



North Yorkshire
County Council

North Yorkshire County Council ZEBRA Scheme Business Case

The Rt Hon the Baroness Vere
Minister of State
Department of Transport
Great Minister House
33 Horseferry Road
LONDON
SW1P 4DR

Councillor Don Mackenzie
Executive Member for Access
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31 January 2022

Dear Baroness Vere

ZEBRA (Standard Process) North Yorkshire County Council - Business Case


North Yorkshire is England's largest county and is located in the Yorkshire and The Humber region. With an area of 8,654 sq. km, it spans the North of England from the M62 in the south to Teesside in the north and from the North Sea coast in the east across to within 10 miles of the Irish Sea in the West. The county is large geographically, and with a population of 620,900 people presents challenges to deliver services across a sparse density with widely dispersed settlements. However, the County Council is adept at delivering high quality services for people across this geography.

As a council we pride ourselves on being innovative, forward thinking and leading by example. This business case details a proposal to do just that and will accelerate our plans to decarbonise the bus fleet across North Yorkshire by delivering 39 new battery electric zero emission buses in Harrogate and Knaresborough over three years. With eight introduced in 2018 this will fully convert the first North Yorkshire bus depot to full electric bus operation. The proposal aligns with a range of wider transport strategies at national, regional and local level. It fully meets all of the ZEBRA programme objectives and with a BCR of 1.96 offers outstanding value to the Department for Transport compared to other schemes.

The proposal also offers two unique and exciting benefits:

- The development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation.

.../continued



Harrogate and Knaresborough between them have significant air quality issues having 50% of the declared Air Quality Management Areas in North Yorkshire. Roadside emission monitoring has evidenced that buses are a contributor to the emissions in all of these areas. The buses under this proposal will operate on routes covering all of the Air Quality Management Areas in Harrogate and Knaresborough, which will support the government's commitment to decarbonisation and to reduce the transport sector's contribution to CO₂ emissions. It will also improve public health as poor air quality is the largest environmental risk to public health in the UK, as long-term exposure to air pollution can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy.

I believe this proposal delivers excellent value in terms of cost and public health improvements. The economic levelling up opportunity is something that should not be overlooked.

I look forward to you supporting this application.

Yours sincerely,



COUNCILLOR DON MACKENZIE
Executive Member - Access

OFFICIAL

1.0 Executive Summary

1.1 Proposal Background

This proposal sets out plans to invest £21,099,210 delivering 39 battery electric buses and supporting infrastructure (2 pantographs to be installed in Harrogate bus station to facilitate opportunity charging and [redacted] to facilitate overnight charging to be installed at Transdev's Harrogate depot). Transdev are a key partner to this proposal and third party funding contribution of £13,298,817 has been secured. The bus funding [redacted]

[redacted] As such this proposal presents a significant levelling up opportunity for central government to address local residents' perceptions that that:

- Government does not understand the challenges faced by rural economies and particularly sparse remote rural economies.
- The issues faced by rural dwellers do not usually feature in national debates about economic development, which are usually urban-centred and focused on the competitive economy in London and the South-East.

This proposal offers two unique and exciting benefits:

- The development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation.

The objectives of the proposal are to:

- Improve air quality
- Accelerate decarbonisation of the North Yorkshire public transport network
- Improving transport for the user
- Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

There are complimentary local measures as set out in North Yorkshire's Bus Service Improvement Plan.

Harrogate and Knaresborough between them have significant air quality issues having 50% of the declared Air Quality Management Areas in North Yorkshire. Roadside emission monitoring has evidenced that buses are a contributor to the emissions in these areas.

Harrogate is a key tourist destination and international conference destination, as such this proposal provides a fantastic opportunity to showcase a modern, efficient and environmentally friendly passenger transport network to visitors from UK and from abroad.

There is strong stakeholder support for the proposal. Letters of support from six stakeholders are at Financial Case Annex 1. The six stakeholders are:

- Transdev's Chief Executive Officer.
- Harrogate Borough Council
- [Redacted]
- Andrew Jones MP for Harrogate and Knaresborough

- Harrogate International Festivals
- York and North Yorkshire Local Enterprise Partnership

1.2 Changes from EOI Stage

There is a change in the proposal cost from £19,925,000 in the Expression of Interest to £21,099,210 within this business case. Whilst the overall change represents a £1,174,210 cost increase in the overall proposal costs, there is a reduction of £595,856 ZEBRA funding ask and an increase of £1,770,068 third party (Transdev) funding, as such providing better value to the ZEBRA scheme.

Expression of Interest	Phase 2 – Full Business Case
<ul style="list-style-type: none"> □ Cost of vehicles – [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck □ 19 double deck 	<ul style="list-style-type: none"> □ Cost of vehicles – [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck (10 with op charge, 10 without) □ 19 double deck (with op charge) □ Battery replacement costs [redacted]
<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) 	<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution)
<ul style="list-style-type: none"> □ Proposal Cost £19,925,000 □ ZEBRA funding ask £8,396,250 □ Third party funding £11,528,750 	<ul style="list-style-type: none"> □ Proposal Cost £21,099,210 □ ZEBRA funding ask £7,800,394 □ Third party funding £13,298,818

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

The reasons for these changes are:

- Better value vehicle costs have now been obtained and agreed, but this does require higher infrastructure costs.
- Battery replacements costs, whilst considered and costed at Expression of Interest stage had not previously been detailed in cost breakdowns at Expression of Interest stage.
- At Expression of Interest stage no provision was made for variations in infrastructure cost due to identified uncertainties. An allowance of [redacted] for contingency as part of the infrastructure costs has now been included which is approximately 3.5% of the total infrastructure costs (calculated using quantitative risk analysis)

This change has minimal impact on the BCR. The Greener Buses Model shows a BCR of 1.96.

1.3 Strategic Case

The Strategic Case demonstrates that within the defined area of Harrogate and Knaresborough there are four air quality management areas declared and the bus is a contributor to air quality issues in all four areas.

North Yorkshire faces a number of challenges in decarbonising the public transport network. Primarily, as a large, rural area, long distances are involved in accessing essential services. The longer distances mean buses are required to operate at a higher speed and for longer distances due to the interurban nature of the service routes. Whilst the zero emission single deck bus market is mature with more demand for the product, the zero emission double deck market is less mature, particularly those suited to interurban operation.

As such there is a strategic case for investment and support to accelerate decarbonisation of the public transport network in North Yorkshire. The proposed ZEBRA investment will directly meet the ZEBRA scheme objectives by:

- Supporting the introduction of 39 battery electric buses.
- Improving air quality in four Air Quality Management Areas.
- Supporting bus manufacturers in the development of zero emission bus technology as the proposal includes the development and manufacture of battery electric double deck zero emission buses

suitable for interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.

- Better understanding the challenges of introducing zero emission buses as the proposal will fully convert the first North Yorkshire bus depot to full electric bus operation. There will be 19 double deck buses, 20 single deck buses, with their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion and subsequent information will be available for other operators and local authorities to learn from.
- Supporting partnership working between the council and Transdev.

The proposal aligns with a range of wider transport strategies at national, regional and local level.

1.4 Economic Case

Value for money has been assessed taking into consideration both monetised and non-monetised costs and benefits. The BCR of the proposal is 1.96 and VfM assessed as medium without taking into consideration any non-monetised benefits or risks and uncertainties. We assess that the non-monetised benefits increase the VfM category to high.

The most significant non-monetised benefits are:

- The development of the next generation of zero emission battery electric double deck vehicles suitable for operation on interurban routes.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation

Other non-monetised benefits include a reduction in noise pollution, societal health benefits, increased power supply resilience and a unique research and development opportunity.

1.5 Commercial Case

The council contacted all local bus service operators in the county enquiring of their interest in submitting the required operator information for inclusion in an Expression of Interest submission. The council also has a good understanding of the county's local bus operator's preparedness for transitioning to zero emission bus fleets from recently commissioned consultant's work and also as part of regular dialogue with operators. The preferred option is to fully convert Transdev Harrogate fleet to 100% zero emission vehicles. This option is in line both with North Yorkshire's roadmap, set out in the North Yorkshire Bus Service Improvement Plan, outlining the county's strategy to transition to zero emission vehicles and Transdev's ambitions to convert their Harrogate depot to full electric operation. This option minimises the commercial risk both in terms of cost and delivery.

The council will act as grant administrator, releasing funding to Transdev on completion of appropriate milestones or conditions, the procurement route will be via our partner Transdev who are experienced, both in the UK and wider, in purchasing both electric vehicles and charging infrastructure. This includes at local level as evidenced by the eight electric vehicles and supporting charging infrastructure already in place. In addition this will enable advantage to be taken of corporate group bulk purchasing opportunity that in isolation the council would be unable to match. Transdev are contributing 63% of the proposal costs and therefore have high incentive to secure best value through procurement of both buses and infrastructure.

Market engagement has taken place with a range of suppliers including different bus manufacturers. A full review of the distribution network operators has been undertaken. The intention is for Transdev to source and set out the specification of the buses [redacted]

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1.6 Financial Case

The total proposal costs are £21,099,210 with DfT ZEBRA funding sought for £7,800,393 (37%) and third party (Transdev) contribution of £13,298,817 representing 63% of the proposal cost. The proposal has the support of Transdev as a partner operator and their support is strongly evidenced by their financial contribution to the proposal.

The costs of the proposal together with funding sources are as follows:

	2022	2023	2024	2025-2038	Total	% Contribution
Transdev Local Contribution	[redacted]	[redacted]	[redacted]	[redacted]	£13,298,817	63%
DfT ZEBRA Funding	[redacted]	[redacted]	[redacted]	[redacted]	£7,800,393	37%
Total	[redacted]	[redacted]	[redacted]	[redacted]	£21,099,210	100%

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

[redacted]

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North Yorkshire County Council has commissioned independent legal advice [Redacted] The advice states “we would regard the support proposed as fully compliant with the TCA Subsidy Control Regime.”

1.7 Management Case

The council intends to deliver this proposal as an integral Project Management Programme. This will ensure a strong governance structure with established project, risk, benefit realisation and stakeholder management procedures. Experienced officers within North Yorkshire County Council, all qualified in their relevant field, will manage the delivery of the proposal. The Senior Responsible Officer will be the Corporate Director of Business and Environmental Services (BES) (Karl Battersby). Responsibility for the delivery lies with Assistant Director Travel, Environmental and Countryside Services (Michael Leah) who will act as Project Sponsor. Commercial Sector Service Development Manager (Cathy Knight) will head management of delivery of the proposal as Project Manager. In addition, projects are subject to regular ‘overview, scrutiny and challenge’ by the Business and Environmental Services management team which includes the Corporate Director of Business and Environmental Services as well as staff from North Yorkshire County Council strategic and financial services. This structure has significant experience in delivering complex schemes.

Key milestones for delivery:

<u>Governance, Meetings and Management</u>	
March 2022	Successful ZEBRA bidders announcement
April 2022	Finalise and sign off SLA with operator partner
December 2022, March 2023 and March 2024	Grant payments to operator partner (tranches)
<u>Point of Connection</u>	
April 2022	Internal approvals

May 2022	Contract finalisation and signing
July 2022	Sign off
<u>Infrastructure Procurement and Installation</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
December 2022, March 2023 and March 2024	Available for vehicle charging
<u>Bus Procurement and Deliver</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
January 2023, March 2023 and March 2024	In service delivery commences
<u>Removal of Diesel Infrastructure</u>	
May 2024	Internal approval to remove
June 2024	Identify and appoint contractor
February 2025	Sign off

Risks have been assessed and a project risk register has been produced which documents the key technical/construction, costs, legal, stakeholder and programme risks together with their likelihood, impact and risk rating. Mitigations have also been considered followed by a post mitigation risk rating. The table below details the top risks that could compromise delivery of benefits or costs together with mitigations identified:

						Risk Stage	PRE Mitigation Rating				Mitigation			POST Mitigation Rating				
ID	Date Raised	Type	Description and Consequences There is a risk that.....	Owner	Level	Stage	Current Controls	Likelihood	Impact	Score	Mitigation(s) with action by dates	Date Actioned	Likelihood	Impact	Score	Last Reviewed Date	Status	
Technical/Construction																		
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply		Low	High	3		Open	
Costs																		
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.		Low	High	3		Open	
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.		Low	High	3		Open	
Legal																		
15	26-Aug-21	Legal	Delays in agreeing SLA	NYCC	Project Board	Start-Up	Development of plan, understanding times needed for each stage	Medium	High	6	Consult with stakeholders and ensure SLA covers requirements of all parties		Low	High	3		Open	

Risks will be considered on an ongoing basis throughout the life of the proposal delivery and a governance structure is in place for managing risks and issues.

A full monitoring and evaluation plan has been prepared and this will demonstrate whether the objectives and outcomes of the proposal have been met. All relevant monitoring data will be shared with the Department and appointed evaluation contractor alongside a commitment to participate in programme-level evaluation activities.

2.0 Strategic Case

2.1 Overview

This proposal will deliver 39 new battery electric zero emission buses in Harrogate and Knaresborough over three years. With eight introduced in 2018 this will fully convert the first North Yorkshire bus depot to full electric bus operation. There will be 19 double deck buses and 20 single deck buses, with their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion and subsequent information will be available for other operators and local authorities to learn from.

North Yorkshire's rurality also presents a further unique opportunity as the proposal includes the development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment. [Redacted

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The table below details the proposal's costs:

	2022	2023	2024	2025-2038	Total
Bus capital and battery replacement costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Infrastructure capital costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

The table below details the proposal's funding sources:

	2022	2023	2024	2025-2038	Total	% Contribution
Transdev Local Contribution	[redacted]	[redacted]	[redacted]	[redacted]	£13,298,817	63%
DfT ZEBRA Funding	[redacted]	[redacted]	[redacted]	[redacted]	£7,800,393	37%
Total	[redacted]	[redacted]	[redacted]	[redacted]	£21,099,210	100%

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

The objectives of this proposal are:

- Improve air quality
- Accelerate decarbonisation of the North Yorkshire public transport network
- Improving transport for the user
- Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

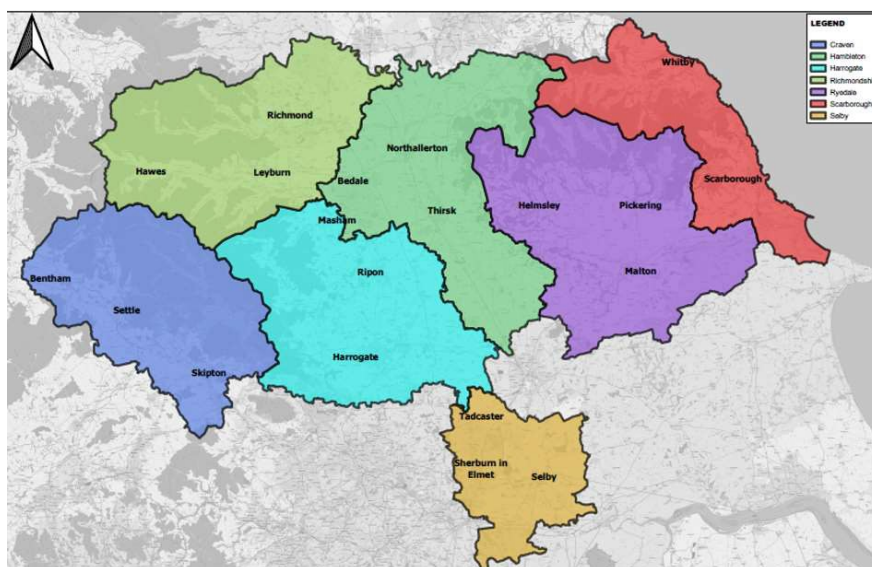
All of these align with the ZEBRA programme and wider DfT objectives. The 39 zero emission vehicles will be deployed on bus routes operating in the four declared air quality management areas in the defined area, which will result in immediate air quality improvements in these areas. The proposal will accelerate decarbonisation of the North Yorkshire public transport network by the full conversion of a depot to zero emission bus operation and improvements for the transport user will be achieved through the delivery of high specification vehicles. [redacted

2.2 Defining the Place

North Yorkshire is the largest non-metropolitan county and lieutenancy area in England, covering an area of 8,654 square kilometres (3,341 sq mi). Around 40% of the county is covered by national parks, including most of the Yorkshire Dales and the North York Moors. The upper tier authority is North Yorkshire County Council, covering the area shaded yellow below.

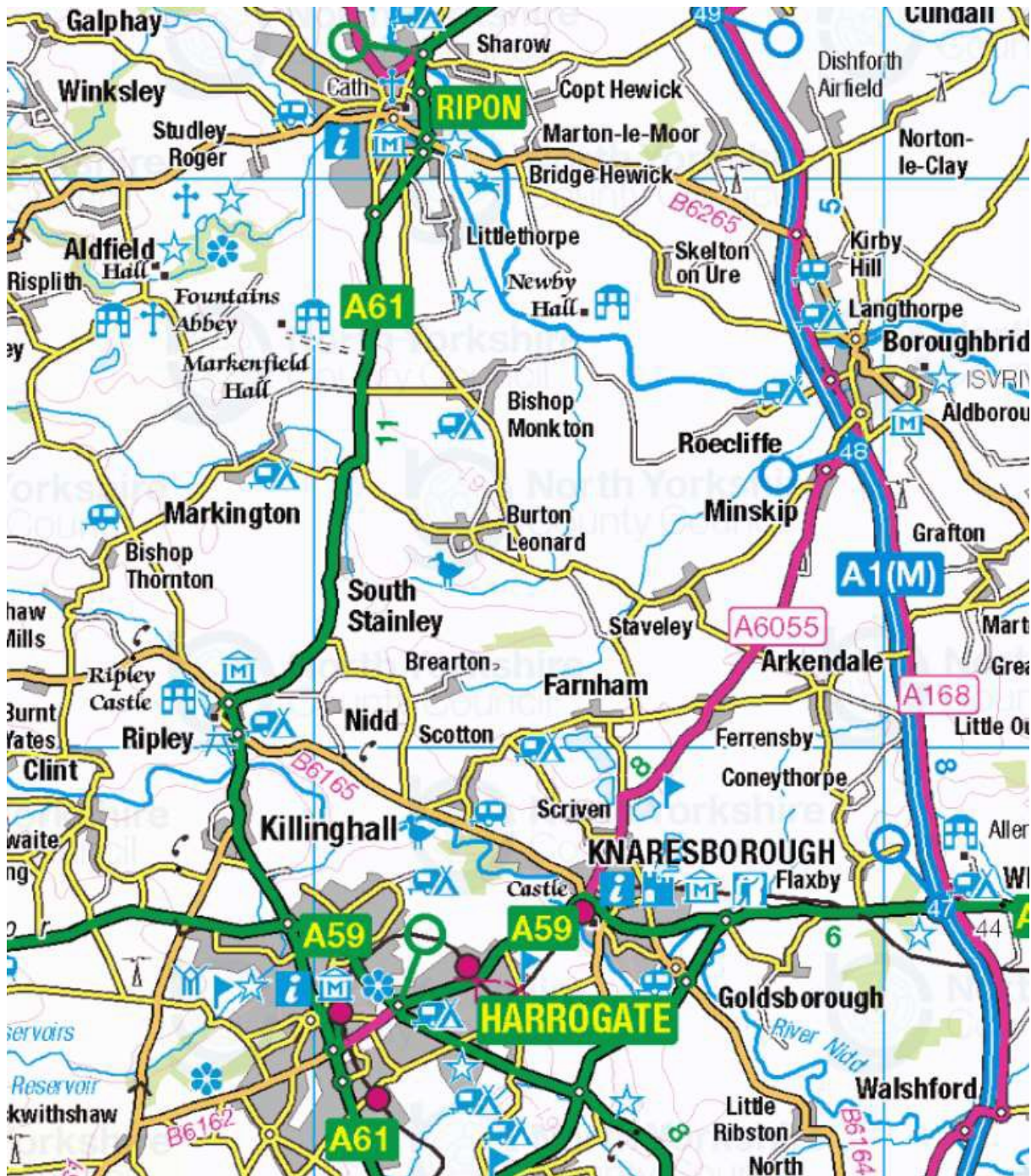


There are seven district councils within North Yorkshire, as shown on the map below.

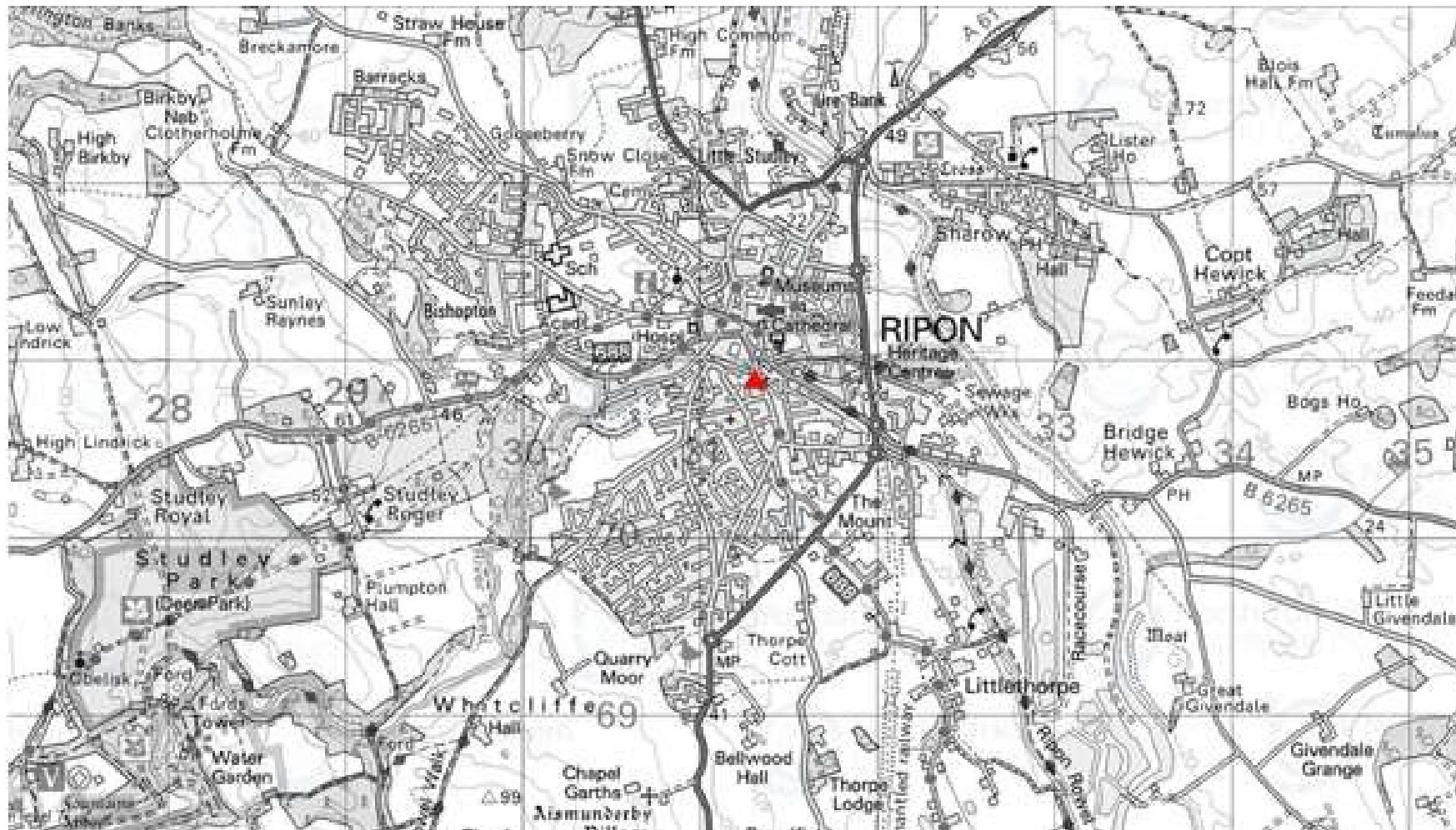


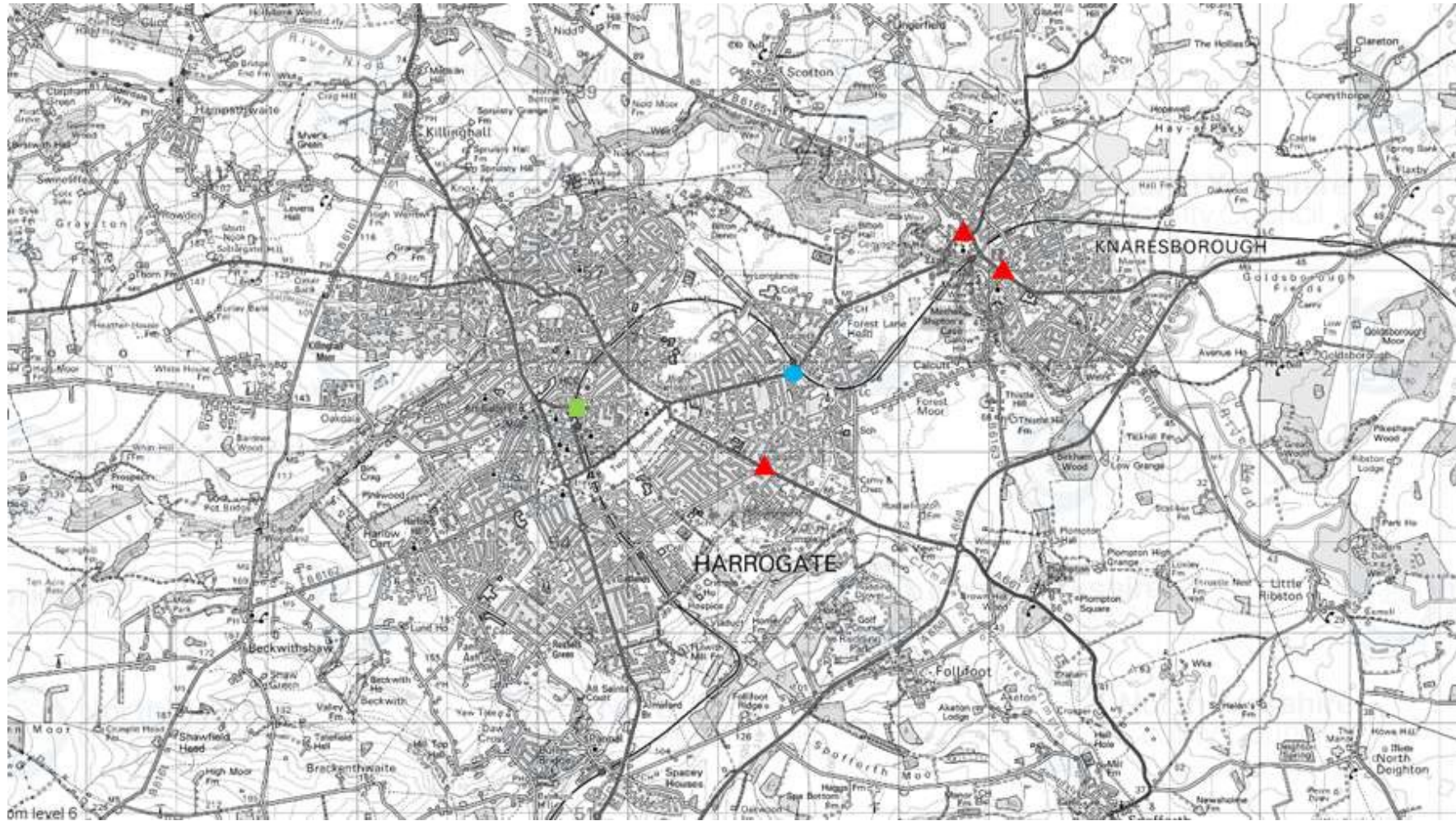
Harrogate is a spa town in North Yorkshire. The town is a tourist destination and its visitor attractions include its spa waters and RHS Harlow Carr Gardens. 13 miles (21 km) away from the town centre is the Yorkshire Dales National Park and the Nidderdale AONB.

Knaresborough is a market and spa town and civil parish in the borough of Harrogate, North Yorkshire on the River Nidd 3 miles (4.8 km) east of Harrogate.

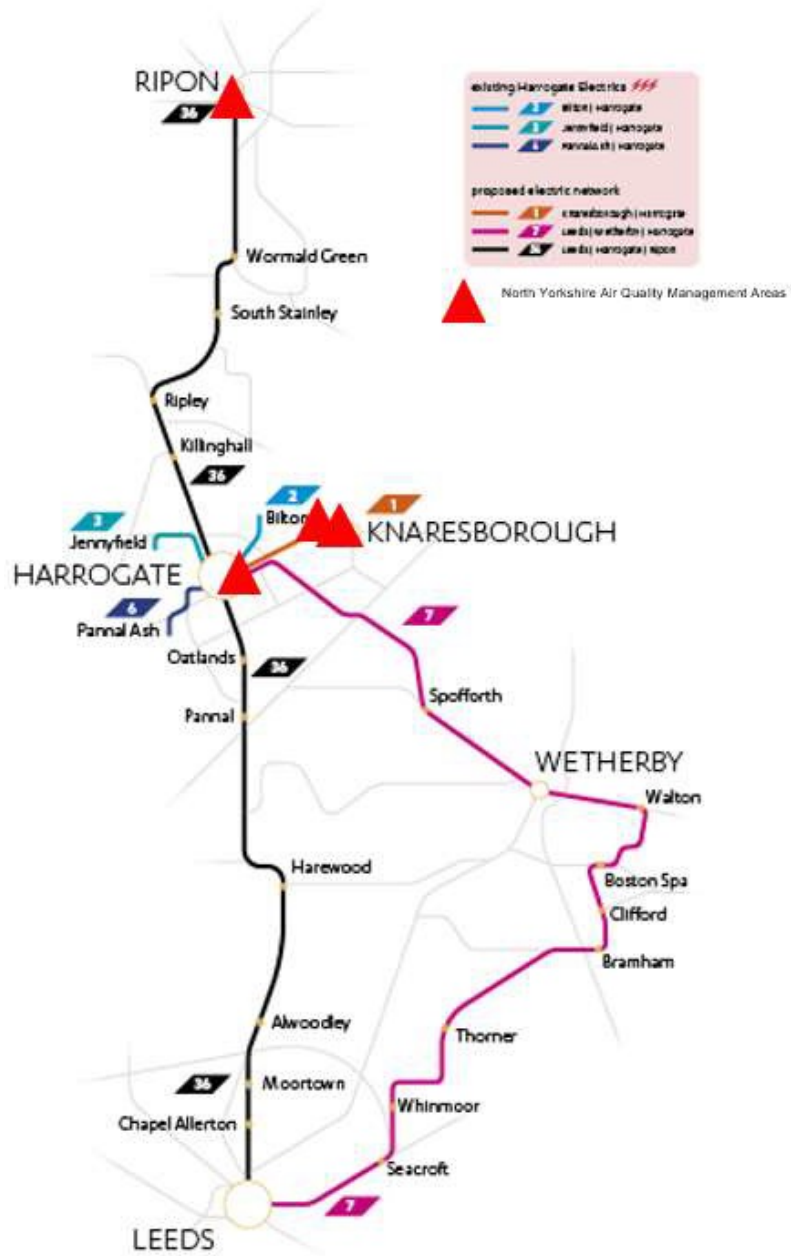


Across North Yorkshire there are eight air quality management areas. Of that total Harrogate Borough Council has declared four air quality management areas for breaches of the annual mean objective for nitrogen dioxide (NO₂). These were declared at Bond End, Knaresborough and Low and High Skellgate, Ripon in 2010, and York Place, Knaresborough and Wetherby Road, Harrogate in 2017. The bus is a contributor to air quality issues in all four areas. At its highest the bus contributes to 15.47% of the total NO₂ emissions at Bond End Knaresborough. As such the areas covered by this proposal, the defined area, are the towns of Harrogate and Knaresborough in Harrogate borough, as this will allow the ZEBRA scheme funding to have a direct positive impact in reducing the transport sector's contribution to emissions with the new zero emission buses operating in all four air quality management areas. The defined area also aligns with the council's the council's Zero Emission Bus Deployment roadmap, set out in the North Yorkshire Bus Service Improvement Plan, which details Harrogate as the first phase in the carbonisation of North Yorkshire bus fleet.





