



Net Zero Sheffield

Decarbonisation Routemap 2023-25

Updated November 2024

Collaborative Partners



Developed by Sheffield City Council in collaboration with:

A Different Gear, Better Buses for South Yorkshire, Eon, Environment Agency, Green Estate Community Interest Company, Meadowhall, National Nature Park (RHS), Peak District National Park, Sheffield and Rotherham Wildlife Trust, Sheffield Chamber of Commerce, Sheffield Hallam University, Sheffield Teaching Hospitals, South Yorkshire Climate Alliance, South Yorkshire Mayoral Combined Authority, South Yorkshire Sustainability Centre, The Sheffield College, The Flow, The National Trust, University of Sheffield, Upper Don Community Energy, Veolia.

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Foreword



Tackling the climate emergency is the biggest challenge of our lifetimes, and it's vital that we all take action here and now, to protect our future.

With the memory of last year's extreme heat event in Sheffield and across the world, we are publishing this plan as we come into summer, a time when many countries in the world are facing record breaking heat, and the unfathomable impacts this has on people's livelihoods.

We are all facing the challenges of the lingering impacts of the Covid pandemic and the acute effect of the cost of living crisis, but the importance of the climate emergency, and its consequences for Sheffield, cannot be under-estimated.

We owe it to our children and grandchildren to take action today to reduce the impact of the climate emergency, and ensure that all of us are able to thrive in a changing climate and global economy.

To achieve this, the Council has an ambition for the city to be net zero by 2030. It is right to have this scale of ambition, but it is important not to underestimate the difficulty of the task. Achieving net zero ahead of the government's 2050 target will require strategic, coordinated and consistent local action, and it will need also need an early step-change in ambition from government to act decisively at a national level so cities such as Sheffield can lead the charge to a more prosperous, net zero future for our country.

Cllr Tom Hunt, Leader of the Council



In March 2022, Sheffield City Council committed in our 10 Point Plan for Climate Action to decarbonise the city, focusing on seven areas. This iterative set of plans, or routemaps, is our response to that commitment.

We want to lead by example to tackle the climate emergency, and we are working hard to reduce our emissions and at the same time, and this set of routemaps begins with the Our Council chapter.

The routemaps will include actions from a range of partners, and there will be much more that people and organisations are already doing that aren't included.

The chapters include sections on what we can all do as individuals that can not only help reduce emissions but can also improve our health and wellbeing and save us money. Our Climate Emergency webpages and newsletter also signpost people and organisations to local funding and opportunities.

In a time that can feel overwhelming, taking action on areas within our reach gives us hope. Through our routemaps, the Council aims to map out how it will work with the city to decarbonise Sheffield and to achieve a thriving, greener, healthier future for all who live, work and study in Sheffield.

Cllr Ben Miskell, Chair of the Transport, Regeneration and Climate Policy Committee

Introduction

This is a plan to support and encourage Sheffield to do its bit to minimise the effects of what is widely recognised as the climate emergency that is facing the world and all of us who live on it. Some of the effects of the changes that are happening are now inevitable, but every fraction of a degree of global warming that can be avoided makes a difference to the effects that we will experience. We need to, and can, act now to minimise, mitigate and adapt to the changing climate. Together we can respond to the challenge in a way that improves our lives and businesses in Sheffield, as well as playing our part in protecting future generations and minimising the impact on ourselves in the years to come.

Climate change in Sheffield

We know some of the increasing impacts of climate change that Sheffield will experience:

- Wetter winters and more intense rainfall events. These are likely to lead to more frequent, severe flash flooding.
- Warmer, drier summers are likely to affect quality and quantity of food and water supply, and damage buildings and infrastructure.
- The changing climate will have a negative impact on the plants and wildlife we know and love.
- Increased energy demand and reducing fossil fuels is likely to lead to further price increases and power cuts unless we see a drastic shift to renewables and increased energy efficiency.

The impact of these changes will be very significant for the city. Residents, communities and businesses will need to adapt and respond to a changing climate.

Impact of these changes to people in Sheffield:

- Increased heat-related illnesses and reduced wellbeing during extreme weather, including loss of life.
- Increased costs for food, utilities and other goods and services, including insurance premiums from damage to property.
- Costs to business of disruption in trading, lower productivity, and reduced customers during extreme weather periods.
- As with Covid-19 and the cost of living crisis, those already living in poverty or in deprived communities will be most affected.

Responding to an emergency

Whilst this may seem overwhelming and worrying, we have all experienced what the impact of a global crisis can do to our city, and how we can come together to respond. Covid-19 has been an acute crisis that demonstrated how we can act swiftly to make previously unimaginable changes, work in different ways and build new relationships. The learning from Covid-19 can help us to act on the climate emergency and how many of the changes we need to make will improve our city and wellbeing.

Net zero 2030, together

Sheffield City Council declared a climate emergency in 2019, and launched an ambitious sustainability target, to become a net zero carbon city by 2030. The Council has a significant role to play in taking action in terms of reducing emissions within its direct control, and through its influence as a leader and enabler. It also has the potential to influence through its place shaping roles, including planning policy and enforcement.

However, the Council cannot decarbonise the city alone. Whilst there is a wide range of action we can take, the transformation required also requires national changes in fiscal and wider policy, and greater action globally and nationally to address systemic failings resulting in skills and supply chain shortages and to perverse outcomes.

Locally, businesses and other organisations, including the South Yorkshire Mayoral Combined Authority, other public sector organisations and voluntary, community and faith sector organisations have a significant role to play. Individuals will also need to make changes.

The Council will engage with the people of Sheffield and with wider stakeholders to find ways working with others to support and facilitate the changes needed.

The decarbonisation routemaps

The Council's '[10 Point Plan for Climate Action](#)' was adopted in 2022 and set out the Council's framework for responding to the climate emergency. Within the plan, the Council committed to developing routemaps across seven key areas of actions, building on the 10 Point Plan:

- Our Council
- The Way We Travel
- Our Homes
- Energy Generation and Storage
- Our Businesses and Economy
- The Way We Use Our Land
- What We Buy, Eat and Throw Away

Achieving an inclusive, fair, and just transition

People who already experience disadvantage, both in the UK and internationally, are generally least responsible for emissions. They will also be most impacted by climate change, and least able to adapt to it. This includes older people, young people, people from ethnic minorities, women, disabled people and people with health issues, and people living in poverty.

Many of the actions that will allow us to play our part in minimising changes in the climate will also benefit people who are currently most disadvantaged. It is important that we understand both the short- and long-term impacts and make fair, creative decisions that maximise the long term benefits, but protect those who genuinely have fewer choices in the short term as much as possible.

The 10 Point Plan also commits to prepare the city for a changing climate. Much of what we do to reduce our impact on the climate will also help us to adapt.

A phased approach

Funding is currently very uncertain, and technology is changing fast. For us to commit now to deliver a specific number of retrofits or transport infrastructure projects in the coming years would be unrealistic and we are simply not in a position to commit to this. Our approach is for the routemaps to commit us to:

- Improving the way we work together as an organisation and with partners.
- Actions that we know we can achieve during this time period.
- The work that we will carry out in order to be able to deliver and accelerate activity at scale to reduce emissions in the future.

The routemaps will therefore outline the vision and objectives for achieving net zero by 2030, and the actions and activities which will be carried out between 2023 and 2025. It is planned that the documents will be live, with future actions added rather than entirely new documents being created.

The current routemap contains actions relating to decarbonising Our Council, and The Way We Travel. Work has started to develop the five further chapters, which are expected by Spring and Summer 2024.

A systems approach

The pace and scale of change for us to deliver our vision by 2030 needs fundamental and radical changes to the way that we currently work as a local authority and as a city.

Whilst our routemaps are individual chapters focused on seven themes, we have to consider how each relates with the other parts of

the system, for example how the way we travel relates to the energy that we use, and the way that we live in our homes.

This allows us to minimise the risks of unintended outcomes, where one action might inadvertently lead to a negative impact elsewhere. It also allows us to maximise the wider benefits that acting on climate change can have for the other things that are important to the city.

Within each theme, our success will depend on five key factors, and we will use these developing our programme of action:

- national/regional action and city leadership (including governance).
- data and knowledge (including monitoring and reporting).
- engagement and inclusion (including behaviour change).
- skills and capacity.
- funding and finance.

Our principles for acting

The principles we work to are broadly the same as the '10-Point Plan for Climate Change':

- An inclusive, just and fair transition.
- Focused on evidence and impact.
- Collaborative and enabling.
- Creating hope and resilience.
- Maximising wider benefits.
- Long term.
- Innovative and creative.
- Nature-focused.



Chapter One
Our Council

GOAL: By 2030, Sheffield City Council will have reduced its emissions by 95% to lead by example as a net zero organisation.



Key objectives

A Our domestic stock is decarbonised by improving the building fabric, reducing consumption, and transitioning to renewable energy.

B Our non-domestic and commercial stock is decarbonised by improving building fabric, reducing consumption, and transitioning to renewable energy.

C Our fleet is decarbonised by reducing mileage and replacing our fleet with decarbonised vehicles.

D Our street-lighting is decarbonised by reducing energy consumption.

E Our land management supports the Council's and city-wide net zero target.

F Our procurement, governance and decision making will support the Council's and city-wide journey to net zero.

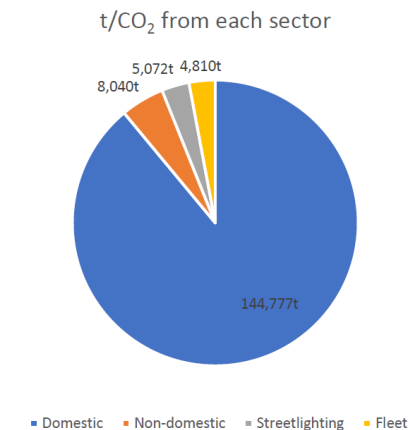
G Our employees are carbon literate and fully engaged in the Council's journey to net zero.

