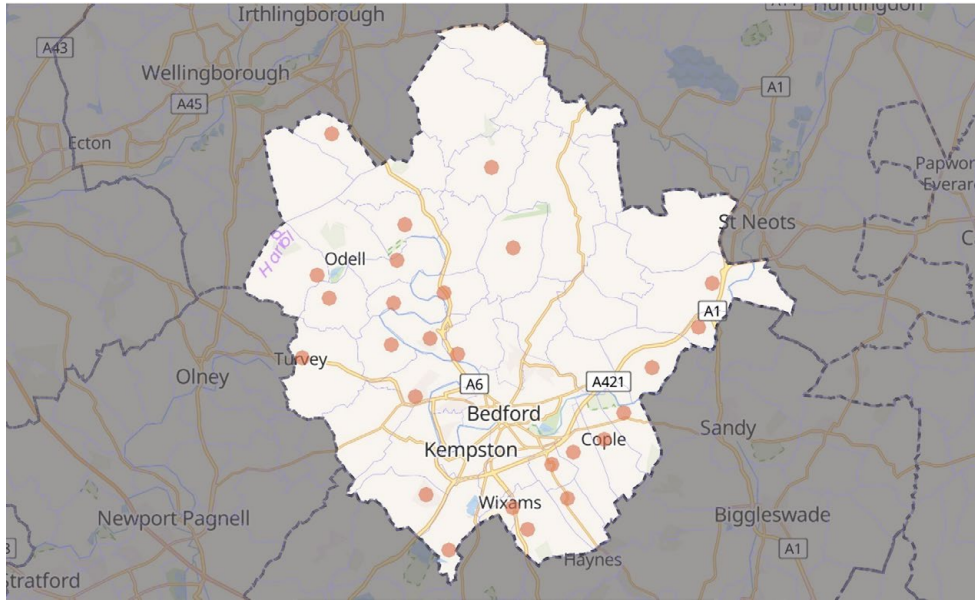
If gullies and/or shared charging platforms become a popular way of charging EVs, publicly funded provision may ultimately be unnecessary in some places where very few households have need. We particularly expect these solutions to be appropriate in the smallest villages, where properties that have no off-street parking are very few in number.

To identify villages likely to be a high priority for provision we considered the EV:Ready tool: in its low uptake scenario, it shows high demand (one or more red hexagons – see Map 2, above) in the following villages within Bedford Borough (excluding local centres):

1. Carlton
2. Cotton End
3. Felmersham
4. Harrold
5. Milton Earnest
6. Oakley
7. Riseley
8. Roxton
9. Stewartby
10. Turvey
11. Willington
12. Wyboston
13. Wymington.

Numerous other villages were also suggested by respondents to our consultation. Some of them – the very smallest – are clearly better suited to other solutions such as shared chargepoints, as outlined above. However, we will include the following villages in our longlist, and require our CPO to assess them for both need and feasibility:

1. Cardington
2. Cople
3. Pavenham
4. Stevington
5. Thurleigh.



Map 4: All proposed village sites, including local centres (showing area covered by 400m radius, or approx. 5 minute walk)

5.5.1 Possible total provision

For illustrative purposes only, Table 9 summarises the possible new provision discussed above. This should be taken as indicative only, and is subject to engagement with residents and communities, and technical considerations relating to the suitability of each site for the installation of chargepoints.

Category	Chargepoints
Urban mobility hubs	12
Urban local centres	12
Urban areas that lack off-street parking	128
Village local centres / key service centres	32
Villages	72
TOTAL	256

Table 9: Indicative estimate of new public chargepoint provision for Bedford Borough to 2027

The figures in Table 9 rest on the following assumptions:

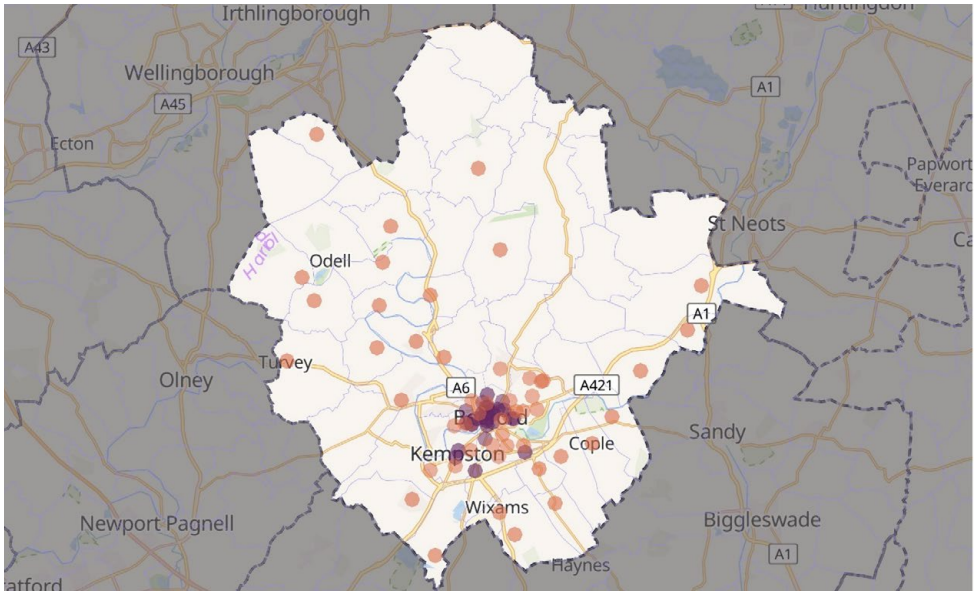
- Six rapid chargepoints at each of the two mobility hub sites (all other chargepoints in these totals are standard speed)
- Six chargepoints in two of the urban local centres (Church Lane, Ford End Road), with the other three served by nearby provision, either existing or proposed, under other categories
- Six chargepoints in each of the urban areas that lack off-street parking, except Conduit Road with two in the first instance
- Four chargepoints in each of the village local centres / key service centres
- Four chargepoints in each of the other village sites.