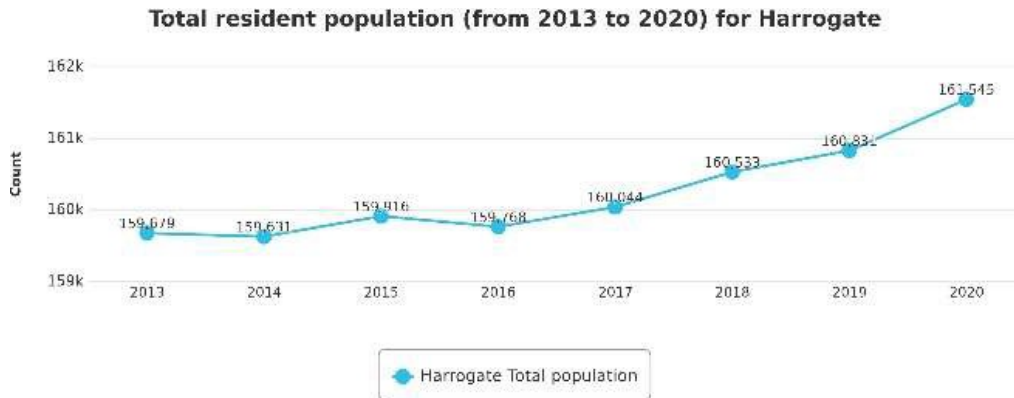
- ▲ Air Quality Management Areas
- Bus Operator Depots
- Existing Pantographs (Harrogate bus station)



[redacted

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North Yorkshire has a population of around 620,600, Harrogate around 161,500 of those residents. Harrogate’s population has grown 1.06% since 2016, compared to 1.82% and 2.32% population growth over the same period in North Yorkshire and England respectively:



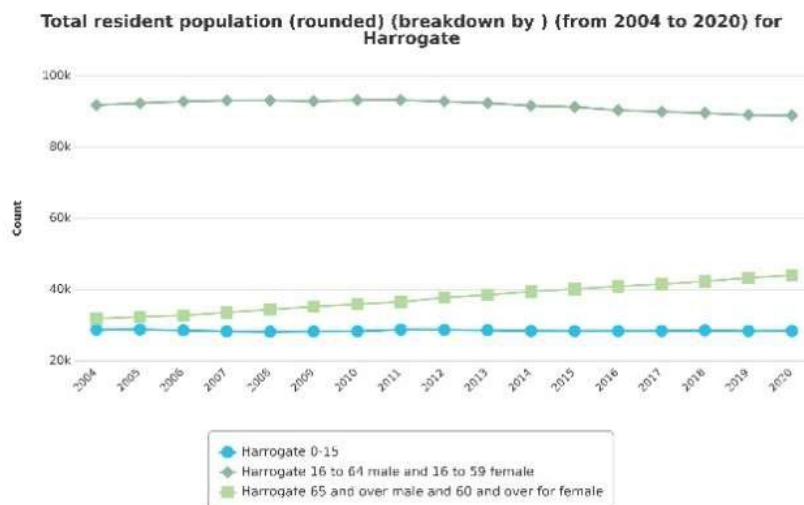
Total resident population (rounded) (from 2016 to 2020) for Harrogate

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Area	Total population (rounded)				
	2016	2017	2018	2019	2020
	People				
Harrogate	159,800	160,000	160,500	160,800	161,500
Total for North Yorkshire	609,500	611,600	614,500	618,100	620,600
Total for Yorkshire and Humberside	5,425,400	5,450,100	5,479,600	5,503,000	5,526,400
Total for England	55,268,100	55,619,400	55,977,200	56,287,000	56,550,100

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The age profile of Harrogate has changed since 2004 with a reduction in the proportion of population aged 0-15 years and a corresponding increase in the proportion of population residents aged 65 years and over:



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**Proportion of population aged 0 to 15 (2020),
Proportion of population aged 16 to 64 (2020) &
Proportion of the population aged 65 and over (2020)
for Harrogate**

Area	% population aged 0-15	% population aged 16- 64	% population 65+
	2020		
	%		
Harrogate	17.6	58.6	23.8
Total for North Yorkshire	16.7	58.4	25.0
Total for Yorkshire and Humberside	19.0	62.1	18.9
Total for England	19.2	62.3	18.5

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Up to date data for other demographics is less readily available. Office for National Statistics 2011 Census data detailing age structure, ethnic group and religion are demonstrated in the tables below:

Age structure

	Persons	
	Harrogate Local Authority	
	count	%
All usual residents	157,869	100.0
Age 0 to 4	8,677	5.5
Age 5 to 7	5,227	3.3
Age 8 to 9	3,481	2.2
Age 10 to 14	9,432	6.0
Age 15	2,016	1.3
Age 16 to 17	4,132	2.6
Age 18 to 19	3,241	2.1
Age 20 to 24	7,384	4.7
Age 25 to 29	8,169	5.2
Age 30 to 44	30,555	19.4
Age 45 to 59	33,987	21.5
Age 60 to 64	10,674	6.8
Age 65 to 74	15,896	10.1
Age 75 to 84	10,382	6.6
Age 85 to 89	2,927	1.9
Age 90 and over	1,689	1.1
Mean Age	42	-
Median Age	43	-

- These figures are missing. Source: ONS - 2011 Census (KS102EW)

Ethnic group

	Persons	
	Harrogate Local Authority	
	count	%
All usual residents	157,869	100.0
White	152,075	96.3
English/Welsh/Scottish/Northern Irish/British	144,717	91.7
Irish	771	0.5
Gypsy or Irish Traveller	107	0.1
Other White	6,480	4.1
Mixed/multiple ethnic groups	1,776	1.1
White and Black Caribbean	411	0.3
White and Black African	265	0.2
White and Asian	626	0.4
Other Mixed	474	0.3
Asian/Asian British	2,409	1.5
Indian	587	0.4
Pakistani	118	0.1
Bangladeshi	68	0.0
Chinese	869	0.6
Other Asian	767	0.5
Black/African/Caribbean/Black British	1,147	0.7
African	624	0.4
Caribbean	148	0.1
Other Black	375	0.2
Other ethnic group	462	0.3
Arab	129	0.1
Any other ethnic group	333	0.2

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies

Source: ONS - 2011 Census (KS201EW)

Religion

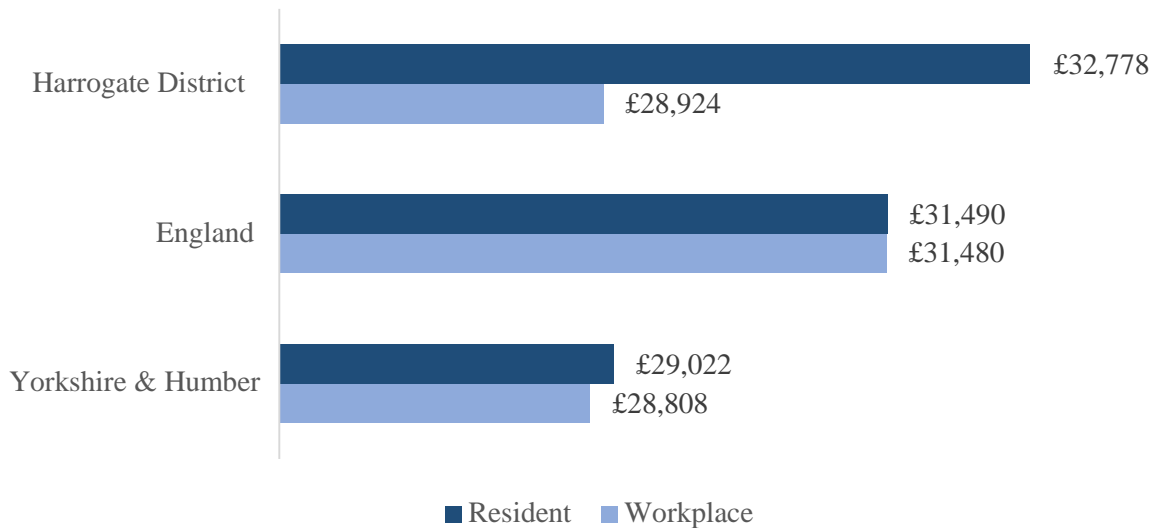
	Persons	
	Harrogate Local Authority	
	count	%
All usual residents	157,869	100.0
Has religion	110,461	70.0
Christian	108,289	68.6
Buddhist	414	0.3
Hindu	236	0.1
Jewish	334	0.2
Muslim	573	0.4
Sikh	82	0.1
Other religion	533	0.3
No religion	36,227	22.9
Religion not stated	11,181	7.1

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies

Source: ONS - 2011 Census (KS209EW)

Older people are at higher risk of poverty which increases likelihood of bus trips. In 2019, people in the lowest real income quintile made more local bus trips on average than any other income quintile, while those in the highest income quintile made the least. [Annual Bus Statistics: England 2019/20](#).

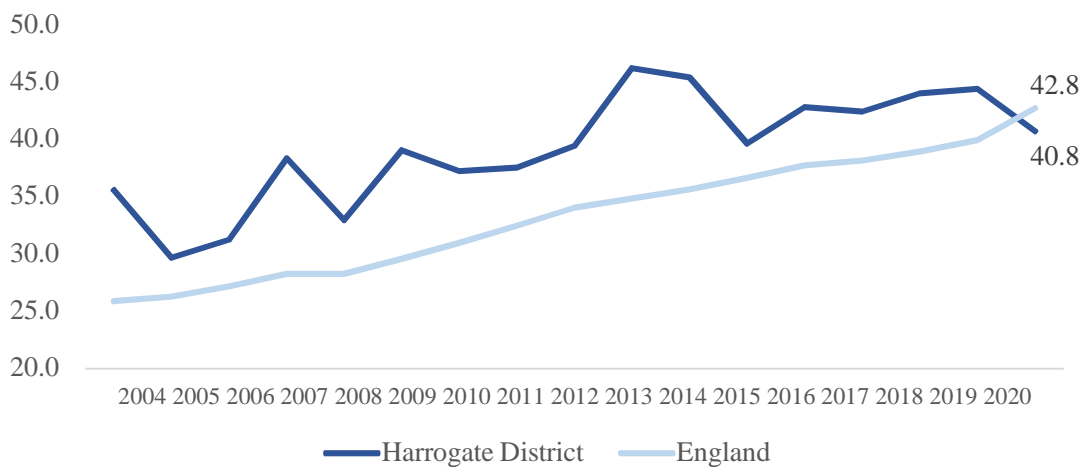
Approximately 47% of Harrogate's residents are employed in professional and managerial roles, while less than 20% work in the service related sectors – this pattern correlates with the higher than average earnings of residents but lower than average earnings of those that work in the district (workplace), reinforcing the trend of out-commuting for higher paid jobs, and in-commuting for lower paid jobs that are prevalent in the town (see table below). Bus services are, therefore, crucial to ensuring sustainable inward travel for lower-paid sectors.



Median Gross Annual Earnings – Resident v Workplace, 2021 (ONS)

This proposal will facilitate inclusive growth through enabling enhanced, reliable, greener bus services for working age people to access opportunities in Harrogate and Knaresborough towns and beyond (and vice versa).

As detailed in the graph below, in 2020, the proportion of the district’s working-age population qualified to NVQ4 (degree level) and above fell below the Great Britain average for the first time since records began in 2004.



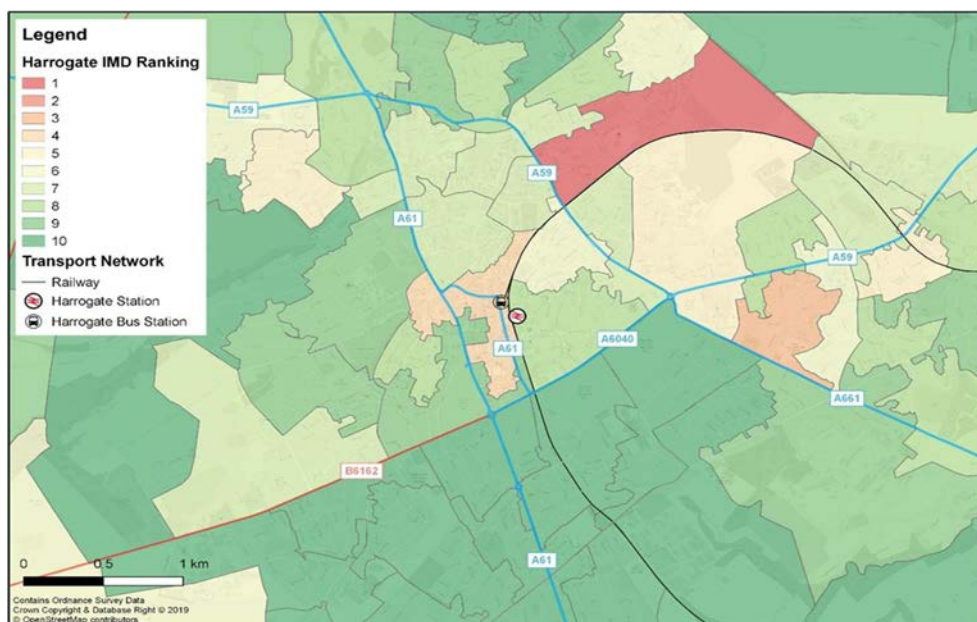
Harrogate District working age (16-64) population projection, 2021-2031 (ONS)

Enhanced bus services will improve equality of access to opportunity, contributing to increased range and quality of available apprenticeships and allowing more individuals, particularly those from more deprived areas, to access skill-building opportunities within educational or workplace settings in a sustainable way.

Despite the affluence of the district, there are pockets of deprivation and a large gap between the most and least deprived areas. Housing is the least affordable across the North of England and, together with a prevalence of lower paid employment, there are cross-boundary, unsustainable commuting patterns.

Indices of Multiple Deprivation (IMD) is a composite of many types of deprivation, including Income, Employment, Education Skills and Training, Health and Disability, Crime, Barriers to Housing and

Services, and Living Environment. The map below demonstrates that six of the LSOAs within the Harrogate study area boundary, rank among the third most deprived of areas in the country.



In summary Harrogate and Knaresborough have an increasing population size with in an increasing proportion of population aged 65 years and over. There is a trend of out-commuting for higher paid jobs, and in-commuting for lower paid jobs that are prevalent in the town. Bus services are, therefore, crucial to ensuring sustainable inward travel for lower-paid sectors. There are pockets of deprivation and a large gap between the most and least deprived areas.

Whilst a series of interventions is required to address the issues, this proposal will provide a contribution to addressing some of the issues. Older, poorer and more vulnerable parts of society are expected to be more exposed to impacts from a number of climate risks. However, co-benefits such as reduced air pollution are likely disproportionately to favour low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. Increasing the number of zero emission buses will improve air quality.

2.3 Vehicles and Operators

Whilst there are over 20 local bus service operators in North Yorkshire, two operate in the defined area:

Transdev, trading as the Harrogate Bus Company, is the main bus operator in the defined area with over 90% of the market in terms of passenger numbers and operating 47 vehicles. This proposal will deliver 39 new battery electric zero emission buses in Harrogate and Knaresborough over three years. With eight introduced in 2018 this proposal will fully convert the Harrogate Bus Company (part of Transdev) depot to full electric bus operation, the first North Yorkshire bus depot to achieve this. There will be 19 double deck buses, 20 single deck buses, with their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion, and subsequent information will be available for other operators and local authorities to learn from. [redacted]

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In addition to the existing eight battery electric zero emission vehicles already in operation the current fleet comprises:

- 10 single deck retrofitted from Euro 4/5 to Euro 6 standard in 2016
- 10 CVRAS compliant single deck retrofitted from Euro 5 standard
- 3 CVRAS compliant double deck retrofitted from Euro 5 standard
- 16 Euro 6 double deck

The current carbon impact of these diesel vehicles is an average 1282g CO₂ per km compared to 438g per km for comparable emission electric vehicles.

The existing eight battery electric vehicles, which have offered Transdev excellent understanding which has been and will continue to be used to improve this proposal, are low range opportunity charge buses that need frequent intense charging. A revised approach has been developed to procure vehicles with a higher mileage range using predominately overnight charging, topped up by selective opportunity charging. This is a more efficient option for the higher mileage interurban routes and has less impact on vehicle schedules and operations.

Surplus capacity was built into the power supply when being upgraded for the current eight electric buses, meaning reduced costs for this proposal and providing enhanced value for money for this ZEBRA proposal. In addition the vehicles to be procured under this proposal will also use the existing bus station charging pantograph infrastructure being used by the vehicles, again reducing the costs of this proposal.

Connexions Buses is a small independent operator based near Harrogate, with services in Harrogate and to Knaresborough York, Otley and Ilkley. The company has a fleet of 39 buses and a PVR of 36. [redacted]

] as outlined in section 4.2 of the Commercial Case we look forward to learning from best practice delivered by other ZEBRA proposals that include upgrading smaller operators’ fleets, particularly where this has involved leasing and financing options. North Yorkshire County Council has committed to investigating how assistance can be given to smaller operators and as part of its Bus Service Improvement Plan has committed to supporting those operators, for example by investigating whether solar panels are a feasible solution to address the problems smaller operators with remote depots have in getting a suitable electrical supply to their depots.

The existing fleet comprises:

- 19 single deck
- 20 double deck

Which are mostly a combination of Euro 4 or 5 vehicles.

2.4 Objectives, Ambition and Case for Change

North Yorkshire County Council’s Council Plan sets out our vision and values. The Plan identifies five ambitions for 2025:

- Leading for North Yorkshire
- Every child and young person has the best possible start in life;
- Every adult has a longer, healthier and independent life;
- North Yorkshire is a place with a strong economy and a commitment to sustainable growth
- Innovative and forward thinking Council

The objectives of this proposal directly contribute to all five ambitions:

Leading for North Yorkshire	This proposal will deliver 39 new zero emission buses in Harrogate over three years and together
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	with previous investment that has been made will fully convert the Harrogate Bus Company (part of Transdev) service network to electric operation acting as a beacon of best practice for the region.
Every child and young person has the best possible start in life	Air pollution can adversely impact human development which can have both immediate and long-lasting effects on a person's health. Early childhood is a critical time for the formation and maturation of body systems and the time during which most rapid changes take place. Increasing the number of zero emission buses will improve air quality.
Every adult has a longer, healthier and independent life	The buses will be fitted with a number of accessibility requirements (eg equipment identifying the route, each upcoming stop) which will assist older people and people with certain disabilities and assist them to have an independent life. Adults will also benefit from improved air quality; older and more vulnerable parts of society are expected to be more exposed to impacts from a number of climate risks. benefits such as reduced air pollution are likely disproportionately to favour low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. Increasing the number of zero emission buses will improve air quality.
North Yorkshire is a place with a strong economy and a commitment to sustainable growth	Bus investment of [Redacted] by the Department for Transport and [redacted] third party funding from Transdev represents a significant support to bus manufacturers in the development of zero emission bus technology. [redacted]
Innovative and forward thinking Council	The proposal will also support [redacted] next generation electric double deck which enables operation of interurban high mileage higher speed services with electric buses. Once developed this next generation vehicle will be available for use more widely across the UK benefitting other operators and local authorities.

The objectives of our proposal are:

- Improve air quality
- Accelerate decarbonisation of the North Yorkshire public transport network
- Improving transport for the user
- Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

<u>Objectives of this Proposal</u>	<u>ZEBRA Programme Objectives</u>	<u>DfT Wider Objectives</u>
Improve air quality The current carbon impact of each diesel vehicle to be replaced as	To support the government's commitment to decarbonisation and to reduce the transport sector's contribution to CO ₂ emissions.	Reduce environmental impacts / Air quality

part of this proposal is an average 1282g CO ₂ per km compared to 438g per km for comparable emission electric vehicles to be procured.		
Accelerate decarbonisation of the North Yorkshire public transport network	To support the roll-out of the 4,000 Zero Emission Buses that the government committed to in February 2020. To support partnership working between Local Authorities, bus operators, and other local stakeholders as set out in the National Bus Strategy.	
Improving transport for the user		Improve transport for the user
Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth	To support bus manufacturers in the development of zero emission bus technology. To understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for Zero Emission Buses.	Grow and level up the economy

The North Yorkshire Bus Service Improvement Plan states:

Through our BSIP we will:

Deliver previously identified highway improvements from the Harrogate Transport Improvement Programme. These measures include bus priority signals, segregated bus lanes and improved junctions and roundabouts for buses.

Improve Air Quality Challenge

Harrogate Borough Council has declared four air quality management areas for breaches of the annual mean objective for nitrogen dioxide (NO₂). These were declared at Bond End, Knaresborough and Low and High Skellgate, Ripon in 2010, and York Place, Knaresborough and Wetherby Road, Harrogate in 2017. The tables below, taken from Harrogate Borough Council Air Quality Action Plan, showing the source apportionment to bus:

York Place, Knaresborough source apportionment.

	Source Apportionment					
	Background	Car	LGV	Rigid HGV	Artic HGV	Bus
Concentration (µg/m ³)	11.8	16.2	1.8	12.1	0.9	3.1
% Contribution to Total	26	35	4	26	2	7

Bond End, Knaresborough 2014 source apportionment

	Source Apportionment							
	Regional Background	Local Background	Car	LGV	Rigid HGV	Artic HGV	Bus	Motorbike
Concentration (µg/m ³)	6.67	5.14	14.4	6.92	4.46	1.27	7.13	0.069
% Contribution to Total	14.47	11.15	31.24	15.01	9.67	2.75	15.47	0.15

Wetherby Road, Harrogate source apportionment

	Source Apportionment						
	Regional Background	Local Background	Car	LGV	Rigid HGV	Artic HGV	Bus
Concentration ($\mu\text{g}/\text{m}^3$)	4.65	5.95	22.38	3.34	8.72	0.64	0.73
% Contribution to Total	10	12.8	48.2	7.2	18.8	1.4	1.6

Low Skellgate, Ripon source apportionment

	Source Apportionment						
	Regional Background	Local Background	Car	LGV	Rigid HGV	Artic HGV	Bus
Concentration ($\mu\text{g}/\text{m}^3$)	4.22	5.69	22.03	6.56	1.68	0.39	4.99
% Contribution to Total	9.26	12.49	48.36	14.40	3.68	0.86	10.96

How the Proposal Addresses the Air Quality Issues

As can be seen from the tables above bus is a contributor to air quality issues in all four air quality management areas. At its highest the bus contributes to 15.47% of the total at Bond End Knaresborough. The zero emission vehicles funded from this proposal will operate on bus routes covering all four air quality management areas:

- York Place, Knaresborough – Service 1
- Bond End, Knaresborough – Service 1
- Wetherby Road, Harrogate – Service 7
- Low Skellgate, Ripon – Service 36

As such there will be a positive impact on the air quality in all four air quality management areas. The vehicles currently operating on these services are fitted with SCRT exhaust technology (pre CVRAS) and will be redeployed elsewhere replacing higher emission buses (Euro 2 or Euro 3), improving air quality elsewhere in the region.

Detail of buses to be replaced:

- 10 single deck retrofitted from Euro 4/5 to Euro 6 standard in 2016
- 10 CVRAS compliant single deck retrofitted from Euro 5 standard
- 3 CVRAS compliant double deck retrofitted from Euro 5 standard
- 16 Euro 6 double deck

These buses will be cascaded as follows:

- 6 vehicles will be recycled, as at 17 year old they will be end of life
- 17 vehicles – all CVRAS specification – will be cascaded to Transdev operations in Blackburn and Burnley where they will replace remaining Euro 2 and Euro 3 vehicles.
- 16 double deck buses will be returned to the leasing company and sold for operation outside the defined area

Accelerate Decarbonisation of the North Yorkshire Public Transport Network Challenge

In North Yorkshire only c10% of one operators bus network mileage is operated by zero emission buses, which equates to just 1% of the county's total bus network mileage. Given North Yorkshire is the largest county in England and is one of the most rural (being one of only a handful of areas in the UK eligible for the Rural Fuel Duty Relief Scheme, a scheme designed is to help drivers in remote areas where the

cost of petrol and diesel is often higher as opposed to local bus operators), the county faces significant barriers to the full transition to zero exhaust emission vehicles, particularly electric, across the region. These barriers include:

Operator mix: The county's bus market predominately comprises smaller, independent operators who lack the ability to fund the increased capital costs of buying zero emission vehicles over standard DERV vehicles, as well as the relatively higher costs of infrastructure necessary to operate such buses.

Dispersed, longer-distance services: As a large, rural area, long distances are involved in accessing essential services. As such the existing EV range (c180-190 miles) limits deployment across the rural passenger transport network where service mileage can be up to 250 miles. This requires smaller, but more widely dispersed charging facilities to support the uptake of zero exhaust emission buses, rather than traditional charging infrastructure alone (e.g. in bus stations and depots within towns) or the development of vehicles with improved range. The issue is likely to be exacerbated by the low capacity of the electrical grid in the more rural areas which may require upgrading to accommodate electric bus charging. This highlights that the support of the Department for Transport ZEBRA funding is required as a priority need compared to other areas to enable investment in infrastructure upgrades to accelerate decarbonisation of the public transport network and to roll out zero emission buses.

North Yorkshire's rurality also presents a further challenge to accelerate decarbonisation of the North Yorkshire public transport network. Whilst the zero emission single deck bus market is mature with more demand for the product, the zero emission double deck market is less mature. The zero emission double deck bus options are also much more suited to an urban environment, for example park and ride operations or city areas such as London or Manchester where vehicles operate at lower speeds. The nature of the bus passenger travel requirements in North Yorkshire mean buses are required to operate at a higher speed and for longer distances due to the interurban nature of the service routes. In addition, the longer distances mean that a higher specification interior is required compared to buses operating on solely urban routes, which adds additional weight to the vehicle. This in turn impacts on battery usage with a higher consumption than on urban routes.

How the Proposal Addresses the Accelerate Decarbonisation of the North Yorkshire Public Transport Network Issues

Some electric buses together with supporting infrastructure have already commenced operation in North Yorkshire with support from the Government's Low Emission Bus Scheme in 2018 and funding from the local operator. The vehicles are low range opportunity charge buses that need frequent intense charging and are not suitable for deployment on many of the longer distance bus services across North Yorkshire. However, they are helpful in informing operator's preferred options, such as the revised approach for vehicle options of this proposal - higher mileage range buses using predominately overnight charging, topped up by selective opportunity charging. Each operator within the county must undertake further work to assess the range of technologies available and emerging to ensure the right vehicle and charging infrastructure mix are deployed across the wider North Yorkshire area. This proposal will provide significant evidence to support operator's choices and option selection.

This proposal will deliver 39 new zero emission buses in Harrogate and Knaresborough over three years. This would complement the eight electric vehicles previously introduced to the operator's fleet and fully convert the Harrogate Bus Company (part of Transdev) service network to electric operation. This completely aligns with the council's Zero Emission Bus Deployment roadmap, set out in the North Yorkshire Bus Service Improvement Plan, which details Harrogate as the first phase in the carbonisation of North Yorkshire bus fleet, and will act as a catalyst and act as a beacon of best practice for other local bus operators in North Yorkshire.

Following the introduction of two phases of battery electric single deck vehicles in 2022 and 2023, this proposal plans to implement battery electric double deck vehicles on interurban routes in 2024. [Redacted

] There is a need to ensure development

and manufacture of a battery electric double deck vehicle with higher specification interior that can meet the needs of interurban bus service operators by operating at higher speeds and for longer distances without adversely impacting on battery consumption. This proposal will therefore provide significant added benefit by developing a type battery electric double deck that can be used by other double deck bus operators across North Yorkshire and elsewhere across the country.

The scale of change required to decarbonise our bus network, especially in our rural areas, requires a strategic and co-ordinated approach to funding and delivering an accelerated transition to zero exhaust emission buses in our region. This proposal will provide an exemplar approach to decarbonising rural passenger transport within the county and to other parts of the country.

Improving Transport for the User Challenge

Given the size of North Yorkshire, the county has distinct bus markets and networks broadly aligning to a dominant urban area, instead of a recognisable single network more commonly found in city regions and smaller counties.

Harrogate is the district with the highest number and frequency of bus services across the North Yorkshire county. Whilst the majority of routes operate with a frequency of less than 1 bus per hour during weekday daytime, Harrogate town serves as a hub for bus services with frequent connections to Skipton and Selby, as well as the high frequency service 36 to Leeds operated by the Harrogate Bus Company. At present there are no DRT services in Harrogate.

As a whole, the district has good geographical coverage by bus, albeit with low service frequencies outside of the principal town of Harrogate.

Transport Focus regularly surveys bus users. Satisfaction with bus services in Harrogate is high amongst bus users:

- 91% Overall journey satisfaction
- 90% Satisfaction with driver welcome
- 93% Satisfaction with interior cleanliness and condition

However local surveys of bus users and non bus users show a marked difference in satisfaction rates. The annual travel survey undertaken by the National Highway and Transport Network, surveying local residents who can be either bus users or non-bus users, shows:

- 56% Satisfaction with local bus services
- 75% Helpfulness of drivers
- 71% Quality and cleanliness of buses

This indicates that there are perception issues, particularly amongst non-users. This provides an excellent opportunity for the zero emission vehicles to be delivered as part of this proposal to change perceptions and introduce new users to buses.

How the Proposal Addresses the Improving Transport for the User Issues

The introduction of “Harrogate Electrics” on the town services in Harrogate in 2018 was accompanied by a marketing campaign highlighting the improved quality and environmental benefits. [Redacted

] A robust marketing plan has been prepared (see Commercial Case Annex 1) covering the period from prelaunch to 2 years following the third phase of zero emission buses commencing operation. The purpose of the marketing plan is to raise awareness, encourage use of the services and zero emission buses leading to new passengers using the service and increased passenger journey frequency. It is expected that the same or better patronage growth compared to the introduction of the “Harrogate Electrics” will be seen as a result.

