



Northumberland
County Council

Climate Change ACTION PLAN

2021-23



CONTENTS

Foreword by the Leader of the Council	4
Foreword by the Chief Executive	6
Executive Summary	8
Introduction	10
Priority Action Area 1 - Council Policy	17
Priority Action Area 2 - Engagement and Partnership	21
Priority Action Area 3 - Heating Existing Buildings and New Buildings	25
Priority Action Area 4 - Transport	34
Priority Action Area 5 - Renewable Energy Generation	44
Priority Action Area 6 - Natural Resource-Based Carbon Sequestration.....	52
Priority Action Area 7 - Reducing Waste	55
Summary of Current Projects	57
The Route to Net-Zero	62
Conclusion	66
Contact Details	68



GLOSSARY OF ABBREVIATIONS

AONB	Area of Outstanding Natural Beauty	LCWIP	Local Cycling and Walking Investment Plan
ASHP	Air source heat pump	LED	Light Emitting Diode
BEIS	Department for Business, Energy and Industrial Strategy	LNRS	Local Nature Recovery Strategy
BEV	Battery Electric Vehicle	LPG	Liquid petroleum gas
CCC	Climate Change Committee (a national, independent committee)	LTP	Local Transport Plan
CO ₂	Carbon dioxide	LULUCF	Land Use, Land Use Change and Forestry
CO ₂ e	Carbon dioxide equivalent	MTFP	Medium Term Financial Plan
CSR	Corporate Social Responsibility	MW	Megawatt
DEFRA	Department for Environment, Food and Rural Affairs	MWh	Megawatt-hours
DfT	Department for Transport	NCC	Northumberland County Council
DNO	District Network Operator	NELEP	North East Local Enterprise Partnership
ECO	Energy Company Obligation	NNPA	Northumberland National Park Authority
ELMS	Environmental Land Management Scheme	NTCA	North of Tyne Combined Authority
ERDF	European Regional Development Fund	ORCS	On-street Residential Chargepoint Scheme
EV	Electric Vehicles	OZEV	Office for Zero Emission Vehicles
EVCP	Electric Vehicle Charging Points	PSDF	Public Sector Decarbonisation Fund
FHSF	Future High Streets Fund	PV	Photovoltaic
FRP	Fleet Replacement Programme	RCEF	Rural Community Energy Fund
FTE	Full Time Equivalent	S106	Planning obligations under Section 106 of the Town and Country Planning Act 1990
GHG	Greenhouse Gas	SCATTER	Setting City Area Targets and Trajectories for Emissions Reduction
GSHP	Ground source heat pump	SME	Small to Medium Enterprise
GWh	Gigawatt-hours	STEM	Science, technology, engineering and maths
HNDU	Heat Network Delivery Unit	tCO ₂	Tonnes carbon dioxide
HNIP	Heat Networks Investment Project	ULEV	Ultra Low Emission Vehicle
IPCC	Intergovernmental Panel on Climate Change		
KPIs	Key Performance Indicators		
ktCO ₂	Kilotonnes carbon dioxide		
kWp	kilowatts peak		
LA7	Durham, Gateshead, Newcastle upon Tyne, North Tyneside, Northumberland, South Tyneside and Sunderland local authorities		



FOREWORD BY THE LEADER OF THE COUNCIL

2020 has been an exceptionally challenging year for the world and not least for us here in Northumberland. As a Council, much of our attention and resource has been focused on the Covid-19 pandemic and its impact on our residents and businesses.



Climate change, however, remains a significant long-term challenge for the planet and for Northumberland and its impacts on all our lives will continue long after the pandemic has been beaten.

Since the publication of our Climate Commitment Action Plan 2020-21 in January last year, we have continued to work hard on this agenda and have made good progress against our plans, despite the upheaval caused by Covid-19.

Our key target of a net-zero Northumberland by 2030 still stands.

Whilst our first Climate Commitment Action Plan set the foundations of our climate change programme, we are now able to publish more detailed plans for projects that will be delivered soon, together with a longer-term vision for net-zero.

Progress against 2020-21 Climate Change Action Plan

We have delivered or are underway with projects committed to in our previous Climate Change Action Plan. These include:

- ✓ Decarbonising our Council fleet
- ✓ Installing 12 additional public EV charging points
- ✓ Giving away 15,000 free trees to households and community groups

Engaging our Communities, Businesses and Staff

The delivery of our climate change target is dependent on the whole County pulling together, to that effect we will be running several community engagement schemes this year. These include:

- ✓ Community Climate Champions – we will provide community groups with the knowledge, training and toolkits necessary to develop their own local climate change action plans
- ✓ Free Tree Scheme – we will be running this popular scheme again with the aim of giving away a free tree for every household in Northumberland
- ✓ Carbon literacy training will be delivered to our staff

New Capital Projects

We plan to deliver a wide range of new projects over the next two years which are subject to successful funding applications. These include:

- ✓ A district heat network in Blyth, using heat from abandoned flooded mines
- ✓ Energy efficiency improvements to over 300 homes between February and September 2021
- ✓ Installing up to 30 pavement chargers for Electric Vehicles in 7 locations across the county



As a Council, we will continue to lead the way by reducing the energy consumption of our estate and installing renewable heat and power solutions in our buildings. We will also be assessing the carbon impact of all the key policy decisions we make.

But to have any chance of realising our ambition of a net-zero Northumberland, we need your support. Every resident, business and visitor to Northumberland will need to make their contribution to see Northumberland become the UK's greenest county.

Through our Community Climate Champions scheme, we will develop strong place-based communities united to deliver growth in the green economy and to achieve our ambition for climate change.

Whilst addressing climate change will require changes to the way we live our lives and do business, there is also significant opportunity for Northumberland to position itself as the centre of the UK's thriving green economy. We have vast natural resources, already absorbing more carbon than any other English county and with the potential to sequester far more, whilst supporting nature. We have resilient, innovative communities eager to build back stronger and greener from the Covid-19 crisis and as a council, we will be seeking to attract green investment, to create jobs and build more green infrastructure which will have a positive impact not only on the climate, but on our day-to-day lives.

The publication of this new Climate Change Action Plan gives me great hope for the future of Northumberland. We will continue to review and update our plans and I look forward to working with residents, businesses and visitors to our wonderful county to make our vision of a net-zero Northumberland by 2030 a reality.



Councillor Glen Sanderson
Leader of Northumberland County Council



To have any chance of realising our ambition of a net-zero Northumberland, we need your support. Every resident, business and visitor to Northumberland will need to make their contribution to see Northumberland become the UK's greenest county.



FOREWORD BY THE CHIEF EXECUTIVE

The Green Economy and Climate Change have never been more important for Northumberland.



This Climate Change Action Plan sets out the actions that the Council will take to help attract green investment into the county and generate more green jobs as part of achieving our target to create a net-zero Northumberland by 2030.

Northumberland County Council remains committed to achieving this target, driven by a strategic intent to attract green investment into the county, grow the green economy, create new jobs, and achieve the climate change target.

This Action Plan focuses on the priorities for the next two years (2021, 2022) alongside the work required to develop the strategies and deliver the projects for 2023. Fundamental to the delivery of this Action Plan will be a county wide change in mindset and behaviours, which will only be possible through effective and far reaching engagement and partnerships with residents, communities, businesses, visitors and central government.

In order to achieve net-zero, 709.1 ktCO₂ will need to be removed from Northumberland's annual CO₂ emissions by 2030. Achieving this through the scenarios modelled in this plan will require an inward investment into the county of around £1.6bn over the next nine years.

This level of investment could create up to 11,000 local green jobs¹.

We will proactively work with national government, our strategic partners, local and national businesses as well as the financial services sector to access relevant funding opportunities and attract green investment partners.

This Climate Change Action Plan includes a focus on both enabling activities (Policy, Engagement and Partnerships) and delivery activities Heating; Transport; Renewable Energy Generation; Sequestration; Waste Reduction). Each of these priority action areas have a set of key targets detailed in this plan.

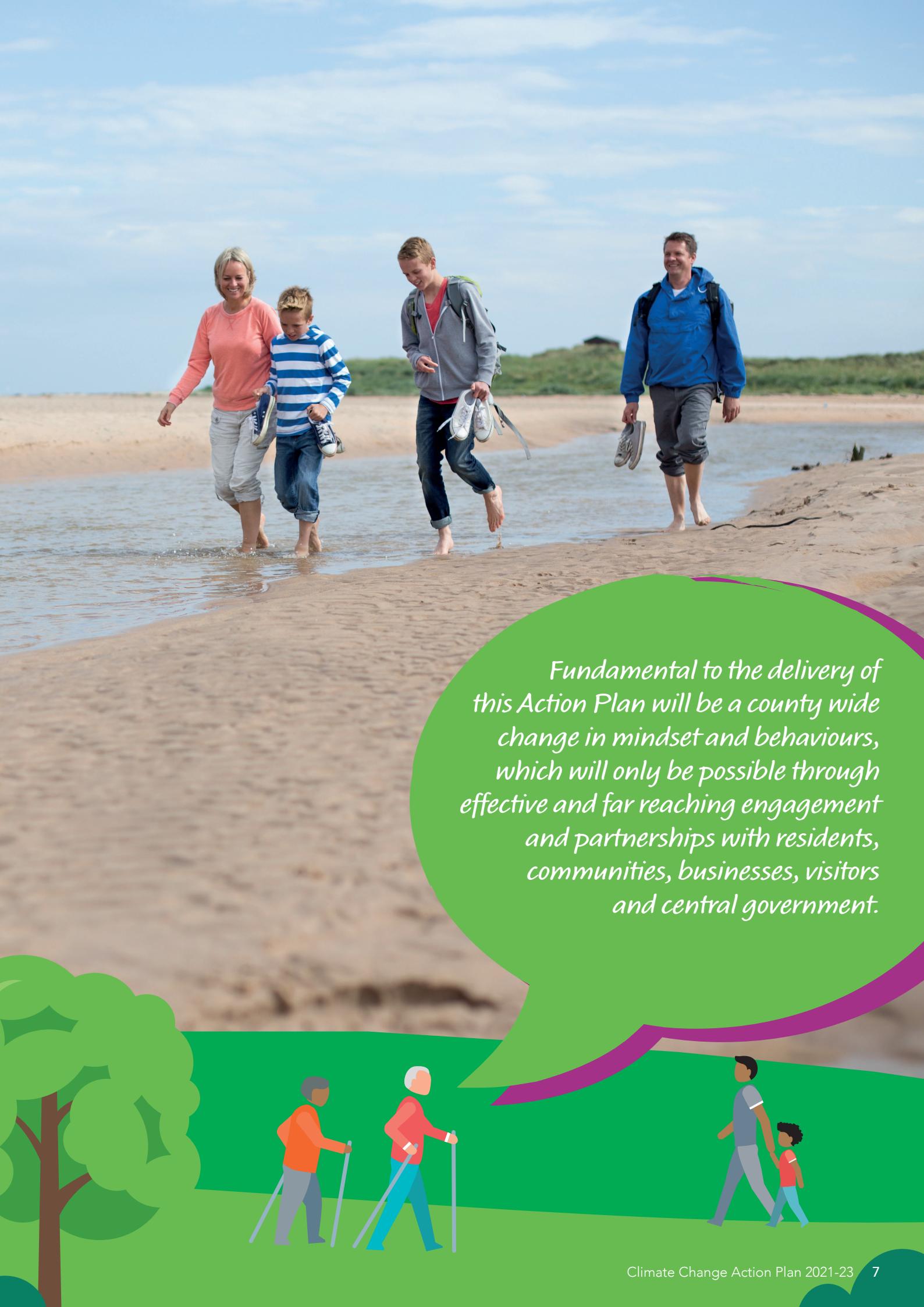
This is a huge amount of work, but far more will need to happen in order to meet our goal of a carbon neutral county. This plan will be revisited on an annual basis in order to track our progress. We will add detail to the modelled routes to net-zero as funding opportunities are identified and won, projects come to fruition and new opportunities emerge.

A handwritten signature in black ink, appearing to read "Daljit Lally".

Daljit Lally OBE
Chief Executive of Northumberland County Council

¹ Throughout this Action Plan, we have calculated the potential jobs created or supported by assuming 10-20% of capital expenditure is human resource with an average annual salary of £20,000 - £30,000. This is in line with the UK National Accounts Blue Book and our experience of delivering capital projects.





EXECUTIVE SUMMARY

This action plan details how Northumberland County Council intends to reduce CO₂ emissions produced in the county over the course of the next two years. Planned projects are set out across seven priority action areas. A summary of Northumberland's most recent emissions report is also given.

Northumberland's CO₂ Emissions

The primary contributor to global climate change is carbon dioxide (CO₂) emitted into the atmosphere from burning fossil fuels to create energy.

By combining our positive and negative emissions, we arrive at a grand total of 709.1 ktCO₂ emitted in 2018. This is the figure by which emissions must be reduced in order to become a net-zero, or carbon neutral county. Our target by which to achieve this is 2030.

Governance

Since the publication of Northumberland County Council's first Climate Commitment Action Plan 2020-21, additional resource has been allocated to the Climate Change programme and a Climate Change Team has been created.

The delivery of the Climate Change Action Plan will be monitored through the Corporate Services and Economic Growth Overview and Scrutiny committee.

The progress made in delivering the Climate Change Action Plan will be measured against key implementation milestones and, key performance / benefit indicators including Carbon Dioxide reduction, Green Jobs created and inward investment.

² http://commiteedocs.northumberland.gov.uk/MeetingDocs/47740_M10833.pdf

Priority Action Areas

Fundamental to the delivery of this Action Plan will be a county wide change in mindset and behaviours, which will only be possible through effective and far reaching engagement and partnerships with residents, communities, businesses, visitors and central government.

At the core of this approach will be the Priority Action Areas set out in the *Northumberland Climate Change Briefing Cabinet Paper* of 13th October 2020², together with an increase in scale and pace across relevant projects.

Priority Action Area 1 - Council Policy

All new policy decisions should be carbon neutral or should reduce Northumberland's emissions from their current level, unless there is significant justification in terms of other benefits to the county. Where such a policy cannot be carbon neutral, all available options to reduce its carbon impact will be explored.

Priority Action Area 2 - Engagement and Partnership

The Council cannot achieve its ambition of a net-zero county by 2030 in isolation. The actions of residents, visitors and businesses will be integral to meeting this goal. We will commit to engaging and partnering to **Inform, Consult, Empower and Evaluate** on initiatives and activity focused on climate change and the environment. We will seek to drive a cultural shift across the county through taking a number of key actions, including the creation of a Community Climate Champions network, working with residents, communities, businesses, the third sector, visitors and staff.



Priority Action Area 3 - Heating Existing Buildings and New Buildings

Poor energy efficiency in both domestic and non-domestic buildings results in the demand for excess heating. This causes unnecessarily high carbon emissions and energy costs. We will address this by progressing our work towards low-carbon district heat networks in our towns and supporting the implementation of renewable heat sources in rural areas, such as heat pumps, by supporting residents to apply for available funding support and drawing inward investment into the County.

Priority Action Area 4 - Transport

We will take a number of actions as part of this plan to help transport in the County become, wherever possible, low carbon with zero tailpipe emissions, protecting local air quality and reducing noise.

Priority Action Area 5 - Renewable Energy Generation

Continuing to generate energy from renewable sources across the County is both sustainable and a driver for economic growth. Whilst we acknowledge that the UK's national grid is projected to decarbonise substantially between now and 2030, there is much that the Council can do to support renewable energy generation. We will achieve this through taking a number of actions including continued support for renewable technology where installations are technically possible, economically feasible, environmentally advantageous and socially acceptable: including wind, solar and hydro.

Priority Action Area 6 - Natural Resource-Based Carbon Sequestration

The County enjoys a vast spread of land and forestry. Carbon is sequestered by forestry, grassland, wetlands and peat, while carbon losses occur on existing cropland and natural land that is converted to cropland. We will continue to work with our partners in our natural capital sector to progress integrated land use which enhances, safeguards sequestration and the associated biodiversity, whilst supporting local climate action and boosting rural economy.

Priority Action Area 7 - Reducing Waste

Northumberland County Council will support and engage our communities to consider a more circular approach to our economy and reduce waste by supporting efforts to design out waste, keeping materials in operation and productive use for as long as possible. This will reduce climate impacts and open new opportunities for businesses and consumers to provide and purchase sustainable goods and services.

The Route to Net-Zero

Savings are required across each emissions source, together with increased negative emissions in order to meet net-zero. Realising the scenarios modelled in this plan would require significant levels of inclusive investment across the various strands of work. Investment would need to cover substantial capital costs for projects. Our initial modelling puts the figure needed to realise the net-zero ambition at approximately £1.6bn. The investment required in realising these scenarios would not only result in green infrastructure but could create around 11,000 jobs within Northumberland across many sectors and skill levels ranging from tree planting to highly skilled construction and engineering jobs.

Beyond 2030

The Council understands that, in order to realise the national ambition of a net-zero UK by 2050, locations such as Northumberland which enjoy large areas of natural resources, will have to become carbon-negative in order to compensate for major urban conurbations which are unlikely to be able to achieve carbon neutrality themselves.

Beyond 2030, the council will continue to align itself with national objectives and support the UK's target of a net-zero country by 2050 by continuing to pursue the strategies set out in this plan.



INTRODUCTION

Positive CO₂ Emissions in Northumberland

The primary contributor to global climate change is carbon dioxide (CO₂) emitted into the atmosphere from burning fossil fuels to create energy. The primary uses of this energy and therefore the primary sources of CO₂ emissions in Northumberland are **transport, heat and power**.

Northumberland County Council uses figures published annually by the Department for Business, Energy and Industrial Strategy (BEIS) to monitor CO₂ emissions for the county of Northumberland. The most recent figures which are for 2018, show Northumberland's positive CO₂ emissions as 1,823.4 kt³.

As demonstrated in Figure 1, emissions have reduced substantially since 2005 however, the rate of decrease since 2013 has been slowing. Much of the decrease came as a result of the closure of one key industrial installation – the Alcan smelter which has now been repurposed as a biomass power plant.

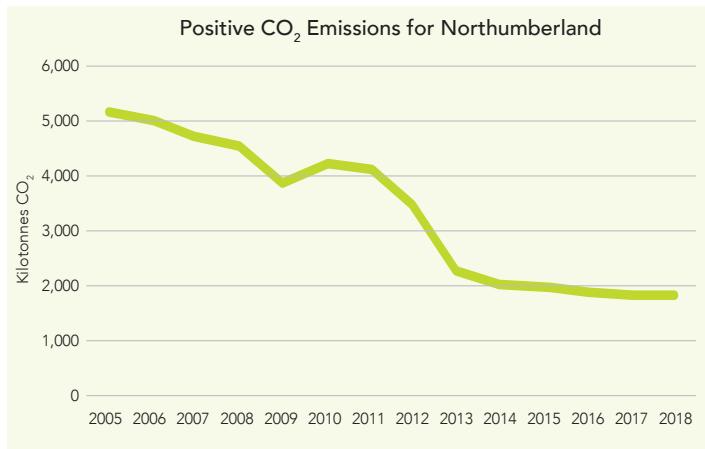


Figure 1 - Northumberland's total positive emissions over time since 2005

³ <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018>



Positive emissions can be broken down across key categories to show where emissions are produced in Northumberland.

Figure 2 and Figure 3 demonstrate that whilst emissions from large industrial installations have dramatically reduced following the closure of key installations and electricity emissions are declining as the national grid decarbonises, most emissions categories remain largely static.

Negative CO₂ Emissions in Northumberland

Whilst Northumberland contributed 1,823.4 ktCO₂ positive emissions in 2018, it also has significant natural capital which sequesters carbon, resulting in negative emissions. These emissions are categorised by BEIS as Land Use, Land Use Change and Forestry (LULUCF). These negative emissions offset positive emissions from energy and fuel uses drastically and reduce the overall carbon dioxide emissions of Northumberland. The most recent figures which are for 2018, show Northumberland's negative CO₂ emissions as - 1,114.3 ktCO₂. LULUCF emissions can also be broken down by category as shown in Figure 4.