Other sets of assumptions could produce different totals. They could raise the figure even higher, for example if some urban sites are given eight chargepoints and some of the villages can accommodate six.

Alternatively, different assumptions again could reduce the total, for instance if some of the village sites can accommodate only two chargepoints, or the urban sites have an average of four chargepoints.

In practice, the process of identifying the best provision for each individual site will produce higher totals at some sites, and lower totals at others. Taking all these together, the figure of 256 is the minimum number of total chargepoints that we will require our CPO to install. None of these figures include the additional, faster chargepoints that we will invite the CPO to install, on top of the standard chargepoints that we will use our LEVI funding for.

The areas on our longlist are illustrated in Map 5.



Map 5: Areas within 400m radius of present (purple) and provisionally proposed (orange) public chargepoints in Bedford Borough

In the event that any current provider of chargepoints in Bedford were to exit their contractual arrangements, we would invite our new CPO to assess all of their sites and to install chargepoints on them at their own risk. As our existing provision is overwhelmingly on commercially attractive, town centre sites, we expect that most sites would be replaced in that way, without any need for us to use any of our LEVI funding. However, barring this extreme scenario, our existing provision will continue under the current commercial relationships.

5.5.2 How we will identify sites

We will implement this strategy by procuring a chargepoint operator to install chargepoints, and recruiting dedicated officers using LEVI capability funding to oversee and manage the programme. So far, we have identified areas of Bedford Borough that are likely to need chargepoints. In the next stage, our CPO and Council officers will work together to identify each individual new site within those areas, and engage with local residents on exactly where chargepoints should best be placed.

There will be two broad dimensions to this work: identifying where it is most desirable to put chargepoints; and identifying where they can best be placed from a technical point of view. This will involve assessing likely demand (in the desirability dimension) and considerations such as ease and cost of grid connections, whether build-outs from the footway are required, what sites can be found the cause least inconvenience in respect of local parking, and so on (in the feasibility dimension).

We anticipate that considering these two dimensions – the desirability from residents' perspective of installing chargepoints on a site, and the site's technical suitability – will produce a matrix where sites can be categorised into one of four quadrants:

4. High desirability, low feasibility	1. High desirability, high feasibility
3. Low desirability, low feasibility	2. Low desirability, high feasibility

Figure 8: Site selection matrix

We will take advice from our CPO partner on sites' suitability, but decisions on the location of charging sites will always be made by us.

To deliver our approach of ensuring equitable provision across the Borough, the 'high desirability' sites will be prioritised (category 1, then category 4). We expect that most of the locations on our longlist, possibly all, will fall into one of these two categories. Sites in category (1) will often be those where our commercial partner will be able to provide infrastructure with little or no additional funding from us. The sites in category (4) will be where our funding can make the most difference, by ensuring provision for residents that the market would not provide on its own, for instance because of high connection costs. We will assess the costs and other challenges for these more technically difficult sites, and aim to maximise the impact we can achieve with our budget.

We will also monitor the installation of infrastructure under the Workplace Charging Scheme. Chargepoints installed under this scheme may be used by local residents during hours when they are not being used by staff or fleet drivers.[14] Installations of this sort may reduce or even remove the need for separate on-street chargepoints at some locations.

14. Workplace Charging Scheme: guidance for applicants, Office for Zero Emission Vehicles, updated October 2023 https://www.gov.uk/guidance/workplace-charging-scheme-guidance-for-applicants

6. Delivery

BEDFORD BOROUGH COUNCIL

6. Delivery

6.1 Timeline

We expect to deliver this strategy on the timeline below. It envisages the new chargepoints being in place across the Borough by the end of 2027, which we believe is feasible in the absence of any major technical challenges. However, there is a risk that challenges of this sort occur for one or more site: connection of new chargepoints to the grid, particularly in villages, is a particular area of risk.

2024

- Staff come into post using LEVI capability funding
- LEVI capital funding is received (90% already received, 10% on agreement with Office for Zero Emission Vehicles)
- Ongoing monitoring of utilisation, need and user satisfaction

2025 and 2026

- Site survey and engagement work for individual sites
- Adjustment of plans in response to resident, business and user input if needed
- Procurement and installation
- Ongoing communication to residents
- Ongoing monitoring of utilisation, need and user satisfaction
- Ongoing management of contract/s with chargepoint operators
- Allocation of ongoing responsibility for EV charging within the Council, after LEVI capability funding is used up

2027

- Evaluation of strategy
- Any remaining procurement and installation
- Ongoing communication to residents
- Ongoing monitoring of utilisation, need and residents' satisfaction
- Ongoing management of contract/s with chargepoint operators
- Planning for next strategy period in light of lessons learned and developments in technology and policy (nationally and locally).

6.2 Procurement and commercial model

Our existing chargepoint provision was established on a concession model, and we will adopt the same approach with infrastructure installed under this strategy. Using LEVI funding, we will pay for the installation and electrical connection of new chargepoints when needed, but look to the chargepoint operator to contribute the hardware and cover a proportion of installation costs. We will require the CPO to provide a full turnkey solution, managing every aspect of the installations and ongoing service. We will go to market asking for a future provider to deliver this with the lowest proportion of public subsidy possible, to ensure our LEVI funding goes as far as possible.

We propose to contract for one provider across the Borough. We are a relatively small local authority, and will be seeking to find the best possible commercial partner at a time when many other authorities will also be seeking to make arrangements for their own provision. Dividing our provision into multiple lots would create relatively small contracts that would be unlikely to attract significant competition at the procurement stage. A tender for a single contract covering the Borough as a whole will be large enough to be commercially attractive.

