



Cherwell
DISTRICT COUNCIL
NORTH OXFORDSHIRE



Cherwell District Council and Oxfordshire County Council Equality and Climate Impact Assessment

ZEBRA

January 2022

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Section 1: Summary details

Directorate and Service Area	Central Locality Team, Environment & Place, Oxfordshire County Council
What is being assessed (e.g. name of policy, procedure, project, service or proposed service change).	Oxford Zero Emission Bus Regional Areas Scheme (ZEBRA)
Is this a new or existing function or policy?	New
Summary of assessment Briefly summarise the policy or proposed service change. Summarise possible impacts. Does the proposal bias, discriminate or unfairly disadvantage individuals or groups within the community? (following completion of the assessment).	<p>The Oxford ZEBRA is anticipated to provide positive health and environmental benefits through reducing emission levels by replacing 159 diesel buses with new electric buses. Public health will be improved as there will be reduced exposure to nitrogen dioxide pollution and positive environmental impacts will be provided by the reduction of carbon emissions. This will address health inequalities in the region and contribute to air quality improvements in the three AQMAs in the defined area.</p> <p>The defined area covers the 'Oxford SmartZone'. This is a multi-operator bus ticketing zone which includes all of Oxford City, Wytham, Botley, Cumnor, Kennington (Vale of White Horse District), Sandford-on-Thames, Horspath, Wheatley, Yarnton, Begbroke and Kidlington (Cherwell District). This includes areas of deprivation within the most deprived 20% in England.</p> <p>The proposal does not bias, discriminate, or unfairly disadvantage any groups within the community but provides health and environmental benefits to all who reside, visit, work, commute and go to school in the area.</p>
Completed By	Laura Hawrych
Authorised By	Owen Jenkins, Director of Growth & Economy, Oxfordshire County Council

Date of Assessment	03/11/2021 (initial assessment), 13/01/2022 (updated assessment following review by DfT and its advisors).
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Section 2: Detail of proposal

<p>Context / Background</p> <p>Briefly summarise the background to the policy or proposed service change, including reasons for any changes from previous versions.</p>	<p>This project is part of Oxford’s transport decarbonisation ambitions as the County Council intends to be a carbon neutral council by 2030 and aims to have a zero carbon Oxfordshire by 2050. Transport decarbonisation is necessary to support this aim, and, alongside Oxford Zero Emission Zone, this ZEBRA scheme will play a major role.</p> <p>In January 2020, the council set an ambition for buses operating within Oxford to be 100% zero emission by 2030. The ZEBRA project takes the first step in realising these ambitions.</p> <p>ZEBRA will also contribute to the execution of Oxford City Council’s Air Quality Action Plan (AQAP) (2021-2025) which sets out the target of all monitored locations in Oxford having 30 ug/m3 nitrogen dioxide levels by 2025. In addition to supporting the delivery of the targets in the AQAP, ZEBRA aligns with and supports a number of other policies and initiatives across Oxford City Council in particular:</p> <p>The Council’s 4th Carbon Management Plan for 2021/22 to 2029/30 Plan – including plans to continue to expand the electrification of the council’s own fleet;</p> <p>The Zero Carbon Oxford Road Map commissioned by Oxford City Council on behalf of the Zero Carbon Oxford Partnership and developed with the Carbon Trust, models a pathway to net-zero 10 whole years ahead of the UK’s Government’s legal targets including a target that carbon based transport emissions must be reduced by 80% to achieve this 2040 goal;</p> <p>The Oxford Local Plan 2036 provides the policy framework for development across the city which includes policies around air quality (RE6) and ensuring efficient movement into and around the city with prioritisation of walking, cycling and use of public transport over the use of the private car (M1). In addition the Plan seeks downward pressure on public and private car parking to promote and develop opportunities for realistic alternatives to the private car (M3);</p>
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	<p>The Cherwell and Oxfordshire’s Including Everyone- Equalities and Diversity Framework, published November 2020, outlines the framework for creating equitable access to services and equality of opportunity across both counties. The aim is to minimise social exclusion and build inclusive communities;</p> <p>Both Oxfordshire County Council and Oxford City Council have demonstrated a strong commitment to improving air quality across the city. This is demonstrated by the introduction of a Pilot Zero Emission Zone ZEZ (February 2022) and the wider ZEZ to be implemented over the following years.</p> <p>Oxfordshire County Council has also proposed a Bus Service Improvement Plan (BSIP) which was submitted in October. The ZEBRA Scheme will support this proposed plan in its aims to tackle inequalities and address the Climate Change Emergency.</p> <p>Finally, the ZEBRA Scheme aligns with The Inclusive Transport Strategy, updated in 2020 and set out by the Department for Transport, which aims to create a transport system that offers equal access for disabled people by 2030.</p>
<p>Proposals</p> <p>Explain the detail of the proposals, including why this has been decided as the best course of action.</p>	<p>The scheme proposes 159 new zero emission electric buses to be put into service in the ‘Oxford SmartZone’, replacing existing diesel buses ensure ZEB operation on ZEBRA routes should buses be out of service. The diesel buses, many are ultra-low emission Euro VI diesel vehicles, which will be ‘cascaded’ to replace older, higher emitting buses in Oxfordshire or elsewhere, bringing significant additional air quality benefits in places like Didcot and Banbury.</p> <p>The ‘Oxford SmartZone’ is a multi-operator bus ticketing zone which includes all of Oxford City, Wytham, Botley, Cumnor, Kennington (Vale of White Horse District), Sandford-on-Thames, Horspath, Wheatley, Yarnton, Begbroke and Kidlington (Cherwell District). Within this defined area 48% of bus services, 67% of total hourly bus flows and 72% of total daily bus milage will be operated by zero emission buses under the ZEBRA scheme.</p> <p>Oxfordshire has the highest per capita bus use when compared to other shire counties in England. Bus flows and bus use are high in the SmartZone and so the impact of electrifying a large proportion of the fleet operating here would provide significant local air quality benefits across Oxford and the wider region, reduce CO2 and fossil fuel emissions, and improve passenger experience for the tens of thousands of daily passengers in the city.</p>