Where we are now

The Council takes its leadership role seriously and has adopted a net zero carbon by 2030 target for its estate and operations. The Zero Carbon Pathway for Council assets work undertaken by ARUP and Ricardo set out baseline emissions inventory and projections to 2030 for each of the following sectors:

- domestic buildings (homes) owned by the Council.
- non-domestic buildings, such as schools and libraries.
- Council and key contractor fleet vehicles.
- street lighting.










From these sectors, baseline emissions for the Council's direct and indirect emissions in 2019 were 162,699 t/CO₂. The Council and its tenants are responsible for approximately 7% of the direct and indirect emissions of the whole city.



The Council's housing stock makes up 89% of Council emissions, with 5% from the Council's operational non-domestic estate. Streetlighting and fleet each make up 3% each of the Council's emissions.

What needs to change?

The table below provides a summary of the key changes that need to be made to reduce the impact of the Council's estate and operations on the climate.

Domestic	 Improve fabric	 Reduce energy consumption	 Remove fossil fuels
Non-domestic	 Improve fabric	 Reduce energy consumption	 Remove fossil fuels
Fleet		 Reduce energy consumption	 Decarbonise vehicles
Street-lighting			 Reduce energy consumption

Following the energy hierarchy, improvements to the building fabric of the Council's domestic and non-domestic estate will be prioritised, then we will seek opportunities to reduce energy demand through efficiency measures and installation of renewables. Removing fossil fuel heating by connecting buildings to new and existing heat networks will be considered before considering heat pumps.

Fuel efficiencies in the Council's fleet will be addressed by driver efficiency training and route optimisation, with a fully electric fleet by 2030.

Considerable efficiencies have already been made to the Council's streetlighting, and further emissions reduction will be made as the grid draws on more renewable energy, and through potential further dimming.

The impact of COVID

Following the lockdown imposed in response to the Covid-19 pandemic, the majority of Council employees worked from home. Like many local authorities, Sheffield City Council staff have not fully returned to the office, with the majority working 40% of their time from the workplace and the remainder at home. This has created excess office space and work is underway to rationalise the Council's estate, including the closure of large office accommodation at Moorfoot.

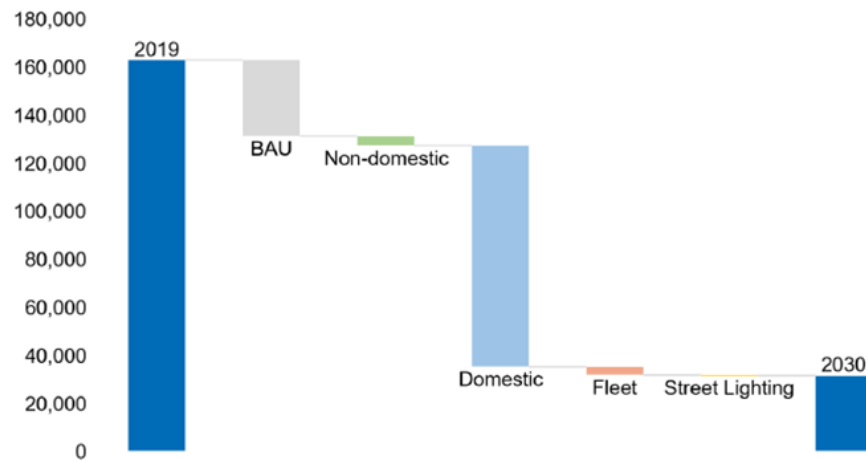
Whilst the disposal of buildings will reduce the Council's carbon footprint, individuals are using their homes for work purposes and consideration will need to be given as to if and how these emissions are accounted for in future.

What carbon reduction will this achieve?

Our analysis shows that if all actions identified are implemented, Council emissions in 2030 fall to 31,498 tCO₂, an 80% reduction against the 2019 baseline. This falls short of the net zero target definition of a 95% reduction and as such demonstrates the importance of carbon positive measures and energy export opportunities in meeting the target.

The Pathways to Decarbonisation reports acknowledge that these alone won't reduce emissions enough to reach the 95% reduction

requirements and therefore offsetting measures outside the Sheffield city boundary will be required. It is recommended that these are done as close to Sheffield as possible such as peatland restoration or afforestation within the city region.



Zero Carbon Pathways for council assets report, Ricardo, 2020

Benefits and barriers

Decarbonising the Council's estate and operations requires wide-scale change. There are a number of social, political, financial and technological barriers that need to be overcome:

- employees not feeling able or empowered to make efficiency savings in their place of work or working practices.
- grant funding for capital works is limited and very competitive. There is little to no revenue available to enable feasibility work to support capital funding bids or to seek investment opportunities.
- increasing cost of capital works.

- grid constraints for the electrification of heat and vehicles.
- skills gap for the installation, repairs and maintenance of low carbon technologies.
- data gaps to effectively monitor and report on the Council's greenhouse gas emissions.
- the need to make tough decisions on funding allocations in line with ever competing priorities.
- lack of resources (finance and staff).
- supply chain delays.

However, there are many co-benefits that arise from decarbonising the Council's estate and operations. By reducing greenhouse gas emissions, we lead by example in mitigating against climate change, and can create wider benefits to the organisation and our society, economy and environment such as:

- more people walking, wheeling and cycling to and for work will improve their health and save them money.
- better working environments with improved thermal comfort and lighting can improve employee health, wellbeing and productivity as well as save money for the Council.
- Replacing fossil fuel boilers, reduced vehicle mileage and vehicle decarbonisation will help improve air quality.
- decarbonisation projects will help support local low carbon skills and economy.
- generating our own energy, and using less of it, will help reduce our energy costs.

OBJECTIVE A: Our domestic stock is decarbonised by improving the building fabric, reducing energy consumption, and transitioning to renewable energy.



OUTCOMES

1. Funding opportunities are maximised and number of successful bids increased.
2. New social homes are future proofed.
3. Robust strategies and policies are adopted.
4. Decisions and delivery based on sound evidence base.
5. Tenants are fully engaged and feel included.
6. Local skills and capacity are increased.
7. Delivery happens at scale and pace.
8. Local infrastructure supports domestic decarbonisation.

Why do we need to decarbonise our housing?

The Council owns 39,000 domestic properties in Sheffield, which in 2019 were responsible for 144,777t/CO₂ (89% of the Council's total emissions). 51,749t/CO₂ were attributed to the Council's 18,000 flats and 93,028t/CO₂ were attributed to the Council's 21,000 houses. Since 2004, we have invested £1 billion in our stock and 82% are already reaching EPC C. We deliver new build homes to minimum EPC B.

In addition to a reduction in CO₂ emissions, the decarbonisation of the Council's homes will help to reduce energy bills, address fuel poverty and improve health benefits from a home that, through retrofit or new build, is more thermally efficient and pleasant to live in.

If the Council doesn't act further on decarbonising its housing estate, there could be an increase in the number of vulnerable residents due to increased fuel poverty and worsening health conditions. This in turn puts additional pressure on local health and community services.

What does the future look like?

Our vision for the future is that our council housing provides our residents with a healthy home that provides warmth and comfort and is energy efficient and more affordable to heat, leading to a reduction in fuel poverty.

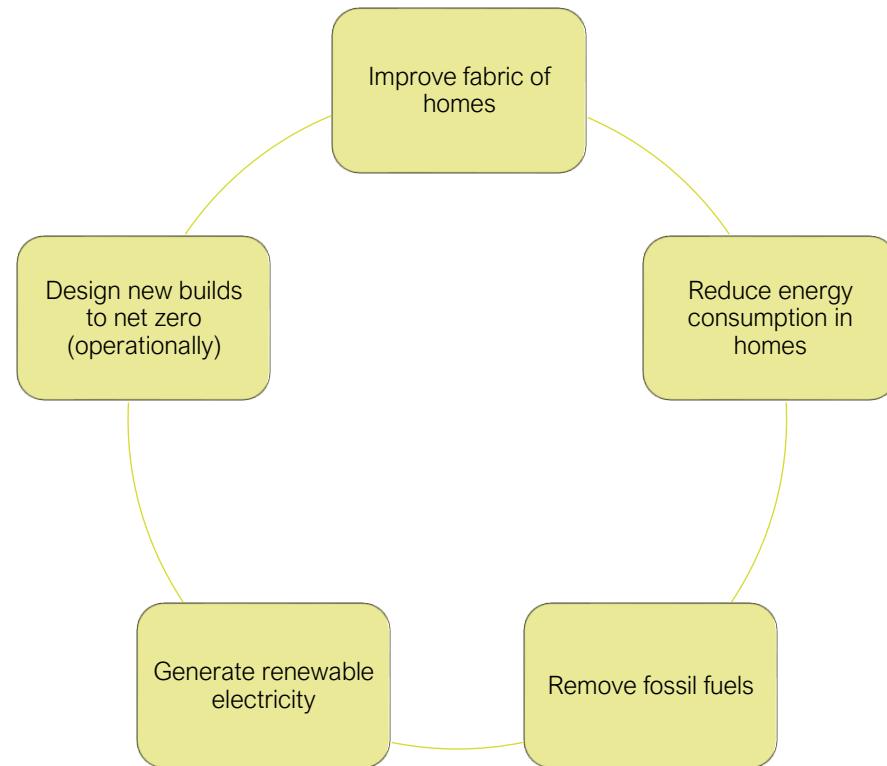
The fabric of our homes will have been improved through draught proofing, replacing glazing and loft, cavity wall, external wall insulation and floor insulation measures. Homes will be more efficient due to smart heating controls and LED lighting. Where we can connect our homes to existing or new heat networks, we will have done so and where that is not viable, we will have installed heat pumps to provide

low carbon and efficient heat, removing our reliance on fossil fuels for heating.