The operator will maintain and operate the chargepoints and collect revenue, of which we will take a share. Ownership of the chargepoints will rest with the operator, and we will require them to replace and update the chargepoints to reflect technological advances during the lifetime of the contract. At the end of the contract the operator will be required either to remove the infrastructure or pass it to the Council, at no further cost for either option. Ownership of the below-ground infrastructure that supports the chargepoints will remain with us throughout.

6.3 Quality of service

We are mindful of the mixed feedback we have received regarding the quality of service offered, at times, by some of our current chargepoints. We will actively manage the contract with our new CPO, which will include key performance indicators (KPIs) that the CPO must meet, in terms of reliability, availability and customer experience, in order to retain the contract.

The KPIs will include:

- Any individual chargepoint must have a technical status of 95% in any reporting period
- The network of all chargepoints must be, on average, reliable for 99% of the time in any 12-month rolling period.

Monitoring will be done using surveys, customer feedback, and the data that we will require from the provider.

6.4 Pricing

We will set a cap on the price per kilowatt hour (kWh) that our commercial partner may charge for using the chargepoints. We want the chargepoints to be affordable to residents, and will ensure that pricing is not out of line with market rates. We will encourage the chargepoint operator to offer promotional pricing or other incentives when chargepoints begin operating, and we will allow in the contract for preferential tariffs including for residents or for overnight charging.

6.5 Operation of charging bays

For on-street chargepoints, our default approach will be that each will have a dedicated bay that cannot be used for general parking, defined by a Traffic Regulation Order (TRO), in line with our approach to date. This will be subject to consultation with local residents, and there may be individual circumstances where another approach will be more appropriate. A different approach may need to be taken in areas of Bedford where parking is governed by permits, such as limiting use of chargepoints to permit holders. Again, we will consult to find the most appropriate approach.

Spaces being blocked either by EVs that are not charging or by ICE vehicles that have parked in them attracted comment from residents in our survey (see Box 4). There was support for bays being reserved only for charging EVs, but frustration at occasions when this had not been enforced (or, occasionally, when it had).

"Every on-street charger I've ever seen has always had an ICE car parked in front of it so it's pointless to install them to begin with if no one's going to ensure they're used appropriately."

"I was waiting in St Loyes Street yesterday and a petrol/diesel Ford pulled into one of the electric charging bays. The driver went into the hairdressers across the road and was still in there when I left around 10 minutes later."

"Blocked by non charging cars!"

"An ICE car was parked in the space with no consideration for EV charging point."

"ICE cars parked in on-street EV charging bays, so couldn't even use them."

"People park in the spaces making access to the charger impossible. Often this is ICE cars but sometimes EVs that aren't actually charging."

"You should issue fines to people parked in EV bays but not charging."

"I had problems using chargers at Riverside. I was then fined for being in a space but not charging."

Box 4: Comments from survey respondents relating to blocked charging bays

Overstay charges will apply if a vehicle has finished charging but remains plugged in. There will be a grace period of ten minutes for the driver to remove their car. Charges will be set at a level agreed by the Council, and will be levied per minute of overstay, rounded down to the nearest minute.

6.6 Working with other commercial partners

For some areas we have identified as likely locations for chargepoints, there are retail sites nearby that would be within a five minute walk for most or all residents. In some cases these do not have any charging provision yet. We will therefore seek to explore options for working with owners of these sites, to identify whether they could accommodate chargepoints that would be available for both residents and customers.

We will also engage with other retailers who might be expected to provide chargepoints for customers but so far have not: some major supermarket chains, for example, still have no chargepoints in their Bedford car parks. We will encourage additional provision at retail sites, to increase the overall number of chargepoints available in Bedford and therefore increase the options for residents.

6.7 Renewable energy

We will require our commercial partner to power our chargepoints using energy that is certified as renewable through the redemption or purchase of Renewable Energy Guarantees of Origin (REGOs).

We have explored options for procuring electricity for our chargepoints directly from solar generation within the Borough, but have been advised that this is not technically feasible. However, we will leave this option open in the contract with our chargepoint operator, in case connections can be made to future electricity generation infrastructure.

We will explore further options for powering chargepoints using renewable energy that is generated locally. In some locations, installing solar panels near the chargepoints may be feasible (for instance on canopies): these will not be adequate to power the chargepoints fully, although associated battery storage may enable them to provide a substantial portion of the electricity, and contribute to grid balancing. Installations of this sort may be eligible for LEVI funding, so the feasibility and cost-effectiveness of options of this sort will be considered for each site.

15. Electric vehicles – Accessible charging – Specification, BSI, October 2022 https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-1899-electric-vehicles-accessible-charging-specification/

6.8 Residents with disabilities

People with disabilities overall are less likely to own a car than the general population. However, cars can be vitally important for some people with disabilities. People who use the Motability scheme may be more likely to switch early to using an EV, as the scheme is increasingly offering EVs as an option.

The implications of the EV shift for drivers with disabilities are therefore highly varied. People with disabilities whose homes lack off-street parking may find charging presents particular challenges, including handling long and heavy cables at public chargepoints, or moving around the car, on and off the kerb, to plug and unplug the charging connector.

The standard for accessible charging of EVs, PAS 1899:2022 was published in October 2022.[15] It covers both the design of the chargepoint itself, and wider matters including its placement, the streetscape and public realm around it, and the provision of information at the chargepoint, including on any display screens.

Chargepoints that are designed to meet this standard have only recently been brought to market, and are more expensive than standard chargepoints. Compliance with the standard can also require more space than at a standard chargepoint.

At some locations, space or infrastructure constraints may make compliance difficult to achieve. However, compliance with PAS:1899 will have many aspects, and may not always be black-and-white: on some sites, it may be feasible to comply with some aspects of the standard, but not all, for instance if the road and footway are relatively narrow.

