

Executive

26 September 2019

Report of the Corporate Director of Economy and Place
Portfolio of the Executive Member for Transport and
Portfolio of the Executive Member for Environment and Climate Change

Reducing York's carbon footprint with Electric Vehicles

Summary

1. The Council has made a commitment to tackle climate change and reduce the City's carbon footprint by 2030 and carbon reduction is starting through a number of projects that seek to make the way the City operates more sustainable.
2. In March 2019, the Executive approved plans to engage with the market to deliver two Hyper hub facilities at Poppleton Bar and Monk's Cross Park and Ride sites. A Hyper hub is a collection of ultra rapid charging points for electric vehicles (EV). This is a scheme that is part funded through the Office for Low Emission Vehicles (OLEV) and part funded through European Regional Development Funding (ERDF). The principle benefits of this scheme are:
 - promoting and driving more sustainable, environmentally friendly cars;
 - having two strategically positioned Hyper hubs to service households and businesses with Electric Vehicles (EV) that don't have the benefit of off street parking;
 - to ensure the council has ownership of strategic assets that allow the Council to play a part in the setting of tariffs that form a key part of the local, regional and national EV charging network landscape;
3. Prior to the development of the Hyper hubs proposals, the Council already had a track record in investing in EV infrastructure in Car parks, retail parks and leisure centres. There has also been experimentation with EV and EV infrastructure for the Council's own fleet.
4. One of the difficulties with executing innovative schemes of this nature, where the market is not mature, is the uncertainty around availability of the technology and the cost, particularly where there is high demand for the

technology proposed. After initial market engagement regarding a specific scheme it was clear that the costs for Hyper hubs would be significantly higher. In order to meet this potential increase of around £700k in cost further funding is being sought through several sources (including Local Enterprise Partnership (LEP) funding and additional ERDF). In order to match this funding the Council will need to provide a contribution to the costs (£400k).

5. During market engagement the opportunity to use on site battery storage to generate revenue has been raised by several suppliers. This potential wasn't accounted for in the original business could and can help to offset the additional Council investment through revenue over the projects lifetime, however in a brand new market income forecasting could prove highly unreliable and therefore is not considered in this report as a viable means of suggesting capital repayment.
6. Despite the increased forecast cost the importance of the two Hyper hubs remains:
 - To provide a sustainable and inclusive solution for EV owners with no off street parking. The cost of installing 50 on street chargers (of which a government subsidy would be available) would be in the region of £250,000 and multiplying this out across the City would represent a significant cost as well as the ongoing maintenance issue. It would also to a challenge with existing technology to provide on street charging where parking is limited, for example in terraced areas;
 - To allow control over tariffs in the City to ensure a fair cost of EV charging for residents, businesses and visitors;
7. Hyper hubs is the cornerstone of the City's future EV charging estate strategy and further work will be done in the next 6 months to refine the strategy for the EV charging estate as a whole. This will include work on the Council's approach to EV in its own fleet and the importance of taking an holistic approach to the development, operation and support.

Recommendations

8. The Executive is asked to:
 - 1) Note the progress of the Hyper hubs project.
 - 2) Recommend to full council an increase in the budget of £700k including £400k additional prudential borrowing to fund the increased cost of the Hyper hubs project;

- 3) Agree to proceed to the procurement of a contract for the supply and installation of the hyper hubs and delegate to the Assistant Director of Transport, Highways and Environment (in consultation with the Assistant Director of Legal and Governance or his/her delegated officers) the authority to take such steps as are necessary to award and enter into the resulting contract for the delivery of the Hyper Hubs project but that if the scheme needs to be tailored to the available budget this will be brought back to Executive in a further report.
- 4) Approve the approach to the wider estate and progress on fixing the Council's current EV charging assets;
- 5) Ask officers to develop the principles laid out in this report along with the comments into a formal Public EV Charging Strategy to be brought back to a future Executive.
- 6) To include the fees for parking in EV bays as part of the budget proposals for 2020/21

Reason: In order to move forward and implement the EV charging infrastructure that meets the Council's ambitions in terms of carbon reduction, promoting sustainable transport and increasing the use of electric vehicles to improve air quality in the City.

Background

9. City of York Council is committed to creating a city which has a thriving local economy, strong communities and a sustainable way of life. A City where residents are healthy, happy and prosperous. This can be no better illustrated than the Council's commitment to the reduction of carbon emissions by 2030 and the resourcing of a number of projects that would make a real impact on the delivery of these targets.
10. An area where the Council can exercise significant influence is by supporting the transition to more sustainable means of transport both for residents, visitors and businesses and internally for the Council's own fleet.
11. The Department for Transport's "The Road to Zero" sets out a framework to end the sales of conventional petrol and diesel cars and vans by 2040 and put the UK at the forefront of manufacturing and sale of ultra low emission vehicles. The ambition is for all new cars and vans to be effectively zero emission by 2040.

12. Vehicles with reduced emissions range from efficient Euro 6d diesel and petrol vehicles, alternatively fuelled vehicles and parallel hybrids (which use traditional fuels (petrol or diesel) and have a supporting electric motor that is charged by the combustion engine). Ultra Low Emissions Vehicles include plug-in hybrids, fully electric vehicles (EVs) and fuel cell electric vehicles (FCEVs – the fuel cell in this example would be hydrogen. Fuel cells are devices that convert chemical energy directly into electrical energy, water and heat). There is a strong narrative in the Department for Transport's strategy for the production and uptake of Ultra Low Emissions Vehicles to play a large part in delivering on the strategy in the next 10-20 years.
13. Already nationally there is an increase in uptake of EVs with nearly 60,000 plug-in cars registered in the UK in 2018 marking the 7th consecutive year of growth and this is reflected locally in terms of sales of EV and demand on the Council's charging infrastructure.
14. Locally, as well as the Local Transport Plan putting in place a strategy for transport, the Smart Transport programme is putting in place the systems to allow better real time and strategic modelling. In addition, the connectivity layer developed by the Council's Digital team puts in place an environment where intelligence can be easily passed to network users.

Cost

15. There is now an increasing range of new and used EVs available on the market and as take up increases and the technology improves the cost of the vehicles will reduce and become more accessible to all users. In this context the Council's main role will be to communicate the benefits of switching to a low emission vehicle.

Range anxiety

16. A perceived barrier to the purchase and subsequent issue for EV users is the uncertainty over the distance a vehicle will go on a charge and when the next charging opportunity will be. This starts with where the user parks the vehicle over night. If this is on a drive and the user has the necessary infrastructure to charge the car, this is less of an issue. If the user doesn't have access to charging infrastructure overnight (or when the vehicle isn't being used), for example where a user parks on-street, which is common in York's terraced areas, there will be a constant question as to where the vehicle will next be able to charge.

17. This anxiety is emphasised for new users as this is not something that normally exists with petrol or diesel vehicles due to the abundance of service stations, even in rural areas. Also, the average range (of more affordable EVs that are likely to replace vehicles) is currently significantly lower than its diesel or petrol contemporary.
18. The resolution to this is supporting the development of an EV charge point network that would give certainty to users around where they will charge. Alongside this would be supporting technology that is available to EV users to allow them to find their nearest operational charging point and to plan a journey with EV charging points considered.

EV charging infrastructure

19. Since 2013 the Council has invested in building EV charging infrastructure in Council car parks, shopping centres and leisure centres. This has enabled the uptake of EVs in the City and the transition to lower carbon and improved air quality to be accelerated. Council owned charging points have usage rates of over 1500 sessions per month.

Hyper hubs

20. At the core of the Council's strategy to accelerate the adoption of EVs is the Hyper hubs project. This project, reported to and agreed by Executive in March 2019, puts in place a key element of the City's ecosystem in terms of EV charging infrastructure. The Monks Cross and Poppleton Bar Park and Ride sites were chosen to host the Hyper hubs because of their geographic locations to the East and the West of the City and their connectivity to the outer ring road.
21. The Hyper hubs will provide a number of 150kW ultra rapid chargers that will allow an average EV to recharge in around 20 – 60 minutes (this will depend on the type of vehicle). This represents a significant improvement on the current EV charging infrastructure and would make the facility more similar to a service station in its usage than a place that the car would be left all day. This would be reflected in the usage regulations for the Hyper hubs where it is envisaged that customers would not be able to dwell at the charger for longer than 90 minutes.

22. The Hyper hubs are designed with the supplementary solar canopy and battery storage to provide charge through sustainable energy by harvesting solar energy through the canopy to store in the battery and using energy in the battery in the charging point.
23. The importance of Hyper hubs is that they enable the Council to provide equality in terms of usage of EVs, the ability for the Council to play a role in the setting of tariffs and to provide nodes in the regional/national charging infrastructure ecosystem.
24. At present, residents living in terraced areas with no off street parking cannot charge at home because there is no infrastructure in place on the street and connecting to their home would be impractical. Hyper hubs would provide the facility to charge these EVs quickly and efficiently.
25. Of equal importance is the ability of the Council to influence tariffs once the market does start to install hyper charging points in service stations. The ownership of the assets also gives the Council the opportunity to provide revenue to support the ongoing maintenance and operation of the facilities.
26. Hyper hubs will also play a role in the regional and national infrastructure piece and allow EV users to connect longer journeys together. This will be a further release on the strain of range anxiety.
27. In terms of the Hyper hubs project, the planning application has been submitted for both Poppleton Bar and Monks Cross sites. The solar canopy in the application covers a larger area than will be installed as part of the Hyper hubs project to assist any future schemes that will look to benefit from solar harvesting.
28. Advice has been taken from the market on the best design of the hubs and an element that emerged during this work was the potential requirement for a canopy over the charging hub to protect the users and the equipment from the elements. Also, the design allows the users to flow rather than park as is the norm with the current EV bays in the Council car parks.
29. A period of market engagement has been completed to inform design and to further inform cost certainty. Several issues arose from this work. Firstly, it was assumed that as time passed in terms of securing funding and developing the designs for the project the technology would have developed and improved and that the 150kW ultra rapid charging units would be more readily available on the market. This has proven not to be the case and, because other cities are on pathways to installing Hyper hub

technology, demand for the units is high. This has had the resultant effect of keeping prices relatively high.

30. This issue, coupled with more developed costs for the frames to support the solar canopies and the practicalities of having a canopy over the charging hubs, has meant a budget shortfall risk has been identified that is likely to be realised during the procurement process.
31. At present, it is estimated that the scheme will cost around £2.2m. This is an increase of £700k on the amount secured to date through OLEV and ERDF. In order to close this shortfall it is proposed that a further amount is applied for through ERDF and, in accordance with the ERDF change control process, this funding will need to be matched.
32. It is proposed that CYC fund £400k and a further £300k is applied for through ERDF (this will bring the ERDF contribution up to £1m). Early discussions have been had with the ERDF managing authority, the Ministry of Housing, Communities and Local Government (MHCLG), and a change request has been constructed for MHCLG's consideration. In terms of the spend profile it is expected that the Council contribution will be required in the financial year 2020/21.
33. There is an opportunity through the Local Enterprise Partnership to apply for funding the match through another source, but there is a process to follow before any potential funding emerges. In terms of the LEP opportunity the team would be looking for a contribution of around £1.5m to cover the shortfall in Hyper hubs funding (as discussed above) and invest in the wider EV charging estate.
34. At this stage any surplus from this budget project will be used to assist in the development of the next stages of the City's Hyper hubs provision, which will be to support the development of a Hyper hub at York hospital.

Wider council EV charging estate

35. In 2013 City of York Council led the way in encouraging low emission vehicle usage by installing a range of APT (brand) public charging infrastructure sites for electric vehicles around the City. However, being an early adopter has meant that much of the estate is now life expired, unreliable and some of the charge points have 3 pin sockets which no longer meet The Alternative Fuels Infrastructure Regulations 2017.

36. Whilst the ambition to install EV was positive and the outcome was good at the time, this was not supported by a wider strategy associated with the installations in terms of the overall management, support and maintenance.
37. In response to this, the assets have now been moved into the Transport systems team in terms of responsibility and an audit of the current estate has been undertaken.
38. At the time of the audit around 44% of the assets were operational. This was due to the issues highlighted above. In July, Full Council approved £25k to invest in the short term repair and maintenance of the assets.
39. The Transport Systems team is now in the process of commissioning the work to put in place the repairs to the assets and 84% of the charging units are now functional with the final sites awaiting third party inspections in order to complete repairs. At present in the region of £15k has been committed.
40. It is clear from the work to date that the repairs will not represent a permanent fix and it is positive that Members have committed a £25k revenue budget for EV charging point maintenance. The wider EV charging network is fundamental to support the Hyper hub project in terms of EV charging provision so the team is now developing a longer term strategy to ensure a sustainable EV charging network is in place.
41. It is proposed that the future Public EV estate development will be initially managed under the following principles:
 - i) Keep residents, businesses and visitors engaged and consulted on future measures and charging types and locations – The initial work will be treated as a scheme in terms of identifying the best locations, the most appropriate charging types and the usability. The implementation and consultation will be carried out in line with the consultation process on Transport system renewal projects.
 - ii) Deliver a reliable network – The technology implemented will be fit for purpose and endeavour to be future proof and the funding to support will cover support and maintenance and renewal.
 - iii) Ensure parking bays are best utilised and EV users who require a charging point are able to access – The objective in this principle is to stop users dwelling in EV charging bays longer than it takes to charge

the car. In some of the City centre car parks the EVs occupying the bays charge for a short period of time (15p per kWh) and occupy the bay for the rest of the day effectively giving free parking to the user and preventing other users from charging. There are a number of possible ways to move forward on this issue:

Examples	Analysis
The bay can only be occupied as long as the car is charging.	This would theoretically ensure that the bays are used for the maximum amount of time, giving more opportunity. The issue here is that the user will not necessarily know how long the car will take to charge and they may need to stay longer and charge.
The user is charged just for the power when charging and then is charged a different standard rate when not charging.	This would resolve the issue of the bays being a free parking bay when not charging, but it would mean that an EV charging bay would be occupied as a standard parking space. There would also need to be a system put in place to manage the cost change.
The bay can only be occupied for a set length of time. Examples in other cities include 4 hours, no return that day.	This would ensure more opportunity and the user would be sure of parking timings, but there would still potentially be a period when the bay was occupied and not charging.

As part of the ongoing review, once the parking bays are identified as fitting with the strategy, the most suitable approach for that location would be identified. Also under review would be the tariff. At present the Council charges 15p per kWh and this could be increased to 20p/kWh to ensure that the charging network is self funding whilst maintaining a competitive tariff that encourages usage. It is proposed that options on tariffs for EV charging are brought forward as budget proposals for 2020/21.

- iv) Match the power output of the chargepoints to dwell time so that the right type of charger is available at the right location – When looking at the whole picture in terms of EV bays take an approach that would

ensure that the right chargers were placed in the right parking areas to ensure best usage.

- v) Ensure residents without off street parking are able to access public chargepoints at a reasonable cost – This is the Council's role in setting the tariffs and influencing the rest of the market in the City.
 - vi) Ensure that the any growth in network is adequately funded to enable effective maintenance, and when required, expansion and renewal of charge points. Members have agreed a budget of £25k per year for the maintenance of the assets. There is potential to kick start further growth in the EV Estate using York, North Yorkshire and East Riding LEP funding. It is proposed that funding is applied for to contribute to Hyper hubs costs and develop, support and replace the current estate. However, growth in the estate will mean more maintenance so the charging structure will need to make it self supporting or a budget will need to be identified.
 - vii) Complement commercial networks to provide a wide choice of publicly owned and privately owned charge points to maximise coverage and choice for users – Interface with private providers, such as BP, to ensure that we have best charge point coverage.
 - viii) Promote the benefits of more sustainable transport and Electric vehicles – to drive the strategy forward engage with the Communications team to develop a campaign to inform of the current policies and installations and the benefits of using more sustainable modes of transport.
42. It is important to recognise that a national issue associated with the increased uptake of EV is the capacity of local distribution networks. Power management will be vital and it may be that future schemes can be developed in line with Hyper hubs where there are elements of energy generation and storage.

The Council's fleet

43. Whilst there is a commitment to shift the Council's own fleet to more sustainable fuels. The work is being picked up as part of the fleet replacement work and should be considered by the new Climate Change Scrutiny as to the potential for greater policy commitments.
44. Not wishing to delay early delivery, officers are to review the Parking services fleet and its potential to become the first all electric fleet and this

proposal will be developed later this calendar year and the waste specifically will be subject to a report later this year.

45. In addition the Council will be exploring fleet opportunities for V2G applications where electricity is fed from the vehicle battery back into the grid, building on previous trials undertaken at Hazel Court.

Finance summary

46. The latest estimated costs of the scheme is £2,200k which when compared to the original budget of £1,500k is an additional cost of £700k. The supplementary costs to fund the shortfall in funding for Hyper hubs is as follows:

Funding source	Note	Value
City of York Council	This will be a contribution to the scheme in the financial year 2020/21	£400k
European Regional Development Funding	This is subject to securing match funding and agreement by the managing authority MHCLG	£300k

47. It is important to note that the Council will comply with the conditions of the award of ERDF funding and have capacity within the Smart Transport team in order to administer the funding and ensure that all activity is compliant.
48. Also note that alternative funding sources for the Hyper hubs shortfall and funding the wider EV estate will be sought in the Autumn.
49. The revenue costs of the additional borrowing equate to circa £40k per annum. This will need to be incorporated in future budget considerations when determining the Treasury Management budget from 2020/21 onwards.

Options

50. **Option 1** is to request Executive Members to approve the supplementary funding to move forward with the Hyper hubs scheme.

51. **Option 2** is to reduce the scope of the Hyper hubs scheme. To ask officers to develop proposals for a reduced scheme for consideration at a future Executive. The likely impact of a reduction in scope would be the delivery one or both of the EV charging elements of the Hyperhubs, but, at this stage, no solar canopy or battery storage.

Analysis

52. **Option 1** is the preferred option as it will deliver on the Council's sustainability ambitions. In **Option 2** the scope would be reduced and it is likely that the project would no longer be eligible for the currently agreed ERDF funding. It is possible that a Hyper hub with just chargers at one or possibly both sites would be affordable, but the solar harvesting and battery technology and consequently the benefit of the sustainability of the scheme in terms of clean energy direct to the EV and managing energy production would be lost, this option would need a further report to Executive but would inevitably reduce the Carbon reduction potential of the project

Council Plan

53. The Hyper hubs project and wider improvements to the EV estate will deliver outcomes which contribute directly to the following objectives in the Council Plan 2015-19.

A prosperous city for all

- Local businesses can thrive
- Efficient and affordable transport links enable residents and businesses to access key services and opportunities
- Environmental Sustainability underpins everything we do
- Visitors, businesses and residents are impressed with the quality of our city.

Implications

- **Financial**
See paragraphs 41 – 44 of the report.
- **Human Resources (HR)**
None

- **One Planet Council / Equalities**

The project will deliver against sustainability outcomes and equalities impacts will be assessed as the project develops.

Legal

54. Funding Agreement

The ERDF funding is predicated on the council proceeding with the project as described in the body of this report. This being solar harvesting, battery storage and rapid charging for electric vehicles. A reduction in the scope would mean a change request would need to be drafted and submitted to MHCLG to vary the existing application, if that was permitted.

Regarding the process for additional ERDF funding a change has been submitted to MHCLG but one of the conditions of the funding is that any such funding must be matched by the Council. The funding agreements in respect of any further funding provided by ERDF or other sources will be reviewed by Legal Services.

55. Procurement

The supply of goods and installation services will be procured in accordance with the provision of the Public Contracts Regulations 2015 and the Council's Contract Procedure Rules.

56. Property

The sites are currently leased to First Bus plc and so consideration will need to be given to the terms of the leases to ensure the hubs can be erected on site. In addition, some of the sites are bound by covenants limiting the use of the sites so these will also need to be considered as part of the project. Initial due diligence on these issues do not suggest any insurmountable concerns.

- **Crime and Disorder**

None

- **Information Technology (IT)**

None at this stage. The Head of ICT will be consulted during the design phase.

Risk Management

57. As with all leading edge technology projects there is a risk that the technology implemented is overtaken by new technologies, systems and approaches. In order to mitigate this, the council has built into the sustainable transport structure the capability to support the project

management and engagement with suppliers. The project is, at an early stage, engaging with experts in the industry to de-risk the adoption of technology solutions.

58. Securing consent for the Solar panels and storage is critical to the projects environmental outcomes. The Park and Ride sites have been selected for their geographic locations and also as there was always an ambition to implement further sustainable transport innovations at these locations.
59. Failure to develop and maintain the EV charging network will lead to reputational risk and a dysfunctional charging network across the City which kicks against the Council's ambitions for Smart, sustainable transport and reducing carbon and other emissions.
60. Without a clear strategy in terms of expanding the network the wrong charging technology may be installed or the wrong locations may be selected.
61. Careful consideration, related to the strategy, needs to be given to the regulations associated with parking and dwell time. Issues with these items could mean lost customers which means loss of revenue and underutilised assets. Failure to set a financially sustainable tariff will mean the network will not be maintainable. Setting it too high will effect uptake.

Contact Details

Author:

Dave Atkinson
Head of Programmes and
Smart Place
Economy and Place
Tel: 01904 553481

Chief Officer Responsible for the report:

Neil Ferris
Corporate Director of Economy and Place

Report **Date** 16/9/19
Approved

Specialist Implications Officer(s) List information for all

Financial

Patrick Looker
Finance Manager
01904 551633

Legal

Cathryn Moore
Legal Manager Projects
01904 552487

Wards Affected: List wards or tick box to indicate all

All

For further information please contact the author of the report

List of Abbreviations Used in this Report

OLEV – Office for Low Emission Vehicles
ERDF – European Regional Development Fund
MHCLG – Ministry of Housing and Local Government
EV – Electric Vehicle
ULEV – Ultra Low Emission Vehicles