This clearly evidences that the ZEBRA funding will improve transport for the users and that the introduction of 39 new vehicles will have an immediate impact. Transdev are committed to introducing high quality zero emission vehicles with a high standard of customer experience. They will be equipped with superfast 4G Wi-Fi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheelchair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops.

This will be attractive to existing users offering an improved journey experience but will also act as a catalyst to enable facilitation of modal shift away from the private car. Previous experience has shown that by making improvements and offering a high quality alternative it is possible to tempt drivers away from their cars and onto buses, as evidenced by the independent study conducted by Systra (see further details below).

Service 36, operating between Ripon, Harrogate and Leeds, was first relaunched in 2003 and saw the introduction of 14 brand new double deck buses fitted to some of the highest specifications seen in the UK bus industry at the time, including luxury leather seats and a coach-style interior, along with a new premium look and brand for the service. [Redacted

] A further relaunch in 2016 saw a further increase in specification and in 2018 a ten minute frequency was introduced.

[Redacted

]

An Equalities Impact Assessment has been undertaken which identified the proposal is likely to deliver a number of positive impacts to a number of groups of people with protected characteristics.

Supporting the Council's Ambition that North Yorkshire is a Place with a Strong Economy and a Commitment to Sustainable Growth Challenge

In a first of its kind in the UK, North Yorkshire County Council established the North Yorkshire Rural Commission in 2019. Bringing together a panel of eight independent experts with a strong understanding and subject expertise in rural issues and a deep commitment to a thriving future for North Yorkshire, it examined the challenges faced by the county's rural communities. The Commission's report [Rural North Yorkshire: The Way Forward](#), published in July 2021, highlighted:

- While employment is high, earnings are noticeably lower, and the County's workforce is significantly less qualified than the national average.
- The Commission heard repeatedly that national government does not understand the challenges faced by rural economies and particularly sparse remote rural economies.
- Contributors to the Commission made it clear that many of the issues faced by rural dwellers do not usually feature in national debates about economic development, which are usually urban-centred and focused on the competitive economy in London and the South-East.

The York and North Yorkshire Strategic [Economic Plan](#) details that growth and productivity are low and decreasing compared to the national average.

In York and North Yorkshire a disproportionately high number of people travel by car (85% of distance travelled, compared to 78% across England).

As much as 47 per cent of North Yorkshire is designated as either a National Park or an Area of Outstanding Natural Beauty and the county is a well known tourist destination. There is a need to protect these valuable natural assets and the improved air quality as a result of the introduction of the 39 battery electric vehicles from this proposal will support that.

All this evidence highlights that the support of the Department for Transport ZEBRA funding is required as a priority need compared to other areas to grow and level up the economy in North Yorkshire and ensure that North Yorkshire is a place with a strong economy and a commitment to sustainable growth.

How the Proposal Addresses Supporting the Council's Ambition that North Yorkshire is a Place with a Strong Economy and a Commitment to Sustainable Growth Issues

Bus investment of [Redacted] by the Department for Transport and [Redacted] third party funding from Transdev represents a significant investment into the economy of North Yorkshire. [Redacted

] This investment in turn will filter through to the supply chain network. This has a direct link to the ZEBRA programme objective "To support bus manufacturers in the development of zero emission bus technology." In addition, it will provide opportunities for these companies to upgrade their workforce's skills, particularly in the zero emission bus technology sector.

[Redacted

]

The routes that the zero emission vehicles will operate on are the busiest in Harrogate, providing key links to the local hospital and major employment sites. Plans exist to extend services into new developments, one of which has already materialised and a further change made to serve a new supermarket. This will improve accessibility.

Transdev has an established apprenticeship scheme, which will now include training on electric vehicle maintenance. From 2021 the apprenticeship programme has evolved to cover both mechanical and electrical aspects with a particular focus on hybrid and zero emission technology. Engineering technicians will work on all systems of the vehicles in respect of their specific trade. The scheme ranges from performing simple tasks, like replacing a part, to solving complex faults often using diagnostic equipment. Examples of units covered in this apprenticeship are:

- Conducting the inspection of buses/coaches
- Contributing to safe working practices in Bus/Coach Engineering and Maintenance
- Carrying out scheduled electrical maintenance
- Diagnosing and repairing electrical & mechanical faults in bus/coach systems and components
- Carrying out scheduled electrical & mechanical maintenance on buses/coaches

2.5 Options Appraisal and Preferred Option

With 50% of the county's air quality management areas in Harrogate and Knaresborough and the strong support, including significant financial support, from Transdev to convert their Harrogate depot to 100% zero emission vehicle operation and their previous experience in procuring and operating battery electric vehicles and supporting infrastructure the preferred option chosen for the area covered by this proposal, the defined area, is the towns of Harrogate and Knaresborough in Harrogate borough. This allows:

- The new zero emission buses to provide a direct positive impact in all four air quality management areas.
- Advantage to be taken of the strong operator support
- Lessons learnt from Transdev's experience of operating battery electric vehicles to be taken into account whilst delivering this proposal.

Lessons learnt from the existing eight battery electric vehicles have been taken into consideration. These vehicles are low range opportunity charge buses that need frequent intense charging, which

negatively impacts on the available time the vehicle operates ‘in service’. As such a revised approach has been developed to procure vehicles with a higher mileage range using predominately overnight charging, topped up by selective opportunity charging. This is a more efficient option for the higher mileage interurban routes having less impact on vehicle schedules and operations.

This proposal will deliver 39 new battery electric zero emission buses in Harrogate and Knaresborough over three years. With eight introduced in 2018 this would fully convert the Harrogate Bus Company (part of Transdev) service network to electric operation. A full appraisal has been undertaken of the supporting infrastructure required to support the operation of the proposed 39 new electric vehicles. This has included full analysis of the vehicle operational running boards, bus model options and charging constraints. Best options in terms of a power procurement strategy have been considered and this includes sizing the connection to future proof the site and avoid higher energy costs. Bench marking of distribution network operators has also been undertaken. This has concluded the following supporting infrastructure requirements for inclusion in the proposal:

- Point of connection for 1.8MVA, sufficient to support the full depot charging requirements
- Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
- [Redacted] suitable for either AC or DC charging
- Installation of proprietary [Redacted] smart charging software to monitor and manage chargers, on-site battery and import energy costs
- Two additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current eight electric buses

The 20 depot chargers allow two buses to be charged at once, and as such the 39 vehicles will be specified with charging points on both sides. This provides cost effectiveness, along with ensuring minimal impact of parking availability. The two additional pantograph chargers at Harrogate bus station are required to provide additional opportunity charging for buses when operating on routes where overnight charging will not be sufficient to power the vehicle over the service operation. These are bus service routes 7 and 36 that cover mileage of up to 350 miles per day. The two additional pantograph chargers will be installed at Harrogate bus station complementing the three already installed there. All new electric vehicles and the existing eight electric vehicles will be able to use all five pantographs. The pantographs provide additional top up charging, overnight depot charging will provide the majority of the charge required for operation. The charge will normally be undertaken in the five minute turnaround window when passengers are boarding and alighting. The pantographs will be available for use by other operators.

Key milestones for delivery:

<u>Governance, Meetings and Management</u>	
March 2022	Successful ZEBRA bidders announcement
April 2022	Finalise and sign off SLA with operator partner
December 2022, March 2023 and March 2024	Grant payments to operator partner (tranches)
<u>Point of Connection</u>	
April 2022	Internal approvals
May 2022	Contract finalisation and signing
July 2022	Sign off
<u>Infrastructure Procurement and Installation</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
December 2022, March 2023 and March 2024	Available for vehicle charging
<u>Bus Procurement and Deliver</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
January 2023, March 2023 and March 2024	In service delivery commences
<u>Removal of Diesel Infrastructure</u>	
May 2024	Internal approval to remove

June 2024	Identify and appoint contractor
February 2025	Sign off

Detail of buses to be replaced:

- 10 single deck retrofitted from Euro 4/5 to Euro 6 standard in 2016
- 10 CVRAS compliant single deck retrofitted from Euro 5 standard
- 3 CVRAS compliant double deck retrofitted from Euro 5 standard
- 16 Euro 6 double deck

As detailed above 17 of these replaced vehicles will be cascaded to elsewhere in Transdev's operations to replace higher emission buses (Euro 2 or Euro 3), as such improve air quality in Blackburn and Burnley.

Options considered:

- Option 1 – Do Nothing: No Zero Emission Buses Investment
- Option 2 – Do Minimum: Local/third party Zero Emission Buses Investment
- Option 3 – Do Something: 20 single deck (10 with op charge, 10 without) 19 double deck (with op charge), depot infrastructure and 2 pantographs
- Option 4 – Do Everything: All Harrogate operators Zero Emission Buses Investment

	Option 1 – Do Nothing	Option 2 – Do Minimum	Option 3 – Do Something	Option 4 – Do Everything
<u>Objectives of this Proposal</u>				
Improve air quality	× × ×	✓	✓ ✓	✓ ✓ ✓
Accelerate decarbonisation of the North Yorkshire public transport network	× × ×	×	✓ ✓	✓ ✓ ✓
Improving transport for the user	× × ×	✓	✓ ✓	✓ ✓ ✓
Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth	× × ×	✓	✓ ✓	✓ ✓ ✓
<u>ZEBRA Programme Objectives</u>				
To support the government's commitment to decarbonisation and to reduce the transport sector's contribution to CO ₂ emissions.	× × ×	✓	✓ ✓	✓ ✓ ✓
To support the roll-out of the 4,000 Zero Emission Buses that the government committed to in February 2020.	× × ×	✓	✓ ✓	✓ ✓ ✓
To support bus manufacturers in the development of zero emission bus technology. To understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for Zero Emission Buses.	× × ×	×	✓ ✓	✓ ✓ ✓
<u>DfT Wider Objectives</u>				
Reduce environmental impacts / Air quality	× × ×	✓	✓ ✓	✓ ✓ ✓
Improve transport for the user	× × ×	✓	✓ ✓	✓ ✓ ✓
Grow and level up the economy	× × ×	×	✓ ✓	✓ ✓ ✓

□ represents positive contribution to objective

□ represents no or negative contribution to objective

The number of ticks or crosses are relative to the scale of positive or negative contribution

Each option was assessed against the ZEBRA objectives to identify the preferred option.

Option 1 “Do Nothing” would see no deployment of zero emission vehicles in the defined area and the existing diesel engine vehicles would continue to operate. This would result in worsening air quality, the region falling behind in the national decarbonisation agenda, a lack of levelling up and investment in the region and no improvements for the transport user.

Option 2 “Do Minimum” would see some deployment of zero emission vehicles in the defined area but on a much smaller scale and over a longer period of time. As a result, there would be much slower improvements to air quality, improvements for the transport user and significantly less levelling up and investment in the region. The region would not benefit from an acceleration of decarbonising the public transport network. There would be no opportunity to monitor and evaluate a full depot conversion or support bus manufacture of the next generation of zero emission battery electric double deck vehicles suitable for operation outside urban areas without the ZEBRA funding requested within this business case.

A fourth option of “Do Everything: All operators in Harrogate” could be considered. As detailed in section 4.2 of the Commercial Case, during March 2021 North Yorkshire County Council commissioned consultants to investigate and understand the county’s local bus operators’ preparedness for transitioning to zero emission bus fleets. The six largest operators, representing approximately 95% of the public transport network in North Yorkshire, were asked to take part – [Redacted

] As part of its Bus Service Improvement Plan the council has committed to supporting operators facing difficulties transitioning to zero emission vehicles.

Preferred Option

The preferred option is Do Something Option 3. The current carbon impact of each diesel vehicle to be replaced as part of this proposal is an average 1282g CO₂ per km compared to 438g per km for comparable emission electric vehicles to be procured. As such this option delivers significant air quality improvements, has full support of the operator involved in the proposal – this includes £13,298,817 investment representing 63% of the proposal costs. This option will convert the first North Yorkshire bus depot to full electric bus operation. Buses will be both double and single deck vehicles and their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion and subsequent information will be available for other operators and local authorities to learn from.

Why the chosen technology: The option of battery electric vehicles was chosen as Transdev have experience of purchasing and operating these vehicles and supporting charging infrastructure and it will enable the full conversion of a depot to electric vehicle operation. Hydrogen powered vehicles have been ruled out on the basis that there is currently no localised production, hydrogen would need to be delivered by road tanker, in a similar way to how diesel fuel is currently delivered, which would reduce the environmental benefits that can be achieved. Compressed natural gas powered vehicles were discounted for similar reasons. The UK’s first hydrogen transport hub in Tees Valley is within close proximity to North Yorkshire so it is envisaged that hydrogen is likely to play a role in North Yorkshire’s transition to zero emission buses in the future most likely with an operator on the east coast of North Yorkshire, who operate outside the defined area.

Why the number of buses: The number of zero emission vehicles proposed is 20 single deck and 19 double deck with this number being one for one replacements of the existing fleet. Whilst the proposal upgrades the first North Yorkshire bus depot to full electric bus operation, the three bus routes on which the vehicles will operate are the busiest in the defined area but also have the most potential for growth in customer numbers. The routes also incorporate the four air quality management areas declared by Harrogate Borough Council, as such giving maximum opportunity to improve air quality:

- York Place, Knaresborough – Service 1
- Bond End, Knaresborough – Service 1
- Wetherby Road, Harrogate – Service 7
- Low Skellgate, Ripon – Service 36

In addition, there are planned complementary infrastructure schemes designed to improve bus speeds and reliability and in accordance with North Yorkshire’s Bus Service Improvement Plan commitments the operator has committed to reinvesting any peak vehicle requirement savings back into the network. These measures include bus priority signals, segregated bus lanes and improved junctions and roundabouts for buses.

Why the vehicle types: As detailed further in section 4.3 of the Commercial Case, market engagement has taken place with a number of bus manufacturers. [Redacted] single deck buses have been demonstrated and modelled to meet the operating schedules on service 1. Modelling highlighted the single deck buses on service 7 will require some opportunity charging due to the higher mileage operated on the service. Because of high patronage numbers, service 36 requires double deck vehicle operation, [Redacted] The route length, speed and average vehicle mileage on this route is much higher – and indeed much higher than current zero emission double deck vehicles can accommodate, so Opportunity Charging will be required. Despite the complexity, converting service 36 to zero emission vehicles provides an excellent opportunity for the ZEBRA scheme funding to develop the next generation of double deck battery electric buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. Transdev have motivated suppliers to deliver a solution to the range challenge and when the vehicles commence operation they will provide a showcase to prove battery electric buses can operate successfully on a busy interurban corridor. Experienced stakeholders are involved in the proposal who are experienced in delivering zero emission battery electric bus technology, which mitigates any complexity risks.

[Redacted]

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The Greener Buses Model shows a BCR of 1.96. The assessment of VfM categorisation is medium without taking into consideration any non-monetised benefits or risks and uncertainties. We assess that the non-monetised benefits increase the VfM category to high.

Changes from the Express of Interest to Full Business Case

Expression of Interest	Phase 2 – Full Business Case
<ul style="list-style-type: none"> □ Cost of vehicles – [redacted (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck □ 19 double deck 	<ul style="list-style-type: none"> □ Cost of vehicles – [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck (10 with op charge, 10 without) □ 19 double deck (with op charge) □ Battery replacement costs [redacted]
<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) 	<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution)
<ul style="list-style-type: none"> □ Proposal Cost £19,925,000 □ ZEBRA funding ask £8,396,250 □ Third party funding £11,528,750 	<ul style="list-style-type: none"> □ Proposal Cost £21,099,210 □ ZEBRA funding ask £7,800,394 □ Third party funding £13,298,818

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

2.6 How the Proposal Meets the Scheme’s Objectives, the Core Policy Objectives of ZEBRA and the Wider Strategic Priorities of the DfT

Alignment with ZEBRA Programme Objectives

Objectives of the ZEBRA Programme	How the proposal is aligned with this policy	Objectives of this Proposal
To support the government’s commitment to decarbonisation and to reduce the transport sector’s contribution to CO ₂ emissions.	There are four declared air quality management areas in defined area. The bus is a contributor to air quality issues in all four areas. The zero emission vehicles funded from this proposal will operate on bus routes covering all four Air Quality Management Areas.	Improve air quality The current carbon impact of each diesel vehicle to be replaced as part of this proposal is an average 1282g CO ₂ per km compared to 438g per km for comparable emission electric vehicles to be procured.
To support the roll-out of the 4,000 Zero Emission Buses that the government committed to in February 2020.	This proposal will fully convert the Harrogate Bus Company (part of Transdev) operation to 100% zero emission bus operation. The proposal will deliver 39 new zero emission buses in Harrogate over three years complimenting the eight battery electric vehicles already in operation. For North Yorkshire this will accelerate decarbonisation of the bus fleets operating in North Yorkshire together with kick starting the delivery of North Yorkshire Zero Emission Bus Roadmap and act as a beacon of best practice for other local bus operators in North Yorkshire.	Accelerate decarbonisation of the North Yorkshire public transport network
To support bus manufacturers in the development of zero emission bus technology.	Bus investment of [redacted] by the Department for Transport and [redacted] third party funding from Transdev represents a significant support to bus manufacturers in the development of zero emission bus technology. [Redacted] A different double deck zero emission vehicle is required for this proposal, capable of operating above 40mph and	Supporting the council’s ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

	<p>covering a mileage of up to 350 miles per day. As part of the market engagement the bus manufacturers detailed in the previous paragraph were engaged with. [Redacted</p> <p style="text-align: right;">]</p> <p>Once developed this next generation vehicle will be available for use more widely across the UK benefitting other operators and local authorities.</p>	
<p>To support partnership working between Local Transport Authorities, bus operators, and other local stakeholders as set out in the National Bus Strategy.</p>	<p>This proposal supports North Yorkshire’s zero emission bus roadmap which forms part of North Yorkshire Bus Service Improvement Plan. Lessons learnt from delivery of the proposal will be used to assist other local bus operators within the county.</p>	
<p>To understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for Zero Emission Buses.</p>	<p>This proposal includes the development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.</p> <p>The proposal will also fully convert the first North Yorkshire bus depot to full electric bus operation. Buses will be both double and single deck vehicles and their operations having varying route lengths and operational terrain. The full conversion of a depot provides a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a</p>	

	significant conversion is available for other operators and local authorities to learn from.	
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Alignment with Wider DfT Priorities

DfT Wider Priorities	How the proposal is aligned with this policy	Objectives of this Proposal
Grow and level up the economy	Bus investment of [Redacted] by the Department for Transport and [Redacted] third party funding from Transdev represents a significant support to bus manufacturers in the development of zero emission bus technology. [Redacted]	Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth
Reduce environmental impacts / Air quality	There are four declared air quality management areas in defined area. The bus is a contributor to air quality issues in all four areas. The zero emission vehicles funded from this proposal will operate on bus routes covering all four air quality management areas. The current carbon impact of each diesel vehicle is an average 1282g CO ₂ per km compared to 438g per km for comparable emission electric vehicles to be procured as part of this proposal.	Improve air quality The current carbon impact of each diesel vehicle to be replaced as part of this proposal is an average 1282g CO ₂ per km compared to 438g per km for comparable emission electric vehicles to be procured.
Improve transport for the user	Partnership work with operator, investment will build confidence in the network, particularly as we recover from Covid19, ensuring network is safe reliable and inclusive. The new vehicles will offer a more comfortable ride and reduced noise pollution compared to the existing offer. Additionally the zero emission vehicles will offer a high standard of customer experience. They will be equipped with superfast 4G wifi, phone holders with USB and wireless	Improving transport for the user

	<p>power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheel chair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops.</p> <p>The introduction of the initial eight electric buses provided a step change in vehicle quality and customer experience, with more customers travelling year on year.</p> <p>Transdev have committed to a programme of tree planning for every 10,000 Zero Emission miles it has operated</p>	
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Alignment with National Bus Strategy Objectives

National Bus Strategy Objectives	How the proposal is aligned with this policy	Objectives of this Proposal
Greener Buses	<p>This proposal will convert the first North Yorkshire bus depot to full electric bus operation. Buses will be both double and single deck vehicles and their operations having varying route lengths and operational terrain. The full conversion of a depot provides a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion is available for other operators and local authorities to learn from.</p> <p>[Redacted</p> <p>]</p>	Accelerate decarbonisation of the North Yorkshire public transport network
Accessible and inclusive by design	<p>The zero emission vehicles will offer a high standard of customer experience, plus additional wheel chair space, audio visual next stop announcements with on board real time information and induction loops. The vehicles will also be compliant with the PSVAR standards required by the ZEBRA scheme.</p>	Improving transport for the user

Better to ride in	The new vehicles will offer a more comfortable ride and reduced noise pollution compared to the existing offer. Additionally the zero emission vehicles will offer a high standard of customer experience. They will be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheel chair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops.	Improving transport for the user
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We will undertake a monitoring and evaluation programme. In addition to the Department for Transport planned programme level evaluation, additional monitoring and evaluation will be undertaken to understand whether the objectives and outcomes of the proposal have been met and also to understand the proposal's two unique and exciting benefits:

- The development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation.

A full monitoring and evaluation plan has been prepared and is available at Management Case Annex 3. In summary, this details:

- Data Requirements and Collection
 - Base data
 - DfT minimum requirements
 - Additional monitoring and performance data
 - Data collection methods
- Reporting
 - Data collection frequency
 - Reporting frequency including annual report
- Resourcing and Governance

All relevant monitoring data will be shared with the Department and appointed evaluation contractor alongside a commitment to participate in programme-level evaluation activities.

All data will be reported in an electronic format, using a common format such as CSV or Microsoft Excel.

2.7 Alignment with Wider Transport Strategy

Ambition to Decarbonise [The York and North Yorkshire Mayoral Devolution Deal for York and North Yorkshire](#) clearly sets out an ambition to accelerate the transition to zero emission buses across the proposed combined authority area. It confirms that bus vehicle emissions are a significant contributor to local air quality issues and Greenhouse Gas emissions. It also confirms the region's three major settlements all have declared Air Quality Management Areas. To address this the document states that a three-phase programme for the roll out of zero emission vehicles across the region is required. This proposal is completely aligned

to phase 2 of that ambition (with phase 1 being within City of York Council boundaries) which states major settlements including Harrogate should see the first deployment of zero emission vehicles in North Yorkshire.

The proposal aligns with local policy across the area's seven districts and two National Parks, including supporting all Local Plans, Climate Emergency Plans. Harrogate's [Ultra-Low Emission Vehicle Strategy 2019 – 2024](#) highlights that there are opportunities associated with ensuring that bus fleets are as green as possible and highlighted building on Transdev's existing electric vehicles as an option. It includes a clear action to encourage the uptake of electric powered public transport services.

The York and North Yorkshire LEP have [a plan](#) to be England's first Carbon negative region. As part of their Routemap to Carbon Negative they have identified the five most carbon-intensive sectors in York and North Yorkshire - buildings, transport, industry, power, and land use and agriculture – and outlined a clear pathway to our climate goals. That pathway, the [North and West Yorkshire Emissions Reduction Pathways](#), has been developed to achieve the plan to be England's first Carbon negative region and this highlights rapid conversion of public fleets to zero emission vehicles as part of the Transport Action Plan. This proposal clearly aligns with that action. By converting a complete bus depot to zero emission vehicles this would contribute a significant reduction in emissions – where transport is the largest emitting sector dominated by road transport – and act as a beacon of best practice for other fleet operators to learn from.

One objective of the [North Yorkshire Local Transport Plan](#) is protecting the environment and preventing climate change. The Plan highlights how North Yorkshire County Council supports measures to promote environmentally friendly forms of transport, including supporting and making provision for the use of ULEVs.

Complementary Policies and Wider Ambitions

North Yorkshire County Council is developing a countywide Electric Vehicle Infrastructure Rollout Strategy, considering the recommendations from the Electric Vehicle Charge Point (EVCP) Deployment Study, which recommended delivery of 615 publicly available electric vehicle charge points by 2030 to accommodate the uptake and use of electric vehicles in North Yorkshire. This sits alongside the council's Zero Emission Bus Deployment roadmap, set out in the North Yorkshire Bus Service Improvement Plan, which details Harrogate as the first phase in the carbonisation of North Yorkshire bus fleet. This proposal by delivering a full depot conversion and 39 new battery electric buses will therefore kick start the delivery of North Yorkshire Zero Emission Bus Roadmap and act as a beacon of best practice for other local bus operators in North Yorkshire.

Prior to the requirements under the National Bus Strategy, North Yorkshire County Council and Transdev worked in partnership on a voluntary basis to deliver a high quality bus network for Harrogate. The results of this are coming to fruition through the Harrogate Transport Improvement Programme (HTIP). An evidence-based approach was followed and studies were undertaken on several key corridors in order to understand where the greatest benefits from interventions and improvements could be delivered. This took into account multiple modes, including car, bus, park and ride, walking and cycling, and also looked at the potential for travel behaviours to be influenced. The approach used visual observations from site visits, traffic data, responses from the public engagement, DfT approved approaches and best practice examples to develop a suite of options that could form a cohesive package. The study found that the A61 Leeds Road presented the greatest opportunity to reduce congestion and make improvements to travel options including bus and cycling, including the potential for a park and ride scheme. The next stage is to develop options in a number of areas, including better infrastructure for cyclists and pedestrians, enhanced priority for buses, a park and ride scheme and improvements at key junctions. As work progresses, the County Council aims to deliver long-lasting benefits in a consistent, co-ordinated way to realise fully the benefits of these schemes.

Within Harrogate we are delivering significant improvements to the bus and rail station gateway area under the Transforming Cities Fund. The improvements propose new bus lanes along the length of Lower Station Parade and at the junction of Cheltenham Parade and Station Parade which will facilitate

easier access to the bus station. Additionally the bus station exit onto Station Parade will be signalled with bus priority for exit. The proposals will also deliver new dedicated cycle access and improved pedestrian access to the bus station.

Transdev participates in 'Car Free Fridays' in Harrogate, a scheme to encourage sustainable travel. A two for one ticket is available whereby two customers can travel together for the price of one.

North Yorkshire Bus Service Improvement Plan, developed in partnership with North Yorkshire bus operators including Transdev, sets out ambitious plans to make the bus an attractive alternative to the car. The plan contains a large number of key deliverables, examples of which include:

- Through pump-prime funding we will deliver a series of improvements to existing services and help pump-prime new markets that have emerged as a result of the pandemic.
- Following the successful pilot of the Council's digital demand responsive travel service, YorBus will be rolled out across other areas in the county.
- We will improve and simplify fares for younger people, we will introduce a consistent under-19 qualifying age across the whole of North Yorkshire on all bus services.
- We will deliver a 50% fare for job seekers and apprentices on single and return fares.
- A website to cover the whole of North Yorkshire which will include information on all operators and bus services in the county, up to date information on fares timetables and any service updates.
- Improved information at bus stops through a standard approach for producing and maintaining publicity, with a named operator responsible for updating designated stops, including a minimum information standard.
- Provision of e-Ink digital signs at bus stops along the identified key corridors.
- Consistent local branding will be put in place at bus stops, bus information and any marketing material.
- Next stop audio / visual announcements to be provided as standard on all new vehicles and through BSIP funding all older vehicles will be retro-fitted.
- Delivery of the North Yorkshire Zero Emission Bus Roadmap.
- A fully developed North Yorkshire Bus Passenger's Charter.

Significant increases in bus priority is also one of those key deliverables. As a predominantly rural county, North Yorkshire does not have bus punctuality or reliability issues on a wide spread basis, however, there are some identified congestion hotspots. The North Yorkshire Bus Service Improvement Plan therefore has a key deliverable of building on the successful Harrogate Transport Improvement Programme model, outlined above delivering this approach across other areas of the county. This multi modal evidence based approach will deliver long-lasting results in a consistent, co-ordinated way to realise fully the benefits of these schemes. We are expecting such schemes to include enhanced priority for buses and improvements at key junctions on bus routes along with encouraging people to change their travel habits. Schemes in current design, that the zero emission buses will operate on, include:

- A bus lane on West Park
- Bus priority / general improvement options at the junction of West Park / Victoria Avenue;
- Linking of pedestrian crossings / provision of bus priority; and
- Bus priority / general improvement options at the junction of Parliament Street / Crescent Road / Kings Lane.

West Yorkshire Combined Authority and Transdev, along with other local bus service operators, are also working together on a ZEBRA funding proposal. For the Transdev element this will see some efficiency benefits from bulk orders and will complement this proposal as it includes the service route from Bradford to Harrogate. It should be noted at this point that the West Yorkshire Combined Authority ZEBRA funding proposal and this proposal are completely separate and independent from each other.

2.8 Summary

The bus is a contributor to air quality issues in all four Air Quality Management Areas within the defined area. At its highest the bus contributes to 15.47% of the total emissions at Bond End Knaresborough. North Yorkshire's rurality means the challenges in decarbonising the bus fleet within the county are more difficult to overcome compared to other areas. Previous experience within the defined area has shown that by making improvements and offering a high quality alternative it is possible to tempt drivers away from their cars and onto buses. Earnings are noticeably lower, and the county's workforce is significantly less qualified than the national average. As a rural county there are challenges faced by rural economies and particularly sparse remote rural economies.

Air quality improvements will be achieved in the four declared air quality management areas in the defined area following the introduction of the 39 zero emission vehicles under this proposal. This proposal will deliver 39 new zero emission buses in Harrogate over three years and together with previous investment that has been made will fully convert the Harrogate Bus Company (part of Transdev) service network to electric operation. This meets the ZEBRA objective "To support the roll-out of the 4,000 Zero Emission Buses that the government committed to in February 2020" and the National Bus Strategy objective for "Greener Buses". Fully converting the Harrogate Bus Company service network, which represents 90% of the network in Harrogate, provides a significant acceleration of decarbonisation of the North Yorkshire public transport network. This meets the ZEBRA objective "To support the government's commitment to decarbonisation and to reduce the transport sector's contribution to CO2 emissions." And the DfT Wider objective of "Reduce Environmental impacts / Air quality". The new vehicles will offer a more comfortable ride and reduced noise pollution compared to the existing offer, meeting the DfT Wider objective "Improve transport for the user" and the National Bus Strategy objective that buses should be "Better to ride in". A high standard of customer experience as the zero emission vehicles will be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheelchair spaces. Audio visual next stop announcements with on board real time information and induction loops will also be included on the new vehicles. All funding from the proposal will be entirely retained within the county of North Yorkshire and this investment in turn will filter through to the supply chain network. These features meeting the DfT Wider objective "Improve transport for the user" and the National Bus Strategy objective that buses should be "Accessible and inclusive by design".

The proposal provides added value by enabling the first North Yorkshire bus depot to full electric bus operation. Buses will be both double and single deck vehicles and their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion and subsequent information will be available for other operators and local authorities to learn from. This meets the ZEBRA objective "To support partnership working between Local Authorities, bus operators and other local stakeholders as set out in the National Bus Strategy".