We wish to make our chargepoint provision as accessible as possible,

within these constraints. We will require our commercial partner to make all chargepoint installations compliant with PAS:1899 as far as reasonably possible, taking the nature of each site into account. We will require a more comprehensive level of compliance for designated accessible bays.

Disabled residents may already request the provision of an on-street disabled parking bay near their home. This is, strictly speaking, not reserved to them: any blue badge holder may use a bay of this sort (although in practice, the resident who requested it will most commonly be its main user). We do not propose to offer public chargepoints at bays of this kind: the cost of installing a single chargepoint in isolation is typically high; and it could create unintended consequences if other blue badge holders in the area start to compete for the use of the chargepoint and the resident who was making the most use of the bay then finds it difficult to park near their home.

However, we will continue to explore charging options for disabled residents: accessible public chargepoints are one solution, but do not allow residents to access cheaper domestic tariffs (unless price structures change in the future). Options such as gullies or pop-up bollards may emerge as popular solutions for disabled drivers

6.9 Information for residents

It will be important for residents to be well informed about our EV charging provision, covering both what we provide and what options we make available, items we do not provide, and other options open to them.

We also heard from survey respondents about how complex EV charging can appear when someone is new to it, or even to someone with experience (see Box 5), so we will also provide information to help people understand the processes and rules involved (although some of this complexity will be reduced by the 2023 Regulations; see chapter 7 below).

Useful and accessible information will be helpful for both EV drivers and other residents considering switching to an EV. It will help residents understand that charging as a barrier to EV ownership has been reduced. The provision of information to residents, and the promotion of that information, will therefore be an integral part of the delivery of this strategy.

"Using any charge point for the first time is a nightmare. Not easy at all. Once you've got the app, created an account and all that stuff then OK it's easy. ALL points should accept contactless card payments..."

"Payment is difficult as don't prefer apps and the pay as you go is not reliable as well."

"There are misleading signs for the on street fast chargers. BP restricts usage to 1.5 hours but the signs say 4 hours parking. This needs to be resolved as it catches out new users."

"Unsure whether I need a parking ticket at some on road charging locations."

Box 5: Comments by survey respondents showing some of the complexity facing EV users

We plan to provide information on the following topics:

- Chargepoints provided by the Council, including where they are, what they cost, features including accessibility of bays, how to report problems, and what we do and don't offer
- Signposting to resources giving information on all chargepoints in Bedford, such as Zapmap (already on our website), Chargefinder or Open Charge Map
- Options for people who have off-street parking, such as links to any grant schemes to help with buying home chargers (already on our website)
- Options for people in flats or with other off-street parking

arrangements, including on available solutions for parking courts and similar, and on dealing with freeholders or management companies.
- Options for people without off-street parking, including how to apply for a gully if / when we offer them (see section 6.12, below), and how to suggest new locations for public chargepoints
- Good practice on EV charging, including rules on trailing cables and residents' liability if they cause an injury (see section 6.11, below)
- Parking regulations that apply to EV charging bays, including charges, restrictions and penalties for misusing them, and how to report ICE vehicles blocking bays (which we have already added to our website in response to consultation feedback)
- Illustrative information on the full costs of owning and running different types of cars, including charging prices using different charging solutions, and car club costs.

We will promote this information using our various channels, including email newsletters and social media. Any branding or visual identity that we develop as part of our renewed Local Transport Plan, or any measures associated with it, will be considered for application to EV charging infrastructure as well. This promotional activity will start early, and continue as an ongoing element of our EV charging provision.

6.10 EV car clubs

Bedford Borough already operates an EV car club, with one vehicle available for hire from a centrally located car park. We anticipate making greater use of car club provision as part of our Local Transport Plan, and our default assumption is that any future car club vehicles will be EVs. More extensive car club provision will create more flexibility for people who only use cars occasionally to give up the cost and hassle of owning a vehicle.

If and when car club provision is expanded, we will work with both residents and commercial car club providers to identify appropriate and commercially feasible sites for car club EVs. Provision at future mobility hub sites will be explored as they are developed. Our information to residents will provide insight to residents on the full cost of vehicle ownership compared to alternatives, including car club use.

Outside the urban area, most rural settlements in the Borough are probably too small to support a commercial car club. However, we will explore options in larger villages, and provide information to residents in smaller villages about options for community car clubs and peer-to-peer car sharing.

6.11 Cables

Trailing a cable across the pavement from a house to a parked car is a relatively rare way to charge EVs in Bedford: very few respondents to our survey reported doing so.

Under section 162 of the Highways Act 1980, it is an offence to place any apparatus (such as a cable) across a highway (which includes the pavement, or more properly footway) that is likely to cause a danger to others, unless it can be shown that all necessary measures to warn

people of the danger have been taken. Anyone who does this without giving the necessary warning may be fined and, under section 161 of the same Act, if someone is injured the owner of the cable will be liable to a fine, in addition to any redress sought by the injured person.

It is difficult to ensure that the use of a cable in this way is legal: any covering to reduce the trip hazard must be comprehensive across the length of the trailed cable, and any warning to pedestrians and other road users must be very clear. We will explain this as part of our information provision, encourage residents to use public chargepoints or other options instead, and make clear that any charging by trailing cable is at their own risk, including of potential enforcement action.

6.12 Alternatives to public chargepoints: gullies, sharing platforms, and more

While public chargepoints are an increasingly well established option for EV charging, other methods are emerging that could also be useful for people who do not have off-street parking. Some of these enable charging from a domestic electricity supply, which can be significantly cheaper: a specialised EV tariff can offer electricity at 10p or less per kilowatt hour overnight, compared to 50p or more for most standard speed public chargepoints (and more again for fast or rapid) – see Table 1 above.

Emerging options include:

- Gullies - covered channels across the footway
- Shared charging platforms that let a homeowner with their own chargepoint rent it out via an app
- Gantries that can swing out over the footway to connect a car to a chargepoint
- Mobile charging, from batteries driven from house to house in vans.