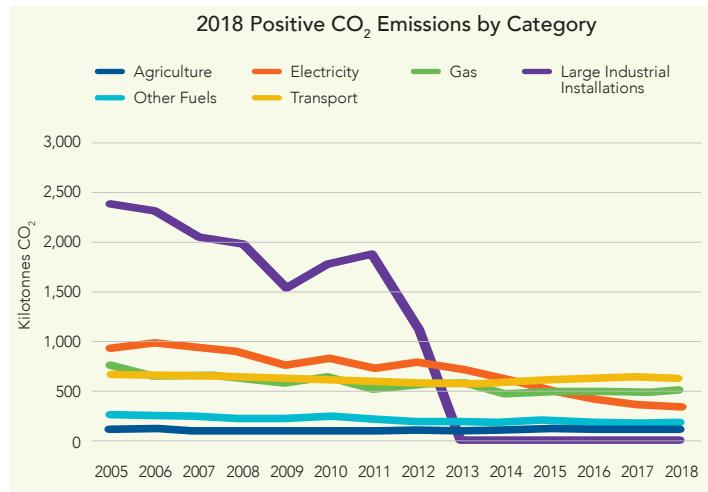


Figure 2 - Northumberland's positive emissions by category over time

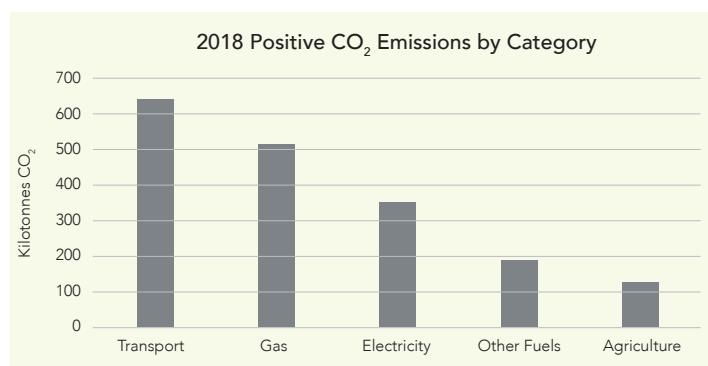


Figure 3 - Northumberland's total positive emissions by category in 2018



By combining our positive and negative emissions, as shown in Figure 5, we arrive at a grand total, as reported by BEIS of 709.1 ktCO₂ emitted in 2018. This is the figure by which we need to reduce our emissions in order to become a net-zero, or carbon neutral, county. Our target by which to achieve this is 2030.

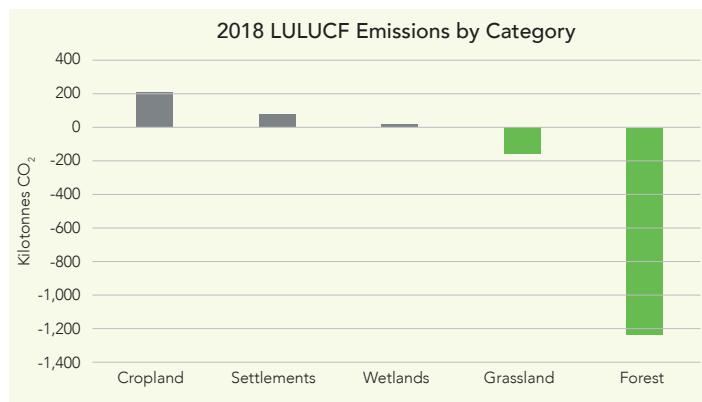


Figure 4 - Northumberland's LULUCF emissions by category in 2018

Reaching net-zero emissions will require a significant reduction of our positive emissions whilst also protecting and enhancing our negative emissions. This Action Plan sets out the key projects we will be progressing in the next two years which will start that process. The plan also sets out the potential impact of scaling up these projects and the resulting route to net-zero.

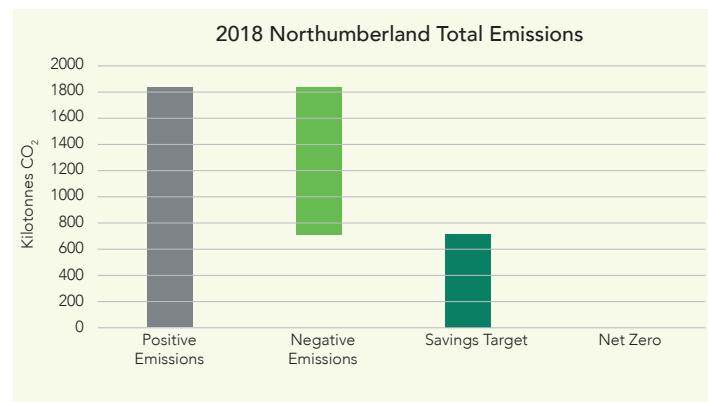


Figure 5 - Northumberland's total positive and negative emissions together with the emissions savings target required to meet net-zero

Our total positive emissions in 2018 were 709.1 ktCO₂. This is the figure by which we need to reduce our emissions in order to become a new-zero county. Our target by which to achieve this is 2030.



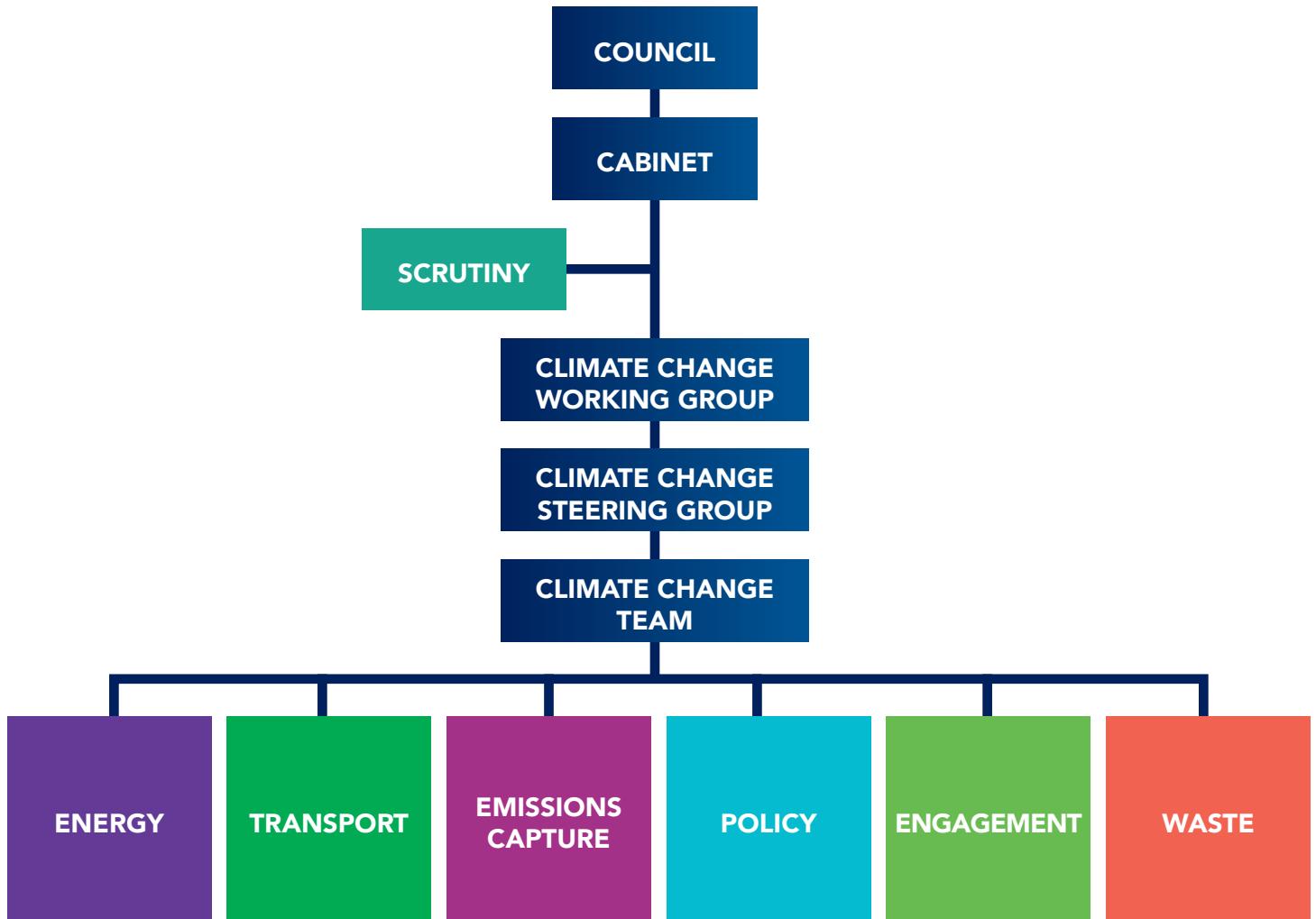


Figure 6 - the governance structure of the Climate Change programme

Programme Governance

The Climate Commitment Action Plan 2020-21 set out the governance of the Climate Change Programme at Northumberland County Council. During the intervening year, there has been acknowledgement of the resource required to deliver this programme and to this end, a Climate Change Team has been created. The Climate Change Team reports to the service director for Climate Change, Business Intelligence and Performance and includes a programme manager, senior climate change and sustainability manager, communications officer and project support officer.

This Climate Change Team will continue to work within the governance model outlined in the previous Action Plan as shown in Figure 6.

Corporate Governance

The progress made delivering the Climate Change Action Plan will be monitored and scrutinised as follows:

- ✓ A summary of progress will be included in the Quarterly Corporate Governance Reporting from quarter 4 2020/21 and each quarter thereafter
- ✓ Scrutiny will be provided through the Corporate Services and Economic Growth Overview and Scrutiny committee

The progress made in delivering the Climate Change Action Plan will be measured against key implementation milestones and, where possible, the following performance / benefit indicators:

1. Carbon Dioxide impact
2. Green Jobs created
3. Investment attracted to the County



PRIORITY ACTION AREAS

Through combining a Business Intelligence evidence-based approach with local knowledge and experience, a portfolio of projects that target immediate and long-term results is starting to emerge.

Fundamental to the delivery of this Action Plan will be county wide change in mindset and behaviours, which will only be possible through effective and far reaching engagement and partnerships with residents, communities, businesses, visitors and central government.

As shown in Figure 7, the completion of the activities needed to stimulate the green economy and achieve the net zero target, will be supported by Northumberland County Council in three different ways:

1. Working in partnership with the Public and Private sector to support the delivery of projects: removing unnecessary barriers, providing access to funding and supporting partners to bid for and secure external funding.
2. Taking greater ownership for delivering specific projects and activities, especially to support the delivery of outcomes at a greater pace and scale.
3. Acting as an exemplar for key policies and projects, for example decarbonisation of the fleet, remote working, recycling and sharing best practice outside of the council.

Fundamental to this approach will be the Priority Action Areas set out in the *Northumberland Climate Change Briefing Cabinet Paper* of 13th October 2020⁴, together with an increase in scale and pace across relevant projects.



Figure 7 - the ways in which the Council will work towards net-zero

⁴ http://commiteedocs.northumberland.gov.uk/MeetingDocs/47740_M10833.pdf



The priority action areas and associated statements of ambition are:

Priority Action Area 1 - Council Policy

All new policy decisions should be carbon neutral or should reduce Northumberland's emissions from their current level, unless there is significant justification in terms of other benefits to the county. Where such a policy cannot be carbon neutral, all available options to reduce its carbon impact should be explored. This will include commissioned and procured services and the associated supply chains where appropriate.

Priority Action Area 2 - Engagement and Partnership

The Council cannot achieve its ambition of a net-zero county by 2030 in isolation. The actions of residents, visitors and businesses will be integral to meeting this goal. We will commit to engaging and partnering to **Inform, Consult, Empower and Evaluate** on initiatives and activity focused on climate change and the environment. We will set up direct lines of communication and will seek to create a network of Community Climate Champions who will be encouraged to engage with their community to develop and own evidence based community Action Plans with the Council's support. Within our own organisation, we will seek to drive a cultural shift across all staff through training and an internal network of climate champions.

Priority Action Area 3 - Heating Existing Buildings and New Buildings

Poor energy efficiency in both domestic and non-domestic buildings results in the demand for excess heating. This causes unnecessarily high carbon emissions and energy costs. Without compromising on heating and comfort standards we will work to address this through varied external and internal funding opportunities, partnerships and business case development. This priority can drive clean economic growth. We will adopt a whole systems approach to heat.

Priority Action Area 4 - Transport

As a largely rural and a destination County we recognise the need for the right mix of public and private transport. That transport, where possible should be low carbon with zero tailpipe emissions, protecting local air quality and reducing noise. We will continue to invest in and grow our Electric Vehicle (EV) charging network, maintain our higher than England average number of charging points to ensure a practical solution for EV users. We will continue to encourage and support increased use of public transport and to support research into the development of alternative fuels for powering freight and passenger carrying vehicles. We will encourage and support walking and cycling as the preferred mode of transport for short journeys and we will deliver our walking and cycling vision. We will review school transport contracts, considering emissions as a factor.

Priority Action Area 5 - Renewable Energy Generation

Continuing to generate energy from renewable sources across the County is both sustainable and a driver for economic growth. We will continue to invest and support the increase of technologies where appropriate which use renewable energy such as solar, wind, water and geothermal heat, across a range of stakeholders which form our County community. We will use various channels such as Borderlands Inclusive Growth Deal and North of Tyne Combined Authority to support local economic growth. This will meet the growing need for renewable electricity to power heat pumps and electric vehicles and help deliver net zero nationally and locally.





Priority Action Area 6 - Natural Resource-Based Carbon Sequestration

The County enjoys a vast spread of land and forestry. Carbon is sequestered by forestry, grassland, wetlands and peat, while carbon losses occur on existing cropland and natural land that is converted to cropland. We will continue to work with our partners in our natural capital sector to progress integrated land use which enhances, safeguards sequestration and the associated biodiversity, whilst supporting local climate action and boosting rural economic prosperity.

Priority Action Area 7 - Reducing Waste

Northumberland County Council will support and engage our communities to consider a more circular approach to our economy and reduce waste by supporting efforts to design out waste, keeping materials in operation and productive use for as long as possible. This will reduce climate impacts and open new opportunities for businesses and consumers to provide and purchase sustainable goods and services.

This Action Plan will set out in detail, how we intend to pursue action across each of these priority areas with specific, agreed projects across the next two years.

The Action Plan, will also model ways to achieve our 2030 goal of net-zero, by scaling up our work in each priority action area and identifying carbon savings across each category of emissions.

Corporate Governance

The progress made delivering the Climate Change Action Plan will be monitored and scrutinised as follows:

- ✓ A summary of progress will be included in the Quarterly Corporate Governance Reporting from quarter 4 2020 / 21 and each quarter thereafter
- ✓ Scrutiny will be provided through the Corporate Services and Economic Growth Overview and Scrutiny committee

The progress made in delivering the Climate Change Action Plan will be measured against key implementation milestones and, where possible, the following performance / benefit indicators:

1. Carbon Dioxide impact.
2. Green Jobs created.
3. Investment attracted to the County.



PRIORITY ACTION AREA 1

- COUNCIL POLICY

THE ISSUE

Policy underpins the way the council approaches its decisions and takes actions, substantially reducing emissions, both as an organisation and across the county. This will require the embedding of carbon reduction across all policies.

THE COST

Achieving alignment with the climate change goals across all policies will not come at a great financial cost, rather it requires a fundamental cultural shift across the organisation with buy-in at all levels. This will take time, training and education.

THE BENEFITS

Sustainability and carbon reduction would be embedded in the organisation, creating a united effort across all priority action areas.

Climate Change Policy Thematic Group

Underpinning all policy-related work between 2021-23 will be the 'climate change policy thematic group'. This group will be made up of senior officers across the council to ensure a joined-up approach to climate change policy. The group will be chaired by the Service Director, Policy and will have a close working relationship with the climate change team. The group will provide insight and advice on policy development to ensure consistent and ambitious approaches to tackling climate change are built into all new policy development. Sign-off and agreeing new policy development will continue through the established governance (i.e. Executive Team, Cabinet, Council and other relevant Committees).

Carbon Impact Assessment

On 13th October 2020, cabinet was presented with the recommendation from the Corporate Services and Economic Growth Scrutiny Committee that "all new policy decisions should include consideration of climate change impact through the use of a carbon assessment measurement and aim where possible to be carbon neutral, and where not possible to identify suitable mitigations to reduce their impact". It was resolved by cabinet that "In order to ensure Councillors make informed decisions when considering the climate change implications of a proposed policy coming to cabinet and full council, it will be necessary to undertake a carbon assessment for each policy decision". Cabinet also resolved that "the details of how such a process will be operated and resourced will be provided in the climate Action Plan 2021-23".

From April 2021, all policies and projects brought to cabinet or full council meetings will have to complete a 'carbon impact assessment'⁵.

⁵ http://commiteedocs.northumberland.gov.uk/MeetingDocs/47740_M10833.pdf

A carbon impact assessment has been created by the Climate Change team and will be piloted between January and April 2021, with necessary revisions made based on user feedback. The assessment will ensure new policy development is reviewed against different categories of climate and carbon impacts. The assessment will return a subjective score based on these responses. When possible, such as for capital projects, proposals will also include an estimated carbon emissions figure.

Prior to being considered at Cabinet and / or Council, the climate change policy thematic group will have oversight of the carbon impact assessment score. Officers will have the opportunity to discuss the assessment with the thematic group and receive recommendations on how to improve the score, where possible. The purpose of this will be to further align policies and projects with the net zero commitment and provide additional support to council staff; the group will not act as a decision-maker but rather a provider of support and advice. As stated, the established decision-making committees of the Council will continue to consider and agree new policy development.

The finalised carbon impact assessment score will be presented in a visually engaging format to senior management and cabinet members, as a key part of the decision-making process. The results of the carbon impact assessment will be included in all cabinet and full council published meeting minutes.

Corporate Social Responsibility Policy

A Procurement Corporate Social Responsibility (CSR) policy is currently being developed by the Procurement department. This will be introduced by April 2021.

The Procurement CSR policy will, among other things, seek to minimise or eliminate carbon emissions, waste and other negative environmental impacts within the Council's commissioned services and wider supply chain. The new policy includes six strategic pillars for mandatory consideration at the early stages of every

procurement and commission of external goods, works and services.

- ✓ Waste Reduction
- ✓ Improve Social Value
- ✓ Improve Health & Wellbeing
- ✓ Reduce CO₂ & Green House Emissions
- ✓ Combat Modern Slavery
- ✓ Increased use of SME and Local suppliers

This policy recognises that, whilst wider supply chain issues are outside the scope of the Council's 2030 net zero target, the Council has an ethical and moral responsibility to reduce global emissions and environmental degradation in any way that it can.

Carbon Literacy Training

The Sixth Carbon Budget, produced by the independent Climate Change Committee (CCC) that advises Government, recommends that local authorities "implement training and capacity building to deliver net-zero within the local authority and with key suppliers and contractors. Climate, energy, sustainability and carbon understanding needs to be embedded in the whole authority, across staff and systems. Climate change should be central to Elected Member and Senior Director training."⁶

In line with this recommendation, and to support the implementation of the carbon impact assessment and refreshed CSR policy, the Council will introduce Carbon Literacy training for both staff and councillors.

The 'Local Authority Carbon Literacy Toolkit' has been developed specifically for local authorities by the Carbon Literacy Trust, funded by BEIS in partnership with the Greater Manchester Combined Authority. This has been extensively tested and piloted by thirteen local authorities in England and Wales and was published for wider use in September 2020.

⁶ <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf>



The training course will educate staff and councillors about the scientific causes and impacts of climate change on a global, national and local level. The course will then cover the potential solutions to climate change. Following this, attendees will be required to develop a climate-positive Action Plan, both as a team and then as individuals, within their own sphere of influence.