Evidence / Intelligence

List and explain any data, consultation outcomes, research findings, feedback from service users and stakeholders etc, that supports your proposals and can help to inform the judgements you make about potential impact on different individuals, communities or groups and our ability to deliver our climate commitments.

Bus Users

Buses are the most accessible form of public transport for disabled individuals. In 2018/2019 99% of local buses were disability accessible, according to DfT's [Transport Statistics, Great Britain 2019 report](#). In 2018/19 around 19% of people in the South East region have a disability ([Equalities Data 2021](#)) and as such the improvement of bus services will be of benefit to these users.

The Equalities Data 2021 conveys that Oxfordshire's total resident population as of mid-2019 was 691,667; 50.3% were female and 49.7% male. 131,373 people were aged below 15 and 128,120 persons aged over 65. As of September 2020, there were 18,682 carers registered with GP practices in the Oxfordshire region, however there are likely more carers than those registered as according to the 2011 Census there were 61,100 unpaid carers. It is also estimated that there are around 12,887 who identify lesbian, gay or bisexual persons (2018 statistics). All the forementioned groups will benefit from bus improvement, this improvement is detailed below.

DfT's [Annual bus statistics: England 2019/20 report](#) conveys that on average people in households without access to a car made over 4 times as many local bus trips in 2019 when compared to those with car access. In 2019, people in the lowest real income quintile made the most local bus trips on average. Those in the highest income quintile made the least. According to the 2019 Index of Multiple Deprivation, 10/83 of Oxford's neighbourhood areas are among the 20% most deprived areas in England, thus can largely benefit from the ZEBRA scheme.

Studies have identified that people with ill-health, disabilities, women, older people, and ethnic minorities are all more likely to be concerned about their personal safety when travelling on public transport (Delbosc and Currie, 2013). Bus services are already considered a safe method of public transport with 94% of buses had CCTV in 2019/20 (Annual bus statistics 2019/20) and further improving bus services will enable individuals with protected characteristics to feel safer on bus services.

Air pollution, climate change and health

Oxford City Council's latest [source apportionment study](#) shows that buses remain a substantial source of transport emissions in Oxford. Further action to tackle bus emissions is therefore essential to achieve clean air and reduce greenhouse gas emissions.

Oxford's most recent pre-Covid [air quality annual status report](#) (2019) summarises the available monitoring data, showing elevated levels of nitrogen dioxide and particulate matter. The most polluted locations are busy bus routes.

According to the Oxfordshire Joint Health and Wellbeing Strategy, due to air pollution in 2019, it is estimated that 2,300 years of healthy life was lost. This was due to a range of associated issues including cardiovascular disease, diabetes and chronic respiratory disease. In 35% of deaths involving COVID-19 respiratory or cardiovascular disease was listed as the main pre-existing health condition, therefore, in this current health crisis it is increasingly evident that air quality needs to be improved. In locations which experience the highest bus flows, introducing electric buses could reduce nitrogen dioxide emissions from road transport by up to around 50% and reduce particulate matter emissions by up to 4-5%.