It remains to be seen how many of these solutions will prove to be popular and commercially viable. We are aware of work by several other local authorities to evaluate and develop options for gullies, which may be a good option for enabling people who have to park on-street to access cheap domestic tariffs for EV charging.

However, a gully does not automatically come with a right to a reserved on-street parking space, and we do not intend to allocate reserved parking spaces for gullies or other alternative charging options. They are also not a solution for houses where it is not possible to park directly outside, for example if there are double yellow lines on that section of the street.

Over the long term, shared charging platforms may be the solution. If streets come to have multiple gullies, they could make it relatively easy for residents to find a space served by a private residential chargepoint, whether that is their own or one belonging to a neighbour. However, even if gullies do emerge as a popular option, it will clearly take some time until there are sufficient numbers available on any given street for EV drivers to be able to find a charging option with total ease.

We are mounting a trial of one or more gully systems, and will evaluate the findings. Requests that we have recently received for gullies are being considered for inclusion in this trial. If we decide to permit the installation by residents of gullies across public footways, permission will be required under section 178 of the Highways Act. Installation will likely be on a similar basis to dropped kerbs: residents will apply to us to have the gully installed, and there will be a fee to cover the cost of the works.

6.13 Lamp post chargers

Chargepoints in lamp posts have been suggested by numerous consultation and survey respondents, who are clearly aware of their use by some other local authorities. They can be a practical option when the lamp post is situated at the front of the footway, close to the kerb.

However, it is more common in Bedford for posts to be situated at the rear of the footway, away from the kerb; and in recent years our approach has been to move lamp posts to the rear. This means that chargepoints built into lamp posts are not viable at many locations in the Borough. It is also the case that lamp posts can only support slow charging speeds of around 3kW. We therefore do not plan to make much, if any, use of lamp post chargepoints.

6.14 Car parking charges

Numerous residents who responded to our survey objected to EVs charging in Council-run car parks not being exempt from car parking fees (see Box 6). However, exempting charging EVs from fees would come with numerous challenges. For one thing, the Council would lose revenue, which would either have to be replaced from another source or require expenditure to be cut, and this effect would increase as EV usage grows. Also, as EV use becomes increasingly common, providing an exemption from parking fees for a large category of drivers would be hard to justify: it could even create a perverse incentive for drivers to use chargepoints in car parks to avoid parking fees (whether they have better options for charging, such as at home on a driveway, or not), and lead to excessive competition for those chargepoints.

We do not rule out consulting further on this issue in the future however, and in the meantime we will explore options with our future supplier for enabling parking fees and charging fees to be paid together, for instance in a single app.

"Outrageous when we get charged to park AND charge in the same spot."

"It's ridiculous that in Bedford you have to pay for parking whilst also paying for charging (at a premium price). If the parking was free whilst charging then I would use them but I'm not going to pay for parking when I'm already paying a premium for a slow charger."

"Bedford Borough charges parking fees while charging car in Riverside car park EV charging points. This is not fair. I even got a parking ticket while I was waiting for a fast charger to become free."

"The cost of charging is too high. Greater incentives should be provided such as free parking if you use a charge point in a council owned car park. More street chargers should be made available but they should be cheaper to use (30p a kWh)."

Box 6: Comments from survey respondents about paying parking fees while charging EVs in Council-run car parks

6.15 Risks

The successful delivery of this strategy will be subject to several external risks. We include contingencies and mitigations in our delivery of the strategy as far as practically possible.

DNO costs and delays

Distribution network operators (DNOs) are responsible for providing connections to the electricity grid. Lengthy waiting times are regularly cited as a cause for delay in installing EV charging infrastructure, and some locations can be ruled out by the high cost of providing a connection.

Supply chain failure / constraints

EV charging infrastructure is being rolled out across the country at scale. Many local authorities will be partnering with commercial providers, who will need to secure the manufacture of large quantities of equipment. In the best case scenario, these companies will be ordering stock well in advance, and be able to provide it for installation promptly and reliably. In the worst case scenario, supply chains may be unable to meet the demand, and installations will be delayed by a lack of equipment.

Market failure

National policy directs local authorities to work with commercial partners and draw in private investment. This approach carries the risk of market failures, for instance if there is insufficient capacity among chargepoint operators to meet all demand, or if one or more operators goes out of business during the period of a contract.

7.

Context: national policy

BEDFORD BOROUGH COUNCIL

7. Context: national policy

National policy across successive governments has been broadly supportive of the transition to EVs, and has implemented numerous measures either to facilitate it, or to mitigate its disruptive effects for consumers and drivers.

At the time of writing, the sale of new cars with internal combustion engines is to be banned as of 2035.[16] The Government indicated prior to taking office that it would bring this date forward to 2030, restoring an earlier policy. Regulatory change to achieve this has not yet been announced, so the timetable to 2035 currently stands.

Over this period, sales of new cars in England, Scotland and Wales will be required to adjust in volume to favour EVs, with 80% of cars and 70% of vans sold from new in 2030 mandated to be zero emission vehicles. These proportions will grow incrementally each year to 2035, as shown in Table 10.

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cars target %	22	28	33	38	52	66	80	84	88	92	96	100
Vans target %	10	16	24	34	46	58	70	76	82	88	94	100

Table 10: Annual targets for ZEV sales shares from 2024 to 2035 for cars under the ZEV Mandate[17]

16. Government sets out path to zero emission vehicles by 2035, September 2023 https://www.gov.uk/government/news/government-sets-out-path-to-zero-emission-vehicles-by-2035

17. A zero emission vehicle (ZEV) mandate and CO2 emissions regulation for new cars and vans in the UK, updated September 2023 https://www.gov.uk/government/consultations/a-zero-emission-vehicle-zev-mandate-and-co2-emissions-regulation-for-new-cars-and-vans-in-the-uk

The previous Government also stated its ambition to remove concerns about the ease with which EVs can be charged as a real, and perceived, barrier to EV uptake, and to make charging an EV, "cheaper and more convenient than refuelling at a petrol station."[18] These strategies and initiatives build on its Net Zero Strategy[19] and Transport Decarbonisation Plan.[20]

Central government has not taken powers to instruct local transport authorities to devise and implement local EV charging strategies. However, local authorities are already being expected to play a central role in delivering EV charging infrastructure for residents, businesses and visitors to their area.