We will be generating on-site renewable energy and by 2030 our new builds will be designed to operationally achieve net zero.

















































Increased choices










The [New Homes Delivery Plan](#) has clear objectives to use housing to reduce inequality, ensure no one is living in a home that damages their health, make residents feel safe and ensure that there is more choice of good quality and affordable homes for all lifestyles. Through retrofitting our homes, our tenants will live in more efficient homes with smart systems that enable them to have more control over their heating and thermal comfort.



OBJECTIVE A: Our domestic stock is decarbonised by improving the building fabric, reducing energy consumption, and transitioning to renewable energy.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Funding opportunities are maximised, and number of successful bids increased.	We will seek opportunities for a regional, collaborative approach to funded energy projects.	Housing	On-going	 
	We will clarify the Council's approach to funding and maximise opportunities such as Levelling Up.	Housing	March 2024	 
	We will continue to work to secure funding from DESNZ via innovation and / or energy programmes, such as the Social Housing Fund, whole house retrofit programme, and ECO flex.	Housing	On-going	 
New social homes are future proofed.	We will revise our specification in stages between 2023 and 2030 to ensure the transition to operational net zero. In earlier stages, future proofing of elements will be incorporated to allow for easier transition of installations to net zero in the future.	Housing Growth	Commenced Dec 2022 – on-going	  
	We will, where cost viable to do so, bring council acquisitions up to net zero standards, or where part of a larger programme of works.	Investment Programmes, Housing	On-going	  
Robust strategies and policies are adopted.	We will deliver a new Housing Strategy and its key policies and action plans, including on net zero.	Housing	January 2024	  
	We will update the Heating Strategy for Council homes with a view to improved energy efficiency and low carbon technologies. This will include short / medium term plans and longer term plans once fabric works are completed.	Housing	2024	  
Decisions and delivery based on sound evidence base.	We will undertake lessons learned from previous projects and seek best practice from other local authorities to understand any barriers to resident uptake of retrofit measures.	Housing	On-going	 
	We will engage with residents early to test generic assumptions, barriers, and willingness of local population.	Housing	On-going	 
	We will annually report decarbonisation measures that have been undertaken on our council homes with expected reductions in emissions.	Housing / Sustainability and Climate Change	Annually	  
Tenants are fully engaged and feel included.	We will develop a one stop shop, signposting and advisory service for residents on energy efficiency and access to funding.	Housing	Qtr 3 and 4 2022/23	  
	We will apply for funding via the Local Energy Advice Demonstrator to develop an in-person energy advice programme, which will help to inform DESNZ strategy for energy advice provision.	Housing	Awaiting funding timescale	  
Local skills and capacity are increased.	We will seek opportunities for a regional, collaborative approach to training.	SCC / SYMCA	On-going	 
	We will undertake a skills audit to ascertain current levels of knowledge and skills in Housing Services to identify training needs.	Housing	March 2024	 
	We will work with Sheffield College and other training providers to develop training opportunities to increase local skills in solar PV and heat pump installation along with insulation and building fabric improvements.	Housing / FM / Economic Development	July 2023	 
	We will upskill our existing workforce to gain accreditation for the installation, repairs and maintenance of heat pumps and other low carbon technologies.	Housing / FM	March 2024	 
Delivery happens at scale and pace.	We will develop an intensive programme of works on Council owned domestic properties.	Housing	March 2024	 
	We will build skills and supply chain opportunities through procurement, regulatory and training opportunities.	Housing / FM / Economic Development	March 2024	 
	We will take findings from the commissioned Council Housing Decarbonisation Roadmap to determine whether we deliver a whole house approach to net zero retrofits or an incremental approach starting with fabric first.	Housing	March 2024	  
Local infrastructure	We will initiate discussions with Northern Powergrid to understand how capacity impacts on meeting zero carbon target and develop a programme of strengthening work.	Sustainability and Climate Change	March 2024	 

supports the decarbonisation of the domestic sector.	We will explore opportunities, including through the Heat Network Zoning Pilot Programme, Advanced Zoning Programme and Heat Network Delivery Unit funded techno-economic feasibility studies, to connect to the district heat networks and seek funding to enable this.	Housing / Sustainability and Climate Change	Qtr 3 2023/24	  
	We will continue to work with and support our tenants where they are seeking permission to install electric vehicle charging infrastructure at their home, prioritising tenants with motability vehicles.	Housing	On-going	  
	We will identify and apply for funding to increase access to electric vehicle charging infrastructure within our existing housing stock and identify a strategy for the roll out of this, including the specification and administrative approach.	Housing	March 2025	  

OBJECTIVE B: Our non-domestic estate is decarbonised by improving the building fabric, reducing energy consumption, and transitioning to renewable energy.



OUTCOMES

1. Robust strategies and policies are adopted.
2. Decisions and delivery based on sound evidence.
3. Funding opportunities are maximised, and number of successful bids increased.
4. Local skills and capacity are increased.
5. Delivery happens at scale and pace.
6. Local infrastructure supports decarbonisation.
7. Employees are fully engaged and are equipped with knowledge to implement change.

Why do we need to decarbonise our non-domestic estate?

122 buildings were included within the scope of non-domestic emissions in the 2019 baseline, amounting to 8,040t/CO₂, 5% of the Council's overall emissions. Many of our non-domestic buildings are not only energy inefficient, but in a poor state of repair, with the repairs and maintenance bill outstripping the funding that is available. Currently, the Council is undertaking its Accommodation Strategy Review of all buildings across the estate to create a smaller, more cost-effective estate that is fit for purpose, well maintained and meets the current and long term needs of customers and employees.

What does the future look like?






























All building energy data and greenhouse gas emissions will be reported, and variances to this data evidenced and shared. Our future non-domestic estate will be reduced, with the most energy efficient buildings that are in a good state of repair and fit for purpose being retained. The retained estate continues to undergo decarbonisation to reduce emissions to net zero.











Employees working in relevant services will be upskilled to appropriate standards to undertake energy audits, feasibility studies, and install repair and maintain low carbon technology, enabling the development of decarbonisation plans to attract external funding.

The Council will continue to identify and secure grant funding as well as explore alternative financing arrangements. In the future, we've assessed our land holdings for the potential of renewable energy generation and storage and where possible we're building out new generation in the city.

OBJECTIVE B: Our non-domestic estate is decarbonised by improving the building fabric, reducing energy consumption and transitioning to renewable energy.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Robust strategies and policies are adopted.	We will complete the Accommodation Strategy Review and manage its implementation.	Property and Facilities Management	March 2024	  
	We will develop and implement a workplace Heating and Cooling Policy.	Facilities Management	March 2024	 
	We will explore technology that enables the creation of a baseline and the monitoring of our ICT infrastructure and cloud based activities.	ICT	March 2024	
	We will develop and implement an ICT Policy to drive energy efficiency.	ICT	March 2024	
Decisions and delivery based on sound evidence base.	We will report on emissions from all operational non-domestic estate, which will require the baseline to be re-calculated.	Sustainability and Climate Change / FM	Annually	
	We will undertake a review of building energy management systems (BEMS). In buildings where they're not installed, a financial analysis will be undertaken to assess if they're viable; in buildings where they're installed but not linked to the Council's BEMS, ascertain whether they can be; assess overall need for any upgrades to infrastructure.	FM	March 2024	
	We will undertake an assessment to understand where the installation of submetering may present an economical business case to do so.	FM	March 2024	
	We will undertake post project monitoring and validation to enable reporting against carbon reduction targets and helps with future project prioritisation.	CDS and FM	March 2024	
	Regular energy usage reports will be provided to Facilities Management workplace managers to provide regular energy reports to enable monitoring and targeting work to be undertaken.	FM	March 2024	
Funding opportunities are maximised and number of successful bids increased.	We will reinvest the £240k match funding contribution to the Salix Recycling Fund to invest in further decarbonisation plans and projects.	FM	June 2023	
	We will undertake an assessment on alternative finance solutions such as Energy Performance Contracts (EPCs).	Sustainability and Climate Change	April 2024	
	We will apply for future rounds of Public Sector Decarbonisation Scheme funding and other funding streams for public sector buildings that may become available.	Sustainability and Climate Change and FM	As they become available	
Local skills and capacity are increased.	We will participate in the Department for Energy Security and Net Zero (DESNZ) funded Low Carbon Skills Fund initiative via the Northeast and Yorkshire Net Zero Hub to undertake decarbonisation plans for 10 buildings and benefit from training and upskilling opportunities.	Sustainability and Climate Change and FM	June 2023	  
	We will work with Sheffield College and other training providers to explore training and apprenticeship opportunities, utilising our own buildings as training centre where appropriate.	Economic Development and FM	July 2023	  
	We will upskill and train existing Council employees in the installation, repairs and maintenance of low carbon technologies.	FM	March 2024	  
Delivery happens at scale and pace.	We will identify priority buildings for decarbonisation works based on boiler age and condition, building condition data, energy performance and Accommodation Strategy Review.	FM	On-going	  
	We will deliver renewable energy generation projects on our buildings, including those leased out to third parties through the Local Renewable Energy Fund.	Sustainability and Climate Change and FM	April 2026	 
	We will undertake large scale LED lighting replacement at Town Hall utilising the remaining Salix Recycling Fund.	FM	April 2024	

	We will work with a community energy provider to pilot a community funded energy project on a council owned building.	Sustainability and Climate Change and FM	April 2025	 
Local infrastructure supports decarbonisation.	We will explore opportunities, including through the Heat Network Zoning Pilot Programme, Advanced Zoning Programme and Heat Network Delivery Unit funded techno-economic feasibility studies, to identify our buildings that could connect to the district heat networks and seek funding to enable this.	Sustainability and Climate Change and FM	On-going	 
Employees are fully engaged and are equipped with knowledge to implement change.	We will implement Behavioural Insights informed communications and behaviour change strategies to ensure successful implementation of projects and effective workplace strategies to drive energy efficiency and carbon reduction.	Sustainability and Climate Change and FM	On-going with project deliver	 
	We will communicate and consult with employees to minimise workplace impacts during the delivery of decarbonisation projects.	Sustainability and Climate Change and FM	On-going in line with project development	
	We will communicate with employees with regard to efficient working practices whilst working from home and will explore the opportunity of monitoring and reporting home working emissions.	Sustainability and Climate Change	April 2024	  

OBJECTIVE C: Our fleet is decarbonised by reducing mileage and replacing our fleet with decarbonised vehicles.