North Yorkshire's rurality also presents a further unique opportunity as the proposal includes the development and manufacture of double deck zero emission bus suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment. [Redacted

] Other operators and local authorities will benefit from this partnership work and full monitoring and evaluation information will be available. This meetings the ZEBRA objective "To support bus manufacturers in the development of zero emission bus technology. To understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for Zero Emission Buses" and the DfT Wider objective "Grow and level up the economy" as the buses will be designed and manufactured in Scarborough within the county of North Yorkshire.

3.0 Economic Case

3.1 Overview

The total proposal cost is £21,099,210 with a ZEBRA funding request of £7,800,393. Third party (Transdev) funding contribution of £13,298,817 has been secured as detailed in Transdev’s letter of support at Financial Case Annex 1. The proposal has the support of Transdev as a partner operator and their support is strongly evidenced by their financial contribution to the proposal as they will fund 63% of the proposal cost, ensuring good value to the ZEBRA scheme.

The ZEBRA funding request per vehicle complies with the scheme criteria of DfT contribution of up to 75% of the cost difference between a zero emission bus and a standard conventional diesel bus equivalent of the same total passenger capacity, excluding optimism bias:

Year	Type	Zero Emission Vehicle Cost	Diesel Bus Equivalent Cost	Grant Request	Number Required	Total Grant Request
2022	Single Deck	[Redacted]	[Redacted]	[Redacted]	10	[Redacted]
2023	Single Deck	[Redacted]	[Redacted]	[Redacted]	10	[Redacted]
2024	Double Deck	[Redacted]	[Redacted]	[Redacted]	19	[Redacted]

	2022	2023	2024	2025-2038	Total
Bus capital and battery replacement costs	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Infrastructure capital costs	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

It is noted that some capital costs are high compared to costs in other similar proposals. The rural nature of North Yorkshire and the predominately interurban service routes, where buses are required to operate at a higher speed and for longer distances, mean that the buses are required to be fitted with opportunity charging capability in addition to overnight charging and supporting in depot and opportunity charging infrastructure required. Transdev has undertaken an international framework procurement which has selected [Redacted] as a preferred supplier. However in preparation for the ZEBRA business case and as this is evolving technology Transdev continue to engage with other framework suppliers such as [Redacted] to ensure value for money and to make sure latest standards are met. As part of the market engagement quotations were obtained and assessed on the grounds of cost and vehicle operational viability. Whilst there are more options available for single deck vehicles suitable for the interurban operation taking into account the required vehicle specification and pricing quotations from the market engagement for single deck vehicles the most suitable vehicle on the market [Redacted]

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Transdev already operate eight battery electric vehicles, which has offered them an excellent understanding which has been and will continue to be used to improve this proposal. Surplus capacity was built into the power supply when being upgraded for the current eight electric buses, meaning reduced costs for this proposal and providing enhanced value for money for this ZEBRA proposal. In addition the vehicles to be procured under this proposal will also use the existing bus station charging pantograph infrastructure being used by the vehicles, again reducing the costs of this proposal.

The Greener Buses Model shows a BCR of 1.96. The assessment of VfM categorisation is medium without taking into consideration any non-monetised benefits or risks and uncertainties. We assess that the non-monetised benefits increase the VfM category to high.

Monetised benefits incorporated into the Greener Buses Model include Carbon, NOx and PM2.5 emission savings together with operating and maintenance costs saved. There are monetised benefits not included in the Greener Buses Model including Carbon, NOx and PM2.5 emission savings in areas where existing vehicles will be cascaded to, plus the investment to the bus manufacturer which in turn will filter through to the supply chain network. The most significant non-monetised benefits are:

- The development of the next generation of zero emission double deck vehicles suitable for operation on interurban routes.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation

Other non-monetised benefits include a reduction in noise pollution, societal health benefits, increased power supply resilience and a unique research and development opportunity. Full details are available in section 3.5 below.

3.2 Greener Buses Model

Inputs used for the Greener Buses Model

Vehicles:

[Redacted

Diesel equivalent bus costs:

- Single deck replacement cost 2022 - [Redacted]
- Single deck replacement cost 2023 - [Redacted]
- Double deck replacement cost 2024 - [Redacted]

These costs are based on equivalent bus purchase costs [Redacted] Economic Case Annex 1. A weighted average cost of [Redacted], an average of the above two single deck replacement costs, has been used for the Single deck bus Do Minimum Fleet Replacement Costs section of the Greener Buses Model due to the availability of only one input cell.

New vehicle costs included in this proposal are also evidenced at Economic Case Annex 1. Warranty details are:

Item	Warranty Period
Basic Body	3 years / 300000 km
Basic chassis parts	3 years / 300000 km
Powertrain parts	5 years / 500000 km
Electrical control system	5 years / 500000 km
Battery (75% SOH guarantee)	7 years* / 490000 km

* Supplier standard, no additional cost is built in for the additional 2 years over the required 5 years. As such there is no additional cost to the ZEBRA scheme.

Also evidenced at Economic Case Annex 1. All future ongoing maintenance costs not covered by warranty will be the responsibility of and be funded by Transdev.

As detailed in section 2.1 of the Strategic Case, North Yorkshire's rurality means buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment and there is currently no suitable option for some routes. [Redacted

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Consideration has been given to the impacts of the super deduction announced in March 2021. [redacted]

Supporting Infrastructure:

[redacted]

Supporting evidence of infrastructure costs is available at Economic Case Annex 2 and Economic Case Annex 3.

[redacted]

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[redacted]

]

[redacted

]

- 2022/3 [redacted]
- 2023/4 [redacted]

The ongoing cost of [Redacted] per annum has been used in the Greener Buses Model rather than [redacted]

The model uses published BEIS forecasts for the cost and kg of CO₂ per kWh of electricity. Values are recommended as part of the Treasury's Green Book supplementary appraisal guidance on valuing energy use and greenhouse gas (GHG) emissions.

P/kWh Resource cost	default	£ P/kWh
Kgs of Co2 per kWh of electricity	default	Kg/Co2/kWh

The following assumptions have been included in the model:

[redacted]

Standard Greener Buses Model data sets have been used for all inputs with the following exceptions:]

- Average vehicle KM per year
- Average velocity

Average vehicle KM per year: As previously detailed in section 2.1 of the Strategic Case, North Yorkshire's rurality means buses are required to operate at a higher speed and for longer distances.

The average vehicle KM per year are therefore higher as a result. This higher mileage does not negatively impact the vehicle life span and remains at 17 years. Transdev has an established mid-life vehicle refurbishment and cascade plan which keeps vehicles as new and cascades vehicles that have operated on high mileage services to lower mileage services later in life.

The average KM of 96,401KM has been input into the model. This figure is obtained using data from operator fleet management systems using the current average mileage operated on the routes that the zero emission vehicles within with proposal will operate. These are:

Service	Annual KM	Total Vehicles	Per Bus KM
1	630,510	10	63,051
7	1,001,896	8	125,237
36	1,876,764	19	98,777
Minor routes	250,469	2	125,235
	3,759,639	39	96,401

Providing an overall average of 96,401KM

Average velocity: A similar approach has been used to calculate the 22.2 km/h, using data from operator fleet management systems using the current average mileage and scheduled hours operated on the routes that the zero emission vehicles within this proposal will operate. These are:

Service	Annual KM	Scheduled Hours	KM/h
1	630,510	41,756	15.1
7	1,001,896	36,170	27.7
36	1,876,764	80,895	23.2
Minor routes	250,469	10,796	23.2
	3,759,639	169,616	22.2

Providing an overall average of 22.2 km/h

Outputs from the Greener Buses Model

Benefits:

[redacted]

Costs:

[redacted]

]

BCR:

[redacted

]

This demonstrates:

- A positive BCR of 1.96

In addition:

- An average cost per bus of [redacted] - average single deck cost per bus [redacted] and average double cost per bus [redacted] (excluding ongoing battery replacement costs).
- An average infrastructure cost per bus of [redacted]

Sensitivity Testing

Sensitivity testing has been carried out for:

- Forecast ZEB vehicle mileage reduced/increased 10%
- Battery replacement costs decrease/increase 10%
- BSOG based sensitivity, BSOG remains at 6p (assuming base case assumption is 22p).
- Low and High Carbon values (in addition to central in base case)

The results are set out in the table below, with supporting Greener Buses Models provided to the Department for Transport alongside this business case.

[redacted]

]

3.3 Considerations of Uncertainties

There are risks and uncertainties that could impact delivery of benefits or costs.

As detailed in the project register at Management Case Annex 2 there are uncertainties around power supply and network distribution operator works and whilst mitigations are in place these remain at amber.

Risk/Uncertainty	Description and Consequence	RAG
Infrastructure cost changes	Firm quotations have been received, however, there is the potential once infrastructure works commence an uncertainty may arise for example the presence of other utilities necessitating diversion works in turn increasing costs. Initial discussions have taken place with the Distribution Network Operator to mitigate this, however until works commence uncertainty remains in place.	Amber

Sensitivity testing has been undertaken on this in addition to the DfT prescribed sensitivities:

- Infrastructure costs increase/decrease 10%

The results are in the table below:

[redacted]

]

As detailed in section 3.2 above the expected vehicle life span is 17 years.

Risk/Uncertainty	Description and Consequence	RAG
Change in expected vehicle life span	The vehicles will operate on high mileage routes. Life expectancy is based on existing zero emission vehicles within Transdev's fleet. This higher mileage does not negatively impact the vehicle life span. Transdev has an established mid-life cascade plan whereby vehicles are internally moved to different operational routes which keeps vehicles as new and cascades high mileage services to lower ones later in life. [redacted]	Green

Sensitivity testing has been undertaken on this in addition to the DfT prescribed sensitivities:

- Vehicle life span increase/decrease 2 years

The results are in the table below:

[redacted]

]

Sensitivity testing has also been undertaken using the Greener Bus Model default annual vehicle KM and default infrastructure maintenance costs. The results are in the table below:

[redacted

]

3.4 Considerations of Risks

Consideration of risks has been undertaken for the proposal with full details outlined in section 6.6 of the Management Case. A project risk register has been produced and is available at Management Case Annex 2, which documents the key technical/construction, costs, legal, stakeholder and programme risks together with their likelihood, impact and risk rating. Mitigations have also been considered followed by a post mitigation risk rating.

The table below details the top risks that could compromise delivery of benefits or costs together with mitigations identified:

						Risk Stage	PRE Mitigation Rating				Mitigation			POST Mitigation Rating				
ID	Date Raised	Type	Description and Consequences There is a risk that.....	Owner	Level	Stage	Current Controls	Likelihood	Impact	Score	Mitigation(s) with action by dates	Date Actioned	Likelihood	Impact	Score	Last Reviewed Date	Status	
Technical/Construction																		
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply		Low	High	3		Open	
Costs																		
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.		Low	High	3		Open	
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.		Low	High	3		Open	
Legal																		
15	26-Aug-21	Legal	Delays in agreeing SLA	NYCC	Project Board	Start-Up	Development of plan, understanding times needed for each stage	Medium	High	6	Consult with stakeholders and ensure SLA covers requirements of all parties		Low	High	3		Open	

Risks will be considered on an ongoing basis throughout the delivery of the proposal and a governance structure is in place for managing risks and issues. Full details of the governance structure is detailed in section 6.2 of the Management Case.

3.5 Non-Monetised Benefits

One of the most significant non-monetised benefit is the development of the next generation of zero emission double deck vehicles suitable for operation on interurban routes. The existing zero emission double deck bus options are much more suited to an urban environment, for example park and ride operations or city areas such as London or Manchester where vehicles operate at lower speeds. The nature of the bus passenger travel requirements in North Yorkshire mean buses are required to operate at a higher speed and for longer distances due to the interurban nature of the service routes. In addition, the longer distances mean that a higher specification interior is required compared to buses operating on solely urban routes, which adds additional weight to the vehicle. This in turn impacts on battery consumption. [redacted]

] This proposal will therefore provide significant added benefit to other double deck bus operators across the country operating longer distance services, at higher speed and with higher specification interior for which no suitable zero emission double deck vehicle is currently available.

In addition, this proposal will fully convert the first North Yorkshire bus depot to full electric bus operation. There will be 19 double deck buses, 20 single deck buses, with their operations having varying route lengths and operational terrain. The full conversion of a depot will provide the ZEBRA programme with a rare and unique opportunity to monitor and evaluate to ensure a better understanding of such a significant conversion and subsequent information will be available for other operators and local authorities to learn from.

Converting over 90% of the market in the defined area to operation using zero emission buses will also have the following community benefits:

Social

Transdev has an established apprentice scheme which will now include training on electric vehicle maintenance. The proposal will also consider making charging equipment available commercially to other businesses while not required for charging buses.

There are also associated power supply resilience improvements with investment in the electrical capacity.

Economic

Transdev has an established apprenticeship scheme which will now include training on electric vehicle maintenance. From 2021 the apprenticeship programme has evolved to cover both mechanical and electrical aspects with a particular focus on hybrid and zero emission technology. Engineering technicians will work on all systems of the vehicles in respect of their specific trade. The scheme ranges from performing simple tasks, like replacing a part, to solving complex faults often using diagnostic equipment. Examples of units covered in this apprenticeship are:

- Conducting the inspection of buses/coaches
- Contributing to safe working practices in Bus/Coach Engineering and Maintenance
- Carrying out scheduled electrical maintenance
- Diagnosing and repairing electrical & mechanical faults in bus/coach systems and components
- Carrying out scheduled electrical & mechanical maintenance on buses/coaches

This proposal directly supports job creation/protection, as labour is required to plan, in-install, maintain and manage the charge points and supporting infrastructure.

Provision of a network of zero emission Transdev fleet across Harrogate and Knaresborough will support leisure and tourism. Multiple districts and stakeholders have raised the impact on tourism due to the current lack of EV charge points in North Yorkshire.

Depending on the commercial and delivery model for EV charge points, there is the potential for local businesses to financially benefit from Transdev's commitment to considering making charging equipment available commercially to other businesses while not required for charging buses.

Air Quality

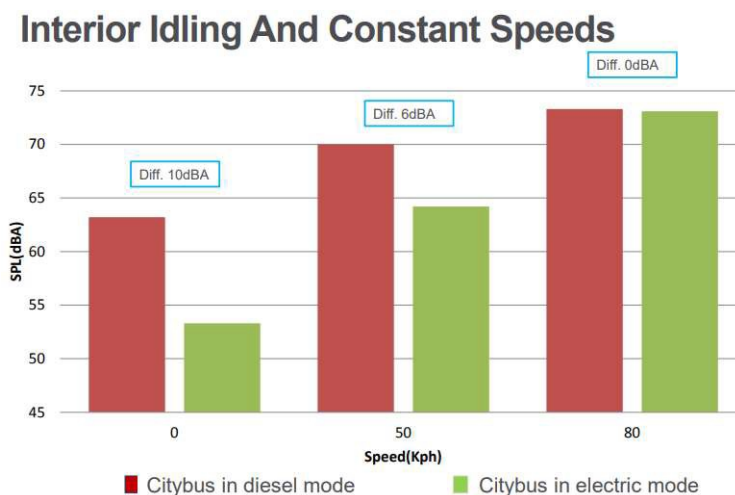
This funding will accelerate improved air quality, with zero emission vehicles that produce zero tail pipe emissions. This proposal will deliver air quality benefits, benefiting the environment and the general health of the North Yorkshire population – in alignment with the North Yorkshire Draft Air Quality Strategy (2020). The current carbon impact of the diesel vehicles is an average 1282g CO₂ per km compared to 438g per km for comparable emission electric vehicles.

Health

Improved air quality has associated improvements to the health due and as such will lead to improvements in the general health local residents and of the North Yorkshire population and visitors who visit Harrogate and Knaresborough. [Health matters: air pollution - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/health-matters-air-pollution) states “Poor air quality is the largest environmental risk to public health in the UK, as long-term exposure to air pollution can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy.” And “The UK Health Forum and Imperial College London, in collaboration with and funded by Public Health England (PHE), developed a modelling framework and estimated that a 1 µg/m³ reduction in fine particulate air pollution in England could prevent around 50,900 cases of coronary heart disease, 16,500 strokes, 9,300 cases of asthma and 4,200 lung cancers over an 18 year period.”

Environmental

Reduced noise pollution. This funding will deliver environmental benefits and accelerate the benefits of decarbonisation, benefiting the environment – in alignment with the North Yorkshire Draft Air Quality Strategy (2020). [Electric buses and noise \(bullernatverket.se\)](#) confirms a 6dBA difference in exterior take-off noise (what is heard when standing at a bus stop) between a diesel intercity bus and an electric city bus and the following differences at interior idling and constant speeds:



The benefits above all help deliver the LEPs vision for York and North Yorkshire to become England’s first carbon negative region.

3.6 Summary - Value for Money

The Green Buses Model shows a BCR of 1.96. The assessment of VfM categorisation is medium without taking into consideration any non-monetised benefits or risks and uncertainties, for example carbon NOx and PM2.5 emissions savings due to cascading 17 vehicles from Harrogate to Blackburn and Burnley replacing Euro 2 and Euro 3 diesel buses currently operating. Taking non-monetised benefits into account is likely to provide high VfM assessment.

The following table provides an overview of the monetised and non-monetised benefits:

	Monetised Benefit	Monetised Benefit (not included in Greener Buses Model)	Non-monetised Benefit
Environment	Carbon emissions saved NOx emissions saved PM2.5 emissions saved	Emission savings due to cascading 17 vehicles from Harrogate to Blackburn and Burnley replacing Euro 2 and Euro 3 buses: Carbon emissions NOx emissions PM2.5 emissions	Reduced noise pollution
Society			Health benefits from improved air quality Apprentices benefiting from training on electric vehicles
Business	Operating costs saved Maintenance costs saved	[Redacted]	Increased power supply resilience

]	
Government			Research and development of a new generation of zero emission double deck vehicles suitable for interurban operation

Risks and uncertainties have been identified and appropriate mitigations put in place. Risks will be considered on an ongoing basis throughout the life of the delivery of the proposal and a governance structure is in place for managing risks and issues.

Economic Case Annexes

Economic Case Annex 1

[redacted]

[redacted]

[redacted]

]

4.0 Commercial Case

4.1 Overview

The council contacted all local bus service operators in the county enquiring of their interest in submitting the required operator information for inclusion in an Expression of Interest submission. The council also had a good understanding of the county's local bus operator's preparedness for transitioning to zero emission bus fleets from recently commissioned consultants work and also as part of regular dialogue with operators. The preferred option is to fully convert Transdev Harrogate fleet to 100% zero emission vehicles. This option is in line both with North Yorkshire's roadmap, set out in the North Yorkshire Bus Service Improvement Plan, outlining the county's strategy to transition to zero emission vehicles and Transdev's ambitions to convert their Harrogate depot to full electric operation.

Market engagement has taken place with a range of suppliers including different bus manufacturers and a full review of the distribution network operators has been undertaken.

[redacted

]

4.2 Commercial Strategy

Options Considered:

During March 2021 North Yorkshire County Council commissioned consultants to investigate and understand the county's local bus operators preparedness for transitioning to zero emission bus fleets. The six largest operators, representing approximately 95% of the public transport network in North Yorkshire, two of which operate in the defined area, were notified of commissioned work and were asked to take part in a consultation meeting to share their fleet renewal plans, their understanding of zero emission bus technology and any particular challenges or obstacles they could foresee in the deployment of zero emission buses in their fleets. In summary the operator feedback was:

[redacted

]

After announcement of the DfT ZEBRA programme and funding opportunity the council contacted all local bus service operators in the county, over 20 in total, notifying them of the funding opportunity and

asking them to let the council know if they had interest in submitting the required operator information for inclusion in an Expression of Interest submission. A handful of operator responses were received but none were suitable for taking forward into a final submission. Reasons including submitting requests to include minibuses, which the guidance confirmed would not be accepted and just requesting funding but being unable to provide any further details such as infrastructure requirements and evidence requirements of the scheme such as engagement with an energy company.

As part of regular dialogue with operators, the council was already aware of Transdev's ambitions to transition their Harrogate depot to 100% zero emission operations. [redacted

] After careful consideration of all the options, and taking into consideration:

- The objectives as outlined in section 2.4 of the Strategic Case
- The presence of air quality management areas of which bus emissions contribute to the source apportionment in all four areas
- The roadmap outlining the county's strategy to transition to zero emission vehicles
- Transdev's ability to meet the operator funding contribution requirements
- Transdev's previous experience in procuring and operating battery electric buses

The preferred option for submission was to submit proposals to transition 100% of Transdev's Harrogate fleet to zero emission vehicles.

Given the comments of North Yorkshire's smaller operators, as outlined above, we also welcome and look forward to learning from best practice delivery by other ZEBRA proposals that include upgrading smaller operators' fleets, particularly where this has involved leasing and financing options. The council has committed to investigating how assistance can be given to smaller operators and as part of its Bus Service Improvement Plan has committed to supporting those operators; for example by investigating whether solar panels are a feasible solution to address the problems smaller operators with remote depots have in getting a suitable electrical supply to their depots.

Preferred option:

The preferred option is to fully convert Transdev Harrogate fleet to 100% zero emission vehicles. This option is in line both with North Yorkshire's roadmap, set out in the North Yorkshire Bus Service Improvement Plan, outlining the county's strategy to transition to zero emission vehicles and Transdev's ambitions to convert their Harrogate depot to full electric operation. It enables the proposal to build on Transdev's previous experience, with the company already operating eight battery electric vehicles. As such they are experienced in the procurement and operation of electric vehicles and the proposal will benefit from this experience and lessons to be learnt from the same. In addition there is existing infrastructure in place which supports the charging of these eight vehicles, which will also support the vehicles to be procured under this proposal. As part of the grid upgrade works for the existing eight vehicles additional capacity was included which will now be utilised in Harrogate bus station to support the 2 additional pantograph chargers at this location. This option minimises the commercial risk both in terms of cost and delivery.

[redacted

]

The following will be procured as part of this proposal:

- 20 single deck [redacted] battery electric buses and 19 double deck [redacted battery electric buses. Opportunity charging facility will be included for 10 of

the single deck vehicles and all 19 of the double deck vehicles. [redacted]

- Supporting infrastructure requirements for inclusion in the proposal:
 - Point of connection for 1.8MVA, sufficient to support the full depot charging requirements
 - Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
 - [redacted] either AC or DC charging
 - Installation of [redacted]
- 2 additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current 8 electric buses

Transdev’s previous experience in purchasing and operating eight vehicles plus installing and maintaining supporting charging infrastructure demonstrates capability and skills by the operator to deliver these proposals. Details of key council staff along with their roles, responsibilities and relevant experience is included within the Management Case.

Grant Payments

The council has obtained external legal advice, which includes assurance of compliance with subsidy control rules. The full advice is at Commercial Case Annex 2. Release of the grant will be staged and coordinate with the procurement of the various elements of the proposal delivery. It should be noted that Transdev are contributing 63% of the proposal costs themselves. Transdev will be required to provide evidence of any payment made to suppliers to support each grant payment made. The provisional schedule for releasing grant payments is:

	Supplier Appointed and Order submitted	Delivery
Buses	0%	100%
Infrastructure: Charge points	0%	100%
Infrastructure: Power supply and network distribution operator works	0%	100%

Transdev has undertaken an international framework procurement which has selected [redacted] as a preferred supplier. However in preparation for the ZEBRA business case and as this is evolving technology Transdev continue to engage with other framework suppliers [redacted] to ensure value for money and to make sure latest standards are met. At each stage a mini competition will take place to refine costings and range capabilities.

4.3 Outline Procurement Strategy and Market Engagement

The Council’s [Procurement and Contract Management Strategy](#) states “Working collaboratively to deliver efficiencies, value for money and sustainable quality through a proactive commercial approach to procurement and commissioning for the communities of North Yorkshire.”

The key procurement outputs and activities are:

- Bus Procurement - 39 zero emission buses:
 - 20 battery electric single deck
 - 19 battery electric double deck
- Infrastructure Procurement:
 - Point of connection for 1.8MVA, sufficient to support the full depot charging requirements
 - Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
 - [redacted] suitable for either AC or DC charging
 - Installation of [redacted]
- 2 additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current 8 electric buses

One procurement option is for the council to purchase the buses and lease them to Transdev. The council has an experienced procurement team and well established procurement plans and approval process. This option would result in the council incurring additional costs in terms of staff resourcing and the council has not to date purchased any battery electric buses and as such has no expertise in this area so an unnecessary project risk is introduced with this option. There are benefits to allowing Transdev to undertake the procurement of the vehicles themselves. Transdev are experienced, both in the UK and wider, in procuring both electric vehicles and charging infrastructure. This includes at local level as evidenced by the eight electric vehicles and supporting charging infrastructure already in place. In addition this will enable advantage to be taken of corporate group bulk procurement opportunity that in isolation the council would be unable to match. [redacted

]

Taking all of this experience into consideration the procurement route will be via our partner Transdev. It is worth highlighting at this point that Transdev are contributing 63% of the proposal costs and therefore have high incentive to secure best value through procurement of both buses and infrastructure.

Transdev have a corporate procurement strategy which details:

- Needs assessment
- Initial engagement and shortlisting
- Invitation to tender and confirmation of requirements
- Appoint preferred supplier – negotiations and contract award
- Contract management

[redacted

] Transdev are in a better position than the council to manage this responsibility given their experience in already procuring and operating this type of vehicle. Similarly charging infrastructure has already been procured and installed by Transdev, given this experience they are in the best position to procure and arrange third party point of connection and infrastructure installation. Electrical supply costs will also be the full responsibility of Transdev.

Transdev is a public limited company with a Board of Directors, jointly owned by the Caisse des Dépôts Group (66%) and the RETHMANN Group (34%).

The economic, social and environmental factors outlined in the strategic case and economic case will be secured through a service level agreement with Transdev. In addition, this will include clearly defined requirements and obligations expected of Transdev and in turn of their suppliers. There will be a detailed section on grant funding with inclusion of a clawback clause in the event of any unspent funds. Work on this has already commenced, with outline heads of terms:

- Procurement, including a requirement to meet the specifications at section 4.2 below and defined period over which the procurement must take place:
 - Bus Procurement - 39 zero emission buses:
 - 20 battery electric single deck zero emission vehicles*
 - 19 battery electric double deck zero emission vehicles*
 - Infrastructure Procurement:
 - Point of connection for 1.8MVA, , sufficient to support the full depot charging requirements
 - Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
 - [redacted] suitable for either AC or DC charging
 - Installation of [redacted]
 - Two additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current eight electric buses
- Procurement must be carried out in an open and transparent basis, in line with council procurement and contract management aims and objectives
- Appropriate warranties should be included to provide mitigation
- A defined period of ZEBRA scheme timeframe plus five years over which the operator will operate the zero emission vehicles along with route and coverage information
- A defined period over which the operator will utilise and maintain the infrastructure funded through the proposal
- The vehicles and infrastructure will be managed and maintained to the manufacturer and usual industry standards
- A commitment that staff of the appropriate capability and skills will work on the delivery of the proposal throughout the life of the service level agreement
- How the economic, social and environmental factors will be secured
- Full participation in the Monitoring and Evaluation plan as set out in the Management Case Annex 3, along with defined data collection and reporting requirements
- Confirmation that the grant funding:
 - Will meet the scheme criteria of DfT contribution of up to 75% of the cost difference between a zero emission bus and a standard conventional diesel bus equivalent of the same total passenger capacity must not be used for any elements over and above that agreed in the defined specifications

- o Any unspent element, must returned to the council (though the funds will be held and paid to Transdev on vehicle delivery/infrastructure installation)
- o Will not cover maintenance and repairs, including replacement batteries, and are the responsibility of the operator
- o Will not cover power costs incurred and are the responsibility of the operator
- o Will not cover costs associated with delivery delays or cost increases and these are the operator's responsibility
- Inclusion of a clawback clause in the event of any unspent funds
- The operator understands the terms and conditions of the ZEBRA funding and agrees to be binded by them.

* The zero emission vehicles will offer a high standard of customer experience. The vehicles will be manufactured to the required standards of The Public Service Vehicles Accessibility Regulations 2000. The vehicles will also be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheel chair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops.

Market Engagement and Procurement – Infrastructure

Best options in terms of a power procurement strategy have been considered and this includes sizing the connection to future proof the site and avoid higher energy costs. A full review of the distribution network operators has been undertaken benchmarking all offers. [redacted

]

Infrastructure procurement options have been considered, including direct or third party procurement. The council has not to date installed any supporting infrastructure for battery electric buses, and as such has no expertise in this area. Given the specialisms involved, appointing a third party will provide skills, experience and capacity to deliver the project so introducing an unnecessary risk to the project is avoid compared to the council delivering this aspect. [redacted

]

A full appraisal has been undertaken of the supporting infrastructure required to support the operation of the proposed 39 new electric vehicles. This has included full analysis of the vehicle operational running boards, bus model options and charging constraints. This has concluded the following supporting infrastructure requirements for inclusion in the proposal:

- Point of connection for 1.8MVA, sufficient to support the full depot charging requirements
- Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
- [redacted] suitable for either AC or DC charging
- Installation of [redacted

]

- Two additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current eight electric buses

The 20 depot chargers allow two buses to be charged at once, and as such the 39 vehicles will be specified with charging points on both sides. This provides cost effectiveness, along with ensuring minimal impact of parking availability. The two additional pantograph chargers at Harrogate bus station are required to provide additional opportunity charging for buses when operating on routes where overnight charging will not be sufficient to power the vehicle over the service operation. These two additional pantograph chargers will complement the three already installed at Harrogate bus station.

A cost breakdown and phasing is provided at Economic Case Annex 2.

Key milestones for delivery:

<u>Governance, Meetings and Management</u>	
March 2022	Successful ZEBRA bidders announcement
April 2022	Finalise and sign off SLA with operator partner
December 2022, March 2023 and March 2024	Grant payments to operator partner (tranches)
<u>Point of Connection</u>	
April 2022	Internal approvals
May 2022	Contract finalisation and signing
July 2022	Sign off
<u>Infrastructure Procurement and Installation</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
December 2022, March 2023 and March 2024	Available for vehicle charging
<u>Bus Procurement and Deliver</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
January 2023, March 2023 and March 2024	In service delivery commences
<u>Removal of Diesel Infrastructure</u>	
May 2024	Internal approval to remove
June 2024	Identify and appoint contractor
February 2025	Sign off

Market Engagement and Procurement - Vehicles

Transdev already operate eight zero emission vehicles. These vehicles are battery electric with overnight and daytime opportunity. As such they are experienced in engaging with bus manufacturers for the vehicle types required as part of this proposal. In addition they were the first UK operators of opportunity charging buses to managing charging capacity as so experienced in this area.

Transdev has undertaken an international framework procurement, evaluated and option appraised using a combination of price and quality, which has selected [redacted] as a preferred supplier. However in preparation for the ZEBRA business case and as this is evolving technology Transdev continue to engage with other framework suppliers such as [redacted] to ensure value for money and to make sure latest standards are met. As part of the market engagement quotations were obtained and assessed on the grounds of cost and vehicle operational viability. Whilst there are more options available for single deck vehicles suitable for the interurban operation taking into account the required vehicle specification and pricing quotations from the market engagement for single deck vehicles the most suitable vehicle on the market [redacted

]

Having demonstrated and modelled the vehicles against operating schedules 10 vehicles can operate without the need for opportunity charging during daytime operation. In total 20 single deck vehicles will be procured as part of this proposal.