The Public Charge Point Regulations 2023 make provision to improve aspects of the customer experience of using chargepoints. This includes a requirement for all chargepoints to accept payment using a service from a third party roaming provider, and for operators to provide telephone helplines that are always available. Chargers whose power is over 8kW must accept contactless payment.

The Government operates two schemes that are particularly targeted at drivers who do not have off-street parking, and who will typically therefore not be able to charge an EV using a wall-mounted charger attached to their home.

18. Taking charge: the electric vehicle infrastructure strategy, March 2022 https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy

19. Net Zero Strategy: Build Back Greener, October 2021 https://www.gov.uk/government/publications/net-zero-strategy

20. Transport Decarbonisation Plan, July 2021 https://www.gov.uk/government/publications/transport-decarbonisation-plan

The On-street Residential Chargepoint Scheme (ORCS) was first launched in 2017, and provides funding to meet a proportion of the capital cost of installing on-street chargepoints (the proportion having changed over time). ORCS provided funding for 29 of Bedford's existing standard chargepoints, through a £90,000 grant, matched by £30,000 of Council funding.

The Local Electric Vehicle Infrastructure scheme (LEVI) provides both capital funding for new chargepoints and capability funding to enable local authorities to recruit and develop personnel with expertise in charging infrastructure. Following a pilot phase for some areas in 2022, funding to cover remaining parts of the country, including Bedford, was announced in 2023. Bedford Borough's bid for LEVI funding aligns with this strategy.

LEVI funding is targeted at lower powered infrastructure: the majority of project costs must be for infrastructure below 22kW. The majority of chargepoints funded by LEVI must benefit residents without off-street parking, which can include residents who use local authority-supported car clubs. Only a minority of chargepoints may exclusively benefit tourists, customers and visitors (although they may provide some benefit to these groups in addition to benefiting residents), and chargepoints at workplaces, on people's drives or on motorways and non-residential A-roads (and intended for drivers on those roads) are barred from scope entirely.

Additionally, the 2023 Plan for Drivers promised additional support for schools to install chargepoints, under the Workplace Charging Scheme, which allows for chargepoints to be made available for use by local residents during hours when they are not being used by staff or fleet drivers.[21] We will monitor installations under this scheme, and take them into account when identifying sites for on-street chargepoints. The Plan also proposed to provide guidance to local transport authorities on charging solutions that run across pavements, which we will take into account if and when it is published.

Future initiatives by central government to support the roll-out of EV charging may include guidance for local authorities on ensuring that any cross-pavement charging infrastructure is implemented safely, and a unified consent process for obtaining both planning permission and highways consent relating to new infrastructure at the same time.[22] These items may be available during this strategy period: we will monitor developments, and consider their implications for our infrastructure roll-out as they occur.

21. The Plan for Drivers, Department for Transport, October 2023 https://www.gov.uk/government/publications/plan-for-drivers/the-plan-for-drivers

22. Future of Transport Regulatory Review, ibid.

8.

Context: local policy

BEDFORD BOROUGH COUNCIL

8. Context: local policy

Growing EV uptake will contribute to meeting Bedford Borough's objectives for carbon reduction and positive changes to travel within and beyond the Borough. The key current policies are set out here. Additionally we will be developing a revised Local Transport Plan, for which this strategy will become a supporting document.

Our current local plan, Local Plan 2030, contains the following relevant objectives relating to infrastructure:

> 4.6 Deliver existing and future infrastructure needs to support growth in both the urban and rural areas of the borough through the implementation of the Community Infrastructure Levy and other means.
>
> 4.7 Improve the borough's transport infrastructure in order to support growth in the local economy and to make the borough more attractive as a place to live and do business [...][23]

It also outlines the following approach on sustainability and environmental protection:

> 12.23 Sustainability in transport terms is not only about making development accessible by walking, cycling and public transport, but can take into account the wider environment and how infrastructure and public spaces are used. It is also about how safe people feel moving from one place to another and how new innovations such as electric vehicle charging can be incorporated into new and existing development. The Council is preparing a policy to guide the provision of low emission vehicle infrastructure.
>
> [...]
>
> 12.26 We expect the way that people travel in the future will change and development will need to cater for new technologies and travel patterns. Therefore facilities for ultra-low emission vehicles and car clubs should be designed into new development, both for residential and non-residential developments.

Its Policy 89, on EV infrastructure, reads as follows:

> The Council will maximise the use of sustainable transport in developments, and support low carbon public and personal transport such as electric cars, bikes and buses.
>
> The Council will require new facilities for low emission vehicles to be integrated into new major development schemes where local centres or communal facilities are proposed.
>
> Rapid and fast charging points will be located throughout Bedford Borough as well as at key locations in the Bedford and Kempston urban areas, employment sites, railway stations, major retail and visitor destinations, outside schools, local centres and car parks.
>
> To maximise the use of sustainable modes of transport, new residential developments should be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations and, where appropriate, provide electric charging points at a rate of one per dwelling.

The implementation of Policy 89 has been seen in the installation of chargepoints at numerous locations, particularly in the town centre, and will continue as new developments are built (note that 'rapid' and 'fast' are not defined, but 7kW chargers were more commonly considered 'fast' in the 2010s when the plan was developed; see Table 2 above for current definitions).

23. Local Plan 2030, Bedford Borough Council https://www.bedford.gov.uk/planning-and-building-control/planning-policy/local-plan-2030/local-plan-2030-overview

The requirements in relation to new residential developments have since been superseded by Approved Document S for the Building Regulations 2010. As of June 2022, this mandates the installation of chargepoints for new residential buildings or those undergoing major renovation, where parking is allocated.[24] Policy 89 does not address charging provision for residential use other than in new developments, and this strategy fills that gap.

The currently proposed Local Plan 2040 contains the following relevant themes:

- Theme 1: Greener – Working towards making Bedford a net zero carbon emissions borough whilst improving, enhancing and creating green infrastructure and spaces
- Theme 2: More accessible – Encouraging sustainable travel as well as taking the opportunities offered by strategic infrastructure for greater regional and national connectivity
- Theme 4: Better places – Developing high quality, well-designed and beautiful places for all to use and enjoy.[25]

Policy DS1(S), Resources and Climate Change, includes the following:

Minimising carbon emissions, including by:

iii. Contributing to more walkable and cycle-able neighbourhoods that reduce demand for car use

24. Infrastructure for charging electric vehicles: Approved Document S, Department for Levelling Up, Housing and Communities, December 2021 https://www.gov.uk/government/publications/infrastructure-for-charging-electric-vehicles-approved-document-s

25. Local Plan 2040 Examination, Bedford Borough Council https://www.bedford.gov.uk/planning-and-building-control/planning-policy/local-plan-2040-examination

26. Local Plan 2040 for Submission, Bedford Borough Council https://www.bedford.gov.uk/planning-and-building-control/planning-policy/local-plan-2040-examination/examination-library

D) Responding to the economic and policy changes that are likely to accompany climate change, including by:

i. Reducing the reliance on the private car and road freight.[26]

Bedford Borough Council declared a Climate Emergency in March 2019 and has pledged to become carbon neutral by 2030.[27] Overall, these policies imply a goal of moving journeys up the sustainable travel hierarchy when possible, for instance from using internal combustion engine vehicles to using EVs.[28]

Additionally, the Council supports England's Economic Heartland's Transport Strategy, which includes an objective to focus on decarbonisation of the transport system by harnessing innovation and supporting solutions which create green economic opportunities.[29]

The central urban area in Bedford is covered by an Air Quality Management Area (AQMA), and we also run a Defra Air Quality Fund project at eight educational establishments in or adjacent to the AQMA.[30]

EV uptake will meet these multiple objectives, taken together, principally by reducing carbon emissions and improving air quality.

Changes in patterns of vehicle use and ownership are also likely to develop with EV uptake: the nature and extent of these are hard to predict, but they are likely to contribute to meeting objectives relating to reducing reliance on private car ownership and encouraging travel by more diverse modes.

27. Bedford Borough Council sustainability strategies and policies https://www.bedford.gov.uk/environmental-issues/sustainability/sustainability-strategies-and-policies

28. An introduction to the sustainable travel hierarchy, Energy Saving Trust, updated September 2023 https://energysavingtrust.org.uk/an-introduction-to-the-sustainable-travel-hierarchy/

29. Connecting People, Transforming Journeys, England's Economic Heartland, February 2021 https://www.englandseconomicheartland.com/our-work/our-strategy/

30. Air quality overview, Bedford Borough Council https://www.bedford.gov.uk/environmental-issues/noise-nuisances-and-pollution/air-quality/air-quality-overview

31. Transport user personas: understanding different users and their needs, Department for Transport, July 2023 https://www.gov.uk/guidance/transport-user-personas-understanding-different-users-and-their-needs

9.

Why people travel: how the EV shift will affect daily life for different people

BEDFORD BOROUGH COUNCIL

9. Why people travel: how the EV shift will affect daily life for different people

Growing EV uptake may bring different patterns of use and ownership, as a result of the contrasts noted above between EVs and ICE vehicles in respect of purchase prices, running costs and infrastructure requirements.

These new patterns will affect different people in different ways: some drivers will be able to afford to switch to using an EV when they next replace their car; for others, obtaining an EV may be prohibitively expensive until a competitive used EV market develops; for others still, car use may remain impractical for reasons not related to the EV shift.

To assess the possible range of impacts, we used the Department for Transport's Transport User Personas.[31] These provide a range of nine profiles that give a broad sample of transport needs and patterns across the population, based on extensive research. The profiles are divided into car owners (1-6) and non-owners (7-9):

1. Older, less mobile car owners
2. Less affluent urban young families
3. Less affluent, older sceptics
4. Affluent empty nesters
5. Educated suburban families
6. Town and rural heavy car use
7. Elderly without cars
8. Young urbanites without cars
9. Urban low income without cars.

Consideration of the personas shows how the EV shift brings both opportunities and risks. In general, EV adoption will often be difficult for less well-off households. There is the potential for some households to be excluded from car ownership if the EV shift has the effect of raising car prices overall (for instance if prices for new EVs remain high into the 2030s, when most new cars will be EVs, and used ICE car prices increase as a result). Conversely, if EV prices fall and people are able to access cheap electricity tariffs, the cost of owning and running a private car could become lower than it is now, which may make driving more accessible, but could also have wider implications for transport and travel policy.

31. Transport user personas: understanding different users and their needs, Department for Transport, July 2023 https://www.gov.uk/guidance/transport-user-personas-understanding-different-users-and-their-needs

	Segment	Need a car?	Ownership exclusion in EV shift?	Could go carless?	Could reduce use?	Would shared vehicle meet needs?
1	Less Mobile, Car Reliant	Yes	At risk	No: personal mobility needs	Slightly	No: need door-to-door travel
2	Young Urban Families	Yes	At risk	No: work and school needs; poor public transport	Somewhat	Unlikely: high level of car use
3	Older Less Affluent	Yes	At risk	No: work needs; poor public transport	Somewhat	Unlikely: high level of car use
4	Comfortable Empty-nesters	Yes	Low risk	No: poor public transport; possible personal mobility needs	Already have; could more	Possibly: car use is mostly ad hoc not routine
5	Suburban Families	Yes	Low risk	No: work and school needs; poor public transport	Already have; could more	Unlikely: high level of car use
6	Heavy Car Users, Frequent Flyers	Yes	Low risk	No: work needs; poor public transport	Yes	Only partly: high level of car use
7	Elderly And Low Income Without Cars	No, but could benefit from one	Already	Already	N/A	Possibly, if very accessible
8	Urban Professionals Without Cars	No	At risk	Already (but in some cases could afford car)	N/A	Yes: occasional or ad hoc use would suffice
9	Young Low Income Without Cars	No, but could benefit from one	Already	Already	N/A	Yes: occasional or ad hoc use would suffice

Table 11: Possible impacts of EV shift on different transport user personas

However, the table also shows how other transport factors might interact with the EV transition. Many of the barriers to reducing reliance on private cars will not be addressed by the EV transition, such as poor public transport provision and some people's personal mobility needs. However, if done in conjunction with other initiatives the EV transition could help reduce some barriers to car use: for instance, deployment of car clubs could open up opportunities for car use to some groups, who might be able either to reduce their existing car use or make more use of cars than they currently can, without having to buy one.

10.

Monitoring the success of this strategy

BEDFORD BOROUGH COUNCIL

10. Monitoring the success of this strategy

10.1 Outcomes and objectives

Outcome: Every household in the Borough will have access to workable EV charging options

Reason: To support EV take-up by voluntarily offering residents in Bedford Borough, whose needs may not be met by the market, the opportunity to charge a private EV.

Associated objective:

- Charging infrastructure suitable for residential use will be available within five minutes' walk of most households without dedicated off-street parking provision by 2027
- At least 256 new chargepoints will be installed under the contract for LEVI chargepoints.

Outcome: Residents' decisions about EV use will be informed by their knowledge and awareness of the available charging provision and options

Reason: New infrastructure will only meet our aim of removing charging provision as a barrier to EV uptake if residents know it is there and understand what it can do for them.

Associated objectives:

- Charging behaviours reported in regular surveys will reflect advice on good practice given in our information and resources
- User satisfaction measures will show that residents are aware of our information and resources, and find them useful.

Outcome: All new public chargepoint provision during the strategy period will be guided by the needs and views of residents, users and businesses.

Reason: Input from people who will use the chargepoints is essential to ensuring they meet people's needs, including those of people with disabilities and others with special requirements, and therefore provide a good service to the public, in exchange for the public money spent.

Associated objectives:

- We will be able to demonstrate high levels of engagement with proposals for each new installation, and that residents have had the opportunity to suggest provision at additional sites
- User satisfaction measures will be higher for new chargepoint installations than for pre-2024 installations in respect of reliability, ease of use and value for money.

Outcome: the benefit of public funding for new chargepoint provision will be maximised by leveraging additional private funding.

Reason: Many private companies are seeking to invest in charging infrastructure in anticipation of a large scale EV transition, and provision in retail car parks is increasingly expected by consumers; our provision should work with these trends, not in isolation from them or in tension or competition with them.

Associated objectives:

The chargepoint operator will, as a minimum, contribute the hardware at all new installation sites

One or more retail sites in the Borough will work with us to make their chargepoints available to residents on the same or similar cost basis as other residential chargepoints (with no additional charge by the retailer/s or obligation to use the shop/s).

10.2 Supplier data

Once charging infrastructure is installed, it is essential that it provides a good service to residents. We will therefore establish ongoing monitoring of the infrastructure installed to date, both to ensure good service levels and to assist with ongoing delivery.

We will require the CPO to provide data for this purpose, covering both usage of chargepoints and other data relating to KPIs including availability of chargepoints and data on customer services, such as numbers of contacts to customer support, and any feedback provided by customers. We will also run a survey of chargepoint users at least twice a year, based on the survey used in the development of this strategy.

This ongoing monitoring will enable us to manage our contract proactively, to inform our ongoing delivery with good understanding of charging behaviour, and to identify any areas where existing provision is becoming heavily utilised and may need to be expanded. It will also equip us to evaluate the success of this strategy using our evaluation framework.

10.3 Evaluation framework

A full evaluation framework will be developed, reflecting the outcomes and objectives outlined above, and incorporating key indicators outlined in the table below.

Objective	Indicator
Charging infrastructure suitable for residential use will be available within five minutes' walk of most households without dedicated off-street parking provision, by 2027	Proportion of households in areas with low levels of dedicated off-street parking within five minutes' walk of a public chargepoint.
At least 256 new chargepoints will be installed under the contract for LEVI chargepoints.	Number of chargepoints installed.
Charging behaviours reported in regular surveys will reflect advice on good practice given in our information and resources	Percentage of EV drivers self-reporting behaviour in line with advice; number of non-compliance incidents reported to Council
User satisfaction measures will show that residents are aware of our information and resources, and find them useful	Read rates and social media engagement with information and resources
We will be able to demonstrate high levels of engagement with proposals for each new installation, and that residents have had the opportunity to suggest provision at additional sites.	Numbers of people engaged with during development of proposals for each new site
User satisfaction measures will be at least as high for new chargepoint installations as for pre-2024 installations in respect of reliability, ease of use and value for money	User satisfaction score on one or more measures, baselined against 2023 survey
Chargepoint operators will, as a minimum, contribute the hardware at all new installation sites	Monetary value of hardware contributed by chargepoint operators
One or more retail sites in the Borough will work with us to make their chargepoints available to residents on the same or similar cost basis as other residential chargepoints (with no additional charge by the retailer/s or obligation to use the shop/s).	Number of retail sites where chargepoints are available to residents without additional cost

Finding out more

If you would like further copies, a large-print copy or information about us and our services, please telephone or write to us at our address below.

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