

Norfolk ZEBRA Scheme **Full Business Case - Executive Summary** January 2022







EXECUTIVE SUMMARY

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1 Project Background

Why this Area and Why Now?

- 1.1.1 The Greater Norwich region is the defined area for this proposal as this is the area of worst air quality in Norfolk and where the largest number of buses operate. Congestion and a reliance on fossil fuels causes poor air quality, with the whole of the city centre designated an Air Quality Management Area (AQMA). All the buses serving the AQMA are currently diesel and account for the majority of NOx on our most polluted streets where only buses and taxis are allowed.
- 1.1.2 The Zero Emission Bus Regional Area (ZEBRA) fund presents an opportunity to invest in transport in this region at a critical time for facilitating growth and increasing productivity, whilst at the same time tackling congestion, carbon emissions and poor air quality. Norwich is identified as a priority place in the East of England for economic development with a workday population of 280,000 and the ZEBRA fund will enable us to give residents, businesses and visitors compelling reasons to use reliable, clean, shared transport. Without it, growth will be stifled or be at the expense of the social and environmental health of the city.
- 1.1.3 We have recently launched our Bus Service Improvement Plan (BSIP), which sets outs an ambitious programme of measures and schemes based around the theme of ensuring buses play their full part in the county's journey towards a Net Zero transport system. We have also recently approved a new transport strategy for Norwich, which sets out a clear vision that Norwich is a place where carbon emissions from transport are reduced, and we are currently delivering our Transforming Cities Fund (TCF) programme that is delivering extensive priority for buses along corridors that would see the introduction of zero emission vehicles. The Norfolk ZEBRA proposal is fully aligned to this local strategy and programme delivery and will ensure that benefits outlined in this application are maximised.



2 Changes from Expression of Interest (EOI) Stage

- 2.1.1 There has been a small 0.5% increase in overall costs. The grant cost has increased by 0.8%.
- 2.1.2 The cost of the zero emission buses has changed from £5.23m in the EOI to £5.5m in this FBC. This increase is 5.06% and is in line with the inflation assumptions specified for the infrastructure and current UK inflation rates
- 2.1.3 Non-bus costs have reduced overall from £1.618m to £1.338m. Whilst there was an increase in the civil engineering costs, as a result of accurate quotations being obtained, this has been more than offset by a reduction in the DNO costs required as a result of the separate Green Recovery Fund initiative being delivered irrespective of the outcome of this application.

3 Strategic Case

- 3.1.1 The Strategic Case sets out the case for change and demonstrates how the Norfolk ZEBRA proposal achieves the objectives of the ZEBRA scheme and provides strategic fit with Government and wider Department for Transport (DfT) priorities. It is complementary to other projects, programmes and initiatives being pursued by Norfolk County Council (NCC), local bus operators and stakeholders, particularly our new Norfolk BSIP, which sets out our joint aspiration to transition to a zero emission bus fleet.
- 3.1.2 Fifteen (15) battery-powered single-decker electric buses will reduce environmental impacts and improve air quality by operating through the most polluted areas of Norwich, which includes the Low Emission Zone and AQMA in the city centre, reducing carbon emission by 600 tonnes, as well as 9.2 tonnes of local air quality-related emissions of NO_x and PM_{2.5} per annum. The bus routes that will benefit from new zero emission buses also operate through areas of high multiple deprivation and link these areas with appropriate employment, training and education at edge of city



industrial estates, business parks and the city centre itself. Complementary investment in bus infrastructure in Norwich through our TCF programme is already delivering faster and more reliable journey times for bus users, which will only increase further as our TCF programme nears completion in 2023.

- 3.1.3 This ZEBRA proposal will improve transport for the user by delivering a step change in the transport user experience through the provision of modern, comfortable, accessible and safe buses that provide visual and audible information. These attributes are consistent with outcomes outlined in our Norfolk BSIP and a successful award of ZEBRA funding would enable our Norfolk BSIP to 'hit the ground running' and establish a firm foundation to build upon. This would give Norfolk a head-start in terms of better understanding the challenges of introducing zero emission buses and supporting infrastructure to inform future Government support for zero emission bus roll-out, one of the ZEBRA programme objectives.
- 3.1.4 Norwich is poorly connected by both car and public transport. ZEBRA funding will form an important element of the Norfolk BSIP that has clear outcomes to grow bus patronage, increase rural accessibility and increase the bus mode share from cars
- 3.1.5 The reliance on bus for individuals with no access to private vehicles to provide access to employment, training and education is higher in Norwich than the regional and national pictures. Delivering a step change in the quality of the bus experience through this ZEBRA proposal will strongly support this.
- 3.1.6 This proposal delivers strongly against assessment criteria considered by Government in terms of support through 'Levelling Up', which include is a deliverable strategic fit with local and Government priorities and value for money.



4 Economic Case

- 4.1.1 The Economic Case sets out how the impacts of the proposal are assessed via a Value for Money assessment, which considers both monetised and non-monetised welfare impacts in respect to the environment, society, and the economy.
- 4.1.2 The total funding requirement (grant and operator contribution) for the proposal is £6.89 million. The ZEBRA grant will support the purchase of the 15 electric buses with a grant of £2.261 million and a grant of £1million towards the capital costs for the required supporting infrastructure.
- 4.1.3 A Value for Money assessment has been undertaken using the Department for Transport's (DfT's) Greener Bus Tool, which uses a range of cost and bus operational performance inputs, emission data, and other economic parameters to establish the scheme's Benefit Cost Ratio (BCR). Non-monetised impacts have also been considered within the assessment, with 'switching value analysis' used to further test and adjust the Value for Money category.
- 4.1.4 The scheme falls within the Low Value for Money category with a BCR of
 1.41:1. However, following consideration of non-monetised impacts and
 'switching value' analysis, the scheme moves into the Medium Value for
 Money category.
- 4.1.5 The monetised benefits and costs produce a Present Value of Benefits (PVB) of £5.44 million for the appraisal period of 17 years. The impacts appraised included Greenhouse Gas emissions impacts (carbon, NO_X and PM_{2.5}), indirect tax impacts, Bus Service Operator Grant (BSOG) impact, vehicle and infrastructure maintenance costs, operating costs, electric vehicle purchase and costs related to supporting infrastructure.
- 4.1.6 Non-monetised benefits that were considered include quality of travel benefits / soft factors, COVID recovery (patronage growth / mode shift), employment and productivity impacts (supply chain impacts), social value and productivity gains through skills training, non-monetised noise



impacts, non-monetised air quality impacts, reduction in environmental impact of diesel operations, shared use of charging infrastructure and supporting social inclusion / Levelling Up the local economy.

5 Commercial Case

- 5.1.1 The Commercial Case sets out the commercial and procurement strategies that will be adopted, as well as a summary of market engagement to date,
- 5.1.2 NCC will receive the ZEBRA grant from the DfT and administer grant payments to First Bus at agreed project milestones, who will own, operate and maintain all the assets which form part of the project (electric buses and charging infrastructure). This approach is based on legal advice we have received, which is outlined in full in the Commercial Case.
- 5.1.3 First Bus will procure each element of the project, which include the zero emission buses, the civils work and power upgrade (which will be housed on First Bus depot). NCC's involvement in the procurement exercise will be to ensure that the required quantities, technical specifications, costs and milestones outlined within the contracts (and output specification) are delivered. The procurement strategy has been developed by First Bus, in line with their own procurement policy. Given First Bus have undertaken a similar, successful procurement exercise recently. REDACTED
- 5.1.4 REDACTED
- 5.1.5 REDACTED
- 5.1.6 REDACTED

6 Financial Case

- 6.1.1 The Financial Case sets out the affordability of the proposal and funding arrangements.
- 6.1.2 The total scheme cost is **£6,888,444**, REDACTED. Charger ongoing warranty and maintenance costs will be privately funded by First Bus.



- 6.1.3 The project will be funded from the following sources:
- 6.1.4 DfT investment of £3,265,083,
- 6.1.5 First Group investment of £3,623,361.
- 6.1.6 A summary of the key financial risks / risks associated with uncertainty are outlined in the Financial case. The likelihood and impact of all risks have been evaluated and considered acceptable for the project to proceed. The main risks can be summarised as:
- 6.1.7 Changes in cost of the zero emission buses,
- 6.1.8 Inability to meet the timescales for manufacture and delivery of the zero emissions buses,
- 6.1.9 Quotations for power connection costs could increase,
- 6.1.10 Ongoing operating and maintenance costs for the electric buses exceed current estimates.
- 6.1.11 NCC will oversee the delivery of the ZEBRA project and as the ZEBRA grant administrator, will review evidence of all costs incurred as a condition of grant funding.
- 6.1.12 The scheme is considered to be viable in the long term as whole life (operating and maintenance) costs are lower than existing whole life costs (which utilise diesel vehicles).
- 6.1.13 An advice note from our lawyers has been produced to consider whether the grant will be applied in accordance with relevant subsidy control measures. This note is outlined in full in the Financial Case. In summary, this shows that there are strong arguments that any potential subsidy offered to First Bus would satisfy the principles set out in the EU-UK Trade and Cooperation Agreement and therefore it would be a lawful award.



7 Management Case

- 7.1.1 The Management Case provides evidence that the scheme is deliverable from a programme and capability perspective, there are appropriate governance and assurance arrangements in place and the risks have been considered and, where possible, managed and / or mitigated.
- 7.1.2 The key milestones the project will need to meet, assuming that the funding award is announced in March 2022, are as follows:
- 7.1.3 April 2022: Order placed on electrical power upgrade,
- 7.1.4 May 2022: Vehicle order placed,
- 7.1.5 January 2023 onwards Driver and engineer training,
- 7.1.6 April 2022 December 2022: Electrical upgrade works,
- 7.1.7 June 2022 April 2023: Electrical infrastructure works,
- 7.1.8 October 2023 January 2024: Vehicle delivery,
- 7.1.9 February 2024 March 2024: Vehicle operation.
- 7.1.10 The production of a Risk Management Strategy is an integral component of the standard project management procedures adopted by NCC. To ensure the successful delivery of the project, key risks have been identified with a corresponding plan for mitigation. A summary of key risks is as follows:
- 7.1.11 Securing appropriate planning permission for the electrical upgrade works,
- 7.1.12 The delivery of energy on site on time,
- 7.1.13 Use of new-to-market vehicle manufacturer,
- 7.1.14 Driver and engineer knowledge and experience of using electric vehicles,
- 7.1.15 EV batteries don't provide sufficient / predicted vehicle range.



- 7.1.16 Mitigation measures include close liaison with planning officers and stakeholders, clear communication between parties, having an extensive procurement and training plans in place and ensuring that bus routes have been selected based on ability to operate comfortably within the manufacturer's stated battery range, allowing for battery degradation over its lifetime.
- 7.1.17 There is an existing Transport for Norwich (TfN) governance structure already in place that oversees the delivery of transport schemes in Norwich and this structure will be used for the ZEBRA project but adapted accordingly to ensure all relevant project partners specific to the ZEBRA are included.
- 7.1.18 From a local authority perspective, NCC has successfully delivered a large number of projects and initiatives of different sizes and content and has a strong track record of working in partnership with bus operators and other stakeholders. From First Bus, the project team allocated to this project has extensive experience of deploying battery electric vehicles of varying sizes into service at a number of locations in the UK, including, York, Leeds, Glasgow and hydrogen vehicles in Aberdeen. Lessons learnt from previous projects will be applied from all parties.
- 7.1.19 Clearly defined reporting arrangements are already in place for the TfN programme and will form the basis of the ZEBRA project being delivered.
- 7.1.20 A detailed project plan for delivery has mapped out the key tasks that are required to complete the ZEBRA project, identifying the amount of time for each activity and the dependencies of each activity on one another. This has set a critical path for the project and a realistic deadline for the project, as well as a means of tracking progress along the way.
- 7.1.21 Communication of the ZEBRA scheme will sit within the TfN programme, which is a partnership led by NCC with partner local authorities Norwich City, Broadland District and South Norfolk Councils. Communications around the ZEBRA scheme will highlight the strategic benefits brought by



this investment and how this complements the delivery of other infrastructure schemes that are providing priority to public transport on the highway network, as well as behaviour-change programmes that are aimed at reducing single-car occupancy and encouraging greater use of public transport and active modes. A marketing strategy will be focused on a substantial pre-launch event. This will be organised to raise public awareness and build support and excitement about the EV buses prior to deployment on the streets of Norwich.

7.1.22 Effective monitoring and evaluation (M&E) is an important part of the overall appraisal process and we will deliver a tailored monitoring and evaluation programme that identifies the extent to which the identified objectives and anticipated outcomes have been achieved. Full details of the monitoring and evaluation we will undertake are set out in the separate Monitoring & Evaluation report.

8 Glossary of Abbreviations and Defined Terms

- AQAP Air Quality Action Plan
- AQMA Air Quality Management Area
- BCR Benefit Cost Ratio
- BEV Battery Electric vehicle
- BID Business Improvement District
- BSIP Bus Service Improvement Plan
- BSOG Bus Service Operator Grant
- CO2 Carbon Dioxide
- CSS Combined Charging System
- CYC City of York Council
- DEFRA Department for Environment, Food and Rural Affairs
- **DfT** Department for Transport
- DNO Distribution Network Operator

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- EOI Expression of Interest
- EQIA Equality Impact Assessment
- EV Electric Vehicle
- **GBT** Greener Bus Tool
- GDP Gross Domestic Product
- **GJT** Generalised Journey Time
- GNR Greater Norwich Region
- ICE Internal Combustion Engine
- ITT Invitation to Tender
- JCS Joint Core Strategy
- LED Light-Emitting Diode
- LEP Local Enterprise Partnership
- LEZ Low Emission Zone
- LTA Local Transport Authority
- LTP Local Transport Plan
- **M&E** Monitoring and Evaluation
- NBS National Bus Strategy
- NCC Norfolk County Council
- **NNUH** Norfolk and Norwich University Hospital
- NO2 Nitrogen Dioxide
- NOx Oxides of Nitrogen
- **NRP** Norwich Research Park
- **NSIDP** Norfolk Strategic Infrastructure Delivery Plan
- **OEM** Original Equipment Manufacturer
- OfGEM Office of Gas and Electricity Markets
- ONS Office of National Statistics

Norfolk County Council

- PIPs Punctuality Improvement Partnerships
- **PM10** Particulate Matter
- PM2.5 Particulate Matter to 2.5 microns
- PSVAR Public Service Vehicles Accessibility Regulations
- **PVB** Present Value of Benefits
- **PVR** Peak Vehicle Requirement
- **R&D** Research and Development
- SCRT Selective Catalytic Reduction Technology
- SLA Service Level Agreement
- SRO Senior Responsible Owner
- SSE Scottish and Southern Elect
- TAG Transport Analysis Guidance
- TCA Trade Cooperation Agreement
- TCF Transforming Cities Fund
- TfN Transport for Norwich
- ToR- Terms of Reference
- UEA University of East Anglia
- UKPN UK Power Networks
- VfM Value for Money
- **VQP** Voluntary Quality Partnership
- WHO World Health Organisation
- **ZEB** Zero Emission Bus
- **ZEBs** Zero Emission Buses