Additionally, evidence shows an emerging association between specific air pollutants and mental health outcomes including, but not limited to, anxiety, depression, dementia, and suicide. As discussed in a [2018 review](#) by Jacob King for the Journal of Urban Design and Mental Health, this effect is not clear and there are still challenges with measuring the impacts of pollution on mental health. However, this association should still be taken into account when implementing urban design and as such it is logical to conclude in this assessment that zero-emission buses may have positive benefits for mental health.

At a local level, disadvantaged communities are more likely to be disproportionately exposed to poor air quality and subsequently to the above outlined negative health impacts ([Health profile for England: 2018](#)). This is due to disadvantaged communities tending to be disproportionately concentrated in and around polluted locations, such as busy roads.

The climate crisis is becoming increasingly pressing and is due to fossil fuel emissions contributing to an enhanced greenhouse effect. Emissions from diesel vehicles directly contribute to this crisis. The electrification of the 166 buses could save around 6,000 tonnes of CO₂ each year when compared to diesel buses, reducing the negative climate change impacts in addition to the health benefits in electrifying the fleet.

The proposed ZEBRA scheme tackles both these issues, offering all residents, groups, stakeholder access to reliable and clean public transport options across the city and thus supports the ambition of both councils to reduce inequalities, and does not create any negative impacts for different individuals, communities, or groups

Stakeholder and community input

The proposals have been discussed with the Oxford Inclusive Transport and Movement Focus Group, which has enabled people with disabilities and representatives of people with disabilities to give their comments on the scheme. The focus group members have access to a wider network of contacts and will use those to seek further feedback on specific points.

The feedback received so far from the Focus Group has informed the first draft of the impact assessment presented in this document.

A [survey undertaken for the Oxfordshire Bus Service Improvement Plan](#) (BSIP) revealed some of the priorities of the general public and other stakeholder groups for buses in Oxfordshire. The top priorities are increased service frequency, more routes and greater reliability. Reduced environmental impact and improved accessibility were also supported.

The scheme has also received Letters of support from Bus operators involved in the ZEBRA proposal (Go Ahead and Stagecoach), Oxford City Council, Cherwell District Council, Pivot Power, an EDF Renewables UK company, Oxfordshire Local Enterprise Partnership and England's Economic Heartland. This positive feedback from key stakeholders further adds to evidence supporting the scheme.

The delivery of BSIP will be developed through an Enhanced Partnership Agreement between OCC and operators. Oxfordshire is also progressing its Connecting Oxford proposals through the course of 2022, which has a direct impact on bus services and operations. As part of Connecting Oxford and ECIA will be developed, but which point, it should have been determined whether ZEBRA funding has been secured.

Stakeholder engagement, including engagement with the Oxford Inclusive Transport and Movement Focus Group and other representative groups will be a critical elements of developing and implementing the proposals.

	<p>The ZEBRA business case includes a Monitoring and Evaluation Plan. The monitoring of the plan will include engagement with stakeholders which will demonstrate 1. how stakeholders have been engaged through the development of implementation of ZEBRA (as part of process evaluation) and 2. attitudinal research to assess the impact and benefits of the scheme (as part of outcome and impact evaluation).</p>
<p>Alternatives considered / rejected</p> <p>Summarise any other approaches that have been considered in developing the policy or proposed service change, and the reasons why these were not adopted. This could include reasons why doing nothing is not an option.</p>	<p>Oxfordshire's ambition to create a zero emission bus system was set in the 2015 Local Transport Plan, as part of the Oxford Transport Strategy. Various alternative public transport options were considered as part of the OTS, including light rail and trams. Zero emission buses were deemed to be the most appropriate solution for Oxfordshire given its geography, population, movement patterns and environmental constraints. Air pollution in Oxford has already been greatly improved by policies and funding to reduce bus emissions. Around 90% of the Oxford fleet is Euro VI compliant. However, in recent years the reduction in air pollution has plateaued. Furthermore, although cleaner diesel buses tackle air quality they do not fulfil the councils' decarbonisation objectives. Continuing with ever-cleaner diesel buses has been considered but ruled out for the reasons above.</p> <p>Hydrogen-fuelled buses have also been considered, but have been ruled out in favour of battery electric buses for the SmartZone area for the following reasons:</p> <ul style="list-style-type: none"> • Proven technology and greater maturity of supplier market for electric buses • Longer range of hydrogen not required within Smart Zone area • Likely to be easier to cascade to other parts of the county or country when replaced • Maturity of supplier market - <p>It is not an option to do nothing in this case as the problems with local area pollution and climate change are causing negative impacts. These impacts will remain and most likely worsen if no action is taken.</p> <p>The proposed scheme aligns fully with OCC's ambitions to:</p> <ul style="list-style-type: none"> • Develop a zero-emission zone (ZEZ), to cover Oxford City centre by 2022/23.

- For buses operating in Oxford to be 100% zero emission by 2030.

The development of the proposals is in direct response to Government funding initiative for Zero Emission Bus Regional Areas (ZEBRA), which is specifically intended to accelerate the deployment of zero-emission buses.

The ZEBRA funding would support the replacement of existing buses with zero-emission buses, for the eligible routes identified. As part of the scheme development and through discussion with operators, electric buses were identified as a more deliverable and cost-effective solution compared with a hydrogen bus alternative (the only other zero-emission bus technology for which there is a current supplier market).

Section 3: Impact Assessment - Protected Characteristics

Protected Characteristic	No Impact	Positive	Negative	Description of Impact	Any actions or mitigation to reduce negative impacts	Action owner* (*Job Title, Organisation)	Timescale and monitoring arrangements
Age	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Children are particularly vulnerable and suffer disproportionately from the impact of air pollution. Children living in the area will experience lower levels of air pollution. A number of primary and secondary schools are near bus routes and will benefit from reduced air pollution. Many of the bus routes included will be used by school children for their journeys to and from school.</p> <p>Poor air quality is also especially problematic for the elderly as their lungs are less able to filter out polluted air and air pollution is likely to aggravate existing health conditions. Studies have also highlighted links between air pollution and decreased cognitive performance.</p> <p>New buses purchased through the ZEBRA scheme will have numerous accessibility features, which will be equal to or better than the features on the vehicles being replaced.</p>			

<p>Disability</p>	<p><input type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>	<p>Improving air quality will provide positive benefits to those whose health conditions are related to cardiovascular issues and difficulties with breathing.</p> <p>Some of the buses to be purchased will serve routes to the city's major hospitals.</p> <p>New buses purchased through the ZEBRA scheme will have numerous accessibility features, and exceed Passenger Service Vehicle Accessibility Requirements (PSVAR). This will ensure ZEB vehicles are equal to or better than the features on the vehicles being replaced. There will be room for two wheelchairs, the provision of live information and space for an assistance dog within the bus.</p> <p>A risk has been identified for many years that electric vehicles may be more difficult for visually impaired pedestrians to hear than internal combustion engine vehicles.</p> <p>A report prepared for the Department for Transport in 2011 looked at the data available and concluded that the measurable safety risks appear to be small, but nevertheless, mitigation is</p>	<p>Acoustic Vehicle Alert Systems (AVAS) must be in operation on all new electric vehicle registered after July 2021 to address potential safety concerns for partially sighted pedestrians.</p> <p>New buses purchased under the ZEBRA scheme will be equipped with AVAS. Stakeholders will be consulted with communications planned to raise awareness and engagement will be carried out with disability user groups.</p>		
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				proposed (see next column) to address this concern.			
Gender Reassignment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Improved air quality will lead to an improved quality of life and a lower risk of health problems. Safety features on ZEB buses will enhance feeling of safety.			
Marriage & Civil Partnership	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Improved air quality will lead to an improved quality of life and a lower risk of health problems.			
Pregnancy & Maternity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Poor air quality disproportionately impacts pregnant women and their babies. Studies have connected air pollution to low birth weight, premature birth and development of asthma during childhood. Pushchair space will also have a positive impact on new mothers and those on maternity leave who are using the bus services.			
Race	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Improved air quality will lead to an improved quality of life and a lower risk of health problems. The provision of live travel information will support those whose first language is not English.			

Sex	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Improved air quality will lead to an improved quality of life and a lower risk of health problems.</p> <p>Women are more likely to be carers, so pushchair and wheelchair space is beneficial.</p> <p>Women are more likely to be concerned about their personal safety when travelling on public transport and therefore the improved safety measures</p> <p>Furthermore, lone parents are predominantly female and more likely to face risk of poverty and as such use public transport more often, therefore this scheme will be especially beneficial to this sex.</p>			
Sexual Orientation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Improved air quality will lead to an improved quality of life and a lower risk of health problems.</p> <p>Safety features on ZEB buses will enhance feeling of safety.</p>			
Religion or Belief	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Improved air quality will lead to an improved quality of life and a lower risk of health problems.</p>			

Section 3: Impact Assessment - Additional Community Impacts

Additional community impacts	No Impact	Positive	Negative	Description of impact	Any actions or mitigation to reduce negative impacts	Action owner (*Job Title, Organisation)	Timescale and monitoring arrangements
Rural communities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The scheme will allow low emission and ultra low emission Euro V and Euro VI buses to be cascaded to smaller towns and more rural parts of Oxfordshire.			
Armed Forces	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is no armed force component to the area as there are no military bases or ranges.			
Carers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Improved air quality will lead to an improved quality of life and a lower risk of health problems. Women are more likely to be carers, so pushchair and wheelchair space is beneficial.			
Areas of deprivation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	According to the Index of Multiple Deprivation (2019), 10 out of 83 of Oxford's neighbourhood areas are among the 20% most deprived			

Additional community impacts	No Impact	Positive	Negative	Description of impact	Any actions or mitigation to reduce negative impacts	Action owner (*Job Title, Organisation)	Timescale and monitoring arrangements
				<p>areas in England. Areas of deprivation are disproportionately impacted by low air quality as they are most likely to suffer the highest levels of pollution and thus experience the worst impacts. Most of these areas are served by high frequency bus services which increase air pollution, these will become emission-free under the ZEBRA scheme.</p>			

Section 3: Impact Assessment - Additional Wider Impacts

Additional Wider Impacts	No Impact	Positive	Negative	Description of Impact	Any actions or mitigation to reduce negative impacts	Action owner* (*Job Title, Organisation)	Timescale and monitoring arrangements
Other Council Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The implementation of the scheme will have no impact on other council services as it only applies to bus services.			
Providers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No impact on providers as the scheme only applies to bus services.			
Social Value ¹	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The proposal will improve public health in the defined area by reducing nitrogen dioxide pollution exposure, address health inequalities by reducing emissions in deprived areas. The local economy will also be supported in its Covid-19 recovery by boosting bus image and improving passenger and shopper experience. The scheme will			

¹ If the Public Services (Social Value) Act 2012 applies to this proposal, please summarise here how you have considered how the contract might improve the economic, social, and environmental well-being of the relevant area

Additional Wider Impacts	No Impact	Positive	Negative	Description of Impact	Any actions or mitigation to reduce negative impacts	Action owner* (*Job Title, Organisation)	Timescale and monitoring arrangements
				also ensure existing bus industry jobs are retained and increased.			

Section 3: Impact Assessment - Climate Change Impacts

OCC and CDC aim to be carbon neutral by 2030. How will your proposal affect our ability to reduce carbon emissions related to

Climate change impacts	No Impact	Positive	Negative	Description of impact	Any actions or mitigation to reduce negative impacts	Action owner (* Job Title, Organisation)	Timescale and monitoring arrangements
Energy use in our buildings or highways	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The electric buses will be more energy efficient than diesel buses and will reduce the energy usage and carbon emissions from transport and highways.			
Our fleet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The buses to be funded are not part of the council's fleet, so there is no direct impact on our own fleet.			
Staff travel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Staff who travel on these buses will reduce their personal carbon footprint. The scheme may also increase the number of staff using buses as a transport option as new electric buses are likely to be perceived as a 'better' transport product than the diesel buses they replace.			

Purchased services and products (including construction)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The scheme will not have an impact on purchased services and products as it only applies to bus services.			
Maintained schools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The scheme will not impact on maintained schools as it only applies to bus services.			

We are also committed to enable Cherwell to become carbon neutral by 2030 and Oxfordshire by 2050. How will your proposal affect our ability to:

Climate change impacts	No Impact	Positive	Negative	Description of impact	Any actions or mitigation to reduce negative impacts	Action owner (*Job Title, Organisation)	Timescale and monitoring arrangements
Enable carbon emissions reduction at district/county level?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The 'Oxford SmartZone' covers an area of Cherwell and other districts. The new electric buses will therefore enable significant carbon emission reduction at district and county level.			

Section 4: Review

Where bias, negative impact or disadvantage is identified, the proposal and/or implementation can be adapted or changed; meaning there is a need for regular review. This review may also be needed to reflect additional data and evidence for a fuller assessment (proportionate to the decision in question). Please state the agreed review timescale for the identified impacts of the policy implementation or service change.

Review Date	January 2022
Person Responsible for Review	Martin Kraftl – Oxfordshire County Council Eliot Wilde – Steer Group
Authorised By	Owen Jenkins, Director of Growth & Economy, Oxfordshire County Council