OUTCOMES

1. Fleet efficiency is improved.
2. Fleet is decarbonised.
3. Scope 3 emissions are measured and reduced.
4. Robust carbon reporting is in place.

Why do we need to decarbonise our fleet?

Sheffield City Council and its two principal contractors; Amey and Veolia, operates a diverse fleet of 1,145 vehicles which are responsible for 4,810 tCO₂ (3%) of the Council's emissions:

- The council operates around 920 vehicles, the majority of which are vans, followed by cars and minibuses. 71 run on electricity.
- Amey operates 170 vehicles to deliver the citywide Streets Ahead service. Most of these are vans and trucks, however they also operate larger specialist vehicles, such as gritters and sweepers.

- Veolia operate 60 vehicles, the majority of which are large refuse collection vehicles (RCVs), including two electric RCVs which are powered by energy from the energy recovery facility.

While our fleet may only account for a small percent of council emissions, transport is the third largest source of emissions in the city. The council needs to lead by example by decarbonising its own vehicles, encouraging its contractors and partners, and inspiring our citizens to act too.

Decarbonising our vehicles will also lower fuel costs, reduce vehicle maintenance costs, and improve air quality.

What does the future look like?

The key focus for decarbonising our fleet is improved efficiency and vehicle electrification through interventions including:

Improved efficiency:











































- removing the need for travel in the first instance through technological improvements e.g remote service delivery, automatic meter reading and cashless transactions.
- car-sharing for business travel and commuting.
- telephone/web-based conferencing and work-from-home arrangements.
- optimised route-planning to ensure multipurpose trips, and supportive telematics and eco-driver training.
- vehicle maintenance.

Vehicle electrification:

- fleet electrification strategy supported with provision of suitable EV charge points at key locations.
- alternative fuel (Hydrogen/biofuels) for large/specialist vehicles.

OBJECTIVE C: Our fleet is decarbonised by reducing mileage and replacing our fleet with decarbonised vehicles.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Fleet efficiency is improved.	We will maximise the analysis of telematics to optimise route planning, journey consolidation and reduce mileage.	Fleet	On-going	 
	We will undertake a programme of behaviour change training for our drivers to increase fleet efficiency.	Fleet	On-going	  
	We will consider and determine the resource required and identify the appropriate services to develop Council workplace travel planning and associated initiatives to enable the decarbonisation of staff commuting.	Climate Oversight Board	December 2023	  
	We will develop a behaviour change programme to our employees to encourage efficient driving.	HR, Sustainability and Climate Change	March 2024	  
	We will continue to promote the electric vehicle, bike and e-bike salary sacrifice scheme to our employees.	HR	On-going	  
Fleet is decarbonised.	We will update the vehicle replacement programme priority to include net zero (currently underpinned by air quality, not net zero) to begin to accelerate the electrification of all cars and vans.	Fleet	On-going	 
	We will continue to deliver the six year vehicle replacement programme, currently in year four, then on a rolling basis year after year.	Fleet	On-going	 
	We will identify the future depot estate through the Accommodation Strategy Review, which will determine future investment for EV charging infrastructure.	Property, FM and Fleet	On-going	
	We will continue to explore the feasibility of installing additional EV charging infrastructure at our depots, in line with the Accommodation Review and considering on-site electrical capacity constraints.	FM, Fleet	On-going	 
	We will trial low carbon large and specialist vehicles as they become available, in preparation for a complete switch away from diesel.	Fleet	On-going	 
	We will use telematics data to ascertain the number of future EV chargers required across the estate.	Fleet	On-going	
	We have gathered data and will investigate the feasibility of installing home chargers for Council drivers who take their vehicles home overnight.	Fleet, HR, FM	On-going	 
	We will publish training for employees on how to use electric vehicles on our Go Learn platform.	Fleet, HR, Sustainability and Climate Change	September 2023	
	We will explore the use of the Workplace Charging Scheme and maximise this where possible.	Fleet, FM	On-going	 
Scope 3 emissions are measured and reduced.	We will work with key contractors to align their vehicle policy with the council's zero carbon targets and monitor and report on their fleet emissions.	SCC, Veolia, Amey	On-going	 
	Veolia will continue to pilot EV or H2 fleet to determine their preferred option ahead of their 2025 replacement programme.	Veolia	By 2025	  
	We will continue to obtain mileage and emissions data from AMEY to record their progress in their fleet decarbonisation.	Amey	Annually	  
Robust carbon reporting is in place.	We will collect and report on annual emissions resulting from the Council's agricultural fleet and equipment.	Sustainability and Climate Change	Annually	 
	We will collect and report on annual emissions resulting from grey fleet mileage and target high mileage service areas for efficiency measures and behaviour change.	HR and Sustainability and Climate Change	Annually	  

OBJECTIVE D: Our street-lighting is decarbonised by reducing energy consumption.



OUTCOMES

1. Infrastructure is efficient and maximised.
2. Robust carbon reporting is in place.

through reducing the hours that streetlights are used (known as trimming) and dimming of streetlighting means that street lighting emissions contributed only 3% of our overall emissions in 2019. However, with the current energy price crises, the need to further reduce the energy consumption of our street lighting has again come to the forefront.

In addition to the cost and carbon reduction benefits of decarbonising our street lighting, it has the additional benefit of reducing light pollution and benefiting wildlife, but street lighting also has implications for levels of walking, wheeling and cycling as people need to feel safe if they are going to travel actively in hours of darkness.

What does the future look like?

Opportunities for reductions in lighting levels and hours of operation of streetlighting will be explored across the city, taking into consideration design factors, ecology and public safety. The decarbonisation of the electricity grid will contribute to the decarbonisation of the city's street lighting.






We'll maximise the use of infrastructure, including using street lighting columns for EV charging where possible. This pilot is detailed in the transport section of the Routemap.

Why do we need to decarbonise our street-lighting?

Sheffield's street lighting is managed by Amey through the Streets Ahead programme. Previous work to install LED lighting and make efficiencies

OBJECTIVE D: Our street-lighting is decarbonised by reducing energy consumption.

 Social
  Health
  Economic
  Biodiversity

Outcome	Action	Who	When	Co-benefits
Infrastructure is maximised.	We will undertake a street lighting column EV charging pilot and will continue to monitor resulting changes in energy consumption and emissions and look to address any increases.	Highways, Transport	March 2024	 
	We will explore opportunities for further trimming and dimming of streetlighting, whilst ensuring public safety is achieved.	Highways	March 2024	
Robust carbon reporting is in place.	We will realign the Council's emissions baseline to include accurate emissions from streetlighting and all highways infrastructure including CCTV and traffic signals.	Sustainability and Climate Change	March 2024	 

OBJECTIVE E: Our land management supports the Council's and city-wide net zero target.



OUTCOMES

1. Council land is effectively managed to sequester carbon and increase biodiversity.
2. Council land is used to generate local renewable energy.
3. We will have an off-setting policy that supports land based off-setting as near to Sheffield as possible and that provides additionality.

Why do we need to sequester carbon from our land?

Land Use, Land Use Change and Forestry (LULUCF) refers to the emissions and removal of greenhouse gases resulting from land use, such as commercial uses, land use change and forestry activities. When trees and other plants grow, they absorb CO₂ and when they die, they release

CO₂. Peat bogs are made up of long dead trees, and when peat bogs degrade, they release CO₂.

When more CO₂ is absorbed than released, this is referred to as carbon sequestration and helps balance emissions from other sectors. Whilst emissions from carbon sequestration are hard to measure, the way in which we use our land is of great importance to tackling both the climate and ecological emergencies.

In 2020, net emissions from LULUCF across the city were -24,500t/CO₂. Further natural capital mapping of the Council's land is required to understand the net emissions from our own estate.

The work undertaken by Arup and Ricardo identified measures to reduce the Council's emissions by 80%, falling short of the 95% net zero definition. This highlights the importance of LULUCF measures in meeting the 2030 net zero carbon target, including opportunities for using Council owned land for renewable energy generation.

















































What does the future look like?

The Council is leading by example in maximising ecosystem services on our land and creating habitat that is optimum for carbon sequestration and nature recovery. Our land promotes the benefits and opportunities of carbon stewardship and delivers on Biodiversity Net Gain and wider environmental net gains, as well as providing spaces for recreation. This leads to improvements in the health and well-being of our residents and helps us to adapt to the impacts of climate change by reducing heat and flooding risk.

In addition, opportunities to use Council land for renewable energy generation have been maximised, providing direct renewable energy to local consumers where available or exported to the national grid to further the decarbonisation of electricity supply.