As a result of the training the Council will develop an organisational cultural change in its approach to the climate emergency, by creating an informed, motivated workforce and elected membership. This will be crucial for the success of internal policy mechanisms, such as the net-zero policy assessment and service reviews, and for the county to achieve net-zero by 2030.

In early 2021, implementation of Carbon Literacy training will be piloted with select members of staff, to develop a high-quality, appropriate course. By April 2021, to coincide with the implementation of the carbon impact assessment, all Executives will have completed the training; the Council will be accredited as a 'Bronze' Carbon Literate Organisation as a result.

Training will then be rolled out to senior managers and managers across the organisation throughout the course of 2021. This initial focus is because these staff will have the greatest influence on the Council's decisions that could affect the net-zero target. Once there is trainer capacity, training will be made available to all staff across the organisation and will be widely publicised through internal communications channels.

In summer 2021, following Northumberland's local election, all elected members will be offered Carbon Literacy training, which will lead them to be certified as Carbon Literate. The individual climate action commitment made by each councillor as part of the training will be published in the 'county councillor information' section of the council website.

Service Reviews

The CCC recommends that councils "conduct policy and service reviews to align policy, spending and functions with Net Zero". The Council has been undertaking service reviews across the organisation since summer 2020 and will continue to do so in 2021. A key element of the service review will be to align the service with the 2030 net zero target commitment.



Northumberland Local Plan

A new Northumberland Local Plan, the statutory development plan for the County, is emerging. The Plan is currently subject to examination and is expected to be adopted in 2021.

In accordance with national policy the Plan takes a proactive approach to mitigating and adapting to climate change, considering the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.

There are several policies in the plan supporting the future resilience of communities and infrastructure to climate change impacts. Detail will be given as to how the plan aligns to each of the priority action areas below.

In addition to the Local Plan itself, The Council's Planning Service has consulted on the scope of the following proposed Supplementary Planning Documents (SPDs): Renewable Energy SPD; and Northumberland Design Guide SPD. These will supplement the Local Plan and provide detailed guidance which will explain how applicants can address the policies and policy criteria in the Local Plan.

The Renewable Energy SPD will cover a range of renewable energy technologies, such as anaerobic digestion, biomass, hydro, solar and wind. The Northumberland Design Guide will cover matters such as sustainable construction, supplementing, amongst other policies, Policy QOP 5 of the Northumberland Local Plan. The Council may also look to prepare additional documents to address matters of detail.

Collaboration with Other Councils

The CCC recommends that councils "collaborate with neighbouring and cross-tier local authorities and other key delivery bodies on strategies and plans".

The Council will continue to collaborate at a regional level with neighbouring authorities around net zero action, including existing forums covering energy, transport and skills. This covers partnerships and organisations like the North of Tyne Combined Authority, the Borderlands Partnership and Transport North East.

The Council will work with and support Town and Parish Councils within Northumberland to develop their own climate Action Plans and align their actions with the net zero commitment.

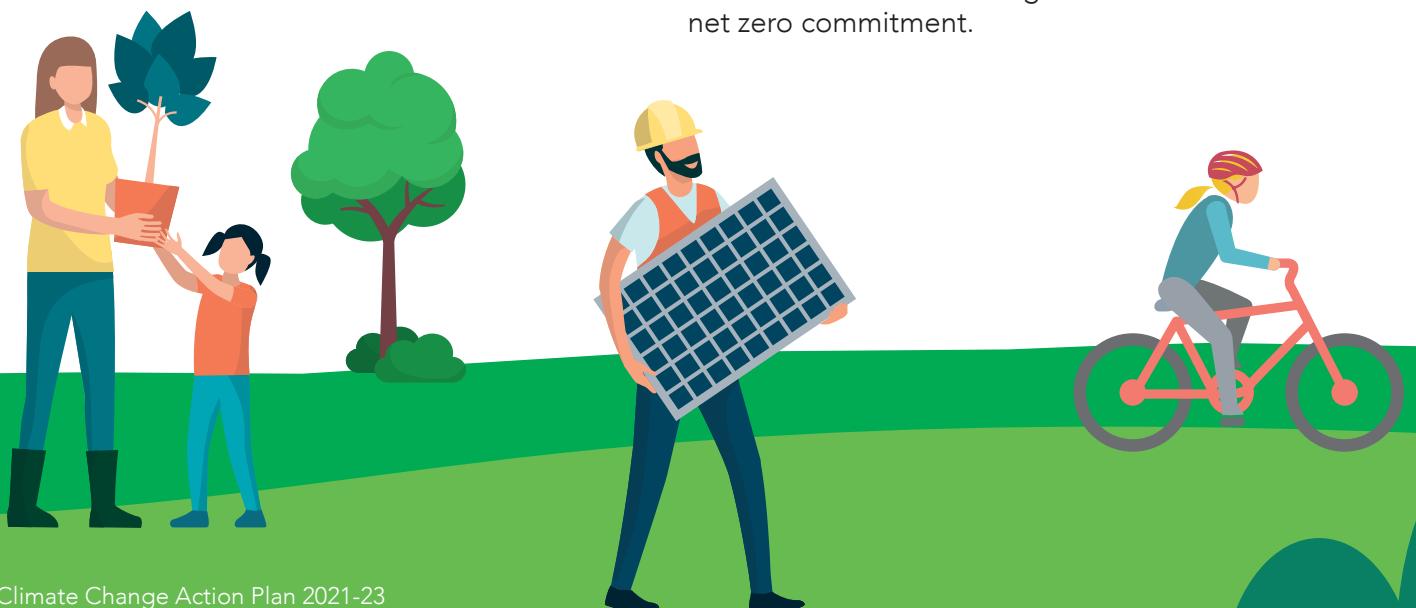
The Council will also build upon existing informal relationships with other councils across the country to develop a community of best practice and learn from others, particularly those who have been national leaders in local authority climate action.

Internal Policy

Between 2021-2023, the Council will explore opportunities to incentivise staff to make more climate-positive actions. Both formal mechanisms, such as salary sacrifice and KPIs, together with informal mechanisms, such as a network of internal climate champions, will be used. Any staff incentives that are misaligned to the net zero commitment will be revised or removed.

Green Finance

The Council will also explore emerging financial instruments that better align council action with the net zero commitment.



PRIORITY ACTION AREA 2

- ENGAGEMENT AND PARTNERSHIP

THE ISSUE

The challenge of meeting net-zero by 2030 is huge and cannot be achieved by the Council in isolation. Engaging with residents, businesses, visitors and our own staff to understand the implications of climate change on our communities and providing them with the knowledge and tools to support the move to net-zero is essential to meeting our targets.

THE COST

A 0.6 FTE Communications Officer and an annual communications budget of £30,000 have already been agreed.

Again, a fundamental cultural and behavioural shift is required which will require time and resource.

THE BENEFITS

Engagement and Partnerships are enablers to realising the tangible benefits set for all priority action areas. Successful engagement and partnerships will create an environment in which investment, jobs, improved health and wellbeing and restoration of nature can be realised.

Helping residents, businesses and our own staff understand the implications climate change has on our communities and providing them with the knowledge and tools to reduce their emissions is essential to meeting our net-zero target by 2030.

Engaging with our communities through digital platforms, public events, local press stories and through community projects will ultimately help incite change at a local level and promote the positive work the Council is doing to tackle climate change.

It is also important to develop partnerships with businesses, community groups and schools, as well as developing strategic partnerships with other organisations working towards the same aims such as Borderlands, the North of Tyne Combined Authority and the NELEP.

Community Climate Champions

The Community Climate Champion scheme will give residents and community groups the opportunity to educate their communities and empower them with their own community climate action plans at a local level. This will help drive behavioural change in Northumberland through organic communication methods.

In short, a community climate champion is anyone who has direct access to residents and/or businesses in Northumberland and is willing to help spread awareness of climate change and the initiatives the Council are taking to help reach carbon neutrality.

This could include council staff, schools, community groups, local businesses, farmers, residents, town/parish councils, elected members and partner organisations to lead the way in communicating carbon reduction messages with their networks, customers and communities.

Training will be made available to ensure all champions feel knowledgeable and comfortable talking about the effects of climate change, and a





The Community Climate Champion scheme will give residents and community groups the opportunity to educate their communities and empower them with their own community climate action plans at a local level.

toolkit will be developed and updated frequently to help encourage positive changes in lifestyle which make a tangible impact at a local level. Networking events will also be held to help ensure there is a shared good practice approach.

The scheme will initially be developed around a pilot group of individuals who are already proactive in their local communities, with plans to roll out the scheme to all Northumberland residents by May 2021.

Projected timescale for the Community Climate Champion scheme:

- ✓ Oct to Dec 2020: Initial planning and discussions of scheme format
- ✓ Dec to Feb 2021: Development of training programme and toolkit
- ✓ Mar 2021: Rollout pilot scheme to selected individuals and groups
- ✓ Apr 2021: Pilot community Action Plans agreed
- ✓ Jun 2021: Collate feedback and make changes to scheme
- ✓ Aug 2021: Promote champion scheme to the wider public
- ✓ Oct 2021: First Community Climate Champion forum event

Schools and young people

We will prioritise engagement with our schools and early years settings, to ensure the county's youngest minds are educated in how they can best to tackle climate change.

Working with colleagues in Early Years and Education, we will create resource packs to enable our teachers have the knowledge and tools to educate our children in the importance of tackling climate change.

The Third Sector

Northumberland is home to a wide range of voluntary and charitable organisations, many of which share the aims of the Council regarding climate change and have established enthusiastic networks of volunteers. The Council will work closely with the Third Sector in order to deliver this action plan and to coordinate an approach to climate change activity which creates a shared focus across the county. Third sector organisations will be encouraged to join the Community Climate Champions scheme and to access the resources made available. The Council also hopes to learn from and harness the expertise of voluntary organisations in coordinating community action. By summer 2021, a detailed plan for climate change engagement with the Third Sector will have been created, supported by the Climate Change Steering Group.

Free Tree scheme

Another community engagement campaign is the Free Tree scheme. To help increase tree planting across the county, and further increase negative emissions, the Council aims to giveaway thousands of young tree saplings to residents, community groups and schools to plant on their land, with the aim of giving away a free tree to every household in the county. The scheme was first run in 2020 and saw an incredible uptake.

Whilst it is acknowledged that these trees will only have a small impact on the county's overall carbon emissions, it is a good way of engaging with residents across the county and encouraging them to take their first steps in acting to reduce carbon emissions. With each tree, information is given out about changes people can make to reduce their carbon footprint.

Carbon Footprint campaign

An ongoing behavioural change campaign will be launched, to support residents in reducing their carbon footprint. This will include bitesize advice on small, medium and large scale changes to help make daily routine and lifestyle habits more eco-conscious and save financially.

Promotional flyers, shown below in Figure 8, have already been distributed to approximately 6,000 residents through the Free Tree scheme and will continue to be distributed via any council maildrops, and feature on our digital channels.



Figure 8 - promotional flyer included with free trees in 2020

A wider range of "tips" will be available online and will link directly into our Domestic Emissions Dashboard. The dashboard will operate as an online platform for residents to calculate their household emissions, and compare their figures against a county-wide average, as well as offering an easy to understand offset comparison (i.e. trees to be planted). The dashboard will then offer residents advice on how to reduce their carbon footprint, and how much money this could save them, with further carbon reduction / money saving tips available through the carbon footprint campaign.

We are intending to launch the dashboard alongside the Community Climate Champions pilot in early 2021.

Digital newsletter

A newsletter subscription has been created, with monthly newsletters issued via email. Each issue focuses on different climate conscious initiatives relevant that month. Anyone can subscribe via the website, and we currently have over 5,000 members.

Public events

Due to Covid-19 restrictions, public events cannot happen in person for the foreseeable future. Instead, virtual events hosted online will be organised to give our communities the opportunity to discuss actions the Council is taking to tackle climate change and find out what they can do at a local level.

Visitors

The Destination Management Plan strategy is currently being developed in partnership with Northumberland Tourism, and will be published in June 2021. It will be aligned to the aims of this Action Plan and encourage sustainable tourism. Positioning Northumberland as the UK's greenest county, with excellent climate credentials will help to attract tourists with an interest in sustainability and environmentalism to the county.

Businesses

Engagement with businesses will follow two strands. Firstly, proactively engaging with large businesses with relatively large carbon footprints to support their own ambitions to reduce their carbon emissions through corporate sustainability agendas. An example of this is Simpsons Malt in Berwick who have engaged with the Council to gain support for a biomass facility, which would substantially reduce gas consumption in the Berwick area.

A second strand of activity is necessary to engage with smaller businesses. Following successful development and deployment of the Community Climate Champions scheme, a wider champions scheme will be created, which will be aimed at SME businesses. The Business Climate Champions scheme will look at ways in which businesses within Northumberland can operate in more eco-friendly and sustainable ways, whilst increasing custom and revenue.



Our People

Similar to the Community Climate Champions scheme, we will be supporting Council staff to become climate change advocates in the workplace. As mentioned in the Council Policy section, we will be introducing our staff and councillors to the Carbon Literacy training which has been developed specifically for local authorities and aims to educate staff and councillors about the scientific causes and impacts of climate change on a global, national and local level. Our internal climate champions will then develop a climate-positive Action Plan for their service area or ward, which will in turn feed into the Community Climate Champion scheme and help reduce emissions in the workplace.



Strategic Partnerships

The Council is also committed to working with partner organisations who can support progress towards the 2030 net-zero goal. These include but are not limited to:

- ✓ The Borderlands Inclusive Growth Deal
- ✓ North of Tyne Combined Authority
- ✓ North East Local Enterprise Partnership
- ✓ LA7 North East Councils
- ✓ North of England Natural Capital Group



PRIORITY ACTION AREA 3

- HEATING EXISTING BUILDINGS AND NEW BUILDINGS

THE ISSUE

The burning of gas and other fuels for heat contributed 38% of Northumberland's positive emissions in 2018.

Decarbonising heat requires energy efficient buildings together with new technologies to replace fossil fuels as our primary heat source.

THE COST

Projects set out in this section will cost around £12m. The majority of this will come through government grant funding.

In addition, individual residents will bear some cost of the move to renewable heat, supported by available grants.

THE BENEFITS

The carbon reduction potential of projects set out in this section is around 4.5 ktCO₂.

It is estimated that around 88 jobs will be created or supported through the delivery of these projects.

Air quality will also be improved, leading to better public health and fuel poverty will be reduced.

Heating our homes and businesses is one of the main contributors to carbon emissions in Northumberland. The burning of gas and other fuels for heat contributed 38% of Northumberland's positive emissions in 2018. Heat can be split across domestic and commercial, together with gas and other fuels, as shown in Figure 9. This category of emissions represents a significant proportion of the 709 ktCO₂ it is estimated that the county needs to cut in order to meet its net zero ambition.

Decarbonising heat presents one of the most significant challenges to lowering carbon emissions in the county. The fundamental challenge is twofold; firstly, our housing and property stock includes several archetypes that are thermally inefficient and difficult to insulate, such as single skin stone-built properties and secondly the relative cost of fossil fuel heating alternatives makes renewable heating less financially attractive to the end user, particularly those currently using gas as their primary heat source.

The challenge of reducing emissions from heat cannot be overstated and will not be accomplished through technological advancement alone. It requires support from national government in terms of legislation and fiscal policy along with local action to drive a full culture shift across the diverse breadth of Northumberland's residents and businesses. This will need significant communication and engagement across our communities for the importance and impact of this shift to be understood and fully embraced.

To decarbonise there are two key technological aspects to be implemented, and they must be implemented together; insulation to improve the thermal efficiency of the building stock and low carbon renewable heat.

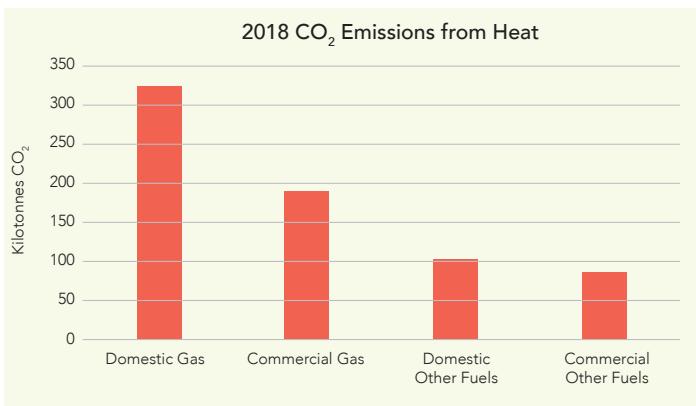


Figure 9 - CO₂ emissions from heat in 2018 by source

Heat reduction

In order to maximise both the cost and carbon efficiency of Northumberland's building stock, starting with a "fabric first" approach is key. This means utilising the most modern insulation techniques and applying these with confidence in their most appropriate settings. Due to the diverse portfolio of properties, there is no "one size fits all" approach and hence bespoke options will be required to be delivered.

Properties may be broken into certain archetypes which allows for certain measures to be replicated in large numbers, for instance those with cavities should have cavity wall insulation and all properties which have an unused loft space (i.e. no room in roof) should have 300mm of loft insulation applied (current standard). These measures have been supported through the government's ECO programmes and Northumberland County Council will continue to promote and support the implementation to be funded through this and other supported mechanisms, where available.

In order to maximise both the carbon reductions and the investment within the county Northumberland County Council will support engagement through two distinct angles;

- ✓ Domestic properties – support those who are eligible to apply for Green Homes Grant⁷ funding and other support mechanisms such as Energy Company Obligation (ECO)⁸ funding to facilitate economic investment in these technologies and encouraging the able to pay market to adopt these technologies as part of a carbon reduction strategy.
- ✓ Commercial properties - there are limited support mechanisms which are as wide reaching as Green Homes Grant for businesses, but support does exist through several agencies, such as North East LEP, North of Tyne Combined Authority and Borderlands. It will be for Northumberland County Council and our partners to support businesses to access relevant mechanisms and encourage them to adopt appropriate technologies themselves.

Despite best intentions, there are fundamental challenges in improving the thermal efficiency of some properties, described generally as "hard to treat" these include single skin stone-built properties. Accurately identifying these properties and understanding what, if any, measures can be applied to support these properties is important. Without sufficient thermal improvements these properties will still rely on fossil fuels as a primary fuel source.

Methods of decarbonising heat

Renewable heating most efficiently runs at low temperatures (30-45°C) and hence thermal efficiency is key in maintaining comfortable heat levels within properties. To support this heat emitters often require increasing in size to provide sufficient energy at lower temperatures to heat room spaces. This can provide major disruption and inconvenience to people's lives, reinforcing the requirement for up front engagement and support to assist understanding of the technologies to be implemented.

As will be discussed in greater detail in the next section, a large part of the clean growth strategy outlined by BEIS is supporting low carbon district heat networks⁹. In order to meet the ambitious 2030 target in a cost-effective way district heat networks will require wide roll out across urban areas. These networks may involve removing boilers from people's home as they would become reliant on a centralised heat source providing heat directly to their properties. This is likely to be met with resistance and uncertainty until first adopters are receiving high quality service without issues.

Other types of heating will involve properties having direct responsibility for their own heating source, be this a heat pump or other technology. This may be more palatable to end customers but is likely to suffer from lower efficiencies and higher end costs to some consumers. Promoting opportunities to understand the impacts of renewable heat and to access grants or loans will be a key part of our communications and engagement strategy.

⁷ <https://www.gov.uk/guidance/apply-for-the-green-homes-grant-scheme>

⁸ <https://www.ofgem.gov.uk/environmental-programmes/eco>

⁹ <https://www.gov.uk/government/consultations/green-heat-network-fund-proposals-for-the-scheme-design>



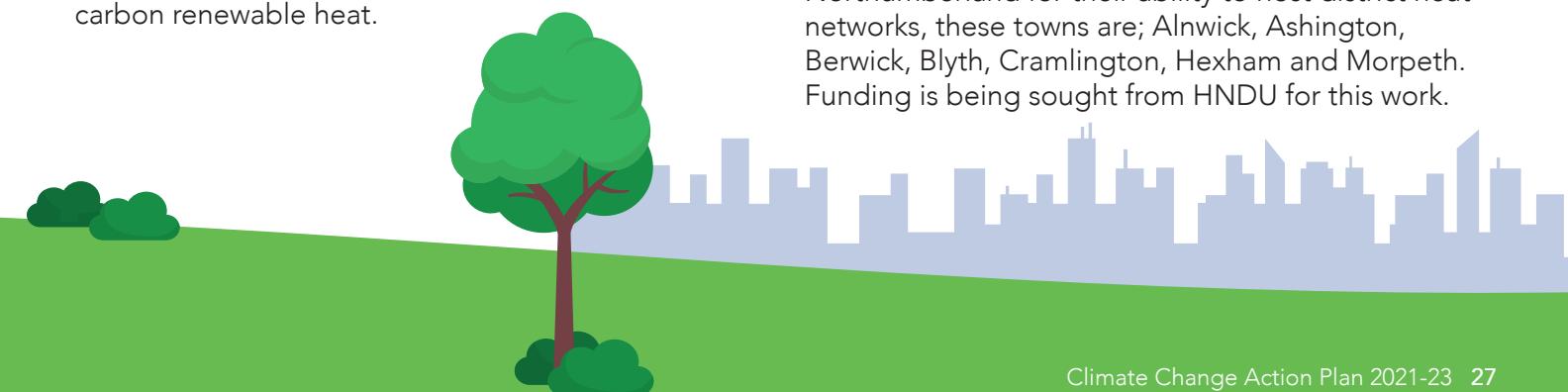
District heat networks

In urbanised settings district heat networks are a potential method of lowering carbon emissions. In order to meet the 2030 target, it is likely that district heat networks will be required to play a significant role with their primary heat source being a low or zero carbon source.

Heat networks are a relatively new concept within the UK, however, are utilised to great effect in Scandinavian countries. The major change required is the core fuel source, often heat networks have been run with natural gas or coal. To make major carbon savings these networks must be capable of running on low carbon renewable heat.

Northumberland has an existing network of abandoned coal mines which can be utilised as a geothermal heat store and provide renewable heat to power modern district heat networks. As will be discussed in the next section this could provide a significant opportunity in many of Northumberland's historic mining towns. In other towns, alternative potential renewable and low-carbon energy sources include solar thermal and geothermal heat and waste heat from industry and commercial buildings.

Northumberland is proposing, with the support of central government and the Heat Network Delivery Unit (HNDU) to assess the 7 largest towns in Northumberland for their ability to host district heat networks, these towns are; Alnwick, Ashington, Berwick, Blyth, Cramlington, Hexham and Morpeth. Funding is being sought from HNDU for this work.



The assessments of Blyth and Cramlington have already been undertaken at a high level and their next steps are detailed below.

Blyth network

A heat mapping and energy master planning study was undertaken for Blyth in 2020 to consider the ability of district heat networks to be feasibly run. The primary purpose of the study was to establish if the Bates Colliery mine water treatment plant run by the Coal Authority could be used as a heat source to provide low carbon heat to commercial and domestic properties around Blyth.

The study has confirmed that a network is possible and feasible, however further study is required to understand the full extent of the potential network. An underground study has also been conducted and concluded that there is enough geothermal heat in the mine water held underground to provide heat for all the properties in Blyth.

Northumberland County Council will be working to maximise the reach of the network currently set out in Figure 10, to ensure the best economic, social and environmental credentials for the scheme. It will be particularly key to deliver the maximum carbon savings physically possible through the scheme.

Successful implementation of phase 1 will save 1,400tCO₂ per year¹⁰. Further phases have been modelled and will be reviewed as part of a wider reaching strategy through the next stage technoeconomic feasibility study.

Northumberland County Council sees this as a strategic asset and is working closely with the Coal Authority to determine how best to use the heat and how to provide it to the county for the maximum carbon reduction.

To this end Northumberland County Council will work with central government to secure funding in order that the full extent of this potential project can be established and realised. Applications have been made to fund a detailed technical feasibility study into this opportunity.

Northumberland County Council will seek to ensure that the technology is implemented in the safest and most secure way to create a reliable network capable of replacing the traditional fossil fuel-based alternatives this seeks to replace. The network will be utilized, initially by the businesses detailed in Figure 10 but it is intended that more businesses and homes could use the network as it expands and becomes more commercially viable.

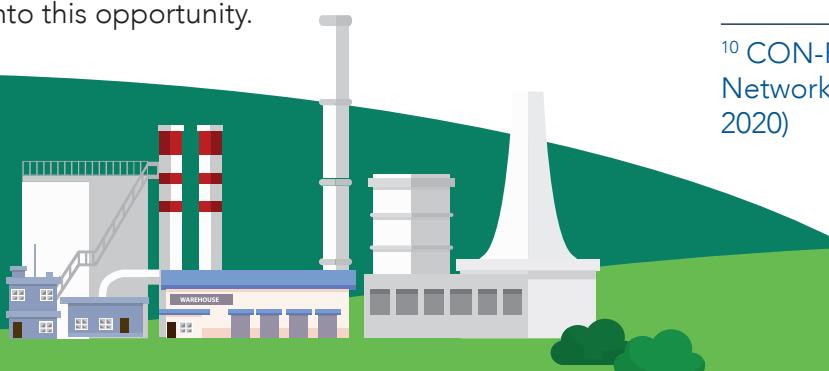
The network will further seek to incorporate the new assets being developed within Blyth through Future High Streets Fund and Town Deal and seek to support any new properties as low/zero carbon assets from their inception.

Aspects of the potential network(s) identified in the heat mapping and energy master planning study have been determined to be uneconomical. Northumberland County Council will work with heat network specialists to determine routes to improve the viability and hence the deliverability of a larger network with greater carbon savings. The scale of ambition is to utilise the asset to decarbonise as much of the town as technologically possible.

Should all 3 initially identified network opportunities be undertaken, the capital investment into the town would be circa £17m and equate to annual carbon savings of over 3000tCO₂.

Within the area of Blyth an opportunity to develop further wind turbines on the land that currently has a single turbine has been identified. Were the network can utilise wind or other renewable energy to power an energy centre, the heat produced would be zero carbon. This presents the first tangible opportunity to fully decarbonise heat within Northumberland and use local infrastructure to do so.

¹⁰ CON-REP-6198 - Northumberland District Heating Network Energy Masterplanning – 03C (Locogen 2020)



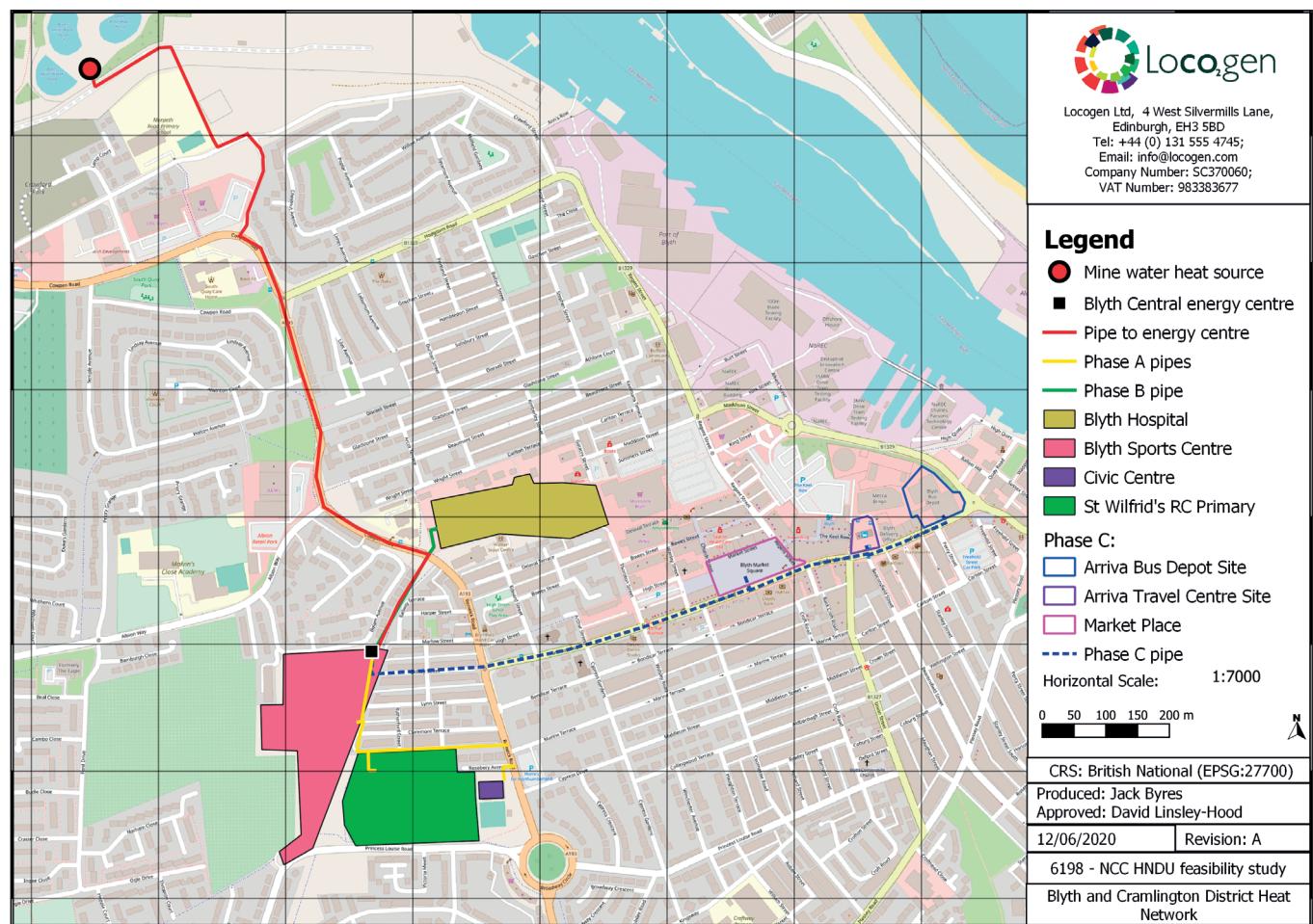


Figure 10 - location and properties served by the first phase of the proposed district heat network in Blyth

Cramlington network

A heat mapping and energy master planning study has also been undertaken for Cramlington. This study has pointed to the large biomass combined heat and power plant operated by Estover Energy as being a primary heat source for the network. The plant produces high grade heat in the form of steam for industrial usages, but also produces waste heat from the process.

The study confirmed that the waste heat produced can be used by a district heat network and supplied to residential and commercial properties. Of the network options presented a number were considered uneconomical, but as with the work ongoing in Blyth Northumberland County Council is committed to working through options that may improve the

economics of the options presented and seek to deliver the maximum carbon savings through these projects.

Figure 11 details the most ambitious of several options presented by the consultant. This would represent almost £17million of investment, over 4000tCO₂ saved annually and be equivalent to 133 construction jobs and potentially 10-15 operational jobs.

Northumberland County Council is again working with central government to secure funding to take this opportunity to full technoeconomic feasibility study stage and seek to have the network formally invested in and commissioned. A draft timeline for the initial phase of this project is shown in Figure 12.

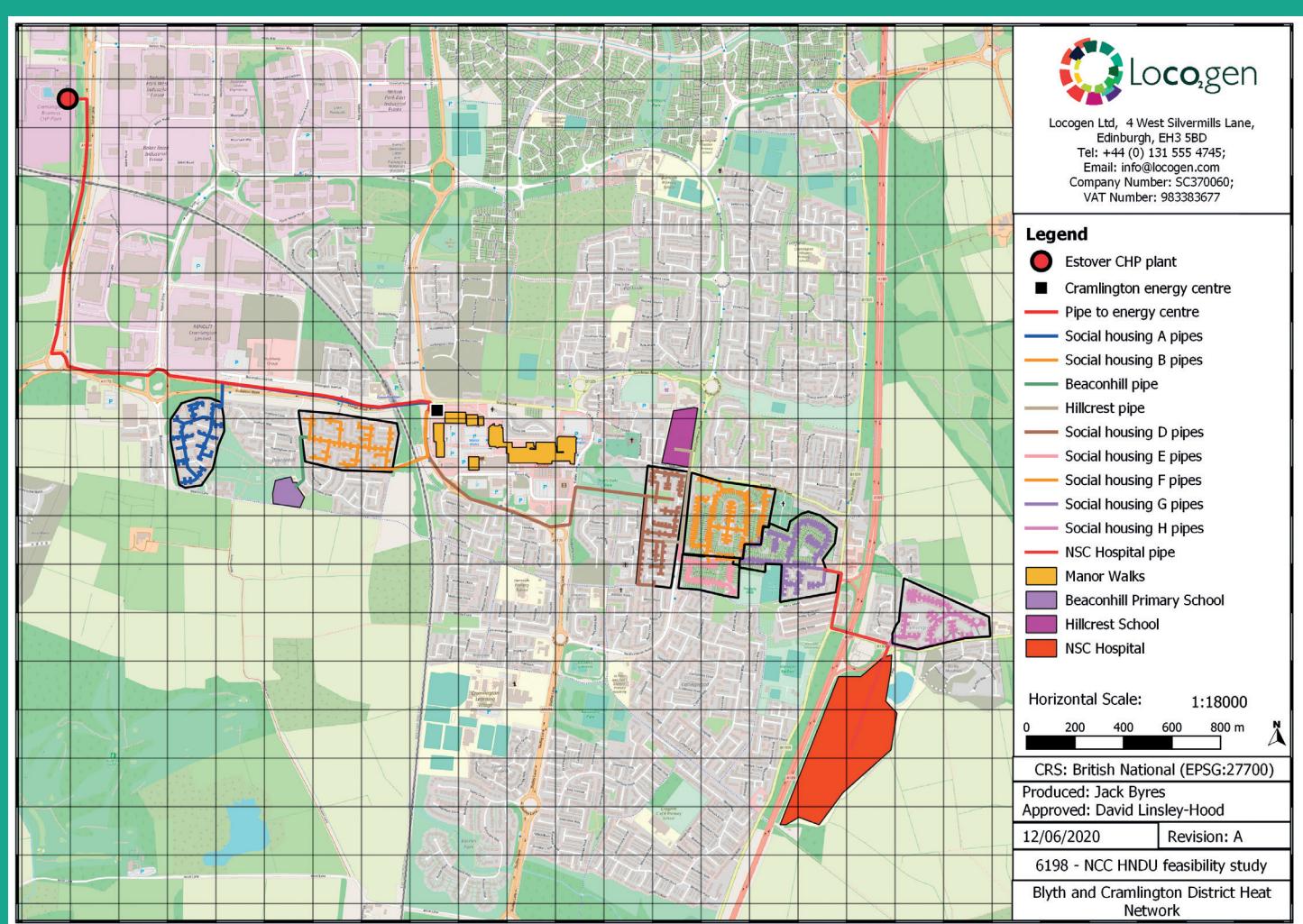


Figure 11 - location and properties served by the potential heat network for Cramlington

Blyth and Cramlington District Heat Network Programme

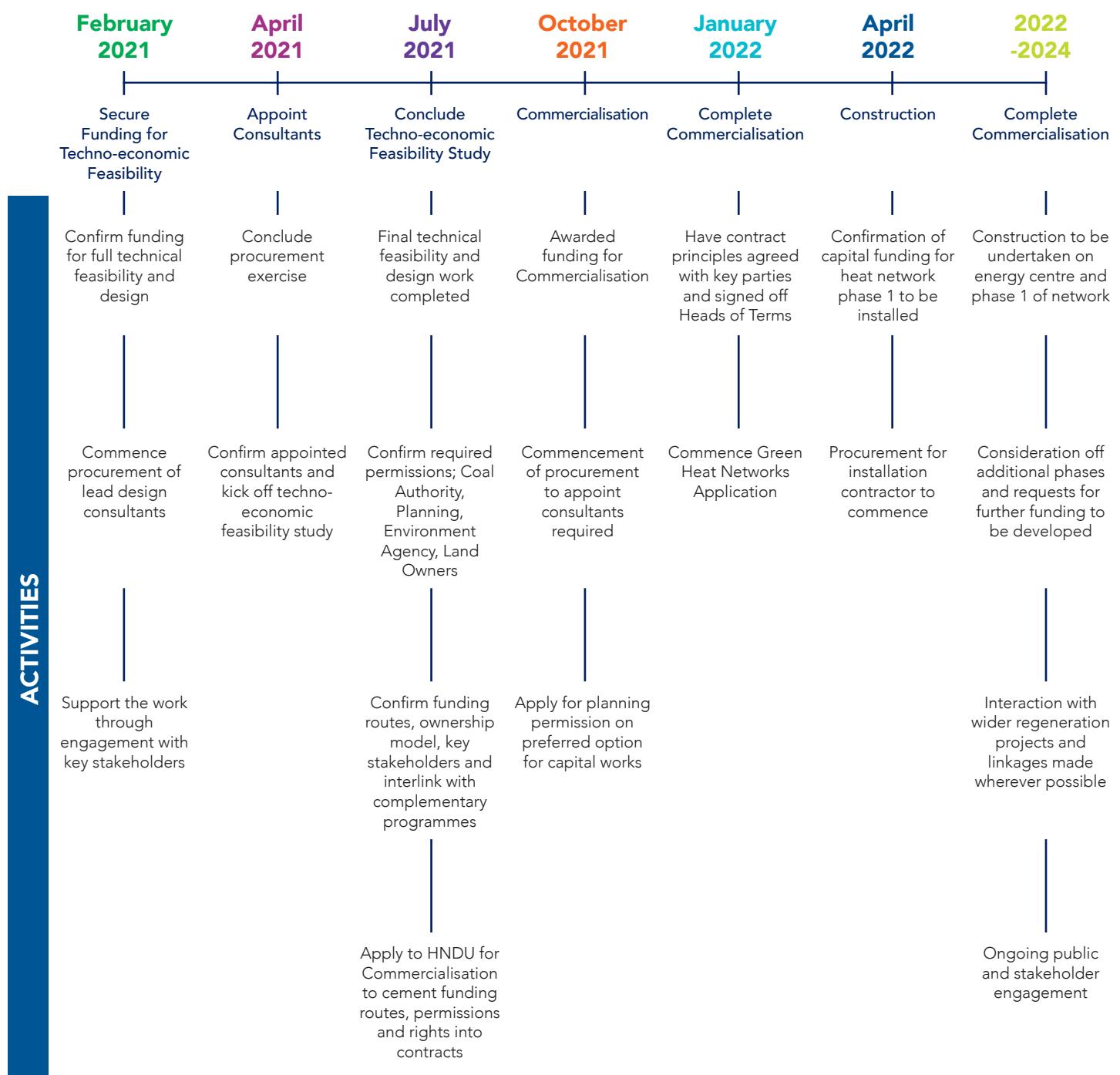


Figure 12 - draft timeline for progress with the Blyth and Cramlington district heat networks.

NB this is subject to change as the project develops



Heat pumps

Where heating loads are more distantly spread, district heat networks would not present viable options for investment and individual heat pumps would present better investment options. Northumberland County Council will therefore be actively supporting heat pump roll out in both our own estate and across the county. Heat pumps present the best value benefit against the carbon saved. In off gas regions this technology presents an option that can save both carbon and financial cost against oil, LPG and electric heating.

This technology utilises lower grade heat and hence a simple "swap out" of fossil fuel-based technology for low temperature renewable heat options will not be possible. It is critical to ensure that buildings are thermally efficient, heat emitters (radiators) are correctly sized and that building users understand the technology's use and how that differs from traditional heating.

Northumberland County Council will be seeking to support the implementation of heat pumps across the county through funding streams that we can access or that we can support residents to access. Since the close of Northumberland County Council's successful Warm Homes Fund project in 2020 the Green Homes Grant has opened, and their voucher scheme can be utilised by residents to support a range of measures to decarbonise heat.

In addition to this, Northumberland County Council is applying for the Local Authority Delivery funding that has been made available through the Green Homes Grant. The council will continue to leverage as much public and private investment into the county as possible to improve both the lives of our residents and the county's carbon footprint.

Where district heat networks are not an option, Northumberland County Council will seek to utilise the following heat hierarchy to install/replace heating within its own estate;

1. Ground Source Heat Pumps.
2. Air Source Heat Pumps.
3. Electric (other).
4. Biomass (*where appropriate*).
5. Natural gas.
6. Other fossil fuels (oil/LPG).

It may not be possible in all circumstances to avoid the use of fossil fuels, but these will only be considered when all other options have been exhausted. The hierarchy will be reviewed on a case-by-case basis. All installs must be technologically possible as well as socially and financially acceptable.

Northumberland County Council already has a portfolio of 14 operational ground source heat pumps throughout its estate and is seeking to develop another 6 projects supported through the Public Sector Decarbonisation Fund (PSDF);

Site Name	Post Code	tCO ₂ saved per year	Grant applied for
Willowburn Leisure Centre GSHP	NE66 2JH	284	£1,758,430.00
Belford Fire Station GSHP	NE70 7NZ	4	£108,796.00
Swarland Primary School GSHP	NE65 9JP	19	£296,858.00
Stannington First GSHP	NE61 6HJ	13	£292,327.00
Stamfordham First GSHP	NE24 2HP	5	£288,367.00
Whittingham C of E School GSHP	NE66 4UP	7	£267,802.00
Total		333	£3,012,580.00

This represents a first stage of projects seeking funding in the 2021-22 financial year. Where the PSDF continues to operate Northumberland County Council will continue to build this pipeline, starting with properties where the heating system needs replacement to maximise the benefits and ensure that we are not wasting operational assets and public funds.

Hydrogen and other technologies

There has been a great deal of media coverage over the potential for hydrogen to significantly reduce greenhouse gas emissions and potentially replace natural gas within the gas network. Unfortunately, it appears that should hydrogen be capable of replacing natural gas, and this is far from certain, it would be highly unlikely to be able to do so within the 2030 timescale that Northumberland County Council has set on reaching carbon neutral. Based on Northern Gas Networks net zero pathways hydrogen would only be at early roll out stage by 2030, with large uptake not expected until 2040 and it becoming the norm by 2045-2050¹¹.

It has therefore been determined that electrification of heat is the only technologically sound option available for meeting this ambition.

While other options may be available to the council to meet carbon reduction targets, it is clear that due to the scale of the challenge we face and the short duration of time we have remaining, less than 10 years, it is essential to start implementing change; waiting for a new technological solution is not a viable strategy.

Biomass has been utilised in limited cases throughout Northumberland County Council's estate. Due to some of the difficulties in managing this technology as well as the variable cost of fuel and the questionable carbon impacts of combusting biomass this technology will only be implemented where it can be proved to be a better alternative than other options available. The IPCC make the point that biomass is vulnerable to climate change with the soil conditions and vegetation being susceptible to changes in rainfall and heat¹². Given the risks inherent in fuel supply and embedded emissions in transportation and

processing of biomass, Northumberland County Council will not commit to this technology being a significant part of the decarbonisation plan.

Industrial waste heat can be used to provide space heating for domestic and commercial premises. There are certain industrial processes that require fossil fuels. Northumberland County Council acknowledges this and would seek to utilise any waste heat by-product to provide heating to other local heat users wherever economical and technically possible.

Northumberland Local Plan

Maximising energy efficiency and the use of renewable and low carbon energy sources including, but not limited to decentralised energy supply systems, is a key principle of securing sustainable development, as prescribed by policy STP 3 of the emerging Northumberland Local Plan. When determining planning applications, consideration will be given to how development proposals both mitigate climate change and contribute to reduced carbon emissions, including through reducing energy use and incorporating decentralised, renewable and low carbon energy where possible.

Whilst Building Regulations address technical standards in buildings, Policy QOP 5 of the Local Plan specifically addresses sustainable design and construction of new development. Development will be supported where it can address the various opportunities identified in the policy, such as: passive design measures, which respond to climatic conditions; using locally sourced, recycled and energy efficient building materials; incorporating small scale low carbon or renewable energy generation; and connecting to district energy networks, where feasible and viable to do so. It should be noted that the costs of some measures are currently considered to be prohibitive by the development industry. This may change over time. Similarly Building Regulation standards are likely to change, moving forward. The Council plans to prepare a Northumberland Design Guide, which will supplement the Local Plan. The design guide will also advocate sustainable design and construction, and may add further detailed guidance on relevant considerations.

¹¹ <https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/11/Navigant-Pathways-to-Net-Zero-2-min.pdf>

¹² <https://www.ipcc.ch/site/assets/uploads/2018/03/Summary-for-Policymakers-1.pdf>

PRIORITY ACTION AREA 4

- TRANSPORT

THE ISSUE

Transport is the single biggest contributor of emissions in Northumberland, accounting for 35% of CO₂ in 2018.

Decarbonising transport requires a shift to short journeys being made by bicycle or on foot with longer journeys made by public transport or in an electric vehicle.

THE COST

Projects set out in this section will cost around £300m. The majority of this will come through government grant funding. Individual residents will bear some cost of the move to low emissions transport through the purchase of EVs, supported by available grants.

THE BENEFITS

It is difficult to calculate the carbon benefit of projects such as EV charging or cycle infrastructure as they enable a modal shift but reductions of around 5 ktCO₂ could be expected.

It is estimated that up to 2000 job years will be created or supported through the delivery of these projects.

Improved air quality, public health and reduced congestion would also be outcomes.



Transport Emissions in Northumberland

In 2018, transport accounted for 637.5 ktCO₂ of Northumberland's total emissions (35%), by far the largest category. Of this, road transport alone was responsible for 33% of the county's total CO₂ emissions as shown in Figure 13. The remaining 2% of transport emissions comes from other sources, such as buses and railways¹³.

2.09 billion vehicle miles were travelled on roads in Northumberland in 2019. As shown in Figure 14, this is increasing each year, having risen by 31% since 2010 and by 40% since 2000¹⁴.

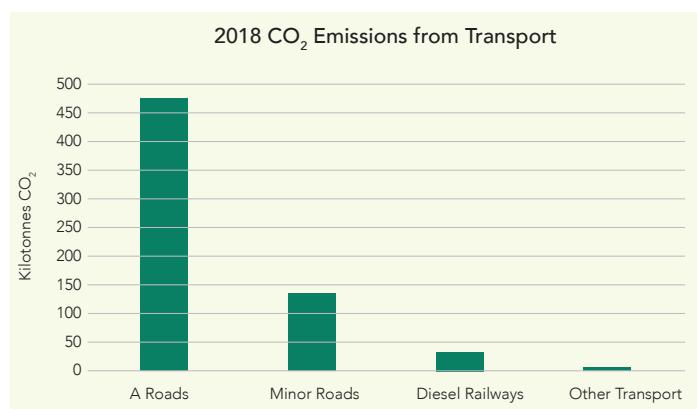


Figure 13 - emissions from transport by source in 2018

Figure 15 shows that in 2019, there were just over 200,000 vehicles licensed within Northumberland. Of these, 163,862 were private cars, of which only 839 were Ultra Low Emission Vehicles (ULEVs); 481 of ULEVs were fully electric Battery Electric Vehicles (BEVs)¹⁵. This is an increase of 12% since 2010 as shown in Figure 16.

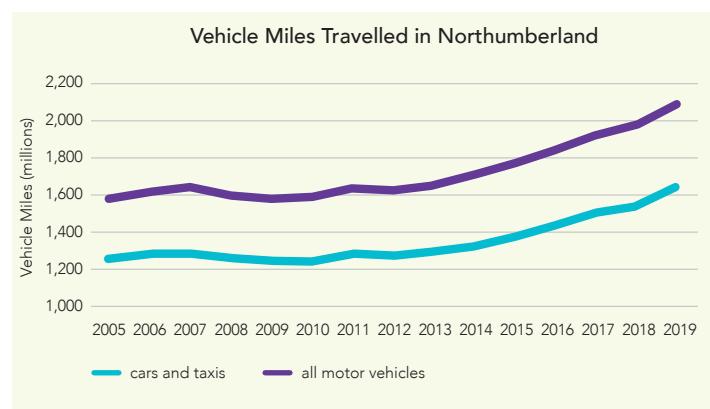


Figure 14 - the number of vehicle miles travelled in Northumberland over time between 2005 and 2019

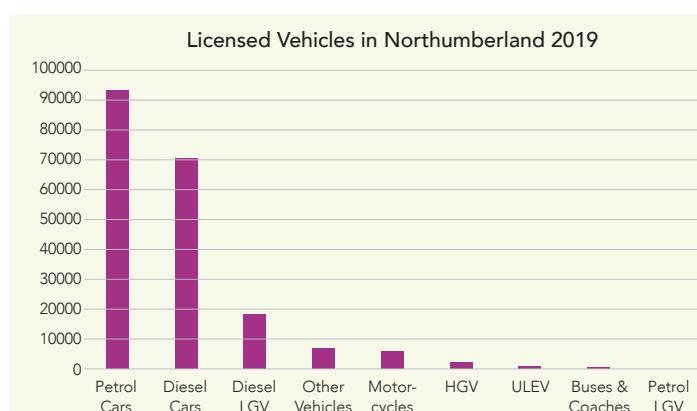


Figure 15 - the total number and type of vehicles licensed in Northumberland in 2019



Figure 16 - the rate of growth in car ownership in Northumberland over time between 2009 and 2019

¹³ <https://data.gov.uk/dataset/723c243d-2f1a-4d27-8b61-cdb93e5b10ff/emissions-of-carbon-dioxide-for-local-authority-areas>

¹⁴ <https://roadtraffic.dft.gov.uk/local-authorities/102>

¹⁵ <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01; VEH0105: Licensed vehicles by body type and local authority: United Kingdom>

Assuming the same rate of growth of private car ownership, there could be more than 180,000 privately-owned cars in Northumberland by 2030.

In a Regional Low Carbon Strategy, commissioned by the LA7 in 2019, a high-ambition scenario for the seven north east local authorities was for 27% of private cars to be EVs by 2035. This was written before the ban on the sale of new internal combustion engine vehicles was brought forward to 2030. Taking this into account, the high-ambition scenario could reasonably be a 30% share of EVs; this is approximately 55,000 cars. However, this would still mean there could be more than 125,000 petrol or diesel cars owned in the county by the 2030 net zero commitment. Petrol and diesel cars sold in the latter half of this decade could continue emitting greenhouse gases well into the 2040s.

Not only will replacing internal combustion engine cars with EVs not be enough to achieve net zero by 2030, neither will it address other issues associated with the private car, such as congestion, parking pressures and conflict, and low levels of physical activity.

It is critical, therefore, to achieve a modal shift by reducing levels of personal car ownership and mileage in order to reach the 2030 net zero target. This means a combination of reducing the necessity of owning a car, reducing the number of trips required and reducing the distance required for each trip. This can be achieved by increasing the opportunity, availability and desirability of alternative modes of transport, whilst ensuring local communities have the services they need close to home.

It is acknowledged that Northumberland is a large, rural county, so faces different transport challenges to more urban local authorities; many residents will require a car of some form in the future, due to their rurality.

However, based on the 2011 census, 54.1% of Northumberland residents lived in an urban area and a further 16.9% lived in a rural town in a non-sparse setting¹⁶. Approximately 20% of Northumberland residents live in rural villages, hamlets and isolated dwellings. This means that, for most of the county, short-distance active travel journeys to and around their local area are entirely feasible. The Department for Transport aims for half of all journeys in towns and cities to be walked or cycled by 2030¹⁷; the Council has the same ambition for its twelve main towns.

Decarbonising transport across the county is crucial to achieving the 2030 net zero target.

Northumberland County Council Local Transport Plan, 2011-2026

The Northumberland County Council Local Transport Plan (LTP) 2011-2026¹⁸ is the existing relevant transport policy for the county. Within this, there are five key aims: support economic growth; reduce carbon emissions; promote equality of opportunity; contribute to better safety, security and health; and improve quality of life and healthy natural environment.

Considering the climate emergency, the Council will commit to update the LTP Implementation Plan giving greater emphasis to schemes that support the goal of carbon reduction, as well as those that improve quality of life and a healthy natural environment, whilst still working within the overall LTP strategy goals.

A draft LTP programme for 2021/22 is currently in the process of being finalised. In this draft programme of works, £1,525,000 has been allocated for cycling and walking. This will be spent on a variety of highways improvements for pedestrians and cyclists, as well as maintenance of public rights of way. A further 'Safety' allocation will include works to improve safety around schools across the county, which could help with discouraging car use and encouraging active travel for school transport.

¹⁶ <https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Northumberland-Knowledge/NK%20place/Rural%20Urban%20classification/2011-Census-Analysis-Rural-Urban-Areas-of-Northumberland.pdf>

¹⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904146/gear-change-a-bold-vision-for-cycling-and-walking.pdf

¹⁸ <https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Roads-streets-and-transport/transport%20policy/Local%20Transport%20Plan/Local-Transport-Plan-2011-2026.pdf>



Active Travel

'Our Way', Northumberland Cycling and Walking Board

In June 2020, the Northumberland Cycling and Walking Board published the 'Our Way' report, a vision for cycling and walking in the county¹⁹.

The Cycling and Walking Board has an ambition to secure, from 2020 onwards, an average and tangible annual allocation of £5 million for walking and cycling in Northumberland, equivalent to £15 per resident.

Funding for active travel is allocated through the LTP Programme, as mentioned above. To help meet the rest of the £5 million annual ambition of the Cycling and Walking Board, the Council will proactively seek and apply for central Government grants. In the Autumn Spending Review, the Government announced "£257 million for cycling and walking in 2021-22, part of [a wider] £2 billion commitment to cycling and walking across the parliament"²⁰. Other sources of funding, such as the Borderlands partnership, North of Tyne Combined Authority and S106 developer funding will be explored.

Local Cycling and Walking Investment Plans

The Government's Cycling and Walking Investment Strategy was published in 2017, which first set out Local Cycling and Walking Investment Plans (LCWIPs). LCWIPs are a strategic approach to identifying cycling and walking improvements required at the local level, ideally over a ten-year period.

Council staff have been developing LCWIPs for the county, receiving additional technical support from the Department for Transport. LCWIPs have now been drafted for the twelve main towns in the county: Alnwick; Amble; Ashington; Bedlington; Berwick; Blyth; Cramlington; Haltwhistle; Hexham; Morpeth; Ponteland; and Prudhoe.

65 priority cycling and walking corridors have been identified through the creation of the LCWIPs. The estimated cost of creating these is over £80 million.

Between 2021-23, the Council would like to begin works on some of these priority corridors. Having established a robust evidence base during the LCWIP process, NCC is in a stronger position than many councils to apply for funding.

¹⁹ http://commiteedocs.northumberland.gov.uk/MeetingDocs/47289_M10841.pdf

²⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938052/SR20_Web_Accessible.pdf



Town Investment

There is opportunity to incorporate active travel, and climate emergency solutions in general, into broader town investment plans. For example, active travel is prominently featured within the Blyth Town Investment Plan. This plan is currently in draft stage and will be used as a framework for the Town Deal and Future High Streets Fund applications; there is an opportunity to access up to £70 million between these two funds.

One of the strategic objectives within the Blyth Town Investment Plan is "CONNECTED TOWN - To make Blyth an accessible and well-connected town, supporting growth and improving quality of life by making it easier for residents, workers, learners, visitors and businesses to arrive at and move around the town." Key to this, and referenced throughout the plan, is investment in cycling and walking access and infrastructure, connecting the new railway stations, town centre, employment sites and residential areas together.

Two projects have been identified within the Town Deal fund application: Blyth Bebside to Town Centre Connectivity; and Blyth Town Centre Northern Gateway (Phase 2). These projects will cost an estimated £7 million and £3 million, respectively. The Blyth Bebside to Town Centre Connectivity project will deliver almost 3 kilometres of cycle way and walking paths between the new Bebside train station, key employment sites and the town centre. Phase 2 of the Northern Gateway project will improve connectivity for cyclists and pedestrians with a further 600 metres of new/upgraded cycle and walking paths, as well as 2500 square metres of new/improved public space.

Project delivery within the Blyth Investment Plan is expected to commence from April 2022, provided the application for funding is successful.

It is important to note that the overarching, cross-cutting priority of the investment plan is for a 'clean growth town', incorporating active travel alongside other key priorities, such as supporting the renewable energy sector in the town and developing the heat network described above.

Between 2021-2023, the Council will explore further opportunities to fund and integrate active travel schemes into broader town investment plans and funding bids, for other towns in the county.

Additional Schemes and Infrastructure

Between 2021-2023, the Council will explore other mode shift opportunities for cycling and walking, including opportunities for further funding. This includes schemes such as active travel neighbourhoods, quiet streets, play streets, school streets, e-bikes and e-cargo bikes.

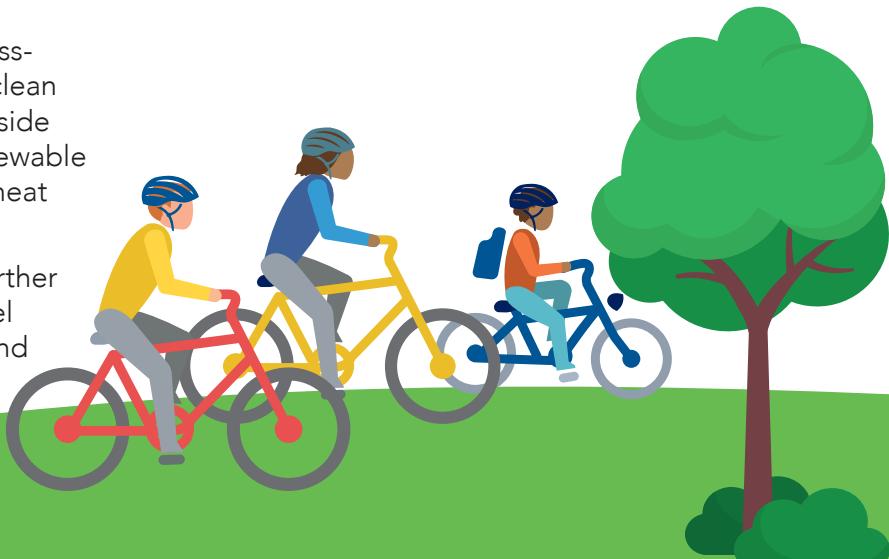
The Council will seek to increase high-quality cycle storage at key locations, including town and village centres, train and bus stations, and schools and workplaces. New cycle storage will be installed in early 2021 in the twelve main towns of Northumberland, as part of the central Government 'active travel fund'.

The Council will launch a new marketing campaign, the 'Big Northumberland Gear Change', in early 2021, encouraging residents to shift to active travel and public transport.

The Council will continue to publicise and actively participate in walking and cycling campaigns, such as 'Bike Week' and 'Cycle to School'.

Engaging and consulting with residents will be crucial to achieving the necessary modal shift; the Council will proactively consult with residents around active travel schemes. As part of this, the Council will publish an online tool in 2021 that allows residents to register their interest in cycle storage, creating a demand map for potential future storage sites.

There is currently no guaranteed, substantial funding past March 2021 for active travel schemes, such as Bikeability, Modeshift STARS and Safer Routes to School. The Council will explore opportunities, both internally and externally, for sufficient funding for active travel schemes and infrastructure that matches the county's net zero ambition.



Northumberland Line

The Northumberland Line will bring passenger trains back into service between Ashington and Newcastle. It is a priority of both Northumberland County Council and North Tyneside Council and is supported by a number of key project partners, including the Department for Transport, Network Rail, Transport for the North, Nexus and Northern Rail.

The Northumberland Line aims to stimulate and support economic growth, regeneration and community development in Northumberland and the surrounding regions by providing new and improved transport links for local people and businesses.

As shown in Figure 17, the project will provide six new stations at Ashington, Blyth Bebside, Bedlington, Newsham, Seaton Delaval and Northumberland Park, with journeys between Newcastle and Ashington taking about 35 minutes with no need to change trains.

In the period 2020-2023, the Council has allocated £29.6 million from its capital programme to help design and develop the Northumberland Line scheme.

The line is currently anticipated to open to passengers in winter 2023. Because of this opening date, the Northumberland Line will not result in any carbon emissions reductions between 2021-2023. However, once operational, the rail line is estimated to save approximately 80.7 kilotonnes of CO₂ equivalent greenhouse gas emissions over a period of sixty years²¹. This equates to 1.35 ktCO₂e per year, 0.19% of the 2030 target.

Buses

At present, there is uncertainty in the bus transport sector, due largely to the coronavirus pandemic, which has greatly impacted bus usage. Between 2021-2023, the Council will work with bus operators in the region to establish the demand for a post-COVID bus network. The Council will proactively seek and apply for funding from the Government.

From 2021, as part of the tender evaluation process, all future public transport and school transport commissioning within the Council will factor in the

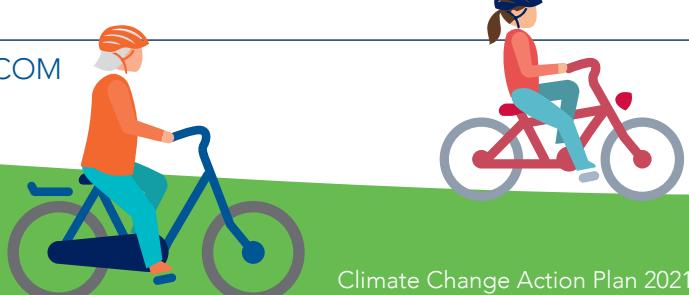


Figure 17 - map of the proposed route of
The Northumberland Line

carbon emissions of the tendering vehicle fleet. Organisations providing transport services to the Council will also be obliged to submit details of the carbon emissions from their commissioned services to the Council as part its contractual monitoring and performance management arrangements.

The Council will continue to collaborate on a regional scale with other partners, such as the Joint Transport Committee and Transport North East, to prioritise low carbon solutions.

²¹ Northumberland Line Outline Business Case, AECOM



Car clubs and sharing

As previously stated, there is a need to reduce the number of private cars and associated journeys in Northumberland to reach the net zero 2030 commitment. After increasing active travel and public transport use, one way in which to do this could be through increasing the efficiency of cars through car sharing and car clubs.

Due to the coronavirus pandemic, there now appears to be a long-term shift to increased working from home. As people commute less in future years, there may be greater demand for shared use of cars.

When appropriate, depending on the coronavirus pandemic and associated restrictions, the Council will publish an online tool that will allow residents to register their interest in joining a car club.

To act as a leading example for the county, between 2021-2023 depending on the coronavirus pandemic and associated restrictions, the Council will seek to introduce its own car sharing incentive for staff travel.

EV Charging

In 2018, road transport accounted for 605.7 ktCO₂ emissions, 33% of Northumberland's total emissions. This is equivalent to 86% of the 2030 net zero target. However, it is not until 2030 that the sale of new internal combustion vehicles will be banned, and it is not until 2035 that all new cars will have to have zero tailpipe emissions. Based on the current lifetime usage of cars, there could be carbon emitting cars in Northumberland well into the 2040s.

Assuming car ownership trends continue and that 30% of private cars will be EVs in 2030, there could be approximately 55,000 EVs in the county. There are currently 481 Battery Electric Vehicles in Northumberland. In the nine years until 2030, approximately 6000 EVs will have to be sold each year, all of which must replace an existing internal combustion engine vehicle. Over the last ten years, an average of approximately 2000 cars are sold each year in the county²². In effect, this means an additional 4000 residents, who otherwise would not have bought a car, must buy an EV every year between now and 2030. This shows that a 30% EV share by 2030 will likely not be attainable without a reduction in overall car ownership.

A large expansion in both the public and private sector charging infrastructure will be required between now and 2030, to accommodate the rise in EV ownership.

It is estimated that approximately 80% of the county have access to off-street parking²³. For these residents, the Council will promote funding opportunities for home chargers, such as the Electric Vehicle Homecharge Scheme.

The remaining 20% of residents, if they own an EV, may require on-street charging facilities. Here the Council will take a more direct role, installing on-street chargepoints in residential streets. Assuming the same distribution of EV ownership among residents with and without access to off-street parking, there could be up to 11,000 EVs requiring on-street charging in 2030. Research suggests that by 2030, one charger could accommodate sixteen EVs

²² <https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>: VEH0105: Licensed vehicles by body type and local authority: United Kingdom

²³ <https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy>: NTS0908: Where vehicles are parked overnight by rural urban classification: England



for normal public charging and that 80% of EV charging will take place at home or at work²⁴. The Council, therefore, may need to install around 700 on-street chargers by 2030. This is likely to require investment of between £5m - £10m. However, it should be noted that assumptions used to calculate this figure mean it is subject to change as more in-depth analysis takes place.

As a first step, the Council will collaborate with external partners to develop robust data about demand for EVs and the implications this may have on charging infrastructure and the power grid.

The Council will publish an online tool in 2021 that will allow residents to register their interest in having an on-street charger, as well as register their interest in joining a car club. This map of potential demand and implications on the power grid will then be further explored through work with external partners.

In spring 2021, the Council will apply to the Office for Zero Emission Vehicles (OZEV) On-street Residential Chargepoint Scheme (ORCS) for £100,000 of funding, which will be matched by an additional £33,333 from the Council's capital budget. 6 selected locations across the County will then each have 4 on-street charge points installed by April 2021, if the application is successful. This will act as a pilot scheme to understand best practice around on-street EV charging, before further expansion in future years.

£500,000 of capital funding was allocated to EV charging in the 2020/21 budget. From this funding, 12 priority sites were identified for a range of rapid, medium and standard charging points, which are currently being installed in public car parks. This is in addition to the 37 chargepoints the Council already operates.

According to the government's most recent figures, Northumberland currently has a total of 162 public charging devices which equates to 50 per 100,000

population²⁵. This places us in the top 20% in the UK for EV charging provision. The Council is committed to continuing to maintain this above average position through expansion of its own EV charging network together with attracting commercial EV charging companies to install facilities within the County.

In the 2020 Autumn Spending Review, the Government announced "£275 million to extend support for charge point installation at homes, workplaces and on-street locations" and "£90 million to fund local EV charging infrastructure to support the roll out of larger on-street charging schemes and rapid hubs". The Council will proactively seek out and apply for central Government funding to support the expansion of Northumberland's public charging infrastructure.

The Council will collaborate with private business to increase charging facilities at Northumberland workplaces and will promote funding opportunities, such as the Workplace Charging Scheme.

The Council will work in close partnership with the District Network Operator to identify potential charger locations, as well as providing them sufficient notice to allow for works; this could greatly reduce the cost per charger connection.

Northumberland Local Plan

There are several policies in the emerging Local Plan supporting the future resilience of communities and infrastructure to climate change impacts, including Policy TRA 1. The policy seeks to ensure sustainable connections by reducing the need to travel by car and maximising the use of sustainable modes of transport. The plan recognises the unavoidable reliance upon private vehicles given the rural nature of the county and in this context supports the roll out of electric vehicle charging infrastructure. The policy seeks to ensure that, early in the design process, developers

²⁴ <https://theicct.org/sites/default/files/publications/UK-charging-gap-082020.pdf>

²⁵ <http://maps.dft.gov.uk/ev-charging-map/>



include routing for the future cabling of off-street household charging points in safe and accessible locations, to avoid costly and disruptive retrofitting. The Government recently consulted on potential changes to building regulations which would take this requirement further, making the installation of electric vehicle charging points mandatory for new homes with parking.

Fleet Replacement Programme

A Green Fleet Review was undertaken on the council's own vehicle fleet in early 2020, which confirmed the use of EVs as a viable fleet option for certain classes of vehicle. As a result of this study, the Council's Fleet Replacement Programme (FRP) was reviewed during summer 2020 and it was decided to replace 70 end of term, small diesel vans with EV alternatives; the council's fleet size will not increase as a result of this replacement scheme.

This switch to EVs has now commenced with 47 EV vans having been procured in the financial year 2020-2021. An additional 11 EV vans will be bought in 2021-22 and a further 12 EV vans in 2022-23. The total capital cost of these new EVs is expected to be £1,533,000. It is estimated that this decision to utilise EVs within the Council's vehicle fleet will result in the following CO₂ emissions reductions, as well as avoiding the polluting emissions from diesel engines which are of particular concern to air quality:

- ✓ 2020/21 - 0.2046 ktCO₂
- ✓ 2021/22 - 0.2133 ktCO₂
- ✓ 2022/23 - 0.2146 ktCO₂

Additional benefits include a potential annual fuel saving of £86,158.42 and potential Vehicle Excise Duty saving of £18,100 per year, based on current rates.

To accommodate and support the FRP, Electric Vehicle Charging Points (EVCPs) will be installed at several Council sites. Without the necessary charging infrastructure, NCC will not be able to progress the 'greening' of its fleet through increased use of EVs. It is anticipated that 43 EVCPs will be required at 15 depots,

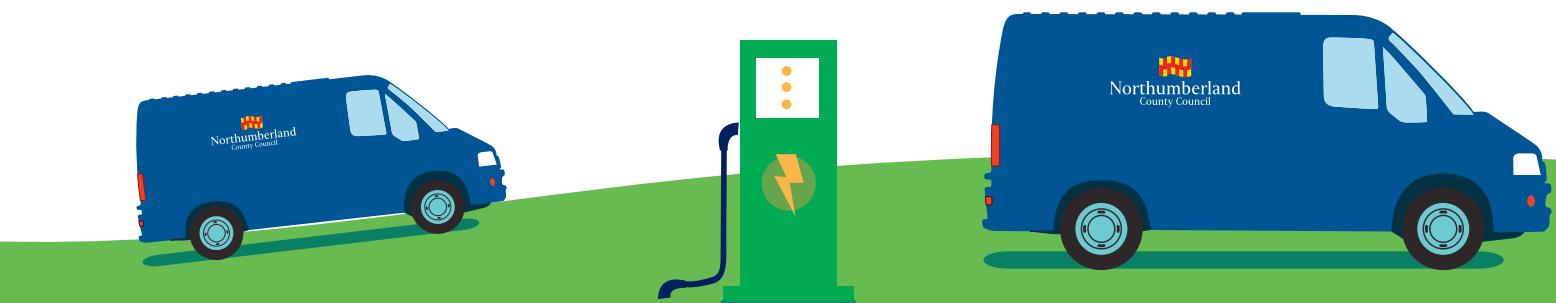
to accommodate the growing EV fleet. Due to ongoing or upcoming construction works at several sites it is necessary to phase the installation of the new EVCPs; 34 EVCP units have therefore been installed in 2020 at a capital cost of £156,500 and it is envisaged the remaining required EVCPs will be installed between 2021-2023 to align with depot improvement schemes.

It should be noted that the EVCP installations within depots are to meet the Council's own fleet requirements and are not for public use. A separate programme is being implemented to enhance public EVCP infrastructure across the County in order to support the wider uptake of EVs by the public and businesses as part of the Council's climate change Action Plan.

Regular reviews will continue to take place across the Council's whole vehicle fleet as part of its Fleet Replacement Programme in order to assess the viability of other electric alternatives to the many different types of diesel vehicles operated by the Council, such as street sweepers, larger vans and refuse collection vehicles. The pace of this EV replacement programme is largely dependent on emerging new technology and the cost of electric alternatives to larger vehicles. If a positive business case can be made that demonstrates the additional capital cost of purchasing an EV is warranted based on the revenue savings made over the vehicle's lifetime in fuel, maintenance and tax, alongside the contribution made to reducing CO₂ emissions and progress towards climate change targets, the council will proactively begin to replace the respective vehicles with electric alternatives once existing vehicles come to the end of their lifetime.

In addition to a switch to EV vehicles, the Council will also continue its work to make best use of new technologies, such as Global Positioning Systems, in-cab systems and routing software, alongside driver training programmes, to ensure that its vehicle fleet is operated as efficiently as possible in order to minimise fuel consumption and the associated carbon emissions.

The Council has also begun trialling battery operated handheld equipment with a view to replacing two-stroke



engines on items such as strimmers, chainsaws and hedge trimmers across its grounds maintenance activities. These have well received by operators as they have significantly lower levels of noise and vibration as well as reducing emissions substantially. Two stroke engines are some of the worst polluters in terms of air quality so replacing these types of machine is a priority for the Council.

Broader Context - North East Transport Plan, Transport North East

Transport North East have recently published the draft 'North East Transport Plan, 2021-2035²⁶'. This is the first region-wide transport plan for the seven local authority areas in the north east: Durham, Gateshead, Newcastle, North Tyneside, Northumberland, South Tyneside and Sunderland. This plan sets out the transport priorities for the region up to 2035. The plan is currently undergoing public consultation. A finalised version of the plan will be published in 2021.

The vision of the draft North East Transport Plan is "moving to a green, healthy dynamic and thriving North East".

The plan has five key objectives, including creating a "carbon neutral North East" and delivering "appealing sustainable public transport choices".

There are several climate-relevant key performance indicators of the plan, including: increase the sustainable transport mode share; increase the accessibility of public transport; improve greener journeys by reducing carbon output per capita; increase the uptake of ULEVs; and improve air quality.

The plan has funding asks of Government and its partners for £200 million each year for transport and digital funding for the region's COVID-19 recovery and a multi-year settlement of £6.1 billion to commence delivery of the programme. The Council will work with Transport North East to allocate a fair share of any allocated funding to Northumberland for net zero transport projects.

The draft North East Transport Plan includes the following relevant policy statements:

- ✓ "We will help people make greener and healthier travel choices whenever they can and make sure our sustainable network takes everyone where they need to go, at a price they can afford"
- ✓ "We will help more people use active travel by making the cycle network better across the North East. This will include being flexible in how we use road space to help cyclists and pedestrians"
- ✓ "We will initiate actions to make travel in the North East net carbon zero and improve transport safety and security"
- ✓ "We will improve bus travel and attract more passengers with new rapid bus corridors. This will include changing how road space is used to help buses move more quickly"
- ✓ "We will strengthen use of cleaner, greener cars, vans and lorries"
- ✓ "We will invest in Metro and local rail to extend and improve the network"

Northumberland County Council shares the draft North East Transport Plan's net zero transport vision, objectives and KPIs and will work with regional partners to help achieve these. The Council will work with Transport North East around the above policy statements, to deliver as many net zero outcomes for Northumberland as possible.

Alongside the North East Transport Plan, Transport North East will also be publishing a bus strategy, local rail strategy, active travel strategy and road and electric vehicle infrastructure strategy between 2021-2023. The Council will work alongside Transport North East and regional partners to shape these strategies for a carbon-neutral regional transport system.

²⁶ <https://www.transportnortheast.gov.uk/wp-content/uploads/2020/11/Full-Transport-Plan.pdf>



PRIORITY ACTION AREA 5

- RENEWABLE ENERGY GENERATION

THE ISSUE

Electricity use accounted for nearly 20% of positive CO₂ emissions in Northumberland in 2018

Whilst the national grid is decarbonising through a move away from fossil fuels to renewables, there is still a need to generate renewable energy locally, in order to meet increased demand for electricity as heat and transport become more reliant on it.

THE COST

Projects set out in this section will cost around £5m. The majority of this will come through grant funding.

Individual residents will bear some cost of the move to low emissions transport through the purchase of household solar PV, supported by available grants.

THE BENEFITS

Around 430 tCO₂ can be directly saved through delivery of these projects.

It is estimated that around 32 jobs will be created or supported through the delivery of these projects.

The electricity we use in our homes and businesses produces carbon emissions; this is in part because the UK's national energy grid is predominantly powered with centralised energy from power plants. These plants have historically been coal powered, however the UK is transitioning its energy to lower carbon options, such as natural gas. Part of this transition is being supported by renewables such as solar PV, hydro, wind (on and offshore) and biomass. As the energy mix shifts toward renewables the electricity utilised decarbonises. This may present an option for "do nothing" on energy as the decarbonisation of this

element is being managed centrally, however Northumberland County Council are committed to providing clean power within the county for the county's use. There are two reasons why "do nothing" is not being considered an option:

- 1) the grid is not decarbonising quickly enough for us to meet our 2030 target;
- 2) we will increase our power usage through a move to electrified vehicles and heat and hence it is important that we are providing our own power to offset these increases.



As such the council is committed to installing its own renewables across the county and supporting private investors to install renewable energy where; it is technically, socially and environmentally feasible.

Northumberland has a thriving energy community that is responding to climate change whilst driving clean economic growth. As shown in Figure 18, we have improved on the generation of renewable energy over the last six years and are 2nd in England for MWh generation in onshore wind, and 1st for Hydro generation.

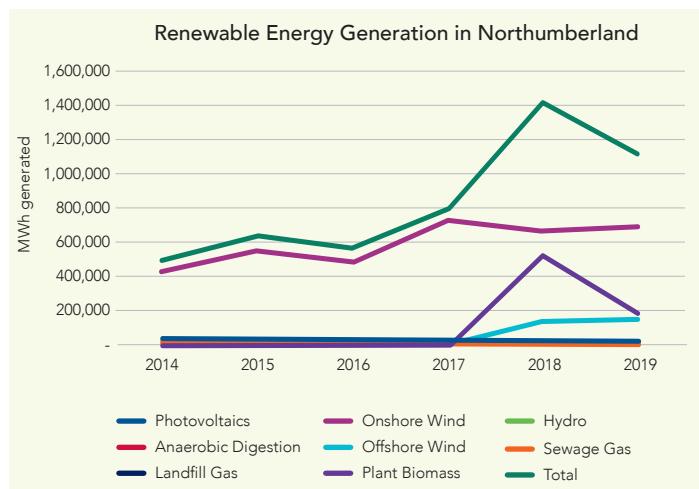


Figure 18 - renewable energy generated in Northumberland by type between 2014 and 2019

In 2019 Northumberland generated over 1.1 million MWh of renewable energy from over 8,000 installations which is 50% of the equivalent overall electricity use for the county, with the national average being 34%.

Grid Decarbonisation

The UK's national grid is decarbonising and to some extend Northumberland will be reliant on this national trend to deliver a significant proportion of our carbon savings. BEIS produce projected decarbonisation figures for the national grid and it has been determined from their data calculated against electricity usage in Northumberland, that national grid decarbonisation will equate to 219 ktCO₂ savings annually in Northumberland by 2030²⁷.

Northumberland County Council appreciates that it has a role to play in the continued national decarbonisation of the grid and that it is important that the council seeks to draw in opportunities to the county. Offshore wind has been heavily supported by central government and Northumberland is well placed as a coastal county to support this industry and use existing partnerships with Port of Blyth to seek to leverage private sector investment into the region and create employment and wider inward investment.

Offshore wind is by no means the only active energy generation sector that can support local jobs, Northumberland already has a significant amount of renewable energy infrastructure, between onshore wind, biomass plants at Lynemouth and Cramlington, the largest hydroelectric power plant in England situated at Kielder Water and a range of commercial and domestic renewable systems which support local investment in maintenance and management of these assets. Northumberland County Council will continue to support renewable technology where installations are technically possible, economically feasible, environmentally advantageous and socially acceptable.

²⁷ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2019>



Power reduction and efficiency

As with the priority action area covering heat, the key to maximising the benefits of energy efficiency are to reduce the total amount required prior to emphasising generation of our own energy. A few simple technologies exist to be able to support the reduction of energy demand.

LED lights have long been a cornerstone of energy efficiency measures, but they have not been delivered in all technologically appropriate settings across the council estate. Local Services have delivered a wide roll out of LED lighting across the street lighting portfolio, however our property estate still has properties requiring installation. Northumberland County Council will undertake an evaluation of the whole estate, including maintained schools, and roll out LED lighting across the entire estate by 2023. Where possible and appropriate, passive infra-red (PIR) sensors will be installed at the same time as LEDs to ensure that power is only used when it is required.

Another significant power use is electronic appliances, both white goods and IT equipment. Northumberland County Council will only purchase energy A+ rated and above appliances, unless extenuating circumstances make alternatives a better investment option. Where possible settings will be put in place to turn off equipment when not in use to minimise "standby use".

Through our partnerships and engagement strand, we will work with local communities and businesses to develop plans to reduce power usage in homes and businesses across the county.

Whilst the measures above can be adopted to reduce demand for power, it is anticipated that demand for power will nevertheless increase over time as transport and heat become more reliant on electricity.

Energy Generation

While energy efficiency and minimisation of energy usage is critical it can only go so far in reducing our emissions. There will always be a requirement for power to enable Northumberland County Council's operation. It is expected that as we electrify our fleet vehicles and our property's heat our electricity demand will increase over time. To offset these emissions, it is critical that we increase the renewable energy generation across the county and build on the existing assets we have to maximise the carbon reductions.





Solar PV

The most common example and most widely distributed energy generation asset is roof mounted solar PV. Northumberland County Council has made significant investment into this technology over the last 10 years and now boasts an estate of 3,510kWp. This figure includes domestic properties within Northumberland County Council's housing estate.

Within Northumberland County Council's commercial solar PV estate 738MWhs of electricity were generated in 2019/20 financial year. Based on our current pipeline of projects, we expect 2,485MWhs to be generated by the PV estate by 2022/23 financial year (greater than a 3-fold increase). There are ongoing works to determine the scale of possible implementation for solar PV, additional roof mounted is certainly possible across the council's estate however the pilot solar car port project being undertaken at County Hall may provide a blueprint for far reaching implementation.

Northumberland County Council will continue to make investment into roof mounted solar PV where it provides a carbon saving and a net nil cost over the life of the asset.

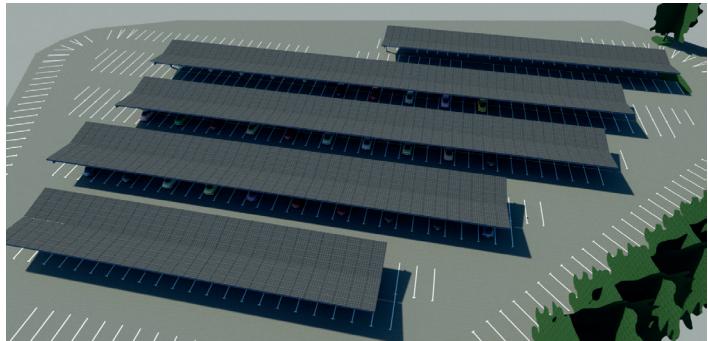


Figure 19 - cross section of solar car port design with EV charger

With the support of ERDF funding, Northumberland County Council is currently designing and installing a solar car port at our County Hall building. The solar car port will provide power to both the building and to electric vehicle charge points being installed underneath as shown in Figure 19. The installation at County Hall will present an opportunity to test the technology with a view to wide scale roll out across the county over the 2021-23 period. This technology will be applied best where there are large energy users who can use any excess power that is not being used to charge vehicles. Leisure centres are a prime example and the council's intention is to consider





these as the next assets we will consider. We will also support private investors and other landlords to install this technology within the county, sharing our experiences and learning.

Based on analysis of the number of council owned car parking spaces across the County, it may be possible to install up to 10MW of solar across car parks in Northumberland. This would represent an energy generation potential of 8GWhs per year of clean energy generation and would make better use of the space taken up in our towns and villages by car parks.

Full feasibility and planning would be required, which may limit potential installations. Northumberland County Council commits to reviewing the energy generation potential of all its car parks by the end of 2023. Where an economic case can be made which is socially and environmentally acceptable and technologically achievable, a pipeline of solar car port projects will be developed for installation commencing in the 2023-24 financial year. Solar car ports provide a strategic opportunity to link electric vehicle charging points to clean energy generation and these technologies will be dual located wherever possible and feasible.

Solar farms are an option that since the close of the supporting subsidies has not been directly considered by Northumberland County Council. The Council will consider solar farms as a potential investment option where there are significant carbon savings and an economically investible case. With the recent change in Contracts for Difference (CfD) funding²⁸ this may become an economical option again. The council will only consider this where it does not have a negative social or environmental impact.

The Council will further support communities to develop their own energy generation schemes. The council have co-funded an officer with the North East Local Enterprise Partnership (NELEP) to assist community groups to apply for the Rural Community Energy Fund (RCEF), which can support feasibility and project delivery of community energy projects.

Through Green Homes Grant voucher scheme and the Local Authority Delivery aspect of that fund, Northumberland County Council is actively supporting the installation of renewable energy generating technology, particularly solar PV, which is relatively simple to be installed and provides significant energy savings to bill payers.

²⁸ <https://www.gov.uk/government/collections/contracts-for-difference-cfd-allocation-round-4>

Hydroelectric

Hydroelectric generation presents some significant benefits to add to Northumberland County's renewable energy mix. Northumberland can already boast the largest hydroelectric power plant in England, Kielder Water. Where hydroelectric presents a real benefit is in its seasonal generation outputs. Where solar provides much more significant outputs during summer months than winter, the increased rainfall in the county during the winter months presents a strong opportunity for energy generation.

Hydroelectric can be a divisive issue as if it is designed and installed incorrectly, it can have negative impacts on aquatic wildlife and hence it requires a significant amount of due diligence prior to committing to a project.

Northumberland County Council is investing in this level of due diligence for the potential hydroelectric opportunity presented at the weir adjacent to Hexham Bridge. Funding has been agreed from North of Tyne Combined Authority and the North East LEP to support a technoeconomic feasibility study into the options presented at the site. This site presents a real opportunity to directly utilise the power. Two options

are currently presented for direct usage, the Wentworth Leisure Centre and the Tyne Mills Depot. The latter is undergoing a rebuild which will be supported by electrified renewable heating, either air source or ground source. It will also require EV charging capacity for our increasingly electric fleet. If power can be supplied from a hydroelectric facility to power the buildings electric and heating load it is possible that the redevelopment can reach Passivhaus Standard²⁹.

Northumberland County Council has also undertaken a high-level scoping exercise into various locations within the county that could be suitable for hydroelectric. In addition to Hexham Hydro three of these options have been taken forward for additional investigation which has yielded an option on the River Wansbeck at the weir in the centre of Morpeth. There are significant ecological concerns at the site which have paused work on this opportunity but should the investigations at Hexham prove to be fruitful and an ecologically safe technology be implemented then the weir in Morpeth on the River Wansbeck presents a natural next avenue of investigation.

	KW	kWhs/year	Year 1 tCO ₂ saved	Capital Cost	Jobs
Hexham Hydro	230	1,165,000	272	£1,850,000	12
Morpeth Weir	70	215,000	50	£437,000	2
Haltwhistle Weir	110	357,000	83	£1,046,500	6
Wooler Weir	15	49,000	11	£152,950	1

²⁹ https://www.passivhaustrust.org.uk/what_is_passivhaus.php





Wind

The UK Government has been openly supporting the development of offshore wind for several years and in 2020 the UK's Energy Minister has pledged to increase offshore wind production by 4 times from its existing level by 2030³⁰. This level of support has allowed a young industry to grow exponentially over the last decade and this growth is expected to continue into the next decade. Blyth already hosts the offshore energy catapult which provides expertise and development to the industry. Northumberland County Council through its connections with The Port of Blyth and Advance Northumberland will support the industry and seek to increase local employment in this growing industry and seek inward investment into the county.

Onshore wind has been divisive over the past decade, balancing the need for clean, renewable and cheap energy against the visual impacts of the turbines. Onshore wind still presents the most cost-effective form of energy generation, but as turbine sizes increase to generate greater amounts of power within smaller footprints of land it increases the visual

impact. Northumberland County Council has set out its position for onshore wind within the local plan. To provide a full range of options for the decarbonisation of the county onshore wind cannot be ruled out, however where alternatives exist it will not be prioritised.

Blyth estuary already benefits from an onshore wind turbine providing power to the national grid. Options have been discussed for increasing the number of turbines in that area and utilising the power directly within Blyth. This presents a real opportunity should the mine water district heat network be installed in Blyth as a centralised energy centre could be powered by the onshore wind directly presenting an opportunity for zero carbon heat to be produced. It may also be possible for any excess to be used within local buildings as clean power. This presents a major opportunity to decarbonise Blyth town and hence Northumberland County Council will explore this in line with the other opportunities being explored through Future High Streets Fund, Blyth Town Deal, Energy Parks Development and Port of Blyth's ongoing investment.

³⁰ <https://www.gov.uk/government/news/new-plans-to-make-uk-world-leader-in-green-energy>

Northumberland Local Plan

As previously referred to, the new Northumberland Local Plan, the statutory development plan for the County, is emerging. The Plan is currently subject to examination and is expected to be adopted in 2021.

In accordance with national policy, mitigating and adapting to climate change is a key principle running through the Plan and is inherent in securing sustainable development in Northumberland.

The plan supports small scale renewable and low carbon energy generation incorporated into new development. In addition, the Plan has a section dedicated to dealing with low carbon and energy generation developments

(including anaerobic digestion, biomass, heat pumps, hydro, onshore wind and solar photovoltaics and associated energy storage facilities). The plan supports such developments, whilst ensuring that the objective to maximise the generation of renewable and low carbon energy is balanced with other planning considerations such as the need to protect Northumberland's environment, communities and businesses from any adverse impacts associated with development. Policy REN 2 of the Plan deals specifically with planning for onshore wind energy developments, and how such proposals will be appraised in the context of sensitive planning considerations for such developments.



PRIORITY ACTION AREA 6

- NATURAL RESOURCE-BASED CARBON SEQUESTRATION

THE ISSUE

Northumberland enjoyed negative emissions of -1,114.3 ktCO₂ in 2018, compensating for 61% of positive emissions.

Protecting and enhancing this resource is essential to meeting the net-zero target.

THE COST

The initial cost of projects set out in this section is £365,000 but it should be noted this just an indicative figure.

Full costs will become known following detailed planning work.

THE BENEFITS

Around 21.71 k tCO₂ could be sequestered through delivery of these projects.

Jobs will be created or supported through the projects outlined in this section. The natural resources, biodiversity and wildlife of the country will also be protected and improved.

Carbon 'capture' or sequestration is a key component of any net zero transition. From the emissions data shown in this Climate Action Plan these emissions (LULUCF) offset direct emissions from energy and fuel uses drastically and reduce the overall carbon dioxide emissions of Northumberland.

As a Council we recognise that these emissions can change (as land use changes) and they have the potential to be reversible. However, Northumberland is a major rural county with a strong established natural capital value across many areas which benefit the environment, society and the economy. It is therefore with some assurance we feel these emissions will remain and indeed increase in their offsetting capability given our and other partners approaches to land management. This is particularly true in terms of our planned efforts in reforestation/afforestation and nature recovery. This should ensure that any adverse side-effects on eco-systems from changes of land use (or from climate change) will be fully considered and mitigated where possible.

It is therefore important that these areas of land are maintained, enhanced and increased through our work in several areas.

The Great Northumberland Forest

The Great Northumberland Forest currently aims to plant 1,000,000 trees by 2024/25 across 500 hectares. Using figures from the CCC's Sixth Carbon Budget Methodology Report³¹ and assuming a 67:33 planting ratio in favour of broadleaves over conifers, these planned forests have the potential to sequester 21.71 ktCO₂ annually by 2030.

Recent political developments suggest there is an appetite to increase the scale of the Great Northumberland Forest further towards 2030 and beyond. Through the work of its Woodland Creation Group, Northumberland County Council will investigate and propose options for a more ambitious reforestation/afforestation scheme considering economic, environmental and social benefits and seek funding for this.

Local Nature Recovery Strategy pilot for Northumberland

Northumberland was selected by Defra as one of five locations for a Local Nature Recovery Strategy (LNRS) pilot. As the local responsible body, the Council map the most valuable sites and habitats for wildlife and identify where nature can be restored.

This will see the creation of habitats including new woodlands, the protection and enhancement of peat and wetlands, which are important for both healthy communities and in the fight against climate change. Local priorities for restoring and linking up habitats will fully consider the need to store more carbon.

Northumberland's Local Nature Recovery Pilot will be published by April 2021.

Borderlands Inclusive Growth Deal

The Borderlands Natural Capital Innovation Zone aims to secure investment through the Borderlands Inclusive Growth Deal to allow for a strategic approach to further enhance natural capital, that is the natural 'stock' found in nature and ecosystems that underpin environmental, social and economic benefits.

In order to allow local low carbon energy measures to work there need to be shared, accurate, detailed local plans, that leaders, decision makers, investors, communities, DNO/DSOs, businesses and residents can understand and can play a part in to allow an environment that offers greater certainty, clarity and assurance for investment in low carbon energy (power and heat) generation and low carbon transport.

The purpose of the Borderlands Inclusive Growth Deal in this context is clean growth, that is an ambition to grow Borderlands economy whilst lowering carbon dioxide emissions. Northumberland County Council is working with partners to deliver detailed local, place-based energy plans driven by data, engagement and both social and economic analysis. This projects and programme delivered approach will be the output of a major, strategic low carbon energy masterplanning exercise due to commence in January 2021 and will support this Action Plan across many areas in the coming year and beyond.

For Northumberland, our natural capital is a key part of our county's economy. The state of the environment must ensure soils, seas, freshwater, air and species all thrive for us to thrive. Northumberland County Council will work with our partners to ensure this zone drives improvements in sustaining natural capital in areas such as forestry and farming.

³¹ <https://www.thecccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-Methodology-Report.pdf> pg228



Peat Restoration

Our peat bogs are important habitats that provide food and shelter for wildlife, help with flood management, improve water quality and sequester large amounts of carbon. However, most peat soils support ecosystems that are sensitive to human activities including drainage, grazing, liming and afforestation. This makes them susceptible to degradation if poorly managed in which case they can become positive carbon emitters rather than sequesters. A 2010 report by Natural England found that the vast majority of peatland in England was emitting, rather than capturing CO₂³². Given this the Government is committed to creating and delivering a new ambitious framework for peat restoration in England.

Northumberland has extensive areas of peatlands and bogs and as such has a significant role to play in contributing to their continued restoration and expansion. The North Pennines AONB is at the forefront of this work via the Great North Bog initiative and the equivalent ongoing work within the rest of the county is now to be coordinated via a new Northumberland Peat Partnership.

The council has also backed the Northumberland Peat Partnership, supporting the positive management and restoration of peatland habitats in partnership with Northumberland Wildlife Trust, NNPA, Tweed Forum, Natural England and the Environment Agency.

Environment Bill 2020

The Environment Bill 2020 will place a duty for a new governance framework for the environment together with the enhancement of green spaces, nature and conservation will be key part of that at a local level.

³² <http://publications.naturalengland.org.uk/file/6394909851910144>



PRIORITY ACTION AREA 7

- REDUCING WASTE

THE ISSUE

Waste is not included as a direct contributor to CO₂ outputs by BEIS. However, we know that both in terms of emissions and wider sustainability, it is important to reduce waste and keep materials in operation and productive use for as long as possible.

THE COST

Projects set out in this section will cost around **£105,000**.

THE BENEFITS

A detailed analysis of the carbon impact of waste management services is required to understand the CO₂ saving potential.

A reduction of waste, including single use plastics will also be achieved.

Northumberland County Council currently provides cost effective recycling and waste disposal services to its residents that are compliant with current legislative requirements. This includes kerbside recycling services, garden waste collections, 'bring' recycling sites for glass and textiles, a comprehensive network of Household Waste Recovery Centres and minimising the use of landfill disposal by processing the waste deposited in general household waste disposal bins at an energy from waste facility where it is incinerated to produce 9.6MW of energy per year for supply to the National Grid.

However, the Council recognises that it must do more and is committed to reduce waste by supporting efforts to design out waste, keeping materials in operation and productive use for as long as possible. A more circular approach to waste will reduce carbon emissions

both locally and more widely as materials are kept in operation and productive use for as long as possible.

The Council's Municipal Waste Management Strategy 2003-2020 is in the process of being reviewed and updated, particularly in light of the Government's longer term policy direction, as set out in '*Our waste, our resources, a strategy for England*'³³ which would require local authorities to collect a core set of dry recyclables and a weekly collection of food waste.

Waste service modelling work has been undertaken to quantify the impacts of undertaking new waste collections and disposal arrangements around glass, food waste and additional plastic recycling. Details of this modelling work are set out in the Cabinet report '*Northumberland Waste Management Strategy – Proposed Trial of Kerbside Glass Collections*'³⁴.

³³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

³⁴ http://commiteedocs.northumberland.gov.uk/MeetingDocs/47696_M10844.pdf



In response to this report, the Council approved the introduction of a 12 month kerbside glass collection trial to test the modelling assumptions and long-term viability of adding a separate collection of glass to its existing kerbside recycling collection services. This pilot is now underway across approximately 4,000 properties in Morpeth, Bedlington, Alnwick and Hexham. A review of this trial is due after 9 months to assess and confirm the costs and benefits of the kerbside glass collection service, so that the Council is in a strong position to bid for anticipated Government funding to support the roll-out of a kerbside glass collection service in Northumberland.

The introduction of a separate kerbside glass recycling service would be the first stage of this incremental approach to improving the overall performance of waste services. It is envisaged that further pilot schemes for the recycling of a wider range of plastic packaging materials, as well as separate collections of food waste, will be developed following confirmation of the Government's national waste strategy and associated funding support.

The Council is also developing plans to improve the performance of its existing recycling and waste management services and the cleanliness of the local environment for those residents who currently have to rely on weekly plastic sack collections, by providing access to communal recycling and waste bins where possible to do so. A pilot scheme will be developed covering part of the Hirst area in Ashington to evaluate the cost and environmental benefits of replacing the sack collections with large communal bins.

In addition to reviewing and updating our Municipal Waste Management Strategy, the Council will continue to undertake engagement and awareness raising activities to reduce waste, such as the 'Love Food, Hate Waste' campaign. The Council will undertake a comprehensive baselining exercise to determine the carbon emissions associated with its current waste management services and will determine the carbon impacts of any proposed significant changes to waste services against this baseline as part of its decision-making processes, with the aim of ensuring any planned changes deliver a positive contribution to reducing carbon emissions, whilst taking into account environmental, financial, legal, operational and technical constraints.



SUMMARY OF CURRENT PROJECTS

The following projects are currently being, or will be delivered by the Council either directly as part of this Action Plan or as part of wider activity that is relevant to the climate change programme.

Enablers

Policy					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Carbon impact assessments	Starting April 2021	N/A	N/A	Medium	N/A
Corporate Social Responsibility Policy	Starting April 2021	N/A	N/A	Low	Sustainability, supports local supply chain and economy.
Carbon Literacy Training	Starting February 2021	~£5,000	Internal Revenue	Low	Improved understanding of climate change across internal decision-making process

Partnerships and Engagement					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Community Climate Champions	Starting January 2021	£10,000	Internal Revenue	Medium	Community buy-in, financial savings for residents, improved public health, improved biodiversity.
Free Tree Scheme	2020 - 2030	£30,000	Internal Revenue	Low	Community engagement, improved biodiversity.
Newsletter	2020 onwards	N/A	N/A	Low	
Domestic Emissions Dashboard	2021 onwards	N/A	N/A	Low	Improved understanding of household CO ₂ emissions
Borderlands Low Carbon Energy Masterplan	January – October 2021	£350,000	Inclusive Growth Deal	Medium	Energy improvements.



Direct Contributors

Heating					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Blyth Central District Heat Network	2020 - 2024	£4,000,000	HNDU HNIP	High	36 jobs supported
Cramlington District Heat Network	2020 - 2024	£1,600,000	HNDU HNIP	High	10 jobs supported
District Heat Networks in 5 other towns (feasibility)	July 2021 onwards	£50,000 initially	HNDU	High	N/A
Green Homes Grant – Local Authority Delivery Scheme 1b	February 2021 – September 2021	£3,428,413.62	Green Homes Grant	Low	22 jobs supported, reduce fuel poverty, save money on residents heating bills.
Heat Pump Installation	2021-2022	£3,012,580	PSDF	Low	20 jobs supported.

Transport					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Blyth Bebside to Town Centre Connectivity	2022-2025	£6,929,600	Town Deal Funding	Medium	30 jobs supported Improved air quality, public health benefits, transport links for education and employment, improved public space and safety.
Blyth Town Centre Northern Gateway (Phase 2)	2022-2024	£3,000,000	Town Deal funding	Low	15 jobs Improved air quality, public health benefits, transport links for education and employment, improved public realm and safety.
New cycle storage in 12 main towns	2021	N/A	Active Travel Fund	Low	Encouraging cycling use, improved air quality, public health benefits

Transport					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Big Northumberland Gear Change	2021	N/A	Internal Revenue	Low	Encouraging cycling use, improved air quality, public health benefits
Northumberland Line	2021-2025	Phase 1 - £124,983,989 Phase 2 - £161,917,576	Department for Transport	Low	Increased employment, education and leisure opportunities for SE Northumberland residents. GHG, air quality and traffic congestion benefits.
On-street charger pilot	2021	£133,333	OZEV	Medium	Improved understanding of delivery model for on-street charging
Car park EV charging	2020-2021	£500,000	Internal capital budget	Medium	Encourage uptake of EVs, improve air quality, reduce GHG emissions.
Fleet Replacement Programme	2020-2023	£1,533,000	Internal capital budget	Medium	Improve air quality, reduce GHG emissions.
Depot EV charging	2020-2023	£156,500	Internal capital budget	Medium	Improve air quality, reduce GHG emissions.
Local Transport Plan	2021-2022	£1,525,000	Internal capital budget	Medium	Improve air quality, improve public health, reduce congestion.

Energy Generation					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Solar Car Port	March 2021 – September 2021	£2,939,000	ERDF	Low	20 jobs supported, improved EV charging facilities.
Hexham Hydro	2021 (detailed feasibility)	£2,000,000	N/A	Medium	12 jobs supported.





Carbon Sequestration					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Great Northumberland Forest	2020-2024	£220,000 initial grant	Defra	Medium	Improved biodiversity, increased tree coverage, supports existing and new forestry jobs.
Local Nature Recovery Strategy	2021 onwards	£145,000 initial grant	Defra	Medium	Improved biodiversity, natural resources.

Waste					
Project	Timescale	Budget	Funding Source	CO ₂ Impact	Other benefits
Glass Recycling Pilot	2021	£105,000	Internal	Low	

NCC 2025 Target

The Council has set out its ambition to reduce its own carbon footprint by 50% (with respect to a 2010 baseline) by 2025 and is on course to deliver and even exceed this due to the relevant projects listed above together with projected decarbonisation of the national electricity grid as can be seen in Figure 20. Whilst we are confident of achieving this target, it should be noted that it is based on an assumption that the national electricity grid will decarbonise to the expected levels and that if this does not occur, there is a risk that we may fall short based on our projects alone.

Projects included in the graph opposite are only those which are approved and known at this stage. As further projects are proposed and approved (e.g. continued fleet decarbonisation), we will get closer to achieving the target without grid decarbonisation.

The County Council currently contributes 2.2% of the County's total emissions.

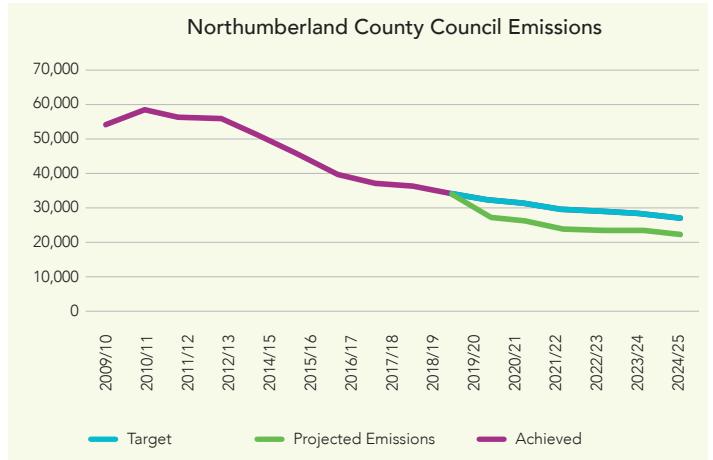


Figure 20 - Projected CO₂ Emissions of Northumberland County Council



THE ROUTE TO NET-ZERO

As described in this plan, the Council has progressed a great many relevant projects since declaring a climate emergency in 2019 and setting its target of a net-zero Northumberland by 2030. The publication of our first Climate Commitment Action Plan 2020-21 set the foundations for this work. An in-depth understanding of the issues facing Northumberland in terms of its contribution to climate change has now been developed within the organisation and a robust governance structure with dedicated resource is now in place.

It is acknowledged however, that whilst all the projects set out in this plan are moving the county in the right direction, there is a great deal more to do in order to meet the net-zero target. It is therefore important to set out a plan beyond the years covered by this Action Plan, which shows how the 2030 goal could be achieved. It should be noted that at this stage, these scenarios do not amount to concrete commitments from the Council but are rather indicative pathways modelled to show possible ways forward, which will be reviewed and assessed on a regular basis. This is particularly important in light of changes in funding created by Brexit, the implications of which are yet to be fully understood.

There are many tools available to support net-zero scenario modelling including SCATTER and the Vision of a Net-Zero Future run by BEIS which will develop a series of country/regional-specific visions that bring to life the scientific evidence on different global pathways to a net-zero future, exploring science and innovation solutions and the co-benefits and trade-offs. Alongside continued in-house analysis, the Council will closely monitor progress to ensure any pathway improvements can be adopted. Additionally, developing work in the Borderlands Energy Masterplan which has set a clean growth ambition for net-zero will also be used as a support tool. The Council is also supporting

a project funded by the National Centre for Energy Systems Integration to value uncertain future benefits and liabilities e.g. cost-benefit analysis of major projects. This will assist in major decisions when considering our projects and toolkits.

The Council will continue to lead this agenda through the priority action areas set out in this plan, but it will require the support of all residents, businesses and visitors in Northumberland as well as significant funding and policy support from central government and other sources in order to make a carbon neutral Northumberland by 2030 a reality.

Economic Impacts

Realising the scenarios modelled in this route to net-zero would require significant levels of inclusive investment across the various strands of work. Investment would need to cover substantial capital costs for projects such as heat networks, EV charging infrastructure, active travel infrastructure and reforestation/afforestation. Our initial modelling puts the figure needed to realise the scenarios set out here at approximately £1.6bn. The council will continue to access all relevant funding opportunities and to seek innovative methods of attracting green investment into the county to support its ambition of net-zero by 2030.



The investment required in realising these scenarios would not only result in green infrastructure but could create around **11,000 jobs** within Northumberland across many sectors and skill levels ranging from tree planting to highly skilled construction and engineering jobs. In light of the impacts of the Covid-19 crisis on employment in Northumberland, this would create significant potential to grow our local economy and reduce unemployment through sustainable jobs which would come in new and emerging sectors rather than at the expense of others.

Additional Benefits

Beyond jobs and investment, pursuing the strategies set out in this plan both in the next two years and in the longer-term scenario modelling to 2030, will bring many additional benefits. It is the Council's ambition to use its Climate Change Action Plan to also improve public health, reduce fuel poverty, increase green tourism practices and to ultimately become the UK's greenest county.

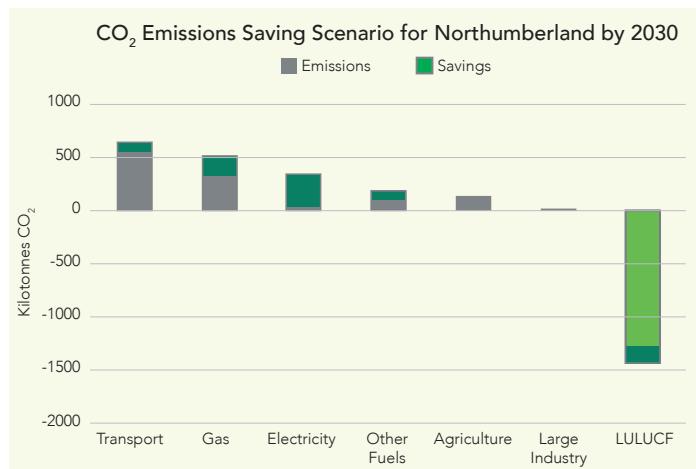


Figure 21 - potential emissions savings and remaining emissions against each category required to meet a net-zero target by 2030

Emissions Saving Scenarios

As set out in Figure 21, savings are required across each emissions source, together with increased negative emissions in order to meet net-zero. The detail behind these potential savings targets is set out below.

Transport

As set out in this plan, a combination of factors will be required to reduce transport emissions as follows:

- ✓ Increased active travel – walking and cycling in place of car journeys
- ✓ Increased use of public transport – trains and buses in place of car journeys
- ✓ Reduced ownership and use of private cars
- ✓ Increase in proportion of private cars and associated journeys which are electric vehicles

This ambitious scenario assumes 30% of car journeys made in Northumberland by 2030 are made by zero-emission electric vehicles, which will amount to a saving of around 84 ktCO₂ annually. In addition to this, if journeys made by petrol and diesel cars reduce through a shift to active travel, public transport or car sharing, a further 16 ktCO₂ could be saved annually.

It is deemed outwith the Council's ability to significantly reduce emissions from HGV freight traffic travelling within and through Northumberland at this time.

Over the course of the decade, Northumberland County Council will continue to pursue the transport and engagement strategies detailed in this plan in order to make emissions savings in these areas. We will review these targets on an annual basis and continue to improve our data in order to assess progress.



Gas

A major scaling up of the district heat networks described in this plan, would be required to reduce gas emissions sufficiently to hit net-zero by 2030.

The scenario set out here assumes that within the 7 main towns in Northumberland for which we have applied for funding to undertake heat masterplanning, 80% of domestic properties and 60% of commercial properties would be accessing low or zero carbon heat by 2030.

This is an extremely ambitious scenario, dependent on many factors including significant capital investment and a major behavioural shift from residents and businesses. However, pursuing this strategy would create massive economic benefits for the county in terms of jobs, infrastructure, supply chain opportunities and training and skills advancements. It would also result in an emissions reduction of around 185 ktCO₂.

Electricity

As set out in this plan, decarbonisation of the UK's national electricity grid through a shift to renewable energy, primarily wind, is currently projected to result in a saving of 293.4 ktCO₂ against 2018 electricity emissions by 2030. The Council will continue to monitor progress against these projections as figures are reported by government.

In addition to this, we have modelled a scenario of a 20% reduction in grid electricity usage across the county by 2030. This would result in an additional 27.8 ktCO₂ saved against 2018 figures. As demand for electricity is likely to increase through electrification of heat and transport, this figure could only be realised by significant investment from the Council, businesses and residents in their own micro-generation schemes such as solar photovoltaics and community energy projects.

It is also important to ensure that the demand on the grid from the electrification of heat and transport is kept to a minimum which is why home efficiency improvements to drive down heat demand together with advancing technology such as vehicle to grid charging, are a key part in emissions control and why the Council is looking at a whole system approach to net-zero.

The Council will continue to assess the feasibility of renewable electricity generation across its own estate and will promote opportunities to residents and businesses for generating their own electricity and saving costs together with CO₂.

Other Fuels

Northumberland has an above average number of homes and businesses located off the gas grid which currently need to burn oil, LPG or solid fuels such as coal or wood for their heat. These properties tend to be sparsely spread in rural locations and are therefore less suitable for district heat networks. Whilst replacing oil and gas heat sources with renewable heat either through ground or air source heat pumps is not entirely straightforward, it does at least offer cost savings as well as emissions savings to the end customer and is therefore a more attractive option for individuals if funding can be found for the initial work.

We have modelled a scenario which sees a 30% reduction in emissions from heat across all wards in Northumberland classed as rural (which can be assumed to be off gas). This would result in a reduction of 79 ktCO₂ against 2018 levels.

Northumberland County Council will continue to work with residents and businesses in off-gas properties to promote and facilitate a shift to renewable heat. This is especially important in light of the UK Government's commitment to increased renewable heat installations referenced above by 2028.

LULUCF

Even with the emissions reduction scenarios set out above, Northumberland would require an increase in negative emissions against 2018 levels in order to tip the balance in favour of net-zero.

Here we have modelled a maximum increase of 3500 additional hectares of forestry (around a 4% increase on existing forestry). Using the figures set out in the CCC Sixth Carbon Budget Methodology Report³⁵, this would result in additional sequestration potential of 151.9 ktCO₂ after 7 years which would allow for planning, land use change and planting of trees. As stated above, there is also potential for further carbon sequestration through peat restoration, wetlands and regenerative farming practices, and as nature recovery work accelerates, the emissions reduction potential of land use change will be better understood.

More detailed analysis is required to understand exactly what the impact of this scenario would be on carbon emissions. There is some disparity between figures published by different sources. As part of our Local Nature Recovery Strategy, Great Northumberland Forest planning and the upcoming introduction of the government's Environmental Land Management (ELM) scheme, we will revisit and revise these figures as more accurate data becomes available.

Modelling the above scenario in terms of our potential to increase our LULUCF negative emissions ensures there is a reasonable level of tolerance against positive emissions reduction schemes to balance our emissions and achieve carbon neutrality.

It is highly unlikely that all the scenarios modelled here will be realised so a level of tolerance is required. As shown below in Figure 22Figure 22, if all scenarios are realised, it would result in total net emissions for Northumberland of -128.6 ktCO₂ by 2030.

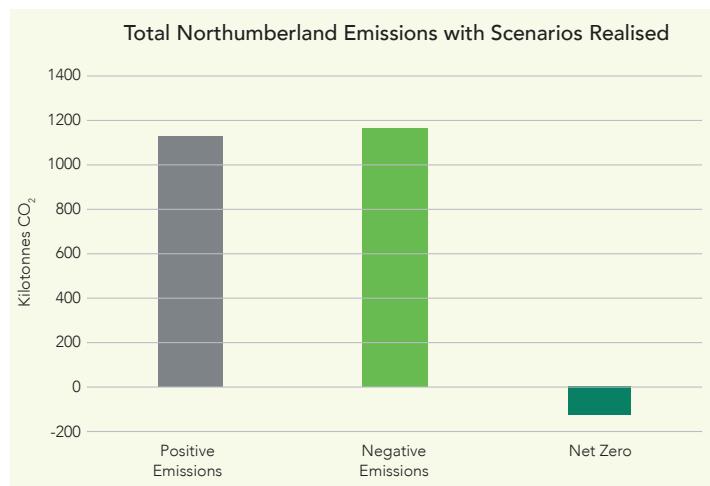
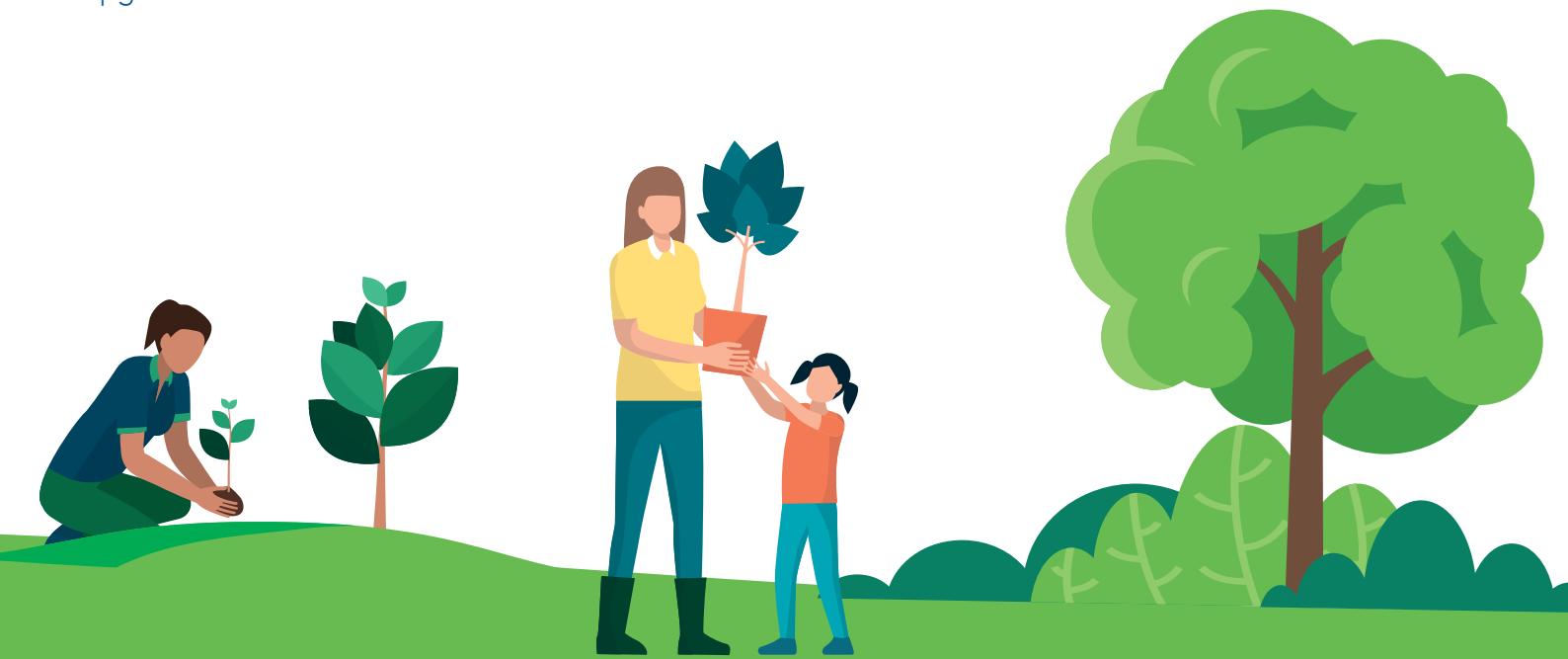


Figure 22 - Northumberland's total emissions if all scenarios modelled here are realised

³⁵ <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-Methodology-Report.pdf>
pg228



Beyond 2030

The Council understands that, in order to realise the national ambition of a net-zero UK by 2050, locations such as Northumberland which enjoy large areas of natural resources, will have to become carbon-negative in order to compensate for major urban conurbations which are unlikely to be able to achieve carbon neutrality themselves.

Beyond 2030, the council will continue to align itself with national objectives and support the UK's target of a net-zero country by 2050 by continuing to pursue the strategies set out in this plan.

Conclusion

This Action Plan sets out the projects and initiatives which will be driven forward by Northumberland County Council across the next two years. It also sets out the significant challenges facing the Council in achieving its net-zero ambition by 2030 along with the varied benefits this will bring.

The Council was clear in its initial pledge when declaring a climate emergency in 2019, that it would require the support of national government along with regional agencies, residents and businesses to achieve a carbon neutral Northumberland. This has not changed and indeed this Action Plan provides further evidence that a joined up and collaborative approach is required.

However, the knowledge and experience, together with the partnerships and networks the Council has built up which underpin the actions and scenarios set out in this plan, demonstrate that it is in a good position to lead the county towards net-zero and to facilitate the collaboration between national government, and local communities which will be required.

Despite the challenges, there is reason for optimism as the actions and scenarios set out in this plan will benefit residents, businesses, visitors and nature across the whole County.

Beyond 2030, the council will continue to align itself with national objectives and support the UK's target of a net-zero country by 2050 by continuing to pursue the strategies set out in this plan.







*Despite the challenges,
there is reason for optimism
as the actions and scenarios
set out in this plan will
benefit residents, businesses,
visitors and nature across
the whole County.*

Contact Details

For further information about Northumberland County Council's Climate Change Action Plan, please contact climate@northumberland.gov.uk

Author Details

Matthew Baker
Service Director – Climate Change, Business Intelligence and Performance

Rachel Bruce
Communications Officer

Euan Casey
Assistant Project Manager

Philip Hunter
Service Director - Policy

Nicholas Johnston
Climate Change Programme Manager

Paul Jones
Service Director - Local Services

Tim Miller-Fay
Economic Advisor (Energy)

Mark Roberts
Senior Climate Change and Sustainability Manager