



Department  
for Transport

# Zero Emission Bus Regional Areas Scheme - 2021-22 Application Form

## Call for Expressions of Interest

### Applicant Information

**Local transport authority:** City of York Council

**(For joint bids only) Which local transport authority is the lead bidder:** n/a

**Area within authority covered by bid:** The York urban area and surrounding villages

**Bid Manager Name and position:** Julian Ridge, Sustainable Transport Manager, City of York Council

**Contact telephone number:** 01904 552435 / 07879 421001

**Email address:** [julian.ridge@york.gov.uk](mailto:julian.ridge@york.gov.uk) [buses@york.gov.uk](mailto:buses@york.gov.uk)

**Postal address:** City of York Council, West Offices, Station Road, York YO1 6GA

### Submission of proposals:

Applications to the Scheme will be assessed against the criteria set out here and in the guidance document. Please adhere to word limits. We will not accept any additional information unless specifically requested.

Proposals must be received no later than 17:00 on the following days.

- **Fast track process** - 5pm on 21<sup>st</sup> May 2021
- **Standard process** – 5pm on 25<sup>th</sup> June 2021.

You will receive confirmation that we have received your proposal within 1 working day.

An electronic copy only of the bid including any supporting material should be submitted to [buses@dft.gov.uk](mailto:buses@dft.gov.uk).

Please include “**ZEBRA (Fast track Process) Local Transport Authority name**” in the subject line of the email if you are applying under the fast track process.

Please include “**ZEBRA (Standard Process) Local Transport Authority name**” in the subject line of the email if you are applying under the standard process.

Enquiries about the Fund may be directed to [buses@dft.gov.uk](mailto:buses@dft.gov.uk).

### **Transparency and privacy**

Please refer to the guidance for this scheme before completing the application form to understand how DfT will manage your data.

## SECTION A: Mandatory Questions

Areas must satisfactorily answer all of the questions in this section to be eligible to progress to Phase 2 of the scheme. If you would like further information, please contact the Department for Transport at [buses@dft.gov.uk](mailto:buses@dft.gov.uk).

Areas must provide the information requested in questions A1-A5.

### A1. In total, how many new zero emission buses will your proposal deliver?

44 single deck (Arrival second generation) electric buses.

### A2. Total DfT funding sought (£m)

*While there is no minimum or maximum size for bids the department is interested in supporting at least three areas across the ZEBRA scheme as a whole, so we expect to see schemes that are approximately £25m – £35m. This is designed to encourage a wide range of bidding areas to come forward and to ensure DfT are able to fund at least three areas across the whole scheme.*

**£8,559,225**

### A3. Third party funding contributions (£m)

**£10,289,075 from First York**

### A4. Funding from other government schemes (£m)

*Please set out any funding from other government schemes that is intended to be used alongside funding from the ZEBRA scheme.*

**None.**

### A5. Total cost of the proposal (£m):

*This should include DfT funding as specified in A2, any third party contributions as specified in A3 and any funding from other government schemes as specified in A4.*

**£18,848,300**

Areas must be able to answer yes to question A6-A12 to be able to progress to Phase 2.

**A6. If your bid is successful, are you able to invest DfT funding within the time outlined by your scheme?**

**Yes.**

**A7. If your bid is successful, are you able to capitalise DfT grant funding?**

**Yes.**

**A8. Have you considered whether additional zero emission buses are needed to replace existing buses?**

*Evidence suggests that replacing diesel buses with zero emission buses can require additional zero emission buses to provide the same level service as provided by diesel buses. Areas should set out how many additional zero emission buses are needed to replace existing buses. If areas are of the view that additional zero emission buses are not required please set out why.*

**Yes. This is a like for like PVR replacement. Additional electric vehicles are not required as we have selected routes on the basis of their ability to be operated by the expected range of the vehicle and by the capacity of the single deck product.**

**A9. Have you provided a breakdown of infrastructure costs for your proposal?**

*Infrastructure costs could include (but are not limited to): cost of charging unit or refuelling stations electrical or other power components; civil engineering works, labour costs (for installation); hardware costs; capital costs of developing associated software systems; surveys at the point of procuring the infrastructure provided they can be capitalised; upgrades to the energy grid to cater for increased energy demand.*

**Yes.**

**A10. Does your proposal have the support of bus operator(s) in the area?**

*The proposal requires the support of at least one bus operator operating in the area who will operate the zero emission buses. The bid does not, however, need the support of all bus operators operating in the area. If local transport authorities are not able to provide this evidence of support from operators they **must** explain why.*

**Yes - First York.**

**A11. Have you spoken with any energy companies when preparing your proposal?**

*Energy companies could include Distribution Network Operators, Independent Distribution Network Operators, energy supplier, energy storage companies, smart charging providers or hydrogen fuel providers.*

**Yes - Northern PowerGrid, with analysis of future energy requirements by energy consultants Green Jam, and EvoEnergy – installers of York’s new Hyperhub public charging stations.**

**A12. Does your proposal comply with the accessibility requirements set out in the scheme guidance?**

*The scheme guidance sets out a number of accessibility requirements including: requiring buses to incorporate equipment to identify the route, each upcoming stop, and the beginning and end of diversions: providing an induction loop to aid direct communication between drivers and passengers who use a hearing aid and providing an additional flexible space in addition to the mandatory wheelchair space, suitable for a second wheelchair user and/or at least two unfolded pushchairs or prams.*

**Yes.**

## SECTION B. Defining the place

This section will seek a definition of the area to be covered by the Zero Emission Bus Regional Area. Areas should:

- Include information setting out the extent of the area to be covered by the proposal – the **defined area**. If the defined area is different to the area covered by the local transport authority please make this clear. Please provide maps if required.
- Provide details on the bus sector including naming **all** operators who operate services in the defined area, their market share and fleet sizes. This should include both operators who are supporting your proposal and will be operating the zero emission buses and other bus operators in the defined b area.
- Clarify what proportion of bus services in the defined area will be operated using zero emission buses.

*Please limit your response to 500 words. Please provide maps as annex documents if required.*

### Defined Geographical Area

*The defined area covered by this bid is the York contiguous built up area. This comprises the whole built up area of York city, within the A64 and A1237 outer ring roads, plus the large villages of Skelton, Wigginton, Haxby, Strensall, Dunnington, Bishopthorpe, Copmanthorpe and Poppleton. As a whole this comprises the area covered by the York urban bus service, which is provided by the bus operators in the York QBP (Quality Bus Partnership). See Annex 1 for a map of the defined area.*

### Operators of Local Bus Services within the Defined Area

Name	Address	Local service fleet size in York AEBT area	Market share
First York	First Floor, 20 George Hudson Street, York YO1 6WR	103 (of which 33 are already electric)	69%
Transdev	Blazefield House, Russell Street, Keighley BD21 2JX	19 (plus 1 already electric and 18 inter-urbans)	14%
East Yorkshire Buses	252 Anlaby Road, Hull HU3 2RS	1 (plus 7 inter-urbans)	4%
Arriva	24 Barnsley Road, Wakefield, West Yorkshire WF1 5JX	8	5%
Harrogate Coach Travel	6 St Thomas's Way, Green Hammerton, York YO26 8BE	6	4%

Reliance	Reliance Garage, York Road, Sutton-on-the-Forest, York YO61 1ES	9	3%
York Pullman	Wetherby Road, Rufforth, York YO23 3QA	3	1%
<b>TOTAL</b>		174	

**Proportion of bus services in the defined area operated using zero emission buses**

*Currently 34 of 174 buses (20%) in York are electric. With ZEBRA funding this will increase to 81 (47%). However the (Euro 6 diesel) inter-urban services to Leeds, Hull and the Yorkshire Coast comprise only around 5% of the mileage in the urban defined area of this bid. Excluding those buses increases the number of urban electric services to 55%.*

## SECTION C: Ambition

This section will seek evidence of the level of ambition from the local transport authority to decarbonise their bus fleets, support bus services and decarbonise transport.

### C1. Public transport ambitions

Areas should:

- Provide clear explanation of your ambition to decarbonise the bus fleet in the defined area and how this proposal will support this ambition. If the defined area is different to the local transport authority area please explain your ambitions to decarbonise the bus fleet in your local transport authority area and how this proposal will support this ambition.
- Provide evidence of existing plans to support the provision and operation of local bus services in the area. This could include existing partnership working between the local transport authority and bus operators, bus priority measures, improvements to information about bus services.
- Include complementary policies to decarbonise transport in the area.
- Explain how the proposal supports wider ambitions to increase public transport use and active travel in the area.

*Please limit your response to 500 words.*

*Effective bus services are at the heart of York's transport policy, and (excepting the covid pandemic) we are proud to have increased bus use in the city in the last ten years – at a time when it has fallen elsewhere in the Yorkshire and Humber Region. This growth has been secured through the Bus Quality Partnership enabling good working relationships between the Council and the seven local bus operators. Developing bus services is central to the delivery of York's draft Local Plan, which sets an ambitious 15% mode share for a number of new developments outside the city centre.*

*City of York Council (CYC) also has a proven history of delivering government funded projects to time and to budget, especially in relation to low emission vehicles. These include:*

- *An award of £3.3m in 2017 from DfT's Low Emission Bus Scheme to support delivery of additional high capacity electric buses and charging infrastructure at York's P&R sites – giving York one of the largest electric bus fleets in the UK – and reducing the cost of subsequent full electrification.*
- *Retrofitting four open-top tour buses to electric drive with CBTF funding, this has had a disproportionately beneficial effect on air quality in York city centre.*
- *An award of £816k by OLEV's 'Go Ultra Low' scheme to fund a city-wide network of car charging hubs, providing ultra-fast, reliable and convenient EV charging*
- *LSTF funded 'Pay As You Go' EV charging network in council car parks, sports facilities and P&R sites – with c. 1500 charging events per month and rising.*



- *Developing 3 “Hyperhubs” for electric vehicle charging through an OLEV scheme. Two of the sites, at park and ride terminals, feature solar canopies so are part- charged from renewables.*
- *Promotion of hybrid taxis - part funded by LSTF and supported by recent changes to taxi licensing conditions - c.20% of taxis licensed in York are now hybrids*
- *Retrofitting 28 school buses to Euro VI with SCR with £308k from the CBTF.*
- *CYC are also electrifying their own vehicle fleet, particularly focusing on smaller vehicles. The Council has recently ordered three electric refuse collection vehicles, and is installing electric charging equipment at its depot.*

*Conversion of York’s bus fleet to electric vehicles has been a key policy objective for CYC since the production of an “Electric Bus Roadmap” for York by Arup in 2012. As such, the measure enjoys support across the political spectrum with, for example, the declaration of a Climate Emergency in 2019. More recently, a cross-party consensus has emerged on transport policy, particularly around policies to reduce private vehicle trips into the city centre and reallocate road space to active modes and public transport.*

*This complements a more general policy, adopted in York’s third Local Transport Plan (2011), of delivering additional bus priorities through new development and bus priorities in the city centre. These policies are also adopted in the city’s draft Local Plan, which places public transport at the heart of policies to develop the city.*

## **C2. Community benefits**

Please highlight any community benefits from your proposal. This could include economic development in the area or the creation and/or retention of jobs and apprenticeships related to the maintenance of zero emission vehicles, including batteries and fuel cells, and supporting infrastructure.

*Please limit your response to 500 words.*

*Whilst First York already operates a mixed fleet of diesel and fully electric vehicles with 33 electric buses currently based at the James Street depot, the success of this bid will allow the continued development of the Engineering team (18 people) for the new style of vehicles whilst also benefiting from the existing knowledge of EV maintenance.*

*Through the York Quality Bus Partnership and the recently announced Enhanced Partnership with bus operators, CYC hopes that First’s knowledge and experience of operating and maintaining electric buses can be shared with other operators in the city.*

*Moving to electric operation means lower noise pollution and running costs making night time and fringe services more viable, thus benefitting York’s night time economy. There is also the potential for wider bus access to the city centre, including pedestrianised areas, with the greater public acceptability and zero pollution of electric vehicles.*

*The main bus depot on James Street, just outside the city walls, will be a more pleasant working environment for First employees and also neighbouring businesses. Diesel fuel deliveries to the depot will be more than halved.*

### C3. Support for your proposal and wider vision

Provide evidence of support for your proposal and wider vision, such as letters of support or evidence of engagement, from partners.

This **must** include evidence of support from the bus operator(s) who will operate the zero emission buses. You **do not** need to include evidence of support from all bus operators within the area, only the operator(s) who will be operating the zero emission buses. This evidence must be a signed letter by both the CEO/equivalent level of the company and the local MD, committing to investing in the buses and operating them in the defined area e for a minimum of 5 years.

Local transport authorities that have not included this evidence must clearly set out the reasons for this.

You **must** also include evidence of engagement with an energy company. Energy companies could include Distribution Network Operators, Independent Distribution Network Operators, energy supplier, energy storage companies, smart charging providers or hydrogen fuel providers.

Areas may also wish to include evidence of support from other relevant bodies, depending on the proposal, for example:

- Other tiers of local government
- Local Enterprise Partnerships
- Local Energy Hub
- Leasing companies
- Finance companies

*Please limit your response to 1000 words. Evidence of support, such as letter of support, can be included as annex.*

*CYC is a recognised national leader in sustainable transport delivery, with particular expertise in cycling and park and ride, and is piloting a number of intelligent transport innovations around management of its road network through the DfT-funded STEP programme. It currently holds the accolade of 'Ultra Low Emission City' and is an active member of the Low Emission Partnership ([www.lowemissionstrategies.org](http://www.lowemissionstrategies.org)). York is also currently leading on the development of DEFRA's new Air Quality Hub. A healthy environment is part of CYC's commitment to put One Planet Living 'at the heart of everything it does' and York aspires to be the 'the greenest city in the north'.*

*CYC is partnering with First York – the major provider of urban bus services in York – for the ZEBRA scheme. This will more than double First York's electric fleet from 33 to 77 vehicles. Annex 2 is a letter of support and intention signed by the Managing Directors of both First York and First UK.*

*First have already been working with energy consultancy Green Jam to analyse what reinforcement of the grid connection to their James Street depot will be required to futureproof the site. An additional 2.5MVA is deemed necessary. A summary of Green Jam's analysis and quote from Northern PowerGrid for this work is included in Annex 3.*

To further enhance and support this bid, reduce overall costs, and ensure they can meet timescales, First York successfully bid to Ofgem’s Green Recovery Fund (<https://www.ukpowernetworks.co.uk/green-recovery>). The fund makes strategic investments in the electricity network to create new capacity that will significantly reduce the cost of connecting green infrastructure projects. In this case, it will provide support for upgrading grid connections that only the DNO can carry out.

The size of the award and what costs are covered are still to be confirmed, but it is anticipated that at least 50% of grid related costs, including non-contestable works such as sub-station and point of connection costs will be included:

Original DNO Estimate (see Annex 3)	Ofgem (50% Reduction)	ZEBRA Grant (75%)	First Bus Contribution (25%)
£450,000	£225,000	£168,750	£56,250

The continued electrification of the bus fleet is part of a wider pro-bus programme in York including:

- Two new bus interchanges in the city centre to be delivered in 2021/22, as part of large scale redevelopment projects (at the Railway Station and in the heart of the retail/tourist area).
- Additional bus priority schemes being delivered as part of new developments.
- Improved bus shelters and real time information displays.
- City of York Council will also work with bus operators – through the emerging BSIP process – to deliver a tap-on-tap-off ticketing system for all buses in York – to reduce boarding times and simplify fares. City of York Council is committing to invest £160,000 to provide tap off readers for around 150 buses in York which are not currently so equipped.

To get maximum value out of the investment, York will develop a package of bus priorities in the city centre and on inner radials. This is being evolved through the refresh of York’s Local Transport Plan and a range of measures to deliver the “significant reduction in private vehicle trips in the city centre” and reallocate highway space to sustainable modes adopted as a cross-party Council policy in December 2019. A full list of committed and potential measures is provided in Annex 4.

York is historically a congested city with unreliable travel times for buses, and this commitment to a step-change in bus priority is crucial to First York’s own willingness to commit to the necessary matching investment.

All of York’s Local Transport Plans over the past twenty years have included the promotion of all forms of sustainable transport as a means of achieving the key objectives of reducing local congestion whilst improving air quality, safety and the health of local residents.

The improvement of active travel links to and from bus interchange points is an integral part of the council’s £650,000 Active Travel Fund programme will help to achieve several of the objectives of the most recent and future LTPs. A further rollout of zero-emission buses will make the local environment much more conducive to walking and cycling through reduced levels of air pollution.

*The council is investing £2.2 million to develop sites next to Monks Cross and Poppleton Bar Park & Rides into high quality, high speed electric vehicle charging hub (Hyperhubs). The project has received support from the European Regional Development Fund (ERDF) and the Office for Low Emissions Vehicles (OLEV).*

*It will deliver 8 ultra-rapid electric vehicle chargers and 8 rapid chargers installed at two sites in York, accompanied by solar canopy arrays that will have a dedicated battery storage solution in order to support the energy grid during peak hours. A letter of support for ZEBRA from EvoEnergy, the developers and installers, is included in Annex 3.*

*The ZEBRA scheme also enjoys strong support from other local stakeholders. Annex 5 contains letters of support from a range of other stakeholders in York's business, social and education and environmental communities including York Civic Trust, York Chamber of Commerce, York Older People's Assembly and York Bus Forum.*

## SECTION D: Air Quality

This section will seek evidence of the air quality challenges in the area and how your plans tackle air quality in the area. Areas should:

- Set out the air quality challenge in the area, such as whether the area is identified in the national assessment as exceeding statutory limits.
- Set out how the proposal would address the local air problem.
- Provide evidence of existing transport plans to tackle air quality and greenhouse gas emissions.

*Please limit your response to 500 words.*

**We will not accept bids covering places that cannot show that they have air quality issues.**

### **The air quality challenge**

*The main air pollutants of concern in York are NO<sub>2</sub> and particulate matter (PM). Motor traffic is responsible for 50-70% of the total NO<sub>2</sub> and analysis of the central area exceedance confirms that diesel buses are still having a disproportionate impact on air quality in York.*

*CYC has three Air Quality Management Areas (AQMA) for nitrogen dioxide (NO<sub>2</sub>) based on breaches of health based standards. Two have recently been revoked, but the largest, covering the centre of York, has recently been extended to incorporate an additional street (Coppergate). See Annex 6 for map of the area.*

*York's tall buildings and, particularly, narrow streets result in canyonisation, where emissions from buses and other vehicles are trapped and dispersion is hindered. This acts to intensify air quality hotspot areas, especially around the inner ring road within which almost all bus routes operate, and which encircles York's five bus interchanges. The highest recorded levels of NO<sub>2</sub> recorded in York's city centre AQMA during 2019 were 47µg/m<sup>3</sup>, which is considerably in excess of the 40µg/m<sup>3</sup> health based objective level.*

*Based on national estimates, pro rata, between 94 and 163 people die prematurely in York each year due to the impacts of poor air quality. This is more than the combined estimate of those who die prematurely from obesity and road accidents.*

*Consequently, there is great scope for reducing pollution levels in York by improving the emissions standards on the bus network – which is why policies to do this have formed a fundamental part of York's air quality management plans for some time.*

### **Addressing the air quality challenge**

*CYC has undertaken several detailed source apportionment studies to support the declaration of its AQMA and development of its Air Quality Action Plan. The studies consistently show that diesel buses have a disproportionate impact on local air quality. While they typically make up only 2-3% of the total motor traffic, they are responsible for up to 27% of NO<sub>2</sub> emissions.*

*As part of the development of CYC's third Air Quality Action Plan (AQAP3) the emission impact of converting 90% of the bus fleet to electric was modelled. The introduction of 90% electric buses was estimated to deliver a 27.6% reduction in NOx and a 10.3% reduction in PM<sub>10</sub> compared with a 2021 do-nothing scenario (with national technology improvements only in place). Air quality benefits will also extend beyond the AQMA into other residential areas of the city that fall on key bus routes.*

*First estimate that replacing 44 Euro 6 diesel vehicles with EVs would lead to a reduction in carbon emissions of almost 2,300 tonnes. When applying an air emissions inventory approach this equates to a reduction in local air quality related emissions (NOx and PM<sub>2.5</sub>) of circa 1.16 tonnes.*

*Whilst SOx emissions have not been formally identified as breaching national air quality objectives (as is the case for most places in the UK), it is recognised that diesel buses emit significant quantities of SOx and reducing this will help to protect the many internationally important heritage sites in York from the impacts of acid deposition, including York Minster and the city walls.*

*An additional advantage of electrifying the bus fleet is a reduction in bus idling. An independent vehicle idling study commissioned using DEFRA grant funding included observations of idling events at a number of key locations around York city centre. This showed that in the city centre the majority of idling events were associated with diesel buses.*

## SECTION E: Value for Money

This section will seek evidence how you meet the Value for Money criteria, as set out in the guidance. Areas are also required to submit a separate value for money pro-forma that has been published alongside the application form. This spreadsheet requests basic information about the proposed investment to enable the value for money to be assessed using the Department's "**Greener bus model**".

The information in a completed pro-forma, enables the model to estimate the greenhouse gases (GHG) emissions savings, other environmental & social impacts such as reduction in particulate matter (PM) and nitrogen oxide (NoX) emissions and savings & costs in the public and private sectors. By quantifying the key impacts of a proposed investment, this model helps provide decision-makers with as full a view as possible, about impacts on the environment, society, transport operators and the government finances.

The model provides a measure of the 'Value for Money', in the form of a benefit cost ratio (BCR) alongside other metrics such as the total estimated GHG savings and a cost effectiveness indicator estimating the net cost per tonne of carbon saved. These outputs will be used to score bids based on value for money.

The model does not capture every possible impact from a proposed investment, such as impacts from any resulting increases in patronage, improvement to the quality of journeys, or increased reliability. Where wider impacts (positive or negative) from investment are expected these should be stated, in the pro-forma, as non-monetised impacts. These will be considered when making a value for money judgement, as set out in the Department value for money framework.

## **SECTION F: Deliverability**

This section will seek evidence of how the Zero Emission Bus Regional Area will be delivered, and demonstrate that plans are credible and deliverable.

### **F1. Method of delivery and timescale for implementation**

Establish the method of delivery, to cover:

- How you will work with local bus operators and other partners to deliver the proposal
- Any public consultation or third-party permission that will be required (e.g. for infrastructure)
- Explain any mitigations put in place for SMEs.
- Timescales for implementation, including when orders will be placed for zero emission buses and when supporting infrastructure will be delivered.
- Please demonstrate how your plans are credible and deliverable in the time proposed, and that any risks have been understood and mitigated

*Please limit your response to 1,000 words.*



## **Working Together**

*City of York Council, through the York Quality Bus Partnership, has built up a strong working relationship with all bus operators in the area. We are looking to build on this relationship with our recently announced intention to form an Enhanced Partnership as part of the new National Bus Strategy.*

*The partnership with First Bus in York has been particularly fruitful and has resulted in successful electrification projects in York. The first was a fully electric Park & Ride service with 12 Optare Versa vehicles (manufactured locally in Yorkshire) in 2014. This also included new charging infrastructure at First's James St depot and the Park & Ride sites.*

*Following the success of this operation, CYC and First received support for a further 21 electric double deck vehicles to join the York Park & Ride fleet in 2020. The result is that five of the six Park & Ride services are now fully electric.*

*In addition to working closely with First on electrification projects, CYC is working with EvoEnergy to deliver two new public charging stations (Hyperhubs) with solar canopy arrays and battery storage solution in order to support the energy grid during peak hours. A letter of support illustrating our close and productive working relationship with EvoEnergy is included in Annex 3.*

## **Vehicles**

*Arrival are a global technology company, headquartered in the UK, and developing electric buses and commercial vehicles for the future. By designing electric vehicles from the ground up and using novel materials and manufacturing techniques to reduce weight and enable low cost, rapid start-up of production, they are at the forefront of innovation. They are also backed by major automotive companies Hyundai and Kia.*

*The single-deck Arrival second generation bus will be built in the UK and features an entirely flat floor, allowing greater accessibility, as well as more usable standing space and ability for passengers to travel more comfortably. It will be fully compliant with the ZEBRA accessibility requirements and will have Zemo certification before full production begins.*

*First are confident that Arrival's development timeline fits comfortably within ZEBRA delivery requirements. However, should there be any unforeseen delays or issues with the delivery of the Arrival vehicles, First's existing positive experience and relationship with Optare, mean they remain a strong alternative proposition and their vehicles' already have Zemo certification.*

**Infrastructure**

The second deployment required further infrastructure work and that will be the case for this bid. First Bus and its partners have a vast amount of experience to deliver such works. A successful ZEBRA bid would allow for a further power upgrade to the site which ensures that a future expansion of the electric fleet can be delivered quickly (subject to additional chargers) at a later date, eventually resulting in a 100% electric depot.

The amount of additional construction work at James St will be kept to a minimum due to previous upgrades, including installation of a new substation building, which will benefit the deployment of the ZEBRA infrastructure. First also intend to move from the current AC charging approach to DC charging, allowing for faster charging and therefore more effective use of the charging area within the depot.

The analysis already performed by Green Jam energy consultants on behalf of First ensures that the additional energy requirement and solution is defined and ready to progress. See Annex 3 for a detailed summary of the analysis.

The expected steps and indicative timeline for infrastructure (based on First Bus experiences at other sites and initial discussions regarding work at James Street):

Month	1	2	3	4	5	6	7	8	9	10	11	12	13
Order Power Upgrade to Site													
Instruct designers to design infrastructure													
Issue tenders of onsite Infrastructure													
Appoint Contract & Place order for infrastructure													
Construction works Complete including Power Upgrade													
Test & Commission													
Infrastructure live ready for use													

## **Training & Experience**

*Drivers in York are already trained in electric bus driving techniques so the additional training required for the new Arrival vehicles would be building on an existing solid base of experience. Data shows that the variance between the most and least efficient driver in York is only 5% whereas it is normally around 30% in depots where electric vehicles are deployed for the first time.*

*The First Bus engineering team at James Street have been maintaining electric vehicles since 2014. Although the Arrival vehicle is a brand new design from the ground up, the core principals of safe EV maintenance still apply and additional vehicle specific training will further develop the Engineering team into a centre of excellence for EV maintenance.*

*For First Bus the opportunity to operate and maintain a variety of electric bus models at one location allows them to build up an invaluable knowledgebase that can be shared and repeated with their operations across the country. The net result is a significant contribution towards a zero emission public transport network.*

## **F2. Monitoring and evaluation**

Please provide indicative details of how monitoring and evaluation will be used to ensure learning about the project and inform future schemes. A detailed monitoring and evaluation plan is not required at this stage but should explain how the approach to delivering services will ensure that future learning is maximised.

*Please limit your response to 500 words.*

*CYC has a robust data framework which can be used to extract maximum evaluation and monitoring information from an electric bus project in York. It has also been tested through the monitoring and evaluation of existing electric bus projects in the city. Data sources available for evaluating the project will be:*

- Changes to air quality can be monitored using York's existing network of 233 diffusion tubes and 9 real time monitoring stations. Data for this monitoring network has been collected for over 20 years, giving a very good historic data set for evaluating the project*
- The remote diagnostics and telematics equipment in use across the First York electric fleet, will allow real time monitoring of a range of operational data including (but not limited to) energy consumption and recuperation, speed, mileage.*
- Fuel consumption monitoring will be conducted for the current fleet and drivers operating all of the routes to be switched. This will be set against the topography and route characteristics of the services. High resolution battery data will be collected following introduction of the electric buses to understand how electricity consumption varies under different route, loading and driver combinations. This will also tie in to analysis of battery performance, charge times and degradation across the year in order to provide real-world data for manufacturers and operators across*

*a range of operating conditions. The detailed evaluation will also enable a full scale evaluation of CO<sub>2</sub> benefits and indicate how these could be optimised.*

- *The QBP will provide a more informal framework for collecting information and observations on operating electric buses from bus operators and drivers and promote roll out across other operators in York.*
- *Attitudinal data about passenger perception can be assessed using the annual Transport Focus bus passenger satisfaction survey. Through the BBA (Better Bus Area), the QBP has funded collection of Transport Focus bus passenger satisfaction surveys, and now has an annual data series going back to 2012. This can be used to track passenger perception of service quality and how this changes in response to the adoption of electric vehicles. Anecdotal evidence suggests that there is a positive passenger response to use of electric buses, but it will be possible to use this data set to consider the change in passenger perceptions of an entirely un-electrified network (2012-2013), to a partly electrified network (2014-present) to a largely electrified network post ZEBRA.*

*This bid is also supported by the Institute for Transport Studies at Leeds University and the DecarboN8 research network (see letter in Annex 3). Through the DecarboN8 partnership the project will benefit from transport, economics, engineering and public health evaluation expertise.*

### **F3. Procurement, State Aid and subsidy rules**

Please confirm you have received advice on legal requirements in relation to procurement, subsidy control and state aid.

Please also demonstrate how you will abide by legal requirements in relation to procurement, subsidy control and state aid, including an explanation, together with supporting evidence, of how you will comply with the principles under the UK-EU Trade and Cooperation Agreement.

*Please limit your response to 500 words.*

*The state aid implications of this bid have been considered by CYC's legal team. Their advice is provided in full in Annex 8.*

*In summary:*

- *The aid will not create any advantage for one specific group of economic actors over any other, and will not have any impact on competition.*
- *The grant funding being sought should be considered compliant with the principles of the UK-EU Trade and Cooperation Agreement.*