OBJECTIVE E: Our land management supports the Council's and city wide net zero target.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Council land is effectively managed to sequester carbon and increase biodiversity.	We will identify a lead within the Council to coordinate our approach to the ecological emergency and LULUCF on all our land holdings, enabling cross departmental working and holistic land management strategies across combined land holdings.	Climate Oversight Board	March 2024	   
	We will meet provisions set within the Environment Act, including the development of a Biodiversity Plan, and work with South Yorkshire Mayoral Combined Authority on the development of Local Nature Recovery Plans.	Parks and Countryside	March 2024	   
	We will implement the Rural Strategy and Estate Management Plan to create substantial opportunities for LULUCF.	Property	Approved April 2023	   
	We will undertake natural capital mapping to understand current baseline of land use in terms of which land management practices in place are emitters of CO ₂ and which are sequesters.	Parks and Countryside	March 2024	   
	We will, in line with the Sheffield Moors Partnership, promote carbon stewardship to ensure the management and restoration regimes of our moors provide the effective storage of carbon.	Parks and Countryside	On-going	   
	We will plant more than 100,000 additional trees and replace trees on a two for one basis in Council controlled greenspaces and woodlands over the next 10 years.	Parks and Countryside	March 2024	   
	We will work with the Environment Agency on natural flood management, across the whole upper catchment, including council owned peatlands.	Flood Management	March 2024	   
	We will consider the ability of habitats to sequester carbon in decision making when disposing of land.	Parks and Countryside / Property	March 2024	   
	We will prioritise the conversion of amenity grass to habitats that maximise rapid carbon sequestration, such as ponds, flood meadows, wet woodland, and scrub.	Parks and Countryside	March 2024	   
	We will continue to work with the South Yorkshire Woodland Partnership and contribute to their scoping exercise to identify the requirements to produce tree numbers at scale to support woodland creation in South Yorkshire.	Parks and Countryside and South Yorkshire Woodland Partnership	March 2025	   
	We will give 30% of our land to nature by 2030 and look to increase this to 40%.	Parks and Countryside	2030	   
	Council land is used to generate local renewable energy.	We will commission a renewable energy and storage scoping study to identify opportunities on council owned land for large scale energy projects.	Sustainability and Climate Change	December 2023
We will have an off-setting policy that supports land based off-setting as near to Sheffield as possible and that provides additionality.	We will work with internal colleagues and external partners to develop an off-setting policy that ensures off-setting provides additionality, is effectively monitored and reported and occurs as close to Sheffield as possible.	Sustainability and Climate Change	March 2024	   

OBJECTIVE F: Our procurement, governance and decision making will support the Council's and city-wide journey to net zero.



OUTCOMES

1. Emissions from our procured goods and services are reduced.
2. Climate change is at the heart of our decision making.

Why do we need sustainable procurement?

Approximately 60-80% of public sector emissions are from Scope 3 activity, with purchased goods and services making up a high proportion of this figure. While we cannot directly control these emissions, we can influence them through our procurement and commissioning processes.

The 2018 National Procurement Strategy for Local Government and the UK Government Green Paper on Transforming Public Procurement published in 2020 both highlight that the commissioning, procurement and management of contracts is a vital mechanism to respond to strategic economic, social and environmental priorities such as the climate emergency.

We can use our spending power not only to support the development of low carbon skills and economy locally, but support all our providers, suppliers, contractors and partners to integrate carbon reduction into the provision of their products and services.

What does the future of sustainable procurement look like?

We recognise that integrating climate impacts into our procurement processes will be a journey, and that we need to work closely with our supply chain to drive down scope 3 emissions associated with the products and services we buy. Over the next two years we aim to do the following:

- update our policies and processes to ensure climate impacts are considered throughout the procurement process, from initial client requests through to ongoing contract management.
- collect information from our suppliers to inform our carbon reporting, providing demonstratable evidence of a reduction in scope 3 emissions associated with services and good delivered on behalf of Sheffield City Council through our supply chain.
- engage and work with our supply chain to meet these ambitions.

Why does climate change need to be at the heart of decision making?

As a local authority, much of the impact that we can have on reducing emissions is through the wider decisions we take across the organisation

and city. To maximise our chances of achieving our net zero ambitions, all our decisions need to consider the impact on climate change, to ensure opportunities to reduce our emissions are not missed. We have developed a Climate Impact Assessment (CIA) Tool to support our decision making.

What does future decision-making look like?

















































We want to continue to develop and refine our tool to ensure it provides added value and does not become a “tick box exercise”:

- we are developing an online app where officers can complete their assessments.
- we will improve our ability to report on use of the CIA tool and the outcomes it enables in terms of carbon reduction.
- we are developing standard assessments for some types of projects to enable more effective use of the tool.
- we will engage with our suppliers and providers to explain what we are doing.

We also aim to incorporate the consideration of climate impacts more fully into service planning to ensure all parts of the Council are playing their part on meeting our net zero target.

OBJECTIVE F: Our governance and decision making will support the Council's and city wide journey to net zero.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Our procured goods and services support sustainable local supply chain opportunities.	We will implement an updated Ethical and Sustainable Procurement Strategy.	Commercial Service	March 2024	   
	We will ensure climate change measures are given due assessment and included in our procurement strategies and associated tender activity.	Commercial Service	March 2024	   
	We will establish mandatory and aspirational climate measures for existing suppliers and new bidders to select from in their tender responses when bidding for work with the Council.	Commercial Service	March 2024	   
	We will establish a set of EU Green Public Procurement (GPP) criteria standards (or equivalent) for inclusion in our tenders and existing contracts. This will facilitate consistent green requirements in our public tender documents and contracts with our supply chain.	Commercial Service	March 2024	   
	We will implement a clear evaluation methodology for evaluating climate measure action plans submitted by bidders during the tender process that is proportionate, fair, open and transparent for the goods and services being procured.	Commercial Service	March 2024	   
	We will ensure climate commitments stated in tenders by successful bidders become contractual obligations to be delivered and measured.	Commercial Service	March 2024	   
	We will benchmark, measure, analyse and report on our suppliers' carbon footprint and their progress annually (as a minimum) against their contractual climate commitments.	Commercial Service	March 2024	
	We will engage with partners to share our approach.	Commercial Service	March 2024	   
Climate change is at the heart of our decision making.	We will implement periodic reporting and follow up on the impact of the Climate Impact Assessment (CIA) tool.	Sustainability and Climate Change	June 2023	   
	We will develop standard inputs to the CIA tool for specific project types and categories.	Sustainability and Climate Change	Ongoing	   
	We will continue to provide regular internal training sessions.	Sustainability and Climate Change	Ongoing	   
	We will identify CIA champions within services.	Sustainability and Climate Change	Ongoing	   
	We will roll out online app for CIA.	Sustainability and Climate Change	October 2023	   

OBJECTIVE G: Our employees are carbon literate and fully engaged in the Council's journey to net zero.

OUTCOMES

1. All employees are carbon literate.
2. All employees feel engaged and able to contribute to the Council's net zero target.

Why do we need to act?

The Council employs 7600 people across its services (77% of whom live in Sheffield) and educates around 24,420 pupils across our maintained schools. The way in which we communicate, engage, and encourage behaviour change in the workplace and in our schools can lead to significant energy reduction activities, helping to lower carbon emissions across the Council and city. The Carbon Trust suggest that up to 10% of efficiency savings can come from effective communications and behaviour change programmes.

What does the future look like?

An overview of the Council's response to the climate emergency was provided at two "Our Sheffield" employee events at the beginning of the summer 2022, which were attended by over 400 employees. The events outlined the approach the Council is taking, and employees were able to ask questions as part of this discussion and in addition, a written response to further questions was provided following the event.

An employee survey was subsequently conducted which was promoted at the events, on the intranet as well and paper copies sent to managers whose staff don't have IT access. The survey was aimed at understanding employees' current awareness of the climate emergency, the Council's role alongside the role of their service and team. Employees were also asked to suggest where they feel things need to change to enable effective climate action, what support they need and what more the Council can be doing.





















119 employees responded to the survey and 61% felt they understood the climate emergency and the Council's role in tackling it, but 58% of respondents don't know what their own service area is doing on climate change. This emphasises the need for improved internal communications.

It was clear from the responses that employees felt they needed more information and support on actions to be taken to maximise their impact on tackling climate change. Comments were received stating that clear guidance on who to contact for information and regular updates on the intranet should be provided, along with ensuring there was a clear understanding of what net zero is. Comments were also received suggesting that behavioural science insights are increasingly being used to enable more effective initiatives.

In future, we will engage employees and help them develop their roles in tackling the climate emergency, for example through improved communications. We will also work with employees to understand wider barriers and enablers to and encourage and enable employees to facilitate positive contributions in the workplace and through their service delivery. 39 respondents to the employee survey stated that they were interested in being part of an employee reference group, which would be an effective way in which to achieve this.

OBJECTIVE G: Our employees are carbon literate and fully engaged in the Council's journey to net zero

 Social
  Health
  Economic
  Biodiversity

Outcome	Action	Who	When	Co-benefits
All employees are carbon literate.	We know everyone wants to understand how they can help address climate emergency and will develop an easy access sustainability and climate change e-learning module for employees.	HR, Sustainability and Climate Change	March 2024	   
All employees feel engaged and able to contribute to the Council's net zero target.	We will develop an approach to improved employee engagement and communication and seek finance for this.	Communications, Sustainability and Climate Change	March 2024	   
	We will engage and consult with employee reference groups.	HR, Sustainability and Climate Change	Awaiting outcome of staff network review	   
	We will maximise opportunities to use a behavioural science and insights approach to support effective implementation of policies, projects and activities.	Public Health, Sustainability and Climate Change	On-going	   
	We will update job profiles and induction process and ensure all employees understand their roles and responsibilities.	HR, Sustainability and Climate Change	July 2023	   



Chapter Two

The Way We Travel

GOAL: By 2030, all our people and organisations will have access to ultra-low emission options for travel, and we will achieve a 419 ktCO₂e reduction in transport-related carbon emissions.