The high patronage numbers of service route 36 means 19 double deck vehicles will be procured as part of this proposal. As previously detailed in the section 2.1 of the Strategic Case, the existing zero emission double deck bus options are also much more suited to an urban environment of park and ride or city bus operations. A different double deck zero emission vehicle is required for this proposal, capable of operating above 40mph and covering a mileage of up to 350 miles per day. As part of the market engagement the bus manufacturers detailed in the previous paragraph were engaged with. Double deck battery electric vehicle suited to this interurban operation or not available. [redacted

], this proposal directly aligns with the ZEBRA programme's two objectives:

- To support bus manufacturers in the development of zero emission bus technology.
- To understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for Zero Emission Buses.

[redacted

]

Financing

[redacted

]

The option of the council to purchase the buses and leasing them to Transdev was rejected as the council is not experienced in procurement of these vehicles, which means introducing an unnecessary risk to the proposal delivery and the bulk purchasing opportunity would be missed. [redacted

]

[redacted

]

4.4 Specification

The objectives of this proposal are:

- Improve air quality
- Accelerate decarbonisation of the North Yorkshire public transport network
- Improving transport for the user
- Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

The outputs and outcomes against those objectives are detailed in the table below:

Objective	Output	Outcome
Improve Air Quality	Reduction in NO ₂ in local AQMA areas	39 zebs introduced on 4 AQMAs by 2024
Accelerate decarbonisation of the North Yorkshire public transport network	Increase number of ZEBs on bus routes operating in Harrogate/Knaresborough	90% of Harrogate network operated with ZEBs by 2024
Improving transport for the user	Improve customer experience, particularly for those group of people with protected characteristics	Increase number of passengers travelling on ZEBs
		Increase % passengers satisfied with PT
		Increase the number of buses with enhanced PSVAR specification
Supporting the council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth	Invest in UK businesses and upgrade skills of employees, particularly in North Yorkshire	[Redacted]
		12 apprentices enrolled by 2024 by Transdev

Vehicles specified for the proposal:

- 20 [redacted]] single deck vehicles
- 19 [redacted]] double deck vehicles

Vehicle specifications are:

Service	1	7	36
Type	Single Deck	Single Deck	Double Deck
Length	12m	12m	10.8m
Passenger Capacity	c40 seats + standing	c40 seats + standing	C60 seats + standing with 2+1 seating
Fuel	Battery	Battery	Battery
Battery Capacity	348kwh	348kwh	457kwh
Opportunity Charging	No	Yes	Yes
Battery Life	[redacted]		
Vehicle Range	c160m	c160m	c250m
Cost	[redacted]	[Redacted]	[Redacted]

Warranty details are:

Item	Warranty Period
Basic Body	3 years / 300000 km
Basic chassis parts	3 years / 300000 km
Powertrain parts	5 years / 500000 km
Electrical control system	5 years / 500000 km
Battery (75% SOH guarantee)	7 years* / 490000 km

* Supplier standard, no additional cost is built in for the additional 2 years over the required 5 years. As such there is no additional cost to the ZEBRA scheme.

The vehicles will be manufactured to the required standards of The Public Service Vehicles Accessibility Regulations 2000. In addition the vehicles will be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheelchair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops. Delivery of the requirements will be included in the service level agreement between the council and Transdev as detailed at section 4.3 above.

Infrastructure specified for proposal:

- Point of connection for 1.8MVA, sufficient to support the full depot charging requirements
- Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
- [redacted]] for either AC or DC charging
- Installation of [redacted]

- two additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current eight electric buses

Consideration of the impact on groups of people with protected characteristics has been considered. A full equalities impact assessment is contained at the end of this business case. In summary, whilst the identified impacts are positive for a number of groups of people with protected characteristics, one potential negative impact has been identified. As electric vehicles are quieter than combustion engine alternatives, there is the potential for an adverse impact to blind and partially sighted people.

The proposal is likely to deliver a number of positive impacts to a number of groups of people with protected characteristics. The council will work with local bus operators that already operate such vehicles to identify if the potential adverse impact identified is likely to materialise and if so the council will work with the preferred bus operator partner to identify evaluate the benefits of interventions to address this adverse impact, for example including artificial bus noise on the vehicles.

4.5 Capability and Skills of the Team Delivering the Proposal

Detail of the project team and their roles and responsibilities is available in section 6.2 of the Management Case. Expertise is as follows:

North Yorkshire County Council	<ul style="list-style-type: none"> □ Governance and project management □ Financial and grant management □ Legal compliance and SLA development □ Equality impact assessment □ Monitoring and evaluation
Transdev	<ul style="list-style-type: none"> □ Procurement □ Vehicle maintenance and operation □ Infrastructure maintenance and operation □ Marketing

4.6 Risk Allocation, Apportionment and Transfer

Consideration of risks has been undertaken for the proposal with full details outlined in section 6.6 of the Management Case. A project risk register has been produced which documents the key technical/construction, costs, legal, stakeholder and programme risks together with their likelihood, impact and risk rating. Mitigations have also been considered followed by a post mitigation risk rating.

The table below details the top risks that could compromise delivery of benefits or costs together with mitigations identified:

ID	Date Raised	Type	Description and Consequences <small>There is a risk that.....</small>	Owner	Level	Risk Stage	PRE-Mitigation Rating			Mitigation			POST Mitigation Rating			Last Reviewed Date	Status
							Current Controls	Likelihood	Impact	Score	Mitigation(s) with action by dates	Date Actioned	Likelihood	Impact	Score		
Technical/Construction																	
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply		Low	High	3	Open	
Costs																	
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Further testing is undertaken to identify presence of any obstructing utilities. Project 1 is a range of temporary battery storage as interim measure pending permanent status confirmation.		Low	High	3	Open	
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.		Low	High	3	Open	
Legal																	
15	26-Aug-21	Legal	Delays in agreeing SLA	NYCC	Project Board	Start-Up	Development of plan, understanding times needed for each stage	Medium	High	6	Consult with stakeholders and ensure SLA covers requirements of all parties		Low	High	3	Open	

Risks will be considered on an ongoing basis throughout the delivery of the proposal and a governance structure is in place for managing risks and issues.

These top risks have been allocated for management as follows:

Risk Description and Consequence	Owner	Risk Approach	Mitigation(s)
Power supply configuration issues	Transdev	Treat	Initial discussions have taken place with provider. Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply.
Presence of other utilities necessitating diversion works	Transdev	Treat	Initial discussions have taken place with Distribution Network Operator. Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.
Operator match funding arrangements change	North Yorkshire County Council	Tolerate	Letter of support confirming financial commitment. Early engagement with operator and SLA confirming funding requirements to be established.
Delays in agreeing SLA	North Yorkshire County Council	Tolerate	Development of plan, understanding times needed for each stage. Consult with stakeholders and ensure SLA covers requirements of all parties.

4.7 Marketing Strategy

A robust marketing plan has been prepared and is attached at Commercial Case Annex 1. The plan covers the period from prelaunch to 2 years following the third phase of zero emission buses commencing operation. The purpose of the marketing plan is to raise awareness, encourage use of the services and zero emission buses leading to new passengers using the service and increased passenger journey frequency.

The plan identifies:

- Target audiences
- Marketing tools
- Key marketing strategies
- Evaluation

A separate Communications Plan has been prepared see Management Case section 6.5.

4.8 Procurement, Subsidy Control and TCA Compliance

North Yorkshire County Council has commissioned independent legal advice [redacted]. The full advice is at Commercial Case Annex 2. The advice states “we would regard the support proposed as fully compliant with the TCA Subsidy Control Regime.”

Commercial Case Annexes

Commercial Case Annex 1

Marketing Plan

Project Name:	ZEBRA		
Project Reference:		Document Author:	Cathy Knight
Project Sponsor:	Michael Leah	Project Manager:	Cathy Knight

1 PURPOSE OF THE MARKETING PLAN

The purpose of the marketing plan is to raise awareness, encourage use of the services and zero emission buses leading to new passengers using the service and increased passenger journey frequency:



This will be undertaken prior to first operation of the new vehicles, the prelaunch phase, to build anticipation. Marketing will continue throughout ZEBRA proposal delivery and be continued for 2 years following the last new vehicles commencing operation to ensure the marketing is embedded and any new passenger usage and increased passenger journey numbers sustained long term.

2 BUDGET

An indicative budget of [redacted] per annum is allocated for marketing. Transdev have confirmed they will fund these ongoing revenue costs as further local contributions to the proposal.

* This is based on the budget for the initial eight electric buses grossed up to the full network.

3 TARGET AUDIENCES

- Current passengers
- Potential new customers
- Older people and groups of people with disabilities
- Young people
- Area employers
- Environmental groups

4 MARKETING TOOLS

The following tools will be used as part of marketing the ZEBRA buses and services:

- Social media
- YouTube
- Websites
- TransdevGo app
- Offers and incentives eg free taster tickets
- Distinctive vehicle branding
- Door to door mailings

5 KEY MARKETING STRATEGIES AND MESSAGING

The following marketing strategies will be prioritised: _

Current passengers

- Keep informed about new buses and environmental benefits to encourage more frequent use.
- Build local ownership.
- Engage through social media, TransdevGo app and distinctive vehicle branding.

Potential new customers

- Target market segments to raise awareness of new buses and environmental benefits to encourage first use, followed by repeat use.
- Build confidence in bus usage.
- Engage through social media, websites, door to door mailings and distinctive vehicle branding. Offers and incentives eg free taster tickets to be used on a targeted basis to make best use of resources.

Older people and groups of people with disabilities

- Keep informed about new buses and enhanced accessibility features to encourage new customers or more frequent use by existing customers
- Build confidence in new buses and accessibility features
- Engage through social media, websites, information in accessible formats as required, engage with disability and older people groups

Young people

- Raise awareness of new buses and environmental benefits to encourage first use, followed by repeat use.
- Build confidence in bus usage.
- Engage through social media, websites and YouTube. Engage with young people and youth groups and strengthen partnerships with educational institutions.

Area employers

- Target local employers to raise awareness of new buses and environmental benefits to encourage first use, followed by repeat use by their employees.
- Engage with employers direct and through business organisations. Offers and incentives eg free taster tickets for employees to be used on a targeted basis to make best use of resources.

Environmental groups

- Target bespoke groups to raise awareness of new buses and environmental benefits to encourage them to deliver secondary marketing activity.
- Engage with organisations direct.

6 EVALUATION

- Hits on website page
- Monitoring patronage use trends on the services
- Engagement on social media
- Feedback from customers and organisations

[redacted]

]

5.0 Financial Case

5.1 Overview

The total proposal costs are £21,099,210 with DfT ZEBRA funding sought for £7,800,393 and third party contribution of £13,298,817. Third party contribution will fund 63% of the proposal cost. The table below details the proposal funding sources:

	2022	2023	2024	2025-2038	Total	% Contribution
Transdev Local Contribution	[redacted]	[redacted]	[redacted]	[redacted]	£13,298,817	63%
DfT ZEBRA Funding	[redacted]	[redacted]	[redacted]	[redacted]	£7,800,393	37%
Total	[redacted]	[redacted]	[redacted]	[redacted]	£21,099,210	100%

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

The summary table below provides a more detailed breakdown:

[redacted]

]

5.2 Proposal Summary

Optimism bias has been included in the Greener Buses Model and an allowance of [Redacted] for contingency has been included in the infrastructure costs.

Cost changes from the Express of Interest to Full Business Case:

Expression of Interest	Phase 2 – Full Business Case
------------------------	------------------------------

<ul style="list-style-type: none"> □ Cost of vehicles – [redacted (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck □ 19 double deck 	<ul style="list-style-type: none"> □ Cost of vehicles – [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) □ 20 single deck (10 with op charge, 10 without) □ 19 double deck (with op charge) □ Battery replacement costs [redacted]
<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution) 	<ul style="list-style-type: none"> □ Cost of Infrastructure [redacted] (of which [redacted] DfT funding sought, [redacted] third party contribution)
<ul style="list-style-type: none"> □ Proposal Cost £19,925,000 □ ZEBRA funding ask £8,396,250 □ Third party funding £11,528,750 	<ul style="list-style-type: none"> □ Proposal Cost £21,099,210 □ ZEBRA funding ask £7,800,394 □ Third party funding £13,298,818

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

The reasons for these changes are:

- Better value vehicle costs have now been obtained and agreed, but this does require higher infrastructure costs.
- Battery replacements costs, whilst considered and costed at Expression of Interest stage had not previously been detailed in cost breakdowns at Expression of Interest stage.
- At Expression of Interest stage no provision was made for variations in infrastructure cost due to identified uncertainties. An allowance of [redacted] for contingency as part of the infrastructure costs has now been included which is approximately 3.5% of the total infrastructure costs (calculated using quantitative risk analysis)

Whilst the overall change represents a £1,174,210 cost increase in the overall proposal costs, there is a reduction of £595,856 ZEBRA funding ask and an increase of £1,770,068 third party funding as such provider better value to the ZEBRA scheme.

It is acknowledged that the ZEBRA funding will not cover costs associated with delivery delays or cost increases. As detailed in section 4.3 of the Commercial Case a full service level agreement will be in place with Transdev, which will include amongst other things:

- Confirmation that the grant funding:
 - Will meet the scheme criteria of DfT contribution of up to 75% of the cost difference between a zero emission bus and a standard conventional diesel bus equivalent of the same total passenger capacity must not be used for any elements over and above that agreed in the defined specifications
 - Any unspent element, must returned to the council
 - Will not cover maintenance and repairs, including replacement batteries, and are the responsibility of the operator
 - Will not cover power costs incurred and are the responsibility of the operator
 - Will not cover costs associated with delivery delays or cost increases and these are the operator's responsibility
- Inclusion of a clawback clause in the event of any unspent funds
- The operator understands the terms and conditions of the ZEBRA funding and agrees to be bound by them.

Transdev also confirm they accept responsibility should there be any cost overruns in their letter of support at Financial Case Annex 1.

Capital Costs

The table below details the capital costs of the proposal together with funding sources:

	2022	2023	2024	Total
Bus capital costs	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Infrastructure capital costs	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Revenue Costs

	2025-2038	Total
Battery replacement costs	[Redacted]	[Redacted]

[redacted]

]

Additionally, there are costs for vehicle maintenance, infrastructure maintenance and electric supply costs. These will be covered by Transdev as further local contributions to the proposal.

A written statement of support from Transdev confirming their commitment to the proposal and their third party funding contribution is available at Financial Case Annex 1.

Detailed Breakdowns

Bus Capital Costs:

	Cost per Vehicle	2022	2023	2024	Total
Single Deck – commence service	-	10	10	0	20
Single Deck	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
ZEBRA Grant	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Transdev funding	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Double Deck – commence service	-	0	0	19	19
Double Deck	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
ZEBRA Grant	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Transdev funding	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

The above figures match the Greener Buses Model. Rounding impacts numbers by £1-2.

Calculation of ZEBRA Grant (Buses only):

The ZEBRA funding request per vehicle complies with the scheme criteria of DfT contribution of up to 75% of the cost difference between a zero emission bus and a standard conventional diesel bus equivalent of the same total passenger capacity, excluding optimism bias:

Year	Type	Zero Emission Vehicle Cost	Diesel Bus Equivalent Cost	Grant Request	Number Required	Total Grant Request
2022	Single Deck	[Redacted]	[Redacted]	[Redacted]	10	[Redacted]
2023	Single Deck	[Redacted]	[Redacted]	[Redacted]	10	[Redacted]
2024	Double Deck	[Redacted]	[Redacted]	[Redacted]	19	[Redacted]

These costs are evidenced at Economic Case Annex 1. It is noted that the capital bus costs are high compared to bus costs in other proposals. The rural nature of North Yorkshire and the predominately interurban service routes, where buses are required to operate at a higher speed and for longer distances, mean that the buses are required to be fitted with opportunity charging capability in addition to overnight charging. In addition, the longer distances mean that a higher specification interior is required compared to buses operating on solely urban routes, more comfortable seating for example. The cost difference between the two single deck options is the vehicles required for operation on service 1 do not require opportunity charging equipment.

Vehicle specifications are:

Service	1	7	36
Type	Single Deck	Single Deck	Double Deck
Length	12m	12m	10.8m
Passenger Capacity	c40 seats + standing	c40 seats + standing	C60 seats + standing with 2+1 seating
Fuel	Battery	Battery	Battery
Battery Capacity	348kwh	348kwh	457kwh
Opportunity Charging	No	Yes	Yes
Battery Life	[Redacted]		
Vehicle Range	c160m	c160m	c250m
Cost	[Redacted]	[Redacted]	[Redacted]

Transdev has undertaken an international framework procurement which has selected [Redacted] as a preferred supplier. However in preparation for the ZEBRA business case and as this is evolving technology Transdev continue to engage with other framework suppliers such as [Redacted] to ensure value for money and to make sure latest standards are met. As part of the market engagement quotations were obtained and assessed on the grounds of cost and vehicle operational viability. Whilst there are more options available for single deck vehicles suitable for the interurban operation taking into account the required vehicle specification and pricing quotations from the market engagement for single deck vehicles the most suitable vehicle on the market was [Redacted] due to its range capability and its ability to meet Transdev's specification for interurban buses. However, this is a rapidly developing area of the bus market and Transdev are prepared to hold a mini competition to ensure that value for money is still being achieved and no significant specification or different price points are available since the market engagement exercise.

Infrastructure Capital Costs:

	2022	2023	2024	Total
Point of Connection and HV works	[Redacted]	[Redacted]	[Redacted]	[Redacted]
On site high voltage work	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Main LV panels	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Vehicle chargers	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Pantographs (2 x inverted assemblies and 600kw charging unit)	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Pantograph installation	[Redacted]	[Redacted]	[Redacted]	[Redacted]
EV charging systems, comms and software	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Other items	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Contingency	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Totals	[Redacted]	[Redacted]	[Redacted]	[Redacted]

As detailed in the table above a contingency amount of [Redacted], circa 3.5% has been included in the infrastructure costs (calculated using quantitative risk analysis). [Redacted]

]

Ongoing bus and infrastructure revenue costs are forecast as follows:

Ongoing Bus Revenue Costs	2022	2023	2024
[Redacted]	[Redacted]	[Redacted]	[Redacted]
Energy	[Redacted]	[Redacted]	[Redacted]
Engineering	[Redacted]	[Redacted]	[Redacted]
Savings BSOG	[Redacted]	[Redacted]	[Redacted]
Total	[Redacted]	[Redacted]	[Redacted]

[Redacted

]

[Redacted]

- 2022/3 [Redacted]
- 2023/4 [Redacted]

Local authority costs:

The following cost categories exist for North Yorkshire County Council during delivery of the proposal:

- **Project management and administration**
- **Monitoring and evaluation**
- **Communication / Marketing**
- **Financial oversight**
- **Other professional and technical support**

These will be covered through existing staff and budgets.

Funding Risks

Both cost and technology risks have been considered along with controls and mitigations. These are set out below.

Cost:

Costs																
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.	Low	High	3		Open
10	26-Aug-21	Financial	Electricity supplier inform of additional grid capacity requirements	NYCC/Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	Medium	4	Early engagement on requirements or alternative requirements	Low	Medium	2		Open
11	26-Aug-21	Financial	Rise in vehicle or infrastructure costs	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and	Medium	Medium	4	Operator will keep in contact with suppliers and confirm order requirements early in start up phase.	Low	Medium	2		Open
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.	Low	High	3		Open
13	26-Aug-21	Data	Forecast patronage increases not achieved	Transdev	Project Board	Post Implementation	Forecast has taken impact of Covid19 into consideration	Medium	Low	2	Operator will ensure satisfactory patronage level through service improvements	Low	Low	1		Open

Technology:

Technical/Construction																
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply	Low	High	3		Open
2	26-Aug-21	Third Party	Delayed delivery of vehicles	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and discussed manufacture and delivery timescales	Medium	Medium	4	Continual contact with vehicle manufacturers	Low	Medium	2		Open
3	26-Aug-21	Technology	Assumptions on vehicle life expectancy are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through frequent maintenance intervals and mid life vehicle refurbishment	Low	Low	1		Open
4	26-Aug-21	Technology	Assumptions on battery life expectancy are underestimated	Transdev	Project Board	Post Implementation	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through use of a managed service with third party battery provider.	Low	Low	1		Open
5	26-Aug-21	Technology	Assumptions of range availability of vehicles are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through continued engagement with vehicle manufacturers	Low	Low	1		Open
6	26-Aug-21	Technology	Assumptions on vehicle and infrastructure reliability are incorrect	Transdev	Project Board	Post Implementation	Operator has researched market to establish reliability assumptions	Medium	Low	2	Operator will manage through warranty.	Low	Low	1		Open
7	26-Aug-21	Technology	Development of new generation of double deck vehicles may progress more slowly than planned	Transdev	Project Board	Delivery	Initial discussions have taken place with manufacturer. Evolution from existing urban battery electric vehicle rather than completely newly designed product.	Medium	Medium	4	Early and ongoing engagement with manufacturer to ensure development progresses as planned. Option to retain usage of diesel vehicles for longer if required. Transdev will continue to challenge other manufacturers to develop interurban double deck solutions.	Low	Medium	2		Open
8	26-Aug-21	Technology	Assumptions on charging time underestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Medium	4	Operator will manage through continued engagement with vehicle manufacturers	Low	Medium	2		Open

Stakeholder support

Transdev are strong supporters of this proposal. A letter of support is attached from the company Chief Executive Officer. The letter confirms the company is committed to investing in the buses and operating them in the defined area for a minimum of 5 years. The letter also confirms that Transdev will commit £13,298,817, 63% of the proposal cost. Funding from this proposal will enable 100% of the Harrogate depot fleet to convert to zero emission vehicles and 90% of the Harrogate network. Transdev have undertaken pre funding submission work Transdev accepts responsibility for any cost overruns such as this, along with ongoing revenue and maintenance costs. This will be reconfirmed in the service level agreement between the council and Transdev, in the meantime Transdev confirm acceptance of this responsibility in their letter of support available at Financial Case Annex 1.

Harrogate Borough Council also support this proposal. In addition their letter of support confirms “Harrogate Borough Council will directly support a successful bid by collecting and reporting air quality data to allow for effective monitoring and evaluation of the scheme.”

[Redacted]

Andrew Jones MP for Harrogate and Knaresborough is a strong supporter of this proposal and a letter of support that is included in this proposal confirms this.

Harrogate is a centre of conference, exhibition and festivals in North Yorkshire all contributing the strong and varied economy, benefitting residents but also bringing tourists into the region. Harrogate International Festivals, a charitable organisation, is a strong supporter of this proposal and a letter of support that is included in this proposal confirms this.

York and North Yorkshire Local Enterprise Partnership support the proposal and highlight the variety of environmental, economic and health benefits the proposal will bring to North Yorkshire.

Letters of support from these six stakeholders are at Financial Case Annex 1.

5.3 Long term Financial Viability

All revenue costs will be covered by Transdev as part of their support for this proposal, which is in addition to the [Redacted] capital funding contribution. Detailed bus revenue costs are provided at section 5.2 above with totals of:

	2022	2023	2024	2025-2039
Total	[Redacted]	[Redacted]	[Redacted]	[Redacted]

This compares to the following forecast revenue costs should the proposal not proceed:

	2022	2023	2024
[Redacted]	[Redacted]	[Redacted]	[Redacted]
Fuel	[Redacted]	[Redacted]	[Redacted]
Engineering	[Redacted]	[Redacted]	[Redacted]
Savings BSOG	[Redacted]	[Redacted]	[Redacted]
Total	[Redacted]	[Redacted]	[Redacted]

The proposal therefore has the following savings in revenue costs demonstrating viability for the proposal.

	2022	2023	2024
Bus revenue costs – ZEBRA proposal	[Redacted]	[Redacted]	[Redacted]
Bus revenue costs – no ZEBRA proposal	[Redacted]	[Redacted]	[Redacted]
Total revenue savings	[Redacted]	[Redacted]	[Redacted]

This demonstrates that the ZEBRA proposal provides long term financial viability.

Both Transdev and the council are committed to the decarbonisation of the bus fleet in North Yorkshire. The North Yorkshire Bus Service Improvement Plan:

We want bus services across North Yorkshire to be zero emission, using modern, comfortable and high specification vehicles.

The council has established a roadmap outlining the county's strategy to transition to zero emission vehicles and this is included in North Yorkshire's Bus Service Improvement Plan. Transdev's ambitions to convert their operations to zero emission vehicles and have a fleet replacement plan in place to support this.

There is an established supply chain in place to support the buses and infrastructure under this proposal.

5.4 Assessment of Financial Risk / Risk Management Strategy

As detailed in section 3.3 of the Economic Case there are uncertainties around power supply and network distribution operator works and whilst mitigations are in place these remain at amber. As such sensitivity testing has been undertaken, details of which are in the Economic Case. It is accepted the ZEBRA grant will not be increased post submission of the final business case.

Transdev have undertaken pre funding submission work and Transdev accepts responsibility for any cost overruns such as this, along with ongoing revenue and maintenance costs. This will be reconfirmed in the service level agreement between the council and Transdev. In the meantime Transdev confirm acceptance of this responsibility in their letter of support available at Financial Case Annex 1.

Optimism bias has been included in the Greener Buses Model as follows:

- 3% Vehicle CapEx
- 3% Do Min Vehicle Replacement
- 3% Infrastructure CapEx
- 3% Vehicle Maintenance Cost
- 3% Infrastructure Maintenance Cost
- 3% Operating Cost

Additionally an allowance of [Redacted] for contingency has been included in the infrastructure costs (calculated using quantitative risk analysis).

Financial Case Annexes

Financial Case Annex 1



Cathy Knight
North Yorkshire County Council
By Email

7 January 2022

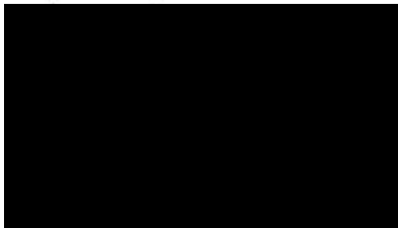
Dear Cathy

Zero Emission Bus Regional Areas Bid

I am pleased to confirm we are committed to invest in the buses set out in the Zero Emission Bus Regional Areas bid. The Harrogate Bus Company will operate these for a period of no less than five years and will work to deliver increased customer numbers. The bid will convert our full local bus network from Harrogate depot to electric bus operation.



Yours sincerely



Transdev Blazefield
The Harrogate Bus Company

10th January 2022

To Whom It May Concern

HARROGATE & KNARESBOROUGH ZEBRA BID

I write on behalf of Harrogate Borough Council and in support of North Yorkshire County Council's bid to introduce 39 new zero emission buses in Harrogate and Knaresborough.

The Zero Emission Bus Regional Areas (ZEBRA) scheme aligns with several local priorities and strategies; most pertinently Harrogate Borough Council's emerging Carbon Reduction Strategy 2021.

Climate change - and the impact we're all having on the planet - is at the forefront of our minds in Harrogate District. As such, by working together, we are aiming to deliver net-zero carbon emissions by 2038.

An area of concern in the district is road transport emissions, which are not declining like other sectors. Promoting EV use and expanding charging infrastructure were high priorities for residents and businesses in surveys conducted in 2021.

Subsequently, we are fully committed to promoting sustainable transport measures, including electric vehicles (EVs) and clean bus technology. We have developed a separate EV implementation strategy and we will seek to use the planning process to improve EV infrastructure and mitigate the impact of new developments (669 new houses are anticipated to be built each year of the local plan period).

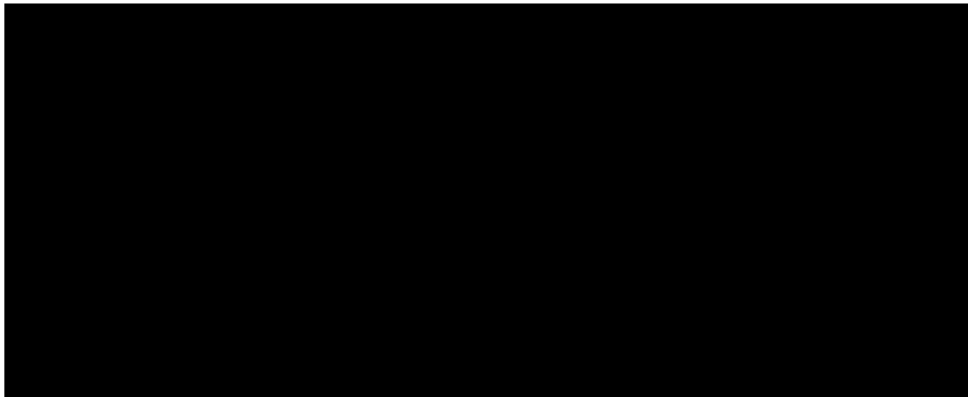
A successful ZEBRA bid will improve local air quality, especially in our Air Quality Management Areas, and Harrogate Borough Council will directly support a successful bid by collecting and reporting air quality data to allow for effective monitoring and evaluation of the scheme.

Beyond the environmental benefits; a successful bid will support a number of local economic priorities and strategies, specifically the Harrogate District Economic Growth Strategy 2017-2035. We have committed to work with partners to address barriers to business growth by securing investment and improvements in transport infrastructure.

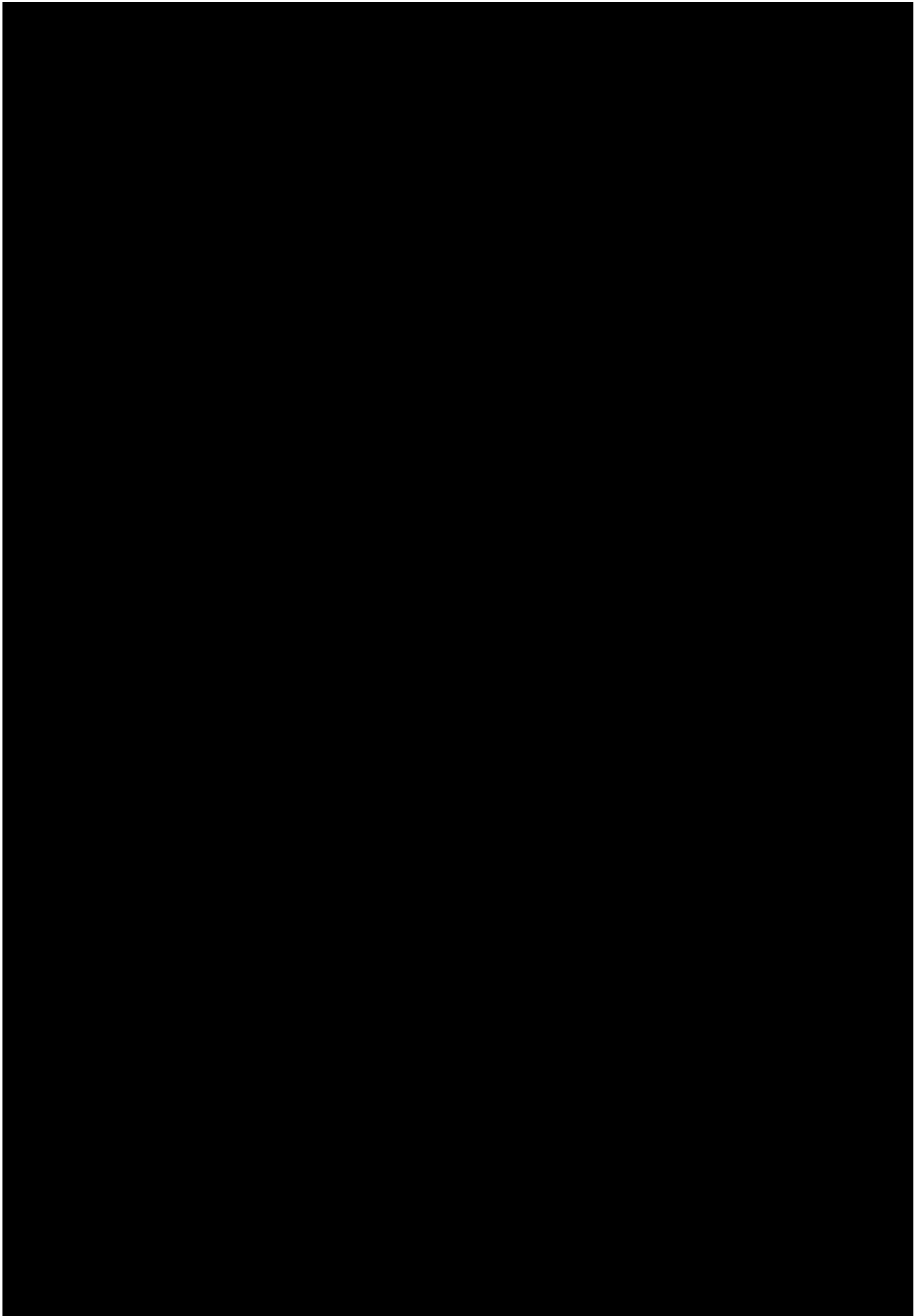
Harrogate's high level of cross-boundary commuting (largely by private vehicle) suggests that there is scope to encourage a modal shift towards bus. The bid will

facilitate inclusive economic growth by enabling enhanced, reliable, greener bus services for people to access employment and training opportunities in Harrogate and Knaresborough. This will help to attract and retain a working-age demographic whilst supporting a growing local elderly population.

Yours faithfully,



If you are replying to this communication by post, please ensure that you use the address at the bottom of the letter



ANDREW JONES MP
Harrogate & Knaresborough



HOUSE OF COMMONS
LONDON SW1A 0AA

1 July 2021

Dear Sir/Madam

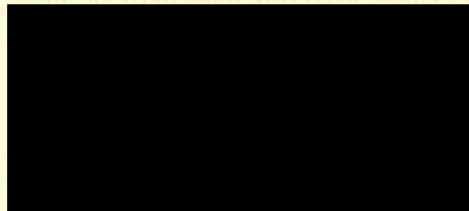
Zero Emission Bus Regional Areas Bid for Harrogate

I am delighted to support North Yorkshire County Council's bid for Zero Emission bus funding in the Harrogate area. The Harrogate Bus Company has already introduced a successful electric bus operation on our local town network which has grown customer numbers and helped improve air quality.

We welcome the bid focusing on the other main bus routes in the borough which will serve the main Air Quality Management Areas in Harrogate, Knaresborough and Ripon.

Our local councils are committed to reaching net zero carbon emissions by 2038 and have ambitious programmes to do that. Reducing emissions from our public transport fleet is a key part of the strategy. A successful bid for Zero Emission bus funding will play a significant role in reaching those critical targets.

I strongly support North Yorkshire County Council's bid.



Andrew Jones MP

Constituency office: 57 East Parade, Harrogate, HG1 5LQ
01423 529614
andrew.jones.mp@parliament.uk



Department for Transport
Great Minster House
33 Horseferry Road
London SW1A 2JL

Dear Sir

Low Emission Bus Region 11 Areas Bid for Harrogate

We are pleased to support your bid for the Low Emission Bus Region 11 Areas in Harrogate. The bid is a key part of the Government's strategy to improve air quality and reduce carbon emissions. We are committed to supporting the development of a sustainable and high-quality bus network in Harrogate.

We welcome the bid for the 11 main bus routes in Harrogate which will serve the main Air Quality Management Areas in Harrogate and Kipon.

Harrogate Bus Company is committed to providing a high-quality bus service for the community and to reducing carbon emissions. We are committed to supporting the development of a sustainable and high-quality bus network in Harrogate.

Yours faithfully,



Chief Executive



James Farrar 000
Chief Operating Officer
Ymk & North Ymrs!hilfe IEP
CountyHaD
NORIH.A.L.IERTON
North Yorkshire
DL78.AH

Tel: ☐ 600 533269
.James.Jfarrar@h nes.sinspoalgJUWlh_ocr

Date 1 July 2021

Our Ref MQ.6SJB[D36_ JF

To whom it may concern,

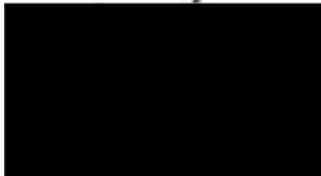
I write on behalf of Ymk & North Yorkshire Local Enterprise Partnership to express our support of North Yorkshire County Council's ambition for electric buses through the ZEBRA scheme

We strongly support this project as it is expected to bring a variety of environmental, economic and health benefits to North Yorkshire. In line with Climate Emergency declarations and ambitions from across our region, the LEP are pushing for fast decarbonisation of our region's economy in advance of the Government's 2050 deadline set out in the Climate Change Act. We aim to hit carbon neutrality in the region by 2034 and then continue progress to become a carbon negative region, contributing disproportionately to the UK's overall target.

Decarbonising the region is a huge challenge in the UK and in Yorkshire and North Yorkshire particularly, where a disproportionately high number of people travel by car (85% of distance travelled, compared to 78% across England). In order to meet our ambitious vision, we will need to increase passenger kilometres travelled by bus by two thirds between now and 2030 - a target that now seems unachievable. The impact of COVID-19 on public transport has increased the need to be achieved, alongside a shift in vehicle stock from internal combustion engines to battery electric - we require 25% of Yorkshire & North Yorkshire's fleet to be battery electric by 2030 and 66% by 2038 to hit our decarbonisation targets.

As an economic development organisation with a presence in North Yorkshire, we recognise the opportunity to act as a beacon for sustainability across North Yorkshire's towns and far beyond. We believe that this project further enables North Yorkshire to remain at the forefront and assume a leading position in delivering a sustainable public transport system.

Yours Faithfully



Chief Operating Officer,
York and North Yorkshire Local Enterprise Partnership

6.0 Management Case

6.1 Overview

The project team is resourced and experienced and has good experience in the delivery of projects of a similar scale. There is appropriate expertise within the partnership to deliver the objectives, outcomes and outputs. There is an established governance structure in place with North Yorkshire County Council as grant administrator and project coordinator. A senior responsible officer is in place.

Key milestones for delivery:

<u>Governance, Meetings and Management</u>	
March 2022	Successful ZEBRA bidders announcement
April 2022	Finalise and sign off SLA with operator partner
December 2022, March 2023 and March 2024	Grant payments to operator partner (tranches)
<u>Point of Connection</u>	
April 2022	Internal approvals
May 2022	Contract finalisation and signing
July 2022	Sign off
<u>Infrastructure Procurement and Installation</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
December 2022, March 2023 and March 2024	Available for vehicle charging
<u>Bus Procurement and Deliver</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
January 2023, March 2023 and March 2024	In service delivery commences
<u>Removal of Diesel Infrastructure</u>	
May 2024	Internal approval to remove
June 2024	Identify and appoint contractor
February 2025	Sign off

There are established internal project management processes in place with risk identification and management. A number of key risks have already been identified and mitigations have been considered. The partnership with Transdev is robust and the proposal has the support of a wide range of stakeholders.

6.2 Deliverability and Governance

Experienced officers within North Yorkshire County Council, all qualified in their relevant field, will manage the delivery of the proposal. The structure chart below shows the management and reporting structure. The Senior Responsible Owner will be the Corporate Director of Business and Environmental Services (BES) (Karl Battersby). The Senior Responsible Owner is ultimately accountable for the proposal meeting its objectives, delivering the projected outcomes and realising the required benefits together with ultimate accountability for risk management and monitoring and evaluation of the project. Responsibility for the delivery of the proposal lies with Assistant Director Travel, Environmental and Countryside Services (Michael Leah) who will act as Project Sponsor. Commercial Sector Service Development Manager (Cathy Knight) will head management of the delivery of the proposal as Project Manager. In addition, projects are subject to regular ‘overview, scrutiny and challenge’ by the Business and Environmental Services management team which includes the Corporate Director of Business and Environmental Services as well as staff from North Yorkshire County Council strategic and financial services.

This structure has significant experience in delivering complex schemes including:

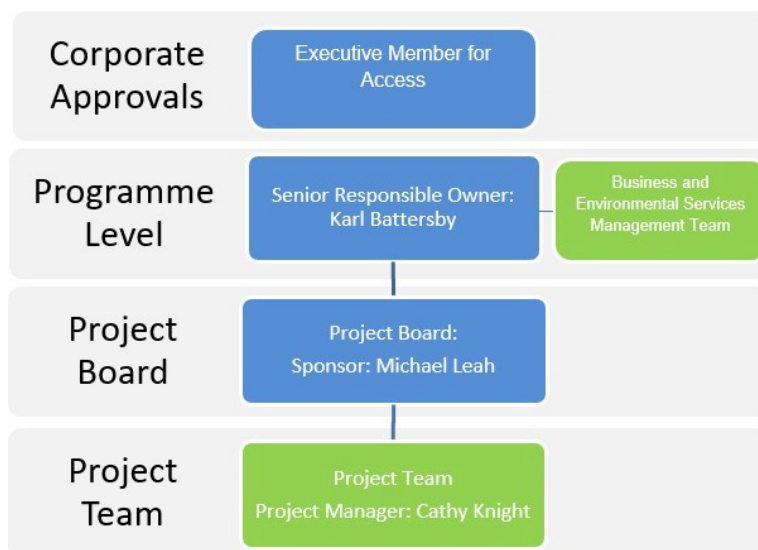
- Highway maintenance works through the annual maintenance programme with a budget of circa £55m for planned highway and footway maintenance.
- Bedale, Aiskew and Leeming Bar Bypass: A 4.8km single carriageway bypass linking the A684 north of Bedale and the A684 east of Leeming Bar. The bypass opened to traffic two months early and within the £34.5m budget.
- LED street lighting: Installation of new, more efficient LED equipment, costing approximately 40 per cent less to power, into 50,400 streetlights in North Yorkshire, over a three year project with £12.8m budget.

As part of the council’s integral project management procedures formally conducted lessons learnt sessions are held at project closure stage. The sessions cover three areas what went well, what didn’t work well and what would be done differently next time. This information is documented, analysed and any necessary changes implemented. An example of this is related to the LED street lighting project above. The lessons learnt session documented that prior to project start up insufficient data and information was gathered. This in turn negatively impacted on the ability to track benefit realisation. Learning from that lesson for this proposal, a full monitoring and evaluation plan has been prepared which:

- maps the objectives, outputs and outcomes
- identifies existing base data
- identifies the monitoring data requirements, data collection methods, frequency of data collection and data sources for each metric to enable performance against outcomes to be measured
- details reporting, resourcing and governance

Given the nature of the proposal (an independent project with limited stakeholders and limited dependencies with other projects) the council intends to deliver this proposal as an integral Project Management Programme. This will ensure a strong governance structure with established project, risk, benefit realisation and stakeholder management procedures.

The below structure chart illustrates project governance. Blue indicates where sign off is required.



Formal approvals as part of the council’s decision making processes will be required at Executive Member level. The Executive Member for Access, whose portfolio includes highways, road and rail transport, public transport; broadband, mobile phones; public rights of way will consider recommendations and approvals at corporate level.

The Project Board represents at management level, the Business, User and Supplier interests of the project. The Project Board is a platform where the service/business, end user and supplier meet, negotiate and agree on the project direction. Members should be able to speak for their specialist area with authority, make decisions on behalf of their area and for the commitment of resources to support the work of the Board.

Role	Nominated Person(s)
Senior Responsible Owner	Karl Battersby
Project Sponsor	Michael Leah
Project Manager	Cathy Knight
Senior Supplier(s)	Paul Turner, <u>Transdev</u>
Senior User(s)	Cathy Knight
Finance Rep	Vicki Dixon

A director from our operator partner will be a representative on the project board. Key lessons have been learnt by Transdev following the introduction of the existing eight zero emissions within their fleet plus the supporting infrastructure and this will provide invaluable insight on this proposal.

Project Board	
Purpose:	To oversee the delivery of a specific project to the required timescales, cost, quality and budget
Membership:	Michael Leah, Vicki Dixon, Cathy Knight and Paul Turner (<u>Transdev</u>)
Role & Responsibility:	<ul style="list-style-type: none"> • Monitor overall progress • Ensure that the project complies with agreed project management standards • Ensure that risks and dependencies are identified and effectively managed • Resolve issues that may compromise delivery escalating any that cannot be resolved • Report on overall progress to the appropriate 2020 Governance Group (Programme Board, BES MT, Customer Strategic/ Implementation Group) • Undertake regular reviews to assess progress and confirm that the project remains on course to deliver as required
Must Jointly:	<ul style="list-style-type: none"> • Create a collaborative environment to enable the project to deliver the changes required to ensure the benefits can be realised • Set the direction for the project and to approve key milestones • Approve the Project Initiation Document • Ensure that the appropriate resources required by the project are made available in accordance with the latest agreed Project Plan • Take decisions as necessary throughout the life of the project • Provides the forum to negotiate solutions to any problems or conflicts and agree action against potential threats/risks • Ensure that quality and integrity of those aspects of the project for which they are accountable for is being maintained • Arbitrates on any conflicts within the project • Give the Project Manager the authority to lead the project on a day-to-day basis • Agrees Project Closure

Standing agenda items for the ZEBRA project will include, but not limited to:

- Actions from previous project board meeting
- Key decisions required to be made
- Highlight Report
- Progress against milestone plan
- Risks / Issues
- Change Control
- Benefits Tracking
- Budget/Costs monitoring including resources
- Terms of Reference (ToR)
- AoB

Whilst the Project Sponsor is ultimately accountable for the delivery of the proposal, the Project Manager proactively manages the delivery on behalf of the Project Sponsor and will be responsible for collating and reporting on the above agenda items. In addition the Project Manager will report on delivery progress through highlight reports.

Decision Making

For all decision-making within this proposal the Project Sponsor, relevant Senior User and relevant Senior Supplier should attend. Should they be unable to attend and decisions are required the relevant member can delegate their decision making power to another in their absence and authority delegation must be formally recorded.

Should other representatives be required to be part of the decision making group it must be formally recorded. If there is insufficient key decision makers or approved delegates in attendance, decision-making will be deferred

PRINCE 2 project management principles will be used to manage the delivery of the proposal. This will include:

- Monthly project meetings to review progress against the project plan and budget.
- Change control.
- Management of risks and issues.
- Objective and benefits realisation.
- Stakeholder management and engagement.

A full project pack is available at Management Case Annex 1

6.3 Contract Management

A Service Level Agreement will be established with Transdev and this will include clearly defined requirements and obligations expected of Transdev and in turn of their suppliers. There will be a detailed section on grant funding with inclusion of a clawback clause in the event of any unspent funds. Work on this has already commenced, with outline heads of terms::

- Procurement, including a requirement to meet the specifications at section 4.2 below and defined period over which the procurement must take place:
 - Bus Procurement - 39 zero emission buses:
 - 20 battery electric single deck zero emission vehicles*
 - 19 battery electric double deck zero emission vehicles*
 - Infrastructure Procurement:
 - Point of connection for 1.8MVA, sufficient to support the full depot charging requirements

- Installation of HV/LV switchgear and equipment from Point of Connection through to chargers.
 - [Redacted]] for either AC or DC charging
 - Installation of [Redacted]]
 - Two additional pantograph chargers at Harrogate bus station using spare capacity in existing site power supply introduced for the current eight electric buses
- Procurement must be carried out in an open and transparent basis, in line with council procurement and contract management aims and objectives
- Appropriate warranties should be included to provide mitigation
- A defined period of ZEBRA scheme timeframe plus five years over which the operator will operate the zero emission vehicles along with route and coverage information
- A defined period over which the operator will utilise and maintain the infrastructure funded through the proposal
- The vehicles and infrastructure will be managed and maintained to the manufacturer and usual industry standards
- A commitment that staff of the appropriate capability and skills will work on the delivery of the proposal throughout the life of the service level agreement
- How the economic, social and environmental factors will be secured
- Full participation in the Monitoring and Evaluation plan as set out in the Management Case Annex 3, along with defined data collection and reporting requirements
- Confirmation that the grant funding:
 - Will meet the scheme criteria of DfT contribution of up to 75% of the cost difference between a zero emission bus and a standard conventional diesel bus equivalent of the same total passenger capacity must not be used for any elements over and above that agreed in the defined specifications
 - Any unspent element, must returned to the council (though the funds will be held and paid to Transdev on vehicle delivery/infrastructure installation)
 - Will not cover maintenance and repairs, including replacement batteries, and are the responsibility of the operator
 - Will not cover power costs incurred and are the responsibility of the operator
 - Will not cover costs associated with delivery delays or cost increases and these are the operator's responsibility
- Inclusion of a clawback clause in the event of any unspent funds
- The operator understands the terms and conditions of the ZEBRA funding and agrees to be binded by them.

* The zero emission vehicles will offer a high standard of customer experience. The vehicles will be manufactured to the required standards of The Public Service Vehicles Accessibility Regulations 2000. The vehicles will also be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheel chair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops.

The council will require Transdev to provide evidence that specified milestones have been completed. The grant funding will form part of this process and release of funding tranches will be conditional on meeting set criteria. Performance will be managed on a regular basis through established performance management meetings as detailed in the project plan below.

6.4 Project plan

A project plan for delivery of the proposal is set out below. This sets out key dates for governance, point of connection, infrastructure delivery, bus manufacture and delivery and removal of diesel infrastructure.

The milestones in the project plan have been set out along with the critical path which commences with the successful ZEBRA bidders announcement, finalisation and signing of a service level agreement with Transdev, contract finalisation and signing for point of connection and sign off of the same, charging

infrastructure operational through to in service zero emission vehicle operation. The critical path demonstrates the order of tasks that must be completed and key dependences.

The council has an established approval gateway process, which sets out approvals at key project stages, which will be implemented as part of the project management process.

ID	Milestone	Task Name	Start	Finish	Timeline grid (Jan-22 to Mar-25)																											
Governance, meetings and management																																
1	Yes	Successful Zebra bidders announcement	Mar-22	Mar-22	█																											
2		Approval to accept funding	Apr-22	Apr-22		█																										
3		Set up project governance	Apr-22	Apr-22		█																										
4	Yes	Finalise and sign off SLA with operator partner	Apr-22	Apr-22		█																										
5		Start marketing activity with announcing bid success	Apr-22	Apr-22			█																									
6		Project board meetings	Apr-22	Apr-24			█																									
7		Project team meetings	Apr-22	Apr-24			█																									
8		Operator partner performance management meetings	Apr-22	Apr-24			█																									
9	Yes	Grant payments to operator partner (tranches)	Oct-22	Jan-24																												
10		Monitoring and evaluation	Jun-22	Apr-24																												
11		Marketing activity	Apr-22	Mar-24																												
Point of Connection																																
12	Yes	Internal approvals	Apr-22	Apr-22		█																										
13		Detailed discussion and finalise requirements	Apr-22	Apr-22			█																									
14	Yes	Contract finalisation and signing (Transdev)	May-22	May-22				█																								
15		Provision of 1.8 MVA HV POC	May-22	Jun-22				█																								
16		Installation of HV/LV switchgear from POC to chargers	May-22	Jun-22				█																								
17		Testing and commissioning	Jul-22	Jul-22					█																							
18	Yes	Sign off	Jul-22	Jul-22						█																						
Infrastructure Procurement and Installation																																
19	Yes	Internal approval to procure	Apr-22	Apr-22		█																										
20		Finalise specification	Apr-22	Apr-22			█																									
21		Transdev commence procurement	Apr-22	Apr-22				█																								
22		Evaluation	May-22	May-22					█																							
23		Internal approval to award	May-22	May-22						█																						
24	Yes	Contract finalisation and signing (Transdev)	May-22	May-22							█																					
25		Detailed specification discussions with Infrastructure organisation	May-22	May-22								█																				
26		Hardware integration to enable use of software platform	Jun-22	Jun-22									█																			
27		Installation of charging software	Jun-22	Jun-22										█																		
28		Installation and testing - depot charge points	Sep-22	Feb-24											█																	
29		Fleet staff familiarity and training - depot charge points	Sep-22	Feb-24												█																
30		Installation and testing - top up charge points/pantographs	Dec-22	Feb-23													█															
31		Fleet staff familiarity and training - top up charge points/pantographs	Dec-22	Feb-23														█														
32	Yes	Available for vehicle charging	Jan-23	Mar-24																												
Bus Procurement and Delivery																																
33	Yes	Internal approval to procure	Apr-22	Apr-22																												
34		Finalise specification	Apr-22	Apr-22																												
35		Commence procurement	Apr-22	Apr-22																												
36		Evaluation	May-22	May-22																												
37		Internal approval to award	May-22	May-22																												
38	Yes	Contract finalisation and signing (Transdev)	May-22	May-22																												
39		Detailed specification discussions with Bus Manufacturer (All Batches)	May-22	May-22																												
40		Manufacturing (Batches 1 and 2: SDs)	May-22	Feb-23																												
41		Delivery Batch 1 SD	Dec-22	Dec-22																												
42		Pre operational inspections Batch 1 SD	Dec-22	Dec-22																												
43		Driver bus familiarity and training Batch 1 SD	Dec-22	Dec-22																												
44	Yes	In service operation commences Batch 1 SD	Jan-23	Jan-23																												
45		Delivery Batch 2 SD	Feb-23	Feb-23																												
46		Pre operational inspections Batch 2 SD	Feb-23	Feb-23																												
47		Driver bus familiarity and training Batch 2 SD	Feb-23	Feb-23																												
48	Yes	In service operation commences Batch 2 SD	Mar-23	Mar-23																												
49		Additional specification discussions with Bus Manufacturer (Batch 3 if required)	Mar-23	Feb-24																												
50		Manufacturing Batch 3 DD	May-23	Feb-24																												
51		Testing with manufacturer Batch 3 DD	Dec-23	Feb-24																												
52		Delivery Batch 3 DD	Feb-24	Feb-24																												
53		Pre operational inspections	Feb-24	Feb-24																												
54		Driver bus familiarity and training Batch 3 DD	Feb-24	Feb-24																												
55	Yes	In service operation commences Batch 3 DD	Mar-24	Mar-24																												
Removal of Diesel Infrastructure																																
56	Yes	Internal approval to remove	May-24	May-24																												
57	Yes	Identify and appoint contractor	Jun-24	Jul-24																												
58		Site assessment	Jul-24	Jul-24																												
59		Removal plan approved	Aug-24	Aug-24																												
60		On site works	Sep-24	Jan-25																												
61	Yes	Sign off	Feb-25	Feb-25																												
Move to closure																																
62	Yes	Project Board agree move to closure	Mar-25	Mar-25																												
Legend																																
					█	Critical Path																										
					█	Key Dependency																										
					█	Non Critical Path																										

6.5 Communications and Stakeholder Engagement Strategy

A communications plan has been prepared and is detailed below. Work has already taken place to raise awareness of the proposal in the form of press releases and social media to ensure the objectives and potential benefits are known.

Communications Plan

Project Overview			
Project Name:	ZEBRA		
Project Reference:		Document Author:	Cathy Knight
Project Sponsor:	Michael Leah	Project Manager:	Cathy Knight

Purpose of the Communications Plan:

The purpose of the Communications Plan is to identify key messages, the audiences for these messages, and methods and channels of communicating these messages.

The key messages will aim to:

- Inform stakeholders of project progress.
- Raise awareness of the proposal
- Explain about the new vehicles (how they operate and are charged)
- Promote the benefits to users and the wider community of the new vehicles (environmental, accessibility standards and modern vehicles)
- Encourage use of the new vehicles from a cross section of the community – we want everyone to take advantage.

The main focus of the communications plan will be internal audiences such as North Yorkshire County Council staff and stakeholders, as well as communications to external audiences (the public).

It is anticipated that a wide range of channels will be used including:

- Highlight reporting
- Project meetings
- North Yorkshire County Council Intranet
- North Yorkshire County Council / Transdev Website
- North Yorkshire County Council / Transdev Social Media
- Press Release
- Other marketing such as leaflets and posters

Key audiences and stakeholder groups are:

- Specific staff involved in the delivery of the proposal
- BES MT
- All staff
- Councillors
- Media
- Residents based in (Geographical area) including current users and non-users of local bus services, of all demographics
- Partner organisation, such as the LEP

Key messages are:

Internal/news

- Harrogate has 4 declared Air Quality Management Areas
- As a partnership the council and Transdev are introducing new zero emission buses on routes that operate through these air quality management areas – this will help improve air quality in those areas
- We have secured DfT funding to deliver this proposal
- This proposal aligns with our aim of working towards being carbon neutral by 2030
- Our public transport services need to be cost effective

Customer facing/promotion

- 39 new zero emission buses and supporting infrastructure will start to come into operation in the geographical area
- This is as a result of partnership working between the council and Transdev
- We have secured DfT funding to deliver this proposal
- This will have environmental benefits such as improving air quality and reducing noise emissions, to help work towards our goal of carbon neutrality by 2030
- The buses have additional features making them comfortable to ride in. They also have additional accessibility features.
- Go to www.XXXXXXXXXXX for info, or call XXXXXXXXXXX to find out more information

Project team/board

- Key progress updates.
- Escalation of risks and issues.
- Documentation and decision authority.
- Change authority.

The table below details the Communications Schedule. This includes the details about the message, who will be communicated with, in what way and when. This will be reviewed throughout the delivery of the proposal.

Audience	Method	Message	Date
Project Board	Monthly project board meetings Monthly highlight reports	Key progress updates Escalation of risks and issues	Monthly
Project Team	Project team meetings	Progress updates Reviewing of risks and issues	Monthly
BES MT	Key documentation/ presentation	Key updates	As required
NYCC Staff	Intranet news Key messages	Inform of new vehicles and air quality benefits Encourage uptake of service	April 2022 onwards
Councillors	Briefings/Presentations Email Appropriate committees	Inform of new vehicles and air quality benefits	April 2022 and as required
Media – print and broadcast, online	Media briefing – face to face or verbal, to include briefing pack News releases; specific to each stage, including reminders for the general public Website	All key messages and specifically; Inform of new vehicles and air quality benefits, partnership working, DfT funded	April 2022 and as required
Residents in geographical area	Social media Press release NYCC website Marketing materials – e.g. leaflets/posters	Inform of new vehicles and air quality benefits Encourage uptake of service	April 2022 onwards
Partner organisations, such as the LEP	Briefings/Presentations Email Appropriate committees	Inform of new vehicles and air quality benefits	April 2022 and as required

The main channels we will use include:

- Articles on North Yorkshire County Council Intranet
- Specific sections / pages on North Yorkshire County Council / Transdev Website
- Regular posts and updates via North Yorkshire County Council / Transdev Social Media
- Press releases to local media
- Briefings to local members and Cllr Mackenzie
- Other marketing such as leaflets and posters

Evaluation

- Compliments and complaints – including the nature of those complaints
- Hits on website page
- Any media coverage
- Customer surveys
- Monitoring patronage use trends on the services
- Engagement on social media

A separate Marketing Plan has been prepared see Commercial Case Annex 1.

In addition, Financial Case Annex 1 contains letters of support from six key stakeholders.

6.6 Risk Management

Risks will be considered by both the project board and project team as a standard agenda item (see project pack at Management Case Annex 1). As detailed in the project pack, all involved within the delivery of the proposal are responsible to identify and raise potential risks to the Project Manager. This will usually be at project either board or project team meetings where risk will be regularly reviewed. However risks can be raised at any other time outside of these meetings through the council’s normal communication channels. Any risks or issues that cannot be resolved and may compromise delivery will be escalated through the governance structure.

Risks will be considered on an ongoing basis throughout the delivery of the proposal and a governance structure is in place for managing risks and issues.

These top risks have been allocated for management as follows:

Risk Description and Consequence	Owner	Risk Approach	Mitigation(s)
Power supply configuration issues	Transdev	Treat	Initial discussions have taken place with provider. Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply.
Presence of other utilities necessitating diversion works	Transdev	Treat	Initial discussions have taken place with Distribution Network Operator. Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.
Operator match funding	North Yorkshire County Council	Tolerate	Letter of support confirming financial commitment.

arrangements change			Early engagement with operator and SLA confirming funding requirements to be established.
Delays in agreeing SLA	North Yorkshire County Council	Tolerate	Development of plan, understanding times needed for each stage. Consult with stakeholders and ensure SLA covers requirements of all parties.

The risk around the development and manufacture of battery electric double deck zero emission buses suited to interurban operation has been fully considered. The development is an evolution of the existing battery electric double deck zero emission buses suited to urban operation rather than the design and build of a complete new vehicle. [Redacted

]

A project risk register has been produced and is shown below and also available at Management Case Annex 2. This documents the key technical/construction, costs, legal, stakeholder and programme risks together with their likelihood, impact and risk rating. Mitigations have also been considered followed by a post mitigation risk rating.

Risk Register																	
Project:		ZEBRA															
Project Manager:		Cathy Knight															
						Risk Stage	PRE Mitigation Rating				Mitigation			POST Mitigation Rating			
					Level	Stage	Current Controls	Likelihood	Impact	Score	Mitigation(s) with action by dates	Date Actioned	Likelihood	Impact	Score	Last Reviewed Date	Status
Technical/Construction																	
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply		Low	High	3		Open
2	26-Aug-21	Third Party	Delayed delivery of vehicles	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and discussed manufacture and delivery timescales	Medium	Medium	4	Continual contact with vehicle manufacturers		Low	Medium	2		Open
3	26-Aug-21	Technology	Assumptions on vehicle life expectancy are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through frequent maintenance intervals and mid life vehicle refurbishment		Low	Low	1		Open
4	26-Aug-21	Technology	Assumptions on battery life expectancy are underestimated	Transdev	Project Board	Post Implementation	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through use of a managed service with third party battery provider.		Low	Low	1		Open
5	26-Aug-21	Technology	Assumptions of range availability of vehicles are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through continued engagement with vehicle manufacturers		Low	Low	1		Open
6	26-Aug-21	Technology	Assumptions on vehicle and infrastructure reliability are incorrect	Transdev	Project Board	Post Implementation	Operator has researched market to establish reliability assumptions	Medium	Low	2	Operator will manage through warranty.		Low	Low	1		Open
7	26-Aug-21	Technology	Development of new generation of double deck vehicles may progress more slowly than planned	Transdev	Project Board	Delivery	Initial discussions have taken place with manufacturer. Evolution from existing urban battery electric vehicle rather than completely newly designed product.	Medium	Medium	4	Early and ongoing engagement with manufacturer to ensure development progresses as planned. Option to retain usage of diesel vehicles for longer if required. Transdev will continue to challenge other manufacturers to develop interurban double deck solutions.		Low	Medium	2		Open
8	26-Aug-21	Technology	Assumptions on charging time underestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Medium	4	Operator will manage through continued engagement with vehicle manufacturers		Low	Medium	2		Open
Costs																	
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.		Low	High	3		Open
10	26-Aug-21	Financial	Electricity supplier inform of additional grid capacity requirements	NYCC/Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	Medium	4	Early engagement on requirements or alternative requirements		Low	Medium	2		Open
11	26-Aug-21	Financial	Rise in vehicle or infrastructure costs	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and infrastructure suppliers who have provided a range of quotes	Medium	Medium	4	Operator will keep in contact with suppliers and confirm order requirements early in start up phase.		Low	Medium	2		Open
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.		Low	High	3		Open
13	26-Aug-21	Data	Forecast patronage increases not achieved	Transdev	Project Board	Post Implementation	Forecast has taken impact of Covid19 into consideration	Medium	Low	2	Operator will ensure satisfactory patronage level through service improvements		Low	Low	1		Open

Legal																
14	26-Aug-21	Legal	Legal challenge from other local bus service operators	NYCC	Project Board	Pre Start-Up	All operators invited to participate prior to Expression of Interest submission	Medium	Medium	4	External legal advice sought prior to submission of business case		Low	Medium	2	Open
15	26-Aug-21	Legal	Delays in agreeing SLA	NYCC	Project Board	Start-Up	Development of plan, understanding times needed for each stage	Medium	High	6	Consult with stakeholders and ensure SLA covers requirements of all parties		Low	High	3	Open
Stakeholders																
16	26-Aug-21	Comms	Delays from information not being communicated in a timely fashion	NYCC	Project Board	Whole Lifecycle	Communications Plan	Medium	Low	2	Regular meetings/briefings and reporting through project management structure		Low	Low	1	Open
17	26-Aug-21	Comms	Delayed approvals from stakeholders	NYCC	Project Board	Whole Lifecycle	Communications Plan	Low	Medium	2	Early engagement with stakeholders for their views		Low	Low	1	Open
Programme																
18	26-Aug-21	Approvals	Decision making delays	NYCC	Project Board	Whole Lifecycle	Project Plan	Low	Medium	2	Regular meetings/briefings and reporting through project management structure. Early agreement on acceptable tolerances.		Low	Low	1	Open
19	26-Aug-21	Scope	Scope Change	NYCC	Project Board	Whole Lifecycle	Project Brief	Medium	Medium	4	Regular meetings/briefings and reporting through project management structure. Early agreement on acceptable tolerances.		Low	Medium	2	Open

Likelihood	H = > 60% or Probable
Probability	M = 30% to 60% or Possible
	L = < 30% or Unlikely

Impact	- Assign a single rating to the risk taking the following factors into account
Objectives	H = 2 or more elements affected M = 1 theme or substantial number of design principles affected L = moderate or minimal number of design principles affected
Financial	H = More than £1m adverse affect or significant loss of opportunity M = £250k-£1m adverse effect or loss of notable opportunity L = Below £250k adverse effect or loss of some opportunity
Services	H = Significant impact on service delivery and / or major project slippage M = Moderate impact on service delivery and / or some project slippage L = Slight impact on service delivery and / or minor project slippage
Reputation	H = Significant external criticism, high level dissatisfaction M = Continuing internal criticism, medium level dissatisfaction L = Sporadic criticism and low level dissatisfaction

Risk Scoring Matrix

Impact				
High	3	6	9	
Medium	2	4	6	
Low	1	2	3	
	Low	Medium	High	Likelihood

6.7 Monitoring and Evaluation Report

We will undertake a monitoring and evaluation programme. In addition to the Department for Transport planned programme level evaluation, additional monitoring and evaluation will be undertaken to understand whether the objectives and outcomes of the proposal have been met and also to understand the proposal's two unique and exciting benefits:

- The development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation.

A full monitoring and evaluation plan has been prepared and is available at Management Case Annex 3. In summary, this details:

- Data Requirements and Collection
 - Base data
 - DfT minimum requirements
 - Additional monitoring and performance data
 - Data collection methods
- Reporting
 - Data collection frequency
 - Reporting frequency including annual report
- Resourcing and Governance

It is noted that an evaluation contractor will be appointed by the Department to undertake a programme level monitoring and evaluation. All relevant monitoring data will be shared with the Department and appointed evaluation contractor alongside a commitment to participate in programme-level evaluation activities.

All data will be reported in an electronic format, using a common format such as CSV or Microsoft Excel.

Management Case Annexes

Management Case Annex 1

Project Pack

Project Overview			
Project Name:	ZEBRA		
Project Reference:		Document Author:	Cathy Knight
Project Sponsor:	Michael Leah	Project Manager:	Cathy Knight

1. ABOUT THIS DOCUMENT

This pack will provide you with information about project key roles and responsibilities, structure charts, terms of reference and key project processes.

This pack is aimed at new projects starting and/or new members joining the project, although it may also be useful to existing members as a point of reference.

2. PROJECT GOVERNANCE

Formal approvals as part of the council's decision making processes will be required at Executive Member level. The Executive Member for Access, whose portfolio includes highways, road and rail transport, public transport; broadband, mobile phones; public rights of way will consider recommendations and approvals at corporate level.

The senior responsible owner is ultimately accountable for a programme or project meeting its objectives, delivering the projected outcomes and realising the required benefits together with ultimate accountability for risk management and monitoring and evaluation of the project. The Business and Environmental Services management team, which includes the Corporate Director of Business and Environmental Services as well as staff from North Yorkshire County Council strategic and financial services, provides regular overview, scrutiny and challenge at senior level.

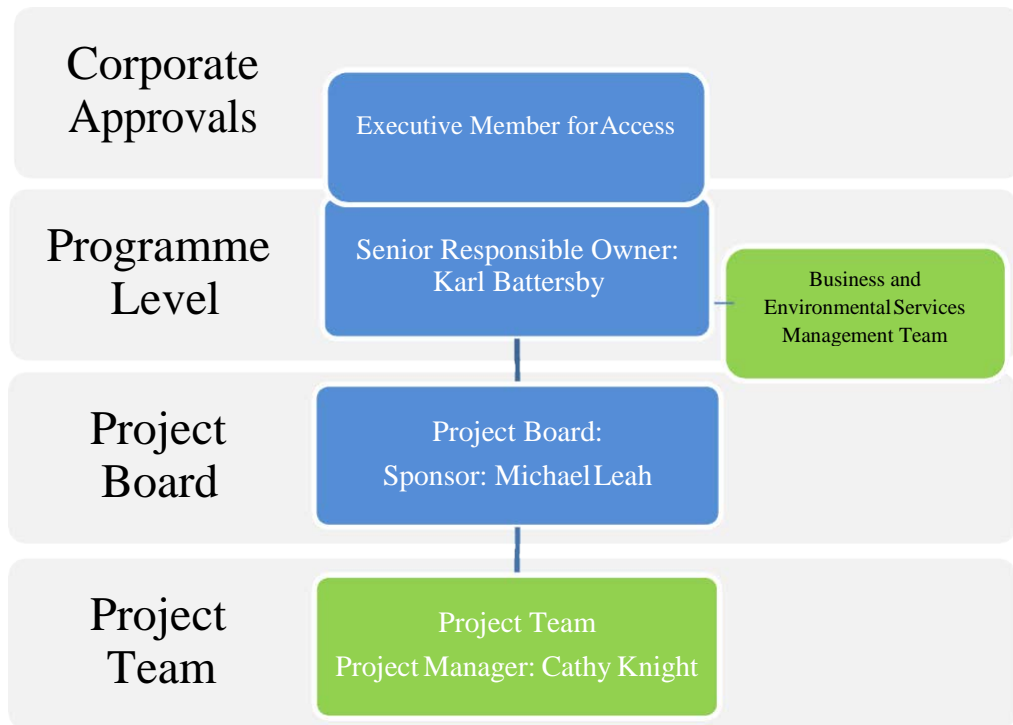
Role	
Senior Responsible Owner	Karl Battersby

The Project Board represents at management level, the Business, User and Supplier interests of the project. The Project Board is a platform where the service/business, end user and supplier meet, negotiate and agree on the project direction. Members should be able to speak for their specialist area with authority, make decisions on behalf of their area and for the commitment of resources to support the work of the Board.

Role	Nominated Person(s)
Project Sponsor	Michael Leah
Project Manager	Cathy Knight
Senior Supplier(s)	Paul Turner, Transdev
Senior User(s)	Cathy Knight
Finance Rep	Vicki Dixon

2.1. PROJECT STRUCTURE CHART

The below structure chart illustrates project governance. Blue indicates where sign off is required.



3. TERMS OF REFERENCE
 3.1. PROJECT BOARD – TOR

Project Board	
Purpose:	To oversee the delivery of a specific project to the required timescales, cost, quality and budget
Membership:	Michael Leah, Vicki Dixon, Cathy Knight and Paul Turner (Transdev)
Role & Responsibility:	<ul style="list-style-type: none"> □ Monitor overall progress □ Ensure that the project complies with agreed project management standards □ Ensure that risks and dependencies are identified and effectively managed □ Resolve issues that may compromise delivery escalating any that cannot be resolved □ Report on overall progress to the appropriate 2020 Governance Group (Programme Board, BES MT, Customer Strategic/ Implementation Group) □ Undertake regular reviews to assess progress and confirm that the project remains on course to deliver as required
Must Jointly:	<ul style="list-style-type: none"> □ Create a collaborative environment to enable the project to deliver the changes required to ensure the benefits can be realised □ Set the direction for the project and to approve key milestones □ Approve the Project Initiation Document □ Ensure that the appropriate resources required by the project are made available in accordance with the latest agreed Project Plan □ Take decisions as necessary throughout the life of the project □ Provides the forum to negotiate solutions to any problems or conflicts and agree action against potential threats/risks □ Ensure that quality and integrity of those aspects of the project for which they are accountable for is being maintained □ Arbitrates on any conflicts within the project □ Give the Project Manager the authority to lead the project on a day-to-day basis □ Agrees Project Closure

The Project Sponsor may invite additional attendees in relation to their specialist subject matter if required.

Deputies (optional attendance)

All members are expected to attend Project Board meetings when required to do so. Where this is not possible through annual leave, sickness or other circumstances, an appropriate representative must be delegated and attend.

Attendance required may vary and will be determined by the agenda of the upcoming meeting.

FREQUENCY OF MEETINGS

Project Board meetings are to be monthly until project is formally closed, frequency may be increased / decreased if deemed necessary and will generally last for 1 hour. Where agenda items do not require the full duration, the meeting may end earlier. If there are no items to discuss the meeting may be cancelled. If required, ad-hoc exceptional board meetings can be requested. The Project Board may meet virtually or physically.

ROLES AND RESPONSIBILITIES

[See Appendix A](#)

PROJECT MANAGEMENT HANDBOOK

Further guidance and information is available to support those involved in sponsoring and delivering projects via the [Project Management Handbook](#).

STANDING AGENDA ITEMS

Standing agenda items will include, but not limited to:

- Actions from previous project board meeting
- Key decisions required to be made
- Highlight Report
- Progress against milestone plan
- Risks / Issues
- Change Control
- Benefits Tracking
- Budget/Costs monitoring including resources
- Terms of Reference (ToR)
- AoB

DECISION MAKING

For all decision-making the Project Sponsor, relevant Senior User and relevant Senior Supplier should attend. Should they be unable to attend and decisions are required the relevant member can delegate their decision making power to another in their absence and authority delegation must be formally recorded.

Should other representatives be required to be part of the decision making group it must be formally recorded. If there is insufficient key decision makers or approved delegates in attendance, decision-making will be deferred.

INFORMATION MANAGEMENT

All project documentation will be stored using the corporate SharePoint site and assigned a dedicated SharePoint project page under its associated programme. Hyperlinks to documents on the project SharePoint page will be used via email as opposed to attachments where possible; this assists with document version control and allows real-time updates to specific documents when required.

CONFIDENTIALITY

If this project is confidential, the folders and/or documents can be password protected or access restricted to specific individuals. The Project Manager on behalf of the Project Sponsor will arrange for the SharePoint folders to be restricted via contacting the Portfolio Management Officer ([PMO](#)) if this project is confidential.

REPORTING

Project Highlight Reports will be produced monthly using the agreed format via Project Vision. The Project Manager will ensure that the Project Sponsor has reviewed the Highlight Report and approved it prior to final submission via Project Vision and to the Project Board.

REVIEWS

The Project Board will review the Terms of Reference on a quarterly basis and during Stage Gate reviews to ensure relevancy.

3.2. PROJECT TEAM – TOR

Project Team	
Purpose:	To manage, monitor and deliver the project to required timescales, cost, quality and budget
Membership:	Cathy Knight, Jonathan Finn, Samantha Raine and Vittorio Pizzuti (Transdev)
Role & Responsibility:	<ul style="list-style-type: none">□ Deliver specific project activities□ Report progress against the plan to the Project Manager□ Identify, monitor and report risks and issues, escalating to the Project Manager any which may compromise delivery with recommendations for corrective action□ Identify, monitor and report any project dependencies□ Provide key project documents and deliverables□ Undertake regular reviews to assess progress and confirm that the project remains on course to deliver as required
Must Jointly:	<ul style="list-style-type: none">□ Represent their area/team and provide contributions on their area, especially where there is an impact on the project□ Act as a challenge (where appropriate) to plans and proposals□ Have a responsibility for communicating key messages to and from staff within their area (when required)□ Participate in targeted workshops where required to aid the progression of project activity□ Ensure that the appropriate resources required by the project are working to the latest agreed Project Plan□ Negotiate solutions to any problems or conflicts and agree action against potential threats/risks□ Ensure that quality and integrity of work within the project which they are responsible for is being maintained

FREQUENCY OF MEETINGS

Project Team meetings are to be bi-weekly until the project is formally closed, frequency may be increased / decreased if deemed necessary and will generally last for 1 hour. Where agenda items do not require the full duration, the meeting may end earlier. If required, ad-hoc project team meetings can be requested. The Project Team may meet virtually or physically.

ROLES AND RESPONSIBILITIES

[See Appendix A](#)

PROJECT MANAGEMENT HANDBOOK

Further guidance and information is available to support those involved in sponsoring and delivering projects via the [Project Management Handbook](#).

STANDING AGENDA ITEMS

Standing agenda items will include, but not to:

- Actions from previous Project Team meeting
- Progress update
- Resources
- Risks / Issues
- Benefits
- Change Control
- Terms of Reference (ToRs)
- AoB

DECISION MAKING

The project team can manage decisions, which are within their remit to do so and within project tolerance levels. All project change requests will be assessed for impact across all areas of the project including resources and if falls outside tolerance levels submit to Project Board for approval and inform PMO.

INFORMATION MANAGEMENT

All project documentation will be stored using the corporate SharePoint site and assigned a dedicated SharePoint project page under its associated programme. Hyperlinks to documents on the project SharePoint page will be used via email as opposed to attachments; this assists with document version control and allows real-time updates to specific documents when required.

CONFIDENTIALITY

If this project is confidential, the folders and/or documents can be password protected or access restricted to specific individuals. The Project Manager on behalf of the Project Sponsor will arrange for the SharePoint folders to be restricted via contacting the Portfolio Management Officer (PMO) if this project is confidential.

REPORTING

Project leads should bring/submit an update report to the Project Team meeting, so that the information can be used to compile the overall Highlight Report for the Project Board.

REVIEWS

The Project Team will review their Terms of Reference on a quarterly basis and during Stage Gate reviews to ensure relevancy.

4. RISK AND ISSUE MANAGEMENT PROCESS

RISK & ISSUE MANAGEMENT

A project risk register has been produced and is available at the dedicated SharePoint project page under its associated programme. Risks will be considered by both the project board and project team as a standard agenda item, as detailed above. All involved within the project are responsible to identify and raise potential risks to the Project Manager.

Role:	Sponsor:
Responsibility:	Ultimately accountable for the delivery of the project, supported by the Senior User, Senior Supplier, Delivery Lead and Project Manager
Specifics:	<p><u>Resources</u></p> <ul style="list-style-type: none"> □ Ensures a project manager is resourced, assigned, agrees the remit and delegates authority to the project manager where appropriate □ Ensures sufficient, relevant and timely resources are sought and secured throughout the project lifecycle □ Mediates and resolves conflicts between project team, end users, suppliers or escalating if necessary <p><u>Strategic</u></p> <ul style="list-style-type: none"> □ Ensures the establishment of an effective risk management strategy □ Provides overall strategic guidance for the project □ Ensures the establishment of effective quality assurance arrangements <p><u>Approvals & Documentation</u></p> <ul style="list-style-type: none"> □ Oversees and develops the Project Brief and Business Case, utilising subject matter experts (SME's) to assist in providing relevant information □ Approves the Project Scope, protects it from scope creep and ensures that any potential change requests are assessed appropriately □ Agrees project tolerances levels for time, quality & cost in conjunction with the relevant portfolio governance group □ Agrees the Critical Success Factors □ Signs off the Project Initiation Document (PID) or equivalent □ Agrees all major plans, and approves or resolves any major deviations from the agreed plans and escalates if necessary □ Signs off completion of each stage, including the deliverables, and giving approval to start the next stage □ Approves end-project report and lessons learned report before submitting to relevant portfolio governance group □ Ensures that a post-project review is planned and scheduled □ Signs off project documentation in a timely manner and makes sure that the work of the project is fit for purpose

Role:	Senior Supplier:
Responsibility:	Represents the views of the supplier and ensures the availability of supplier resources
Specifics:	<ul style="list-style-type: none"> □ Agrees objectives for supplier activities □ Ensures progress remains consistent with supplier perspective □ Promotes and maintains focus on the desired project outputs □ Ensures that supplier resources are made available □ Ensures products are signed off once completed □ Contributes supplier opinions on board decisions □ Arbitrates and resolves supplier priority or resource conflicts □ Briefs non-technical management on supplier aspects of the project

Role:	Senior User:
Responsibility:	Represents the requirements and interests of the collective end users of the output of the project deliverables (products)
Specifics:	<ul style="list-style-type: none"> □ Ensures the desired outcomes of the project are specified and agreed including quality and acceptance criteria □ Ensures progress remains consistent with user perspective □ Promotes and maintains focus on the desired project outputs □ Ensures the required end user resources are made available including end user testers for the life of the project □ Prioritise and contributes user opinions to board decisions □ Resolves user requirements and priority conflicts □ Provides the user view on follow-on action recommendations □ Briefs user management on relevant aspects of the project

Role:	Project Manager:
Responsibility:	Proactively manages the project on behalf of the Sponsor
Specifics:	<ul style="list-style-type: none"> □ Plans and monitors the project □ Works with appropriate resource managers to identify and secure resources required to deliver the project □ Applies appropriate project management standards □ Manages the production of the required deliverables □ Prepares and maintains project, stage and exception plans as required □ Manages project risks, including the development of contingency plans □ Liaises with programme management (if the project is part of a programme) and related projects to ensure that work is neither overlooked nor duplicated □ Monitors overall progress and use of resources, initiating corrective action where necessary □ Applies change control processes □ Reports through agreed lines on project progress through highlight reports and end-stage assessments □ Liaises with appointed project assurance representatives to assure the overall direction and integrity of the project □ Maintains an awareness of potential interdependencies with other projects and their impact □ Adopts and applies appropriate technical and quality strategies and standards □ Identifies and obtains support and advice required for the management, planning and control of the project □ Manages project administration □ Conducts project review to assess the performance of the project at key stages throughout its lifecycle including end of project review □ Prepares any follow-on action recommendations for transition into business as usual

Role:	Delivery Leads (also known as Work Package owner):
Responsibility:	Delivers the key activities and work required to achieve the projects requirements/deliverables
Specifics:	<ul style="list-style-type: none"> □ Works to the agreed Project Plan and takes responsibility for specific priority areas □ Leads and directs the operational staff teams to ensure delivery of the plan is maintained □ Takes accountability for specific areas of the Project delivery, this can be on an individual or collective basis. □ Works with the appropriate resource managers to utilise agreed resources in support of the project and its delivery □ Adheres to appropriate and relevant project management standards □ Manages the production of the required deliverables □ Liaises with project manager to ensure that work is neither overlooked nor duplicated □ Reports on project areas progress through Project Board, contributes to creation of monthly highlight reports via project manager □ Liaises with relevant project assurance representatives to assure the overall direction and integrity of the project □ Maintains an awareness of potential interdependencies with other operational activity and escalates any potential impact □ Contributes to the management of project administration (where appropriate) □ Identifies any risks or issues within project areas, including those which may impact on service delivery □ Prepares any follow-on action recommendations for transition into business as usual

[BACK TO PROJECT BOARD- TOR](#)
[TOR](#)

[BACK TO PROJECT TEAM-](#)

Management Case Annex 2

Risk Register

Risk Register																	
Project:		ZEBRA															
Project Manager:		Cathy Knight															
ID	Date Raised	Type	Description and Consequences There is a risk that.....	Owner	Level	Stage	Current Controls	Likelihood	Impact	Score	Mitigation(s) with action by dates	Date Actioned	Likelihood	Impact	Score	Last Reviewed Date	Status
Technical/Construction																	
1	26-Aug-21	Third Party	Power supply configuration issues	Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	High	6	Early engagement with provider to identify optimum charging plan to maximise flexibility and reduce requirement for additional supply		Low	High	3		Open
2	26-Aug-21	Third Party	Delayed delivery of vehicles	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and discussed manufacture and delivery timescales	Medium	Medium	4	Continual contact with vehicle manufacturers		Low	Medium	2		Open
3	26-Aug-21	Technology	Assumptions on vehicle life expectancy are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through frequent maintenance intervals and mid life vehicle refurbishment		Low	Low	1		Open
4	26-Aug-21	Technology	Assumptions on battery life expectancy are underestimated	Transdev	Project Board	Post Implementation	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through use of a managed service with third party battery provider.		Low	Low	1		Open
5	26-Aug-21	Technology	Assumptions of range availability of vehicles are overestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Low	2	Operator will manage through continued engagement with vehicle manufacturers		Low	Low	1		Open
6	26-Aug-21	Technology	Assumptions on vehicle and infrastructure reliability are incorrect	Transdev	Project Board	Post Implementation	Operator has researched market to establish reliability assumptions	Medium	Low	2	Operator will manage through warranty.		Low	Low	1		Open
7	26-Aug-21	Technology	Development of new generation of double deck vehicles may progress more slowly than planned	Transdev	Project Board	Delivery	Initial discussions have taken place with manufacturer. Evolution from existing urban battery electric vehicle rather than competely newly designed product.	Medium	Medium	4	Early and ongoing engagement with manufacturer to ensure development progresses as planned. Option to retain usage of diesel vehicles for longer if required. Transdev will continue to challenge other manufacturers to develop interurban double deck solutions.		Low	Medium	2		Open
8	26-Aug-21	Technology	Assumptions on charging time underestimated	Transdev	Project Board	Delivery	Operator has researched market to evidence assumptions	Medium	Medium	4	Operator will manage through continued engagement with vehicle manufacturers		Low	Medium	2		Open

Costs															
9	26-Aug-21	Financial	Presence of other utilities necessitating diversion works	Transdev	Project Board	Delivery	Initial discussions have taken place with Distribution Network Operator	Medium	High	6	Early engagement with Distribution Network Operator. Ensure testing is undertaken to identify presence of any obstructing utilities. Prepare for usage of temporary battery storage as interim measure pending permanent mains connection.	Low	High	3	Open
10	26-Aug-21	Financial	Electricity supplier inform of additional grid capacity requirements	NYCC/Transdev	Project Board	Delivery	Initial discussions have taken place with provider	Medium	Medium	4	Early engagement on requirements or alternative requirements	Low	Medium	2	Open
11	26-Aug-21	Financial	Rise in vehicle or infrastructure costs	NYCC/Transdev	Project Board	Delivery	Operator has consulted a number of vehicle manufacturers and	Medium	Medium	4	Operator will keep in contact with suppliers and confirm order requirements early in start up phase.	Low	Medium	2	Open
12	26-Aug-21	Financial	Operator match funding arrangements change	NYCC	Project Board	Delivery	Letter of support confirming financial commitment	Medium	High	6	Early engagement with operator and SLA confirming funding requirements to be established.	Low	High	3	Open
13	26-Aug-21	Data	Forecast patronage increases not achieved	Transdev	Project Board	Post Implementation	Forecast has taken impact of Covid19 into consideration	Medium	Low	2	Operator will ensure satisfactory patronage level through service improvements	Low	Low	1	Open
Legal															
14	26-Aug-21	Legal	Legal challenge from other local bus service operators	NYCC	Project Board	Pre Start-Up	All operators invited to participate prior to Expression of Interest submission	Medium	Medium	4	External legal advice sought prior to submission of business case	Low	Medium	2	Open
15	26-Aug-21	Legal	Delays in agreeing SLA	NYCC	Project Board	Start-Up	Development of plan, understanding times needed for each stage	Medium	High	6	Consult with stakeholders and ensure SLA covers requirements of all parties	Low	High	3	Open
Stakeholders															
16	26-Aug-21	Comms	Delays from information not being communicated in a timely fashion	NYCC	Project Board	Whole Lifecycle	Communications Plan	Medium	Low	2	Regular meetings/briefings and reporting through project management structure	Low	Low	1	Open
17	26-Aug-21	Comms	Delayed approvals from stakeholders	NYCC	Project Board	Whole Lifecycle	Communications Plan	Low	Medium	2	Early engagement with stakeholders for their views	Low	Low	1	Open
Programme															
18	26-Aug-21	Approvals	Decision making delays	NYCC	Project Board	Whole Lifecycle	Project Plan	Low	Medium	2	Regular meetings/briefings and reporting through project management structure. Early agreement on acceptable tolerances.	Low	Low	1	Open
19	26-Aug-21	Scope	Scope Change	NYCC	Project Board	Whole Lifecycle	Project Brief	Medium	Medium	4	Regular meetings/briefings and reporting through project management structure. Early agreement on acceptable tolerances.	Low	Medium	2	Open

Monitoring and Evaluation Plan

Project Overview			
Project Name:	ZEBRA		
Project Reference:		Document Author:	Cathy Knight
Project Sponsor:	Michael Leah	Project Manager:	Cathy Knight

PROPOSAL OBJECTIVES

The Department for Transport ZEBRA programme objectives are:

1. Support the government’s commitment to decarbonisation and to reduce the transport sector's contribution to CO₂ emissions
2. Support the roll-out of the 4,000 Zero Emission Buses that the government committed to in Feb 2020
3. Support bus manufacturers in the development of zero emission bus technology
4. Support partnership working between Local Transport Authorities, bus operators, and other local stakeholders as set out in the NBS
5. Understand better the challenges of introducing zero emission buses and supporting infrastructure to inform future government support for ZEBs

DfT Wider Objectives are:

6. Reduce environmental impacts / Air quality
7. Improve transport for the user
8. Grow and level up the economy

The table below details how each of the data points matches the above objectives:

<u>Output</u>	Objective
Reduction in NO2 in local AQMA areas	1,6
Increase number of ZEBs on bus routes operating in Harrogate/Knaresborough	2,4,5,7
Improve customer experience, particularly for those group of people with protected characteristics	7
Invest in UK businesses and upgrade skills of employees, particularly in North Yorkshire	4,8
<u>Outcome</u>	
39 zebz introduced on 4 AQMAs by 2024	1,2,5,6
90% of Harrogate network operated with ZEBs by 2024	1,2,5,6
Increase number of passengers travelling on ZEBs	5,7
Increase % passengers satisfied with PT	5,7
Increase the number of buses with enhanced PSVAR specification	7
[Redacted]	3,4,5,8
[Redacted]	3,4,5,8
12 apprentices enrolled by 2024 by Transdev	8

The proposal objectives are:

- Improve air quality
- Accelerate decarbonisation of the public transport network
- Improving transport for the user

- Supporting the council’s ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth

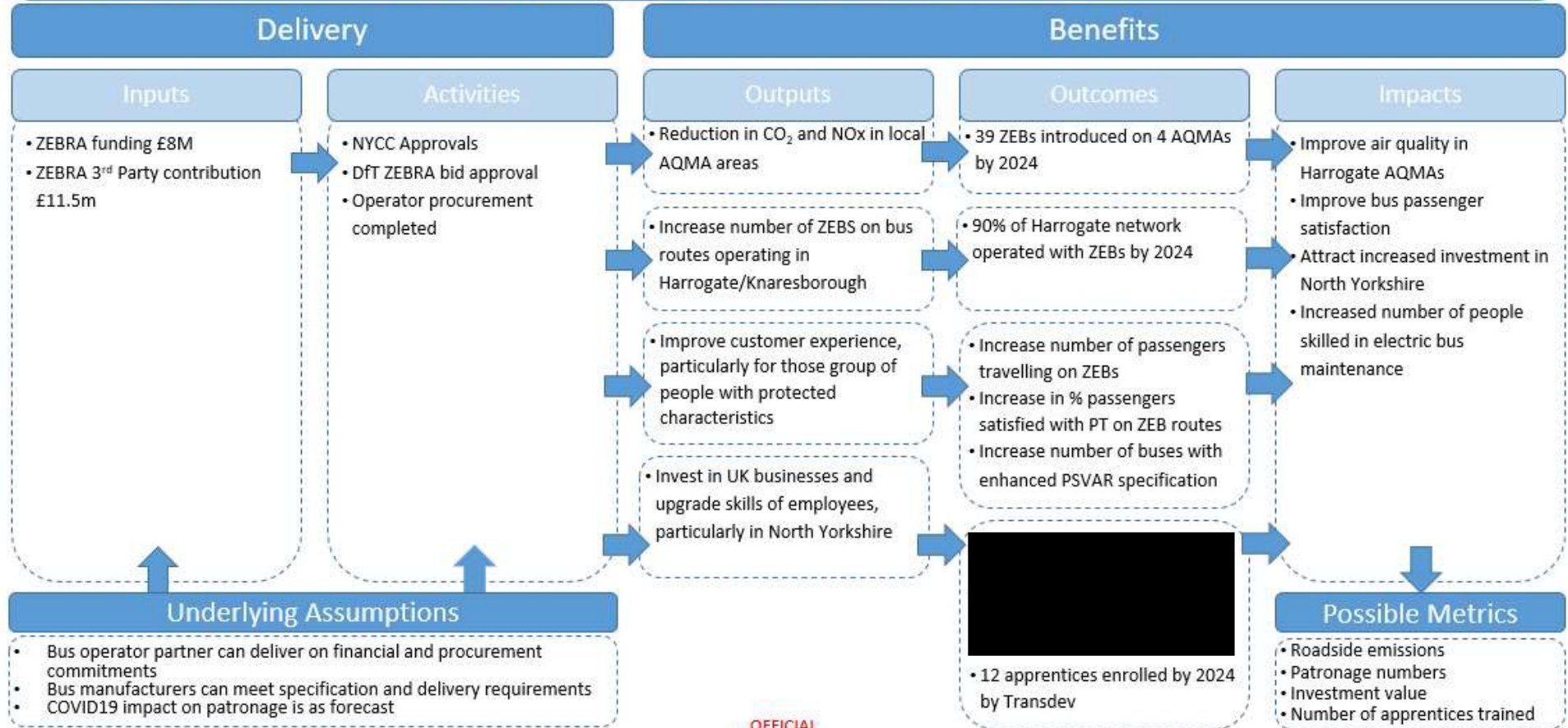
The outputs and outcomes against those objectives are detailed in the table below:

Objective	Output	Outcome
Improve Air Quality	Reduction in NO ₂ in local AQMA areas	39 zebs introduced on 4 AQMAs by 2024
Accelerate decarbonisation of the North Yorkshire public transport network	Increase number of ZEBS on bus routes operating in Harrogate/Knaresborough	90% of Harrogate network operated with ZEBS by 2024
Improving transport for the user	Improve customer experience, particularly for those group of people with protected characteristics	Increase number of passengers travelling on ZEBS
		Increase % passengers satisfied with PT
		Increase % passengers satisfied with PT
		Increase the number of buses with enhanced PSVAR specification
Supporting the council’s ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth	Invest in UK businesses and upgrade skills of employees, particularly in North Yorkshire	[Redacted]
		[Redacted]
		12 apprentices enrolled by 2024 by Transdev

ZEBRA – Logic Model Evaluation and Monitoring

Proposal Objectives

- Improve Air Quality
- Accelerate decarbonisation of the North Yorkshire Public transport network
- Improving Transport for the Use
- Supporting the Council's ambition that North Yorkshire is a place with a strong economy and a commitment to sustainable growth



DATA REQUIREMENTS AND COLLECTION

Base Data

Harrogate Borough Council currently monitor NO₂ and this is undertaken through roadside diffusion tube monitoring. There are 54 monitoring sites across Harrogate and Knaresborough, both on routes where zero emission buses will be deployed and at other locations. There is annual data available from 2016 to 2020 (to which 2021 data will be added) which provides good base data to monitor historical trends and compare this base data against new data collected from the 54 sites, analysing sites where bus services operated by the zero emission buses have been deployed against other locations.

The proposal will offer a unique monitoring opportunity due to the full conversion of an operating depot to zero emission buses. Baseline data available includes energy and maintenance costs of the current fleet operation which can be benchmarked against future energy and maintenance costs once the depot is fully converted to electric bus operation.

There is also a unique opportunity to monitor the operational performance of a double deck vehicle a high speed interurban service with a route length of 350 miles per day. Suitable current market vehicle options are limited for this type of operation. Baseline data available for current diesel double deck vehicles operated includes:

- KM operated
- Consumption on rate (KML)
- Litres used
- Fuel rate
- Gross fuel cost
- BSOG rate per litre (diesel)
- BSOG miles
- BSOG claimed
- Net fuel cost

Baseline data has been provided by Transdev, in addition there is a commitment to future data collection of the comparable data for zero emission electric vehicle and will provide this information on an annual basis. This will enable a comparison of costs and efficiency between a diesel double deck vehicle and the newly developed double deck vehicle suitable for interurban operation. Data collection and reporting will be incorporated into the Service Level Agreement with Transdev.

DfT Minimum Requirements

The table below details the monitoring data required by the DfT as a minimum to be shared with the Department on a quarterly basis. The data requirements, data collection methods, frequency of data collection, data sources are shown for each metric.

<u>DfT Minimum Requirements</u>						
	Measurement	Frequency	Duration	Owner	Source	Data Collection Method
ZEBs and charging infrastructure outputs:	Number of ZEBs purchased	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	From purchase contract
	Number of ZEBs in operation	Daily	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet/AVL system
	Number and type of internal combustion engine (ICE) buses replaced	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Number (and capacity) of charging facilities introduced	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	From purchase contract
	Charging methodology e.g. depot overnight, en-route charging	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	From purchase contract
	(For hydrogen fuelled buses) Fuel production & refuelling method	N/A				
	AC or DC charging	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	From purchase contract
Scheme costs:	Purchase cost per ZEB (add explanatory footnote)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	From purchase contract
	Purchase cost per equivalent ICE bus	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	Operator market engagement information
	Average operational cost (incl. maintenance and infrastructure) per ZEB (£ per month)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	Operator fleet management/accountancy system
	Average operational cost (incl. maintenance and infrastructure) per ICE (£ per month) (if ICE buses operational in fleet)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	Operator accountancy system
	Cost of electric or hydrogen fuelling infrastructure (upfront cost) (£)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	From purchase contract
Data to inform analysis of carbon impacts	Average daily ZEB mileage	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Average daily ZEB energy consumption	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Average daily diesel mileage and fuel consumption for each route (i.e. baseline / comparator data)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Average ZEB well-to-wheel greenhouse gas emissions	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Internal recording
	Average battery state of charge before / after charging	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Time of day ZEB charged and electricity tariff (including electricity generation source)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system

Wider Monitoring and Performance Data (over and above DfT's Planned Programme Level Evaluation)

In addition to the Department for Transport planned programme level evaluation additional monitoring and evaluation will be undertaken to understand whether the objectives and outcomes of the proposal have been met and also to understand the proposal's two unique and exciting benefits:

- The development and manufacture of battery electric double deck zero emission buses suited to interurban operation, where buses are required to operate at a higher speed and for longer distances. The current zero emission double deck bus options are more suited to an urban city environment.
- The full conversion of the first North Yorkshire bus depot to full electric bus operation.

Monitoring Performance Against Outcomes: The table below details the monitoring data required to measure performance against outcomes. The data requirements, data collection methods, frequency of data collection, data sources are shown for each metric.

Outcome	Measurement	Frequency	Duration	Owner	Source	Data Collection Method
39 zebs introduced on 4 AQMAs by 2024	Roadside Emissions	Yearly	Zebra Funding Period	Project Sponsor	Harrogate Borough Council AQM monitoring team	Roadside diffusion tube readings
	Number of ZEBs purchased	see DfT minimum requirements				
	Number of ZEBs in operation	see DfT minimum requirements				
90% of Harrogate network operated with ZEBs by 2024	Number of buses per route by type	Yearly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Operated mileage by route by type	Yearly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
Increase number of passengers travelling on ZEBs	Passengers travelling on ZEBs	Yearly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator ticket machine system
Increase % passengers satisfied with PT	Number of passengers satisfied	Yearly	Zebra Funding Period	Project Sponsor	Passenger Focus Survey Results	Passenger surveys by Passenger Focus
Increase % passengers satisfied with PT	Number of passengers satisfied	Yearly	Zebra Funding Period	Project Sponsor	NHT Survey Results	Passenger surveys by NHT
Increase the number of buses with enhanced PSVAR specification	Number of vehicles with enhanced PSVAR features	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Capital and Revenue Investment	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	From purchase contract
	Capital and Revenue Investment	Quarterly	Zebra Funding Period	Project Sponsor	Operator Finance Team	From purchase contract
12 apprentices enrolled by 2024 by Transdev	Number of apprentices enrolled	Yearly	Zebra Funding Period	Project Sponsor	Operator Finance/Commercial/HR Team	Operator HR recording system

Monitoring Against Additional Benefits: The table below details additional monitoring data to be collected. The data requirements, data collection methods, frequency of data collection, data sources are shown for each metric.

Additional Monitoring	Measurement	Frequency	Duration	Owner	Source	Data Collection Method
	Charge Points					
	Number and type of 'top up' charge points installed	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator internal recording
	Number and type of depot charge points installed	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator internal recording
	Number of ZEBs					
	Commissioned (Number by capacity, make and model)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	From purchase contract
	In operation (Number by Capacity Make and Model)	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management recording system
	Infrastructure Costs Vs Estimate	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	From purchase contract
	Actual ZEB costs vs diesel equivalent including battery replac	Quarterly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management/accountancy system
	Depot costs diesel vis ZEBs	Yearly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management/accountancy system
	Diesel double deck costs vs ZEB electric double deck costs	Yearly	Zebra Funding Period	Project Sponsor	Operator Commercial/Fleet Team	Operator fleet management/accountancy system

Data Collection

Harrogate Borough Council have already provided baseline NO₂ data, as outlined above. In addition the council has committed to future data collection of the same and will provide this information on an annual basis as detailed in their letter of support at Financial Case Annex 1. Data collection will be in the form of a report from Harrogate Borough Council.

Data collection and reporting will be incorporated into the Service Level Agreement with Transdev, as outlined in section 4.3 of the Commercial Case. The service level agreement will also require data to be shared with DfT and an evaluation contractor that will be appointed by the Department. Data collection will be in the form of a self completion form provided by the project manager to Transdev to be completed and returned on a quarterly basis. Some operator/route level data may need to be aggregated to protect commercial interests before open and / or wider circulation. Certain data is not to be disclosed at granular level without prior aggregation.

The council will collect data from a number of sources. A base template has been established which will be completed by the project manager on a quarterly basis.

It is noted that an evaluation contractor that will be appointed by the Department to undertake a programme level monitoring and evaluation. All relevant monitoring data will be shared with the Department and appointed evaluation contractor, alongside a commitment to participate in programme-level evaluation activities

Reporting

Measurements will be obtained over the lifetime of the ZEBRA funding period and will be recorded and illustrated, for example in trend graphs. Data will be collected as set out in the frequency detail for each data set and on a quarterly basis will be presented in the form of an update report by the project manager to the project board to ensure that trends are regularly monitored.

An annual report will also be produced providing details on:

- Performance against objectives
- Details of any issues or challenges
- Trend information

All data will be reported in an electronic format, using a common format such as CSV or Microsoft Excel.

Milestones

There are some key milestones that are required to be achieved if the proposal objectives, outputs and outcomes are to be delivered. These are:

<u>Governance, Meetings and Management</u>	
March 2022	Successful ZEBRA bidders announcement
April 2022	Finalise and sign off SLA with operator partner
December 2022, March 2023 and March 2024	Grant payments to operator partner (tranches)
<u>Point of Connection</u>	
April 2022	Internal approvals
May 2022	Contract finalisation and signing
July 2022	Sign off
<u>Infrastructure Procurement and Installation</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing
December 2022, March 2023 and March 2024	Available for vehicle charging
<u>Bus Procurement and Deliver</u>	
April 2022	Internal approvals to procure
May 2022	Contract finalisation and signing

January 2023, March 2023 and March 2024	In service delivery commences
<u>Removal of Diesel Infrastructure</u>	
May 2024	Internal approval to remove
June 2024	Identify and appoint contractor
February 2025	Sign off

Milestones will be monitored as part of the overall monitoring of the project plan delivery monitoring by the project board.

RESOURCING AND GOVERNANCE

Monitoring and evaluation will be undertaken by North Yorkshire County Council within existing staffing and revenue budgets. Harrogate Borough Council have committed to providing relevant CO₂ data. Transdev have committed to providing the relevant data required by them as set out in the tables above and in the proposed service level agreement.

Overall responsibility for monitoring and evaluation of the delivery of the proposal will be with the Senior Responsible Owner. The project manager will be responsible operational delivery of the monitoring and evaluation plan. A quarterly report on monitoring and evaluation will be prepared by the project manager and presented to the project board and Senior Responsible Officer. The report will provide base line data and the latest data collected, comparing and analysing this and noting performance against outputs and outcomes. The Senior Responsible Officer and project board will provide 'check and challenge' to the project manager. The report will also be provided to the to the DfT and appointed evaluation contractor on a quarterly basis by the project manager.

Similarly, the Senior Responsible Owner is responsible for the project meeting its objectives, delivering the projected outcomes and realising the required benefits together with ultimate accountability for risk management and monitoring and evaluation of the delivery of the proposal.

Risks and issue management is detailed in the project pack at Management Case Annex 1 but in summary a project risk register has been produced, and is available at Management Case Annex 2, and risks will be considered by both the project board and project team as a standard agenda item.

7.0 Equality Impact Assessment

The council has considered the public sector equality duty when establishing this proposal. An equalities impact assessment has been carried out. In summary, whilst the identified impacts are positive for a number of groups of people with protected characteristics, one potential negative impact has been identified. As electric vehicles are quieter than combustion engine alternatives, there is the potential for an adverse impact to blind and partially sighted people. Steps to mitigate any potential adverse impacts are set out in this assessment.

The proposal is likely to deliver a number of positive impacts to a number of groups of people with protected characteristics. The council will work local bus operators that already operate such vehicles to identify if the potential adverse impact identified is likely to materialise and if so the council will work with the preferred bus operator partner to identify evaluate the benefits of interventions to address this adverse impact, for example including artificial bus noise on the vehicles.

The full assessment is shown below:

Equality impact assessment (EIA) form: evidencing paying due regard to protected characteristics

(Form updated April 2019)

Zero Emission Buses Funding Area Funding Bid

If you would like this information in another language or format such as Braille, large print or audio, please contact the Communications Unit on 01609 53 2013 or email communications@northyorks.gov.uk.



যদি আপনি এই ডকুমেন্ট অন্য ভাষায় বা ফরমেটে চান, তাহলে দয়া করে আমাদেরকে বলুন।
如欲索取以另一語文印製或另一格式製作的資料，請與我們聯絡。
اگر آپ کو معلومات کسی دیگر زبان یا دیگر شکل میں درکار ہوں تو برائے مہربانی ہم سے پوچھئے۔

Equality Impact Assessments (EIAs) are public documents. EIAs accompanying reports going to County Councillors for decisions are published with the committee papers on our website and are available in hard copy at the relevant meeting. To help people to find completed EIAs we also publish them in the Equality and Diversity section of our website. This will help people to see for themselves how we have paid due regard in order to meet statutory requirements.

Name of Directorate and Service Area	Business and Environmental Services Integrated Passenger Transport
Lead Officer and contact details	Cathy Knight cathy.knight@northyorks.gov.uk
Names and roles of other people involved in carrying out the EIA	
How will you pay due regard? e.g. working group, individual officer	Officers will consider the council's equality duty and be mindful of the impact and potential effects of the proposal to people with any of the protected characteristics as defined by the Equality Act 2010, or North Yorkshire County Council's additional agreed characteristics throughout the delivery of the proposal lifecycle.

When did the due regard process start?	August 2021
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Section 1. Please describe briefly what this EIA is about. (e.g. are you starting a new service, changing how you do something, stopping doing something?)

North Yorkshire County Council is submitting a Business Case to the Department for Transport through the Zero Emission Bus Regional Area scheme to secure funding for new zero emission buses and supporting charging infrastructure in the Harrogate and Knaresborough area.

Section 2. Why is this being proposed? What are the aims? What does the authority hope to achieve by it? (e.g. to save money, meet increased demand, do things in a better way.)

Converting buses in the defined area to operation using zero emission buses will continue the transition to zero emission buses operating in the area and help develop best practice for use by other local bus service operators as they transition their fleet. There are a number of other benefits including:

Air Quality

With zero emission vehicles that produce zero tail pipe emissions this proposal will deliver air quality benefits, benefiting the environment and the general health of the North Yorkshire population.

Health

Improved air quality has associated improvements to the health and as such will lead to improvements in the general health local residents and of the North Yorkshire population and visitors who visit Harrogate and Knaresborough.

Environmental

Reduced noise pollution. This funding will and will deliver environmental benefits and accelerate the benefits of decarbonisation, benefiting the environment – in alignment with the North Yorkshire Draft Air Quality Strategy (2020).

Economic

Transdev has an established apprenticeship scheme which will now include training on electric vehicle maintenance. From 2021 the apprenticeship programme has evolved to cover both mechanical and electrical aspects with a particular focus on hybrid and zero emission technology.

All of the bus funding [redacted] will be entirely retained within the county of North Yorkshire, a significant levelling up opportunity.

Social

The zero emission vehicles will offer a high standard of customer experience. They will be equipped with superfast 4G wifi, phone holders with USB and wireless power charging at every seat, reading lights, bigger bins with recycling facilities and additional wheel chair spaces. Buses will have audio visual next stop announcements with on board real time information and induction loops. Providing accessibility improvements.

Provision of a network of zero emission Transdev fleet across Harrogate and Knaresborough will support leisure and tourism, and encourage longer distance tourist trips into the region.

Section 3. What will change? What will be different for customers and/or staff?

- This bid will enable 39 new zero emission buses to be delivered, along with supporting charging infrastructure, to replace and redeploy 11 Euro 5 buses and 2 Euro 6 buses.
- There will be improvements in air quality and a reduction in roadside emissions.

- There will be transport user improvements from the high standard bus interiors and enhanced accessibility features, which exceed The Public Service Vehicles Accessibility Regulations 2000 requirements.

Section 4. Involvement and consultation (What involvement and consultation has been done regarding the proposal and what are the results? What consultation will be needed and how will it be done?)

The council will work local bus operators that already operate such vehicles to identify if the potential adverse impact identified is likely to materialise and if so the council will work with the preferred bus operator partner to identify evaluate the benefits of interventions to address this adverse impact, for example including artificial bus noise on the vehicles.

A full consultation and involvement process is not currently feasible, especially as clinically vulnerable groups may feel at risk in face to face engagement and some users can face challenges in digital access. Key stakeholders of groups representative of people with protected characteristics will be engaged with and informed of these proposals and seek their involvement in understanding more about the diverse preferences of stakeholders in relation to the proposal.

North Yorkshire County Council has carried out a level of stakeholder engagement to inform development of this BSIP, seeking the views of a number of organisations and individuals on their priority areas for intervention and desired outcomes. Stakeholders included:

- Bus and community transport operators
- Surrounding Local authorities
- North Yorkshire District councils
- North Yorkshire Parish Councils
- North Yorkshire Elected representatives
- NHS and Emergency services
- Business groups
- Voluntary sector organisations
- Bus user groups

The council also engaged with the North Yorkshire County Councils Citizens' panel, a group of 2,000 residents who share views and ideas to understand local priorities. This engagement found that the top priorities for bus users in North Yorkshire (and their representatives) are:

- More frequent services (ie hourly or better)
- More evening and Sunday services
- Simpler ticketing e.g. contactless card payment, flat fare, capped day travel ticket price
- Good value adult fares
- Clean, safe, accessible buses and waiting facilities

The engagement also highlighted the need for more widely available ticketing offers such as discounted travel for young people and group travel discount for two or more people travelling together; ticket acceptance by any operator on common routes; more availability of live bus information available on smart phone apps; faster and more punctual services; and more demand responsive services.

When asked about the factors that would influence the respondents to use bus services in North Yorkshire, or use them more often, better service reliability, better service frequency and more evening and Sunday services were the three most important factors cited. Live bus information available on a smart phones and clean, safe, accessible buses were also cited as important factors. Having a reliable consistent service throughout the day was also considered more important than having high frequencies at busy times such as 3-4 buses per hour. Bus lanes in locations where traffic congestion occurs was seen by respondents as more attractive than reduced on-street parking or making town centre parking more expensive.

Section 5. What impact will this proposal have on council budgets? Will it be cost neutral, have increased cost or reduce costs?

There are no financial impacts to North Yorkshire County Council other than officer staff time.

Section 6. How will this proposal affect people with protected characteristics?	No impact	Make things better	Make things worse	Why will it have this effect? Provide evidence from engagement, consultation and/or service user data or demographic information etc.
Age		x		<p>Net Zero - The UK's contribution to stopping global warming - Climate Change Committee (theccc.org.uk) Poorer and more vulnerable parts of society are expected to be more exposed to impacts from a number of climate risks. However, co-benefits such as reduced air pollution are likely disproportionately to favour low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. Increasing the number of zero emission buses will improve air quality.</p> <p>The buses will be fitted with a number of accessibility requirements (eg equipment identifying the route, each upcoming stop) which will assist older people and people with certain disabilities.</p> <p>Air pollution can adversely impact human development which can have both immediate and long-lasting effects on a person's health. Early childhood is a critical time for the formation and maturation of body systems and the time during which most rapid changes take place. . Increasing the number of zero emission buses will improve air quality.</p> <p>Health matters: air pollution - GOV.UK (www.gov.uk)</p> <p>Of the 620,610 people living in North Yorkshire in 2020, 117,670 people (19.0%) were aged 0 to 17, 347,982 people (56.1%) were aged 18 to 64 and 154,958 people (25.0%) were aged 65 and over. LG Inform</p> <p>Older people are at higher risk of poverty which increases likelihood of bus trips – see information about socio economic circumstance and use of buses, eg In 2019, people in the lowest real income quintile made more local bus trips on average than any other income quintile, while those in the highest income quintile made the least. Annual Bus Statistics: England 2019/20</p>
Disability		x	x	<p>Poorer and more vulnerable parts of society are expected to be more exposed to impacts</p>

			<p>from a number of climate risks. However, co-benefits such as reduced air pollution are likely disproportionately to favour low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. Increasing the number of zero emission buses will improve air quality. Net Zero - The UK's contribution to stopping global warming - Climate Change Committee (theccc.org.uk)</p> <p>The buses will be fitted with a number of accessibility requirements (eg equipment identifying the route, each upcoming stop) which will assist older people and people with certain disabilities.</p> <p>Whilst increasing the number of zero emission buses will improve noise pollution (which can result in heart problems, sleep disturbance, slower learning and annoyance, and can disrupt the natural environment), as electric vehicles are quieter than combustion engine alternatives, there is the potential for an adverse impact to blind and partially sighted people.</p> <p>The buses will have enhanced accessibility features.</p> <p>Long term health problems in North Yorkshire: 9.87% residents are “limited a little”; 7.46% “limited a lot” – see Data North Yorkshire.</p> <p>People with a disability make fewer trips by car (Transport Statistics 2019)</p>
Sex		x	<p>50.80% female, 49.20 % male in N Yorkshire – Data North Yorkshire</p> <p>Lone parents are predominantly female, which affects socio economic status and access to own car</p> <p>Higher proportion of female carers than male carers, so the additional buggy space/wheelchair space is particularly relevant.</p>
Race		x	<p>9.38% total resident population BAME in N Yorkshire - LG Inform</p> <p>BAME groups more frequently face socio economic disadvantage which can correlate with living in more densely populated areas where air quality is poor.</p>
Gender reassignment	x		<p>Currently, there is no robust data about the number of trans people in the UK.</p> <p>It is not anticipated that these proposals will differentially impact trans people.</p>

Sexual orientation	x			Currently, there is no robust data about the number of LGB people in the UK. Stonewall estimate one in 10. It is not anticipated that these proposals will differentially impact people on the grounds of their sexual orientation.
Religion or belief	x			Nomis Census Data – In N Yorkshire: 69.4% Christian; 0.3% Buddhist; 0.2% Hindu; 0.1% Jewish; 0.4% Muslim; 0.0% Sikh; 0.3% Other religion; 22.2% No Religion.
Pregnancy or maternity		x		Air pollution can adversely impact human development which can have both immediate and long-lasting effects on a person's health. Air pollution has potential effects on foetal growth and exposure to air pollution is associated with low birth weight and premature birth. Increasing the number of zero emission buses will improve air pollution. Health matters: air pollution - GOV.UK (www.gov.uk) The buses will be fitted with a number of accessibility requirements (eg 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) which will assist bus users with pushchairs.
Marriage or civil partnership	x			No evidence of impact on grounds of marriage or civil partnership.

Section 7. How will this proposal affect people who...	No impact	Make things better	Make things worse	Why will it have this effect? Provide evidence from engagement, consultation and/or service user data or demographic information etc.
..live in a rural area?	x			No evidence of impact on grounds of people living in a rural area.
...have a low income?		x		Poorer and more vulnerable parts of society are expected to be more exposed to impacts from a number of climate risks. However, co-benefits such as reduced air pollution are likely disproportionately to favour low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. Increasing the number of zero emission buses will improve air quality. Net Zero - The UK's contribution to stopping global warming - Climate Change Committee (theccc.org.uk)
...are carers (unpaid family or friend)?		x		Carers, such as parents of young children, are likely to benefit from the additional buggy space/wheelchair.

Section 8. Geographic impact – Please detail where the impact will be (please tick all that apply)

North Yorkshire wide	
Craven district	
Hambleton district	
Harrogate district	x
Richmondshire district	
Ryedale district	
Scarborough district	
Selby district	
If you have ticked one or more districts, will specific town(s)/village(s) be particularly impacted? If so, please specify below.	
The towns of <u>Harrogate</u> and <u>Knaresborough</u> in Harrogate borough in the main. The services within the proposal will also operate to West Yorkshire (Wetherby and Leeds) and to Ripon.	
The following four services are part of the proposal for conversion to zero emission buses:	
<ul style="list-style-type: none"> <input type="checkbox"/> The 1 between Harrogate and Knaresborough estates <input type="checkbox"/> The 7 between Harrogate, Wetherby and Leeds <input type="checkbox"/> The 24 between Harrogate and Pateley Bridge <input type="checkbox"/> The 36 between Ripon, Harrogate and Leeds 	

<p>Section 9. Will the proposal affect anyone more because of a combination of protected characteristics? (e.g. older women or young gay men) State what you think the effect may be and why, providing evidence from engagement, consultation and/or service user data or demographic information etc.</p> <p>The following groups are likely to be positively impacted by the proposal:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Older people on low income <input type="checkbox"/> Young children living in a low income household <input type="checkbox"/> People with a disability* on low income <input type="checkbox"/> Pregnant or maternity on low income <input type="checkbox"/> Lone parents who are predominately female and at higher risk of poverty <p>* Whilst impacts are in the main positive, there is the potential for an adverse impact to blind and partially sighted people as detailed above.</p>
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<p>Section 10. Next steps to address the anticipated impact. Select one of the following options and explain why this has been chosen. (Remember: we have an anticipatory duty to make reasonable adjustments so that disabled people can access services and work for us)</p>	<p>Tick option chosen</p>
<p>1. No adverse impact - no major change needed to the proposal. There is no potential for discrimination or adverse impact identified.</p>	<p>x</p>
<p>2. Adverse impact - adjust the proposal - The EIA identifies potential problems or missed opportunities. We will change our proposal to reduce or remove these adverse impacts, or we will achieve our aim in another way which will not make things worse for people.</p>	

3. Adverse impact - continue the proposal - The EIA identifies potential problems or missed opportunities. We cannot change our proposal to reduce or remove these adverse impacts, nor can we achieve our aim in another way which will not make things worse for people. (There must be compelling reasons for continuing with proposals which will have the most adverse impacts. Get advice from Legal Services)	
4. Actual or potential unlawful discrimination - stop and remove the proposal – The EIA identifies actual or potential unlawful discrimination. It must be stopped.	
<p>Explanation of why option has been chosen. (Include any advice given by Legal Services.)</p> <p>The proposal is likely to have a positive impact on a number of groups of people with protected characteristics.</p> <ul style="list-style-type: none"> □ Improved air quality will reduce the adverse impact of air pollution: <ul style="list-style-type: none"> ○ Young people’s development is affected by air pollution, which can have both immediate and long-lasting effects on a person’s health. Early childhood is a critical time for the formation and maturation of body systems and the time during which most rapid changes take place. ○ Low-income and vulnerable people, the former of whom tend to live in areas worst affected by air pollution. ○ Pregnancy/maternity air pollution has potential effects on foetal growth and exposure to air pollution is associated with low birth weight and premature birth. □ The buses will be fitted with a number of accessibility requirements (eg equipment identifying the route, each upcoming stop) which will assist older people, people with certain disabilities and parents who are carers for young people. □ Improved noise pollution (which can result in heart problems, sleep disturbance, slower learning and annoyance, and can disrupt the natural environment). □ The vehicles will have improved accessibility features including an additional wheelchair space. <p>One potential negative impact is that as electric vehicles are quieter than combustion engine alternatives, there is the potential for an adverse impact to blind and partially sighted people. The council will work local bus operators that already operate such vehicles to identify if the potential adverse impact identified is likely to materialise and if so the council will work with the preferred bus operator partner to identify evaluate the benefits of interventions to address this adverse impact, for example including artificial bus noise on the vehicles. The council will also work with the partner bus operator to engage with users and representatives to monitor for signs and any adverse impact.</p>	

<p>Section 11. If the proposal is to be implemented, how will you find out how it is really affecting people? (How will you monitor and review the changes?)</p> <ul style="list-style-type: none"> □ Monitoring and evaluation will be embedded into the project programme. □ Current information systems will be used and monitored for example: <ul style="list-style-type: none"> ○ Correspondence and complaints following the introduction of any changes ○ Feedback from Parish Councils, County Councillors and other stakeholders such as disability user groups □ Monitoring patronage usage by user group □ Passenger satisfaction surveys
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Section 12. Action plan. List any actions you need to take which have been identified in this EIA, including post implementation review to find out how the outcomes have been achieved in practice and what impacts there have actually been on people with protected characteristics.				
Action	Lead	By when	Progress	Monitoring arrangements

Monitoring and evaluation plan	North Yorkshire County Council	Ongoing	Ongoing	As detailed in the plan
Monitor current information systems	North Yorkshire County Council / Operator	Ongoing	Ongoing	Through normal business processes
Monitor patronage usage by user group	Operator	Ongoing	Ongoing	Through normal business processes
Passenger satisfaction surveys	Operator	Ongoing	Ongoing	Through normal business processes

Section 13. Summary Summarise the findings of your EIA, including impacts, recommendation in relation to addressing impacts, including any legal advice, and next steps. This summary should be used as part of the report to the decision maker.

The Council is submitting a Business Case to the Department for Transport through the Zero Emission Bus Regional Area to secure funding for new zero emission buses and supporting charging infrastructure in the Harrogate and Knaresborough area. Funding received through this bid will enable 39 new zero emission buses to be delivered, along with supporting charging infrastructure, to replace and redeploy 11 Euro 5 buses and 2 Euro 6 buses.

There are a number of other benefits including:

- Air Quality
- Health
- Environmental
- Economic
- Social

Whilst the identified impacts are positive for a number of groups of people with protected characteristics, one potential negative impact has been identified. As electric vehicles are quieter than combustion engine alternatives, there is the potential for an adverse impact to blind and partially sighted people.

The proposal is likely to deliver a number of positive impacts to a number of groups of people with protected characteristics. The council will work local bus operators that already operate such vehicles to identify if the potential adverse impact identified is likely to materialise and if so the council will work with the preferred bus operator partner to identify evaluate the benefits of interventions to address this adverse impact, for example including artificial bus noise on the vehicles.

Section 14. Sign off section

This full EIA was completed by:

Name: Cathy Knight

Job title: Commercial Sector Service Development Manager

Directorate: Business and Environmental Services

Signature:

Completion date: 26/08/2021

Authorised by relevant Assistant Director (signature):

Date: