

iFrom: **David Brazier, Cabinet Member for Highways & Transport**
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To: **Environment and Transport Cabinet Committee - 3 November 2021**

Subject: **Electric Vehicle Charging Infrastructure in Kent**

Classification: **Unrestricted**

Past Pathway of report: NA

Future Pathway of report: NA

Electoral Division: All

Summary: This report outlines the current position of Electric Vehicle (EV) Charging Infrastructure across Kent and identifies future infrastructure need. It then compares the projected outcomes of KCC's EV infrastructure programme against that need.

Recommendation(s):

The committee/board is asked to note the contents of the report.

1. Introduction

- 1.1 This report gives a broad overview of the national picture of EV charging and will look at Kent County Council's role specifically in ensuring our residents and businesses are able to switch to electric vehicles.
- 1.2 It looks at the current numbers of EV chargers in Kent and outlines the target numbers required to enable full electrification of vehicles in line with the 2030 ban on new petrol and diesel vehicles.
- 1.3 The report then assesses those targets against the projects within the EV Charging Infrastructure programme that KCC is rolling out over the coming years and determines if additional projects need developing or adapting to meet those needs.

2. Electric Vehicles Charging Infrastructure

- 2.1 Electric Vehicle (EV) sales are growing in the UK and the demand for charging infrastructure is rising - driven by the Government's plan to ban new sales of petrol and diesel vehicles from 2030. This is not traditional refuelling as we know it. The speed, and therefore price, of charging varies from the slowest 3kwh up to a potential 350kwh. This could be the difference between charging in 10 hours or charging in 10 minutes.
- 2.2 Industry data suggests the vast numbers of EV owners choose to charge at home if they have access to a home charger. It is convenient and provides the

lowest cost option. VAT on electricity is paid at 5% at home but 20% on the public network - arguably penalising those who do not have access to off street parking.

- 2.3 In order to help the transition to electrification, with all the carbon and air quality benefits this would bring, KCC have developed an EV infrastructure programme to install EV charging points across the county.
- 2.4 Providing charging infrastructure is not currently a statutory requirement of Local Authorities although the Government is consulting on this topic. However, helping residents and businesses switch to cleaner vehicles will help KCC achieve our climate and air quality goals. All the projects in development and mentioned in this report leverage external funding, grants and private sector investment – often giving an income back to the Local Authorities as landowners. This minimises up front financial risk and allows a long-term income generation while the technology and market develop.
- 2.5 KCC are waiting for the Government to publish guidance to Local Authorities to provide clarity on the amount of action public sector bodies are expected to take. This is due in late 2021 or early 2022. Until such a time officers can only estimate the percentage of chargers that Local Authorities should be or are expected to provide in comparison to the private sector.
- 2.6 Whatever the level of ambition, without some long term and significant funding being made available to Local Authorities, most charging infrastructure will need to fall to the private sector.
- 2.7 For the basis of this report officers propose 4 scenarios resulting in Local Authorities being responsible for 5%, 10%, 20% and 40% of the infrastructure. This percentage will change over time as Government guidance is released and market failures are realised – particularly in charging “black spots” where capital requirement is high and revenue return is deemed to be low.

Anticipating EV Charger socket requirements in Kent.

- 2.8 In 2018 KCC commissioned CENEX, a leading not for profit consultancy in the clean transport space, to forecast EV charger demand across Kent until 2028 for passenger vehicles. In light of recent technological advances, the 2030 ban on new petrol and diesel vehicles and the new companies moving into this space; KCC asked CENEX to update this report in 2021.
- 2.9 Cenex produced a number of scenarios, including those in line with the government’s ban on new petrol and diesel vehicles from 2030 onwards, and proposed a number of chargers, categorised by speed, that have to be installed to meet that target. The data is presented here:

Table 8: 2030 Ban Scenario chargepoint requirements.

	2021	2025	2030
7 kW	253	1,551	5,982
22 kW	58	372	1,121
50 kW	15	88	328
150 kW	1	3	56
Total	327	2,014	7,487

Figure 1 – Charger socket numbers required by 2030 in Kent

2.10 Figure 1 shows that by 2030 Kent will need to have 7,487 public chargers (of varying speeds) installed to meet demand.

2.11 Figure 2 below presents the same data but more clearly shows that the vast majority will be at 7kw speed.

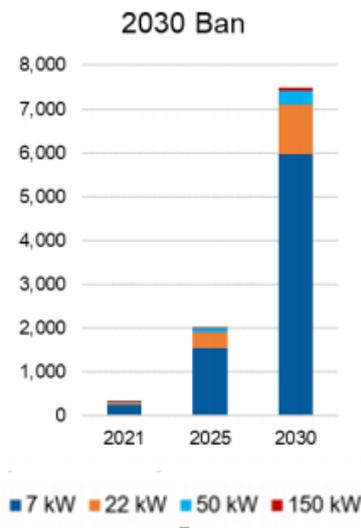


Figure 2 – Shows the number of charger sockets of each type required to support the 2030 ban scenario.

2.12 Figure 3 below expands the Cenex prediction and makes some assumptions about charger socket numbers required each year between 2021, 2025 and 2030. This helps officers better plan the delivery for the projects and manage the funding requirements. The numbers of charger sockets scale up towards the end of the decade and provide a useful guide as to whether the projects are likely to meet these targets annually. If not, officers can look to redesign and develop more projects to meet demand.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
7 KW	253	350	800	1,100	1,551	2,000	2,600	3,400	4,500	5,982
22 KW	58	100	200	300	372	450	560	670	850	1,121
50 KW	15	25	40	60	88	120	150	200	280	328
150 KW	1	1	2	2	3	10	20	30	40	56
Total	327	476	1,042	1,462	2,014	2,580	3,330	4,300	5,670	7,487

Figure 3 – Assumptions made about the numbers of charger sockets required per year scaling up to 2030.

2.13 In order to assess whether the EV infrastructure programme is appropriate, officers need to understand if the planned projects will meet the demand up to 2025 and then on to 2030.

2.14 To do this, officers must look at the numbers of chargers currently installed, determine a quantity or percentage that the private sector are likely to install and add on the numbers that Local Authorities expect to install up to 2025.

District	Fast (7-22kwh)	Rapid (43-50kwh)	Ultra-Rapid (60 – 350kwh)	Total
Ashford	44	3	0	45
Canterbury	30	5	0	35
Dartford	17	8	17	42
Dover	3	3	3	9
Folkestone & Hythe	20	5	0	25
Gravesham	2	2	0	4
Maidstone	51	9	18	78
Sevenoaks	19	9	0	28
Swale	28	3	0	31
Thanet	22	5	0	27
Tonbridge & Malling	16	4	0	20
Tunbridge Wells	21	2	0	23
Total	271	58	38	367

Figure 4 - Kent Charger numbers currently installed (July 2021)

2.15 Figure 4 shows that charger numbers are currently exceeding KCC’s target numbers for 2021 by 40 chargers. Chargers are counted if they are provided to the public whether by the private sector, public peer to peer charging or Local Authorities. However, it should be noted that simply installing chargers does not necessarily mean they are being well used, maintained or are in strategically important locations and at the “right” speed. All these factors must work together to create a coherent and useful charging network.

Local Authority or Private Sector.

2.16 Without clear guidance from the Government officers have to make some assumptions with regards to the number of chargers that KCC and/or other Local Authorities are likely need to provide versus the private sector. At this stage indications from the Department for Transport (DFT) suggest the Government will not look to introduce quotas but are consulting on whether all car parks should be obliged to provide EV chargers. An assumption can be made that the large scale of capital requirement will need to be met somehow and without a clear Local Authority funding plan out to 2030 – this must largely come from the private sector.

2.17 Many private sector companies, including the traditionally fossil fuel-based companies, are making large investments into this space. With clear policy intent from the Government, legacy companies are concerned about losing market share and new start-ups in this space are seeking an opportunity for growth.

2.18 Local Authorities could capitalise on this, as landowners, in often sought-after locations (town centre car parks, for example) but a solution will have to be found as to those areas which are deemed to generate less revenue and which are perhaps expensive to install in.

2.19 The 4 scenarios below show a range between 5 – 40% of chargers being installed by Local Authorities with KCC leading much of this deployment. Over time the programme will adapt when the likely percentage becomes clearer. Note the other % of chargers could be met by the private sector, other Local Authorities within the county of Kent and private individuals.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total	327	476	1,042	1,462	2,014	2,580	3,330	4,300	5,670	7,487
5% KCC allocation	17	24	52	73	100	129	167	215	284	275
10% KCC allocation	33	48	104	146	201	258	333	430	567	749
20% KCC allocation	66	96	208	292	402	516	666	860	1134	1498
40% KCC allocation	112	192	416	584	804	1032	1332	1720	2268	2996

Figure 5 – Shows the numbers of chargers that Kent Local Authorities would have to provide up to 2030 depending on the assumed allocations between 5 and 40%

2.20 Figure 5 shows the cumulative numbers of charge sockets that Local Authorities would need to provide per annum to meet the 4 percentage scenarios offered. It anticipates that by 2030 Kent Local Authorities will have needed to be responsible for delivering anywhere from 275 – 2996 charger sockets.

EV Charging Infrastructure Projects

2.21 Within the EV charging infrastructure programme KCC have a range of projects designed to meet the charging need. Some are based on a local level, some affect policy and some are large scale infrastructure plans working with other Local Authorities. These cater to the different charger speed requirements that electric transport offers.

Project Name	Completion year	Target charger sockets per annum	Progress to date	Notes
Parish Charger network phase 1	2021	30	20	7 – 22kwh chargers across all of Kent. Typically installed in Parish and Village Hall car parks.

District Charger Network phase 1	2021	20 (15 in Kent)	0	7 – 75kwh chargers across 6 Kent Districts & Medway. Tender recently awarded. Feasibility studies carried out.
Rapid Taxi and Private Hire Vehicle Chargers	2021	20	12	50kwh chargers across multiple Districts
Parish Charger network phase 2	2022	50	NA	
District Charger Network phase 2	2022	300 (250 in Kent)	NA	
Rapid Taxi and Private Hire Vehicle Chargers	2022	8	NA	
Parish Charger network phase 3	2023	50	NA	
District Charger Network phase 2	2023	280 (250 in Kent)	NA	
Ultra-Rapid charger network	2023	20	NA	
Parish Charger Network phase 4	2024	50	NA	

TOTAL = 743 new charger sockets

Figure 6 shows that KCC have an estimated 743 new chargers planned by 2024 which have or will be directly influenced by Kent County Council. This does not include other Local Authority projects outside of our scope or the private sector installations.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total charger sockets required	327	476	1,042	1,462	2,014	2,580	3,330	4,300	5,670	7,487
5% KCC allocation	17	24	52	73	100	129	167	215	284	275
10% KCC allocation	33	48	104	146	201	258	333	430	567	749
20% KCC allocation	66	96	208	292	402	516	666	860	1134	1498
40% KCC allocation	112	192	416	584	804	1032	1332	1720	2268	2996
FORECAST cumulative charger sockets KCC will install per annum	+65	+373	+693	+743	NA	NA	NA	NA	NA	NA

Figure 7 – This table compares KCC’s projected installation numbers to the required charger numbers in each % scenario.

2.22 Figure 7 shows that in all but 2 scenarios (2021: 20% & 40% allocation) KCC is on track to exceed the number of chargers required in every scenario up to the end of 2024 and in the 5 and 10% allocations KCC will have exceeded the requirement 6 years early. This does not even account for additional chargers being provided by other Local Authorities or the fact that the 2021 allocation of 327 charger sockets has already been met with installations having already occurred.

2.23 This shows that the projects being delivered are likely to be on track and allows some flexibility if the numbers of chargers cannot be fully realised or are delayed. However, it should be noted that a certain number of charger sockets on the ground does not ensure the chargers are installed in the most optimum locations, are maintained, or are well used. Therefore, projects must be well designed, costed, and planned to ensure targets are met while considering good placement.

KCC EV charger Mapping.

2.24 To ensure KCC looks at the network on a strategic level and places investment and efforts in the areas where it will have the largest impact, officers in Transport Innovations are developing a mapping system. This is taking datasets such as existing charger locations, population density, off street parking capability, known future charger locations, land use and power availability to highlight those areas in Kent that are not likely to be catered for adequately. It will enable officers to understand where project development may be required and look for solutions to address the challenges in those areas. This will help provide area specific strategies where needed.

2.25 It is anticipated that localised charging in areas with little off street parking will be a particular challenge and new projects may need to be developed to address this gap. This could be a renewed review of on street charging solutions when all other options have been exhausted. This is an area the programme will adapt to in future if required.



Figure 8 - A screenshot from the Charger map showing 5 minutes walking distance to Fast charger sockets and a 10 minute's drive to rapid and ultra-rapid charging locations.

The Planning system – Transport & Development Planning.

2.26 A new set of Planning Parking Guidance is due to be published in the Kent Design Guide, supporting national Building Regulations changes to require EV charger installations and passive installations (ducting and cabling) to be installed in new developments. With regards to the public charger network across Kent, the requirements for new commercial development will greatly increase the numbers of publicly available chargers.

Residential Uses	
Dwellings with On-Plot Parking	1 Active Charging Point per dwelling minimum output rating 7kW*
Dwellings with unallocated communal parking	10% Active Charging Spaces and 100% Passive Charging Spaces**
Non-Residential Uses	
All Uses with Off-Street Parking	10% Active Charging Spaces and 100% Passive Charging Spaces**

*chargepoints should be Mode 3, AC.

** applicable to new sites, change of use applications or extensions will be discussed on an individual basis

Figure 9 – An extract from the proposed Planning Parking Guidance.

On Street Charging

2.27 – Enquiries are rising from residents, without access to off street parking, to run a cable from their property to their vehicle on the road. There is no consistent method used for this but proposals include strapping down the cable or running a cable channel under the pavement itself. Although, in principle, this could help many more people to charge their vehicles, accessing lower costs of electricity – officers have not yet seen a solution that meets safety requirements or avoids maintenance, equalities, parking or cost difficulties.

2.28 Officers continue to monitor other Local Authority areas and the private sector for solutions and are awaiting more clarity from the Government, due in 2022, on the issue.

2.29 To enable on street charger installations, officers have published guidance for District Councils to follow to enable and promote safe installations on the highway. This guidance is not yet formally adopted KCC policy but could be brought forward in the coming months. Officers understand it is being used to inform central government advice on the matter.

Available Grid Power In Kent

- 2.30 A fundamental challenge that presents itself when seeking to install new charging infrastructure is availability of grid connections. This is not unique to Kent and Ofgem are looking into this issue. Some areas of the county are quite well equipped to accommodate new chargers while others are severely constrained and require high capital investments.
- 2.31 A lack of power availability often leads to wasted resource when quotations are sought. For context the rapid taxi charger project has investigated nearly 50 locations around the county. Of those 50 only 8 have been viable financially to date. A rapid (50kwh+) charger equals the power requirement of 22 new flats. This can lead to a perceived slow roll out of charging infrastructure.
- 2.32 UKPN have started to understand where their power limitations are on their grid. However, this information is still not freely available to charge point operators or local authorities. Therefore, formal quotations are still required to fully understand if a location is viable – usually after work has taken place to ensure the location is suitable from a user and operator perspective.
- 2.33 The Government is aware of the issue and officers understand this may be changed in the future. Some financial help with very high connection costs is expected to be available in 2022.

3. Supporting the transition to electric vehicles

- 3.1 Expansion of the Kent electric vehicle charging network is critical to incentivise and provide confidence to residents, businesses and the public sector that switching to an electric vehicle makes good sense before the 2030 ban.
- 3.2 Kent County Council together with all other Local Authorities in Kent have set ambitious net-zero targets, in almost all cases to be achieved for their own organisation by 2030. This will require the majority of public sector fleet vehicles to be switched to electric or other low emission fuel by this date.
- 3.3 Kent County Council was awarded a £1.5 million capital grant from Highways England to deliver the Kent REVS Up for Cleaner Air an electric van scheme, which was launched in February 2021. KCC provided £0.5 million revenue funding to operate the scheme for 2 years offering businesses, public and third sector organisations the opportunity to try an electric van for free for up to 2 months. The scheme has already supported over 110 organisations, with five already making the switch to an electric van.
- 3.4 The experience of driving an electric van has been mostly positive, with the main barriers to organisations switching to electric being the lack of local charging infrastructure, charge points being out of service and the complexity of payment methods from a range of providers.
- 3.5 Organisations have also reported that rural and coastal areas lack infrastructure and this reflects the point made at 2.25 where the mapping of charging infrastructure will assist in identifying locations where investment is needed.

4. Financial Implications

- 4.1 At this stage all projects, except the Parish Charger Network, are costed, operating, and funded up to 2024. The Parish Charger Network has funding allocated to deliver Phase 1 and Phase 2 but not Phase 3 or 4. It is expected that grants will continue to be sought and no base funding will be required for that project.
- 4.2 If additional projects are to be realised or projects expanded then additional funds may be required and the Climate Change Fund, outside Grants or private sector investment may be considered. At this stage it is not anticipated that base funding will be needed up until at least 2025. Further work and analysis will take place annually up to 2025 to determine and develop future projects which will better inform funding decisions. Where possible, private sector investment will be utilised with Revenue return back to the Local Authority Landowners

5. Legal implications

- 5.1 All legal implications will have to be addressed on a project basis with legal advice sought as required.

6. Equalities implications

- 6.1 All charging infrastructure needs to be installed to be accessible and with equality in mind. The industry is working with Government on this topic and the findings are yet to be published. All installations partners are and will continue to be expected to ensure their equipment and installations are available for all users.

7. Other corporate implications

- 7.1 There are future projects and opportunities that officers wish to develop, particularly investment in KCC's own estate to provide charging facilities for staff, visitors, and contractors and to support the transition of KCC's own fleet vehicles to electric. Additionally, officers wish to assess the potential of investing in ultra-rapid charging hubs on KCC owned land which could provide a future revenue income stream. This will require cooperation between services managing land and buildings across the KCC estate.
- 7.2 There are added health benefits to be gained from improving electric vehicle infrastructure and supporting the transition to electric vehicles. The resulting reduction in tailpipe emissions will reduce harmful air pollutants, which contribute to both acute and chronic health conditions affecting all ages.

8. Governance

- 8.1 N/A

9. Conclusions

9.1 The report shows that current projects in the works should enable KCC to play a large role in meeting the charging needs of the county. Without clearer guidance from Government officers will continue to monitor installations, national progress, and industry feedback to determine which scenario is most appropriate. It could be that more onus is placed on Local Authorities than the 40% shown in this report. If that is the case then additional projects will need to be developed.

10. Recommendation(s)

Recommendation(s):

The committee/board is asked to note the contents of the report.

11. Contact details

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