Key objectives

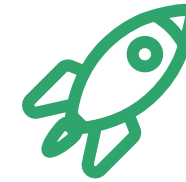
- A Strategic decisions taken in line with a clear vision and policy.
- B Improved routes and facilities that enable as many people as possible to make journeys by walking, cycling, and wheeling.
- C Improved low-carbon public transport network to provide attractive alternatives to private vehicle journeys.
- D Goods and services provided via a consolidated low-carbon LGV/HGV and freight/delivery system to reduce vehicle journeys and road traffic.
- E Decreased vehicle emissions and improved air quality through a shift to electric and zero-emission vehicles.

Travel in Sheffield

In 2017, emissions from the Transport sector contributed 642ktCO₂e to our city's emissions – 26%. That is the same as:



183,426 return flights from London to Hong Kong



1,070 SpaceX Falcon flights to the International Space Centre



Driving **1,442,234** lengths of the UK

Almost two-thirds of these emissions are from cars and over a quarter from light and heavy goods vehicles. Around 98% of the vehicles in the city are either diesel or petrol - only 2% of our vehicles are electric. 60% of journeys are made by car, and around 40% of these are less than 1km in distance (a 10–12 minute walk).

The way we travel does not just contribute to our carbon emissions, it affects everything about our lives and wellbeing:

- Air pollution contributes to around 1 in 20 deaths a year in Sheffield, causing strokes, lung cancer, and cardiovascular and respiratory disease. Pollution from road vehicles is a key contributor to air pollution.
- background traffic growth projects up to 35% increase in journey times, along with increased city centre gridlock events.
- since 2016, Sheffield has had the highest rate of road traffic collisions involving children amongst the core English cities.
- increased vehicle ownership exacerbates limited parking facilities and increases driver time spent searching for a space.

The impact of COVID

In 2020, the UK's response to the Coronavirus pandemic saw significant changes in the way we travel. Nationwide lockdowns resulted in as much as 50% reduction in travel. While it is still not clear how travel behaviour will change long-term in our 'new normal', current trends suggest a shift towards:

- Increased active travel.
- Increased private vehicle use.
- Continuation of long-term decrease in public transport use.

Despite the need to reduce journeys and private vehicle use and increase public transport to meet our 2030 net zero city target, travel behaviour is currently going in the opposite direction.

Benefits of decarbonising how we travel

Of all the areas that need to decarbonise, the way we travel has perhaps the most extensive, strongest and most obvious wider benefits. By overcoming these together, we can transition to a zero-carbon transport system while realising the wide-reaching benefits for the citizens of Sheffield – many of which would be worth the investment even without the carbon benefits:

- neighbourhoods where people feel safe to walk and cycle and where children are free to be more independent and to play.
- increased social inclusion and travel choices as bus and tram services expand and improve, and more people are able to and choose to use them.
- quieter streets with better air quality, especially around schools due to an expanded programme of school streets.

- better health and wellbeing as more people walk, cycle and wheel, helping increase healthy life expectancy, reduce absenteeism, and increase productivity.
- well-planned improvements result in more people visiting local businesses as they travel about their day.
- less dependency on car ownership and use reduces the number of cars, improving pressure on car parking and congestion and making neighbourhoods more pleasant places to live and spend time.
- new economic and business opportunities are created to support growing numbers of cyclists.

What needs to change?

Changing the way we travel to be more sustainable will need everyone in the city to act, and we all have different roles to play in creating a city where:

- short journeys can be taken easily by public transport, cycling and walking.
- essential services and amenities are within easy reach, 15 or 20 minutes walk, of where people live.
- dependency on cars and vehicles is reduced.
- freight is consolidated to reduce delivery journeys.
- vehicles are fuelled by electricity or alternative fuels.

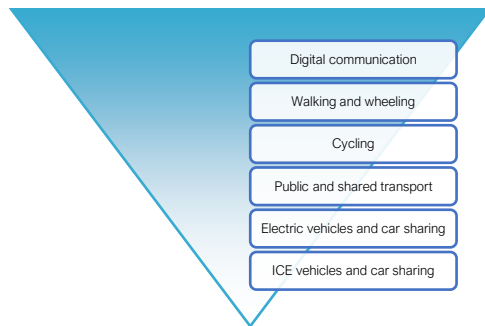
Working with partners, particularly the South Yorkshire Mayoral Combined Authority (SYMCA), citizens and businesses will be crucial. The Council also has a role to play to encourage modal shift. Once a house is insulated, the work is largely finished, but the decision to cycle instead of drive needs to be taken daily. Transport, therefore, is the sector that relies most heavily on behaviour change.

Modal shift and journey reduction

While decarbonising vehicles will achieve the greatest reduction in emissions, it will take longer than we need and so we also need to reduce vehicle journeys by:

- a) reducing the number and length of journeys that we take, for example by using local services or digital or mobile communication.
- b) changing how we travel from a polluting mode to a less polluting mode (known as modal shift).

The Sustainable Travel Hierarchy is a useful tool to help us think about net zero travel and visualise the journey reduction and modal shift that needs to happen. The higher up the hierarchy, the more sustainable and greener the travel option.



Sustainable Travel Hierarchy, Energy Saving Trust, 2023

The way we travel relies heavily on behaviour change: the decision to travel by foot, wheels or public transport instead of drive needs to be taken daily. The Council has a role to play to enable and encourage modal shift and support residents to move up the travel hierarchy.

Designing around users

Transport is a system, and no single measure to decarbonise can be made in isolation of others. But to achieve the many benefits that decarbonising transport can offer, we need to consider and design change around the system's most important component – you.

You don't travel for the sake of travelling. You travel to do something, to access something, to buy something, to experience something. It is essential to your functioning in everyday life and the changes we make need to support and enhance that.

Working together

The Council has powers to plan and deliver interventions to improve road, cycling and walking infrastructure, and inclusion levels to facilitate modal shift and increase mobility and travel options. The role played by other organisations based or working in the city, particularly the South Yorkshire Mayoral Combined Authority (SYMCA) and South Yorkshire Police and by people and businesses and other organisations will be crucial as all our vehicles and journeys will need to change in the coming years.

This won't always be easy – some of the barriers that will need to be overcome include:

- up-front investment to improve infrastructure and the cost of replacing or retrofitting vehicles.
- car-centric infrastructure, facilities and lifestyles.
- personal challenges including lack of time, shift work and caring responsibilities and concerns for personal safety affect travel choices, particularly amongst some disadvantaged groups.

- challenges in communicating and achieving public support for difficult, but ultimately beneficial, decisions on road and land space allocations and funding priorities.

By working together, and by designing change around the system's most important component – the people and businesses that use it, we can transition to a zero-carbon transport system and realise the wide-reaching benefits for the people of Sheffield.

A fair and just transition

The way we travel and the part that transport plays in our lives is crucial to all of us, but there are particular opportunities and concerns that are created for people whose transport options currently limited or whose livelihood is bound up with their ability to travel around the city.

Disabled people and people with restricted mobility, including older people, often experience severe barriers to travel, such as lower car ownership, higher reliance on public transport, inaccessible cycleways, cluttered paths and a lack of storage for mobility aids and bikes. Motability vehicles are transitioning to electric and so motability users will need charging infrastructure to be ready early, whilst some people will be reluctant or face additional challenges in changing to electric or hydrogen vehicles.

People on low incomes are less likely to have the resources to buy an electric car in the near future, but infrastructure needs to be ready for them, and it is important to minimise any negative financial impact on people who do not have the capacity to change the way they travel. They can often particularly benefit from improved public transport, subsidised bike purchases and secure storage for bikes, but greater shift working and longer hours may make this challenging for some.

Businesses heavily dependent on transport can face particular challenges and concerns as we shift towards a decarbonised transport system. Affordable electric vehicles and a mature charging infrastructure will be crucial, whilst there is a high level of concern about financial penalties.

People working in the motor trades will eventually be impacted by a reduction in the number of mechanic jobs, and there will be a need for retraining.

Acting to ensure social justice.

Actions to ensure social justice are included in actions table further on in this document, but previous and planned actions include:

- access Liaison Group and Transport for All forums for engagement with disadvantaged groups, an Access Officer employed to ensure buildings and infrastructure are accessible.
- accessible design standards.
- a barrier alteration programme to upgrade barriers on paths.
- cycle boost bike hire scheme targeted on key workers.
- designing EV charging hubs to be accessible, including booking system for disabled spaces.
- spaces for adapted bikes and cargo bikes as standard in cycle hubs.
- cycling 4 All funded to buy electric trikes for people to trial at home.
- We do not permit trailing EV cables across footpaths.
- prioritising Motability EV/scooter charging.

Increased Choices



Increased walking, wheeling and cycling

Enhanced cycling networks and routes.

Improved walking and wheeling crossings and public realm.

Active travel hubs and cycling facilities.

Safer neighbourhoods

Increased skills and knowledge.

Incentives to walk, cycle and wheel.



Improved public transport

Publicly-owned and optimised tram network.

'Tap and Cap' contactless Payments.

Reliable and reduced journey times.

Value for money.

Seamless connectivity between travel modes.

Improved public transport routes.



Consolidated and decarbonised freight

Shared business distribution centres.

Alternative vehicles for last-mile deliveries.

Collection points and lockers.

Increased use of other transport modes.



Decarbonised vehicles

Public and private carpark charging facilities.

Destination charging for visitors.

Publicly accessible rapid charging hubs.

Publicly accessible on-street charging.

Hydrogen and bio-fuel filling stations.

What Can You Do?

When faced with such a challenge, it is easy to be overwhelmed and unsure on how to take the next step. But there are changes we can each make that together will contribute to decarbonised, healthier, safer, and more inclusive travel in Sheffield.

As a Resident or Commuter, you can:

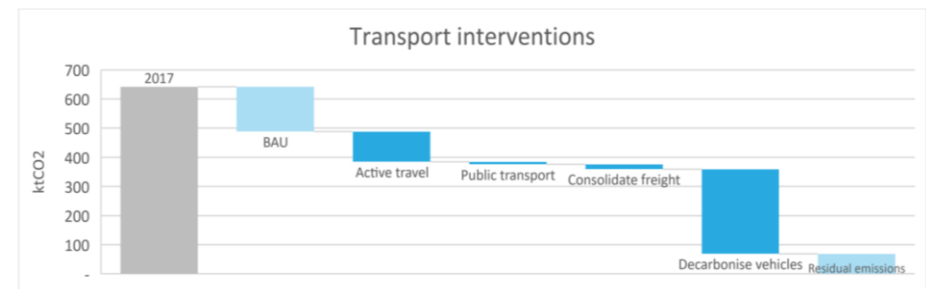
- Reduce car journeys under 1 mile by walking, wheeling, cycling, or utilising public transport.
- Support your local economy and shop locally.
- Utilise local parcel shops/lockers to reduce delivery journeys.
- Lease, share or purchase an electric car and/or electric bike with family, friends, or colleagues.
- Attend Local Area Committee meetings and speak about improvements you want to see in your community.
- Engage with the Council on local travel schemes to help us ensure they are designed for your needs.

As a business, you can:

- Encourage flexible, remote working and online meetings to reduce commuting and business travel.
- Provide bike storage and lockers to encourage Active Travel commuting and business travel.
- Convert business fleets to low- and zero-emission vehicles.
- Install EV chargers on premises for staff and business use.
- Provision of E-Bike and Vehicle salary sacrifice schemes.
- Engage with the Council on local travel schemes to help us ensure they are designed for your needs.
- Apply for funding to support changes to vehicles and infrastructure. For more details go to [Grant schemes for electric vehicle charging infrastructure - GOV.UK](#)

What carbon reduction will this achieve?

We are already working towards reducing our carbon emissions through our current “business-as-usual” policies, improvement programmes and projects. Through accelerated mode shift from private vehicle use to active travel and public travel use, decarbonising vehicles and consolidating freight, we need to achieve a further 419 ktCO₂e (65%) reduction.





















Carbon emissions reduction from the transport sector from interventions

Pathway to Net Zero in Sheffield, ARUP, 2020

Implementing these measures will leave a small portion of residual emissions, which will be addressed through decarbonisation of grid-supplied electricity, locally generated renewable energy and carbon capture.

OBJECTIVE A: We will take strategic decisions in line with a clear vision and policy.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Our strategy, policy and procedures are fit for purpose.	We will work with SYMCA to deliver the statutory South Yorkshire Local Transport Plan (LTP).	SCC / SYMCA	2024	 
	We will review and update the Transport Strategy, in particular to address any changes in the policy context that arise from ongoing work and align with our net zero ambitions and Local Transport Plan.	SCC	Summer 2024	 
	We will implement the new building regulations and explore the case for any supporting policies as part of the development of the new Local Plan.	SCC	March 2024	 
	We will work to align of regional and city strategy to support delivery that maximises funding, collaboration and regional network coverage and consistency.	SCC / SYMCA	Ongoing	 
	We will investigate suitability of demand management options in Sheffield, such as a Workplace Parking Levy.	SCC	2024	 
	We will continue the development and implementation of controlled parking schemes, primarily on the periphery of the city centre in line with the Parking Strategy.	SCC	Ongoing	 
	The Floop will provide driving data to the South Yorkshire region, which is current free of charge, to support positive change, including supporting the Connecting Sheffield programme.	The Floop	Ongoing	
Residents are meaningfully engaged on citywide and local transport schemes that are designed to deliver the users needs.	We will maximise opportunities to use a behavioural science and insights approach to support effective implementation of policies and schemes. Including engaging with residents to understand the barriers to low-carbon travel and work with them on ways to meaningfully overcome them together.	SCC	Ongoing	
	We will develop an active travel engagement toolkit to support officers to engage effectively with communities in the development of active travel interventions.	SCC	October 2023	
	We will develop a net zero transport communications and engagement plan that support residents in understanding how our transport system needs to change and why.	SCC	2023	
	We will improve how we engage with residents on local transport schemes to ensure priority is given to “on the ground” engagement, discussion and participation.	SCC	Ongoing	
SCC Transport Planning has the experience, skills and resource to deliver an accelerated programme of transport decarbonisation.	We will take a decision on the most appropriate way to ensure that we have the skills to determine the carbon impact and anticipated reduction of transport schemes throughout design and delivery, as is to be required in the SY Local Transport Plan.	SCC	2024	
	We will identify the options for recruiting an electric vehicle officer and/or delivery team to oversee and manage delivery as the EV programme accelerates.	SCC	2023	

OBJECTIVE B: Improved routes and facilities that enable as many people as possible to make journeys by walking, cycling, and wheeling.



OUTCOMES

1. The needs of residents that might find walking, wheeling, and cycling more difficult are addressed to ensure improved and increased travel choices.
2. Destination and residential cycle storage facilities are improved.
3. People have increased capability, opportunity, and motivation to lead to modal shift, with a focus on minimising unnecessary car journeys.
4. The active travel economy across Sheffield grows to provide the services required to support active travel.
5. Walking, wheeling, and cycling to work and education and organisations with high numbers of visits (e.g., hospitals, Meadowhall) is increased.
6. A network of safe walking, wheeling, and cycling infrastructure is developed and delivered.

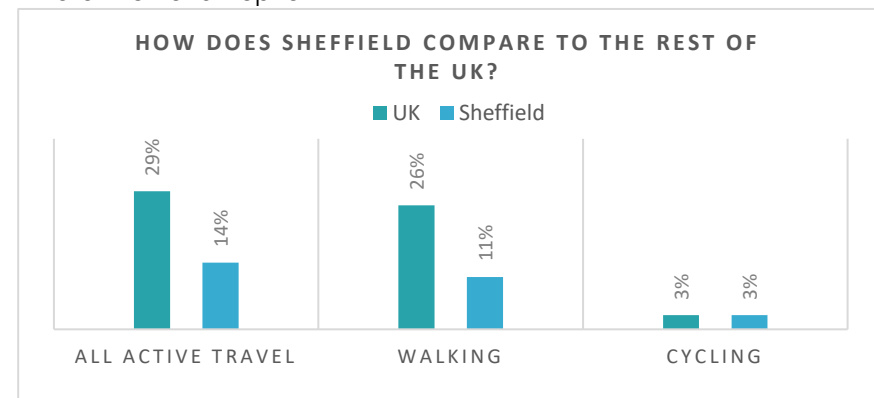
Why do we need to increase walking, wheeling and cycling?

Walking, wheeling (including wheelchairs and scooters) and cycling are the most sustainable modes of travel and have benefits not only to the environment but to the individual – they cost less, benefit health and improve air quality. They are often referred to as “active travel”.

Walking, wheeling and cycling are not going to be suitable for all journeys, nor possible for all of our people. Sheffield also has the added challenge of being a notoriously hilly city, but journeys taken on foot or by bikes and other people powered wheels need to, and can, very significantly increase.















































Vehicle emissions can be reduced by replacing a significant proportion of car journeys with active travel, in particular the high proportion of short car journeys (<1mile).























A zero-carbon transport system will support and increase the number of people able to walk, wheel and cycle for the journeys where it is appropriate, while also ensuring there are alternative travel choices where it is not an option.



'Active Travel: Trends, policy and funding', Parliament.UK, 2020

OBJECTIVE B: Improved routes and facilities that enable as many people as possible to make journeys by walking, cycling and wheeling.

Outcome	Action	Who	When	Co-benefits
The needs of people that might find active travel more difficult are addressed to ensure improved travel choices.	We will ensure our transport interventions do not disadvantage people with protected characteristics, or otherwise disadvantaged people by working with them and their representatives to ensure our transport proposals advance equality in Sheffield.	SCC	Ongoing	 
	We will develop proposals with local communities to serve both the city's transport needs and aspirations and needs of the city's people, including its disadvantaged communities.	SCC	Ongoing	 
	We will continue to improve access to active travel for disabled people through our barrier improvement programme and the increased installation of M stands for cycle parking.	SCC	Ongoing	
	We will have spaces for adapted bikes and cargo bikes as standard in cycle hubs.	SCC	Ongoing	
	Through funded programmes of work we will remove redundant street signs and barriers to improve the walking and cycling experience.	SCC	Ongoing	
	We will continue to enforce and expand pavement parking restrictions in the city centre. Following our response to government consultation we will continue to lobby for further powers to enforce pavement parking across the city.	SCC	Ongoing	  
	We will deliver the Big Bike Revival in Sheffield.	Cycling UK/Bike Rehab	Summer 2023	 
Destination and residential cycle storage facilities are improved.	We will develop proposals for the installation of short stay cycle parking at key locations across the city.	SCC	Ongoing	  
	We will develop a secure 200-space controlled access city cycle hub to increase cycle storage.	SCC	Summer 2023	  
	We will investigate the feasibility of a 100-space cycle hub in Attercliffe.	SCC	2024	  
	We will trial on-street residential secured cycle parking and look to expand if successful.	SCC	2023	 
People have an increased capability, opportunity, and motivation to lead to modal shift, with a focus on minimising unnecessary car journeys.	We will deliver an active travel incentivisation scheme through the Capability Fund.	SCC	2023-24	 
	We will provide residents with bikes through the Cycle Boost loan scheme.	SCC/A Different Gear	2023 Ongoing	  
	We will continue to signpost residents to 1-month loans through the Cycling UK loan scheme.	SCC/Cycling UK	Dec 2023	 
	We will continue to provide education relating to cycling through the Learn to Ride scheme through Road Confidence.	SCC	Ongoing	 
	We will continue to fund and commission Bikeability cycle safety courses to years 5 and 6 children, and secondary schools.	SCC/Partners	Ongoing	 
	We will improve road safety on Ecclesall Road, using £1.425m funding secured from Safer Roads Fund 3 to re-design junctions and improve road signage and markings.	SCC	2024	  
The active travel economy across Sheffield grows to provide the services required to support active travel.	We will support hire bike providers in Sheffield, including to test and develop electric and cargo bikes, and potential for these to be located close to key transport locations such as train and bus stations.	SCC	Summer 2024	
	We will learn lessons from previous active travel hire schemes and investigate what improvements could be made to enable more successful delivery in the future.	SCC	Autumn 2023	
Active travel to schools and work and organisations with high numbers of visits (e.g., hospitals and academic institutions) is increased.	We will continue to support key strategic partners in the city with the development of group-based active programmes, to minimise travel costs and carbon emissions from staff and service users.	SCC	Ongoing	  
	We will continue to support schools to encourage active travel through the Mode Shift Stars Programme for a further two years and develop the programme of school streets.	SCC	Ongoing	 
	We will promote and support the use of sustainable transport to staff and students.	Sheffield College	Ongoing	 

	Sheffield Hallam University will increase active travel using evidence based interventions such as increasing cycle storage by 10% per year and increasing uptake of salary sacrifice schemes as laid out in its Travel Plan 2023-2030	Sheffield Hallam	Ongoing	  
A network of safe walking, wheeling and cycling road infrastructure is developed and delivered.	We will develop a citywide active travel network plan, to include walking and wheeling, to inform future investment decisions.	SCC	2023/24	  
	We will deliver active travel routes from Charter Row to Wolstenholme Road with a spur to Broomhall; from Grey2Green to Olympic Legacy Park; from Leopold Street to Neepsend Lane; from Meadowhall Interchange to Rotherham Boundary; from City Centre to NGH and from Charter Row to Arundel gate and Leopold Street.	SCC	2024-27	  
	We will continue to consult and engage on the success and challenges of the existing pilot active neighbourhoods, with the intention to make an informed decision on their future.	SCC	2023-24	
	We will continue to consult and engage on the success and challenges of the existing Sheaf Valley cycle route, with the intention to make an informed decision on their future.	SCC	March 2024	 
	We will aim to deliver a high quality cycle route along East Bank Road.	SCC	In delivery 2025	 
	We will make improvements to existing infrastructure including making barrier alterations along footpaths and creating a fully accessible route through the subway at Netherthorpe Underpass.	SCC	2023	 
	Darnall mini Holland successfully submitted to Active Travel England. Following feedback, we will continue to work with Active Travel England to enable funding.	SCC	Autumn 2023	  
	We will complete feasibility studies relating to routes from Neepsend to Herries Road, an off-road track from Neepsend Lane through to Deepcar and a route to the reservoirs at Underbank and Stocksbridge.	SCC	2023	
	We will work with residents and SY Police to identify design changes that can be made to the physical environment to increase actual and perceived personal safety along active travel routes.	SCC/South Yorkshire Police	2023 and ongoing	 

OBJECTIVE C: Improved low-carbon public transport network to provide attractive alternatives to private vehicle journeys.



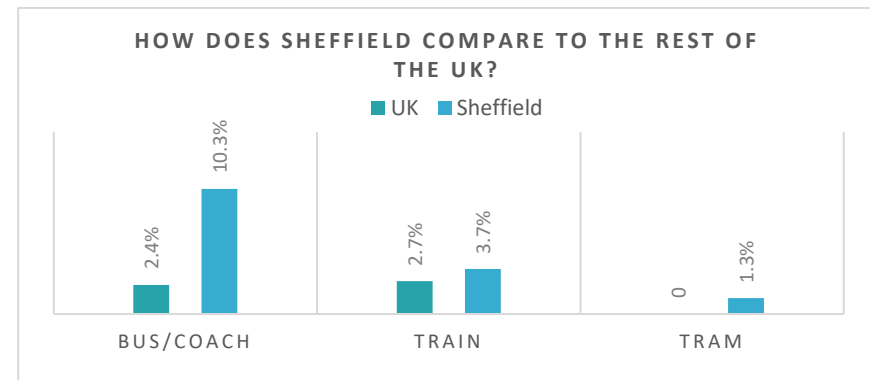
OUTCOMES

1. The future of a commercially sustainable tram network is secured.
2. Customer experience of public transport is improved by removing barriers to ensure cost effectiveness and ease of use for all citizens.
3. Public transport connectivity to other modes of low carbon travel is improved and expanded.
4. Buses journey times and reliability is improved, cutting operating costs alongside the provision of new and improved bus services.
5. Citizens are engaged in decision-making on schemes that affect their local community to meet user and economic needs.

Why do we need to improve public transport?

People care deeply about public transport and want it to be better. The COVID-19 pandemic has had a particularly negative impact on public transport usage. Public transport is lower nationally than pre-pandemic figures, with many now opting to replace bus and tram journeys with increased use of private vehicles. As a result of this, funding cuts and fuel prices, we are seeing service reductions as operators struggle with pandemic funding measures finishing. This further reduces patronage as satisfaction with services reduces.

































A low cost, reliable and well-connected public transport system reduces congestion and road traffic, improves air quality and reduces carbon emissions per passenger through shared travel replacing individual car journeys. It complements active travel measures by catering for journeys that cannot be made by walking, cycling or wheeling, and by supporting mixed mode journeys. Effective public transport services are particularly essential for many older people and for others for whom car ownership and cycling is not possible, or who can travel actively but only for shorter journeys.



'Sheffield Transport Data', Cycle Sheffield; 'Great Britain: Passenger transport by modal split' Statista, 2020

OBJECTIVE C: Improved low-carbon public transport network to provide attractive alternatives to private vehicle journeys.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
The future of a reliable and commercially sustainable tram network is secured.	SYMCA and SCC will work to bring the tram system in as an arm's-length operation at the end of the current contract with Stagecoach.	SYMCA / SCC	April 2024	 
	We will strengthen tram priority including during inter-peak periods, and work with SuperTram to reverse service cuts in the inter peak periods.	SCC / SuperTram	2023/24	 
	SCC will support SYMCA in delivering £100m refurbishment and renewal works of the existing SuperTram system as part of the City Region Sustainable Transport Settlements (CRSTS).	SYMCA/SCC	Ongoing to beyond 2025	
Customer experience of public transport is improved by removing barriers to ensure cost effectiveness and ease of use for all citizens.	We will work with operators to investigate the feasibility of rolling out 'Tap and Cap' contactless payment on buses and trams.	SYMCA	Ongoing	
	We will work with operators to improve public transport service information access to remove the barriers to access and use and to enhance the customer experience.	SYMCA/SCC/Others	2024	
Public transport connectivity to other modes of low carbon travel is improved and expanded.	We will improve future design and delivery through experience and lessons learned by applying the knowledge gathered from the Sheffield to Rotherham tram-train pilot to future mass-transit schemes.	SYMCA	Ongoing	 
	We will develop plans to improve connectivity between public transport and other modes of low carbon transport (i.e., cycle routes, bike transportation on public transport, EV hire, bike hire).	SYMCA/SCC	September 2024	  
	We will explore options to expand park and ride sites on the tram system, to meet demand at Meadowhall, Middlewood and Halfway.	SYMCA	March 2024	 
	We will review the operating, business and regulatory model for public transport services in the city, to provide the best platform from which we can maintain and improve public transport services in the manner that best meets Sheffield's needs, including consideration of franchising.	SYMCA / SCC	2023	 
	Sheffield Hallam University will work to increase the use of public transport and car sharing as laid out in its Travel Plan 2023-2030 (ongoing)	Sheffield Hallam	Ongoing	 
Bus journey times and reliability is improved, cutting operating costs alongside the provision of new and improved bus services.	Further investigate how to increase bus priority over travel by car to improve bus journey times and their reliability along Abbeydale Road and Ecclesall Road.	SCC	2024/25	 
	We will work in partnership to increase patronage and service improvement through the Enhanced Bus Partnership Plan and exploring the benefits and opportunities of a franchised bus network in South Yorkshire.	SYMCA/SCC/Others	March 2024	 
	We will introduce a bus gate at Arundel gate to improve air quality and enable bus priority.	SCC	2023	 
	We will build on and expand the city centre 'Public Transport Priority Box'.	SCC	Ongoing	 
	Electric shuttle buses to be trialled and then rolled out to decarbonise the city centre Sheffield Connect service.	SCC	Early 2024	 
	We will explore further funding opportunities for zero carbon bus transport, including Zebra 2.	SCC/SYMCA	Late 2023	 
	We will explore the potential for extending the hours of operation of existing bus lanes throughout the city to include weekends and daytime periods.	SCC	Spring 2024 and ongoing	 
Citizens are engaged in decision-making on schemes that affect their local community to meet user and economic needs.	We will engage with residents on public transport infrastructure schemes through the Connecting Sheffield consultations and engagement programme.	SYMCA/SCC	Ongoing	

OBJECTIVE D: Goods and services provided via a consolidated freight system that reduces vehicle journeys and road traffic.



OUTCOMES

1. Freight movements within the city meets the needs of residents and businesses, whilst minimising the harm associated with goods vehicles.
2. Organisations with large fleets operating in the city will be supported in consolidating freight, in particular for last-mile deliveries.
3. Residents have access to collection points and collection lockers within 20 minutes walking, wheeling, or cycling.
4. Use of alternative, low-carbon transport modes for freight and last mile delivery is increased.
5. Shared freight and distribution services and infrastructure result in fewer delivery vehicles and warehouses.

Why do we need to consolidate freight?

The last two decades have seen the rise of online shopping and door-to-door delivery. Home deliveries rose exponentially during the pandemic, and more and more businesses are moving to new delivery models that prioritise convenience and speed for their customers.

While services are being made more efficient through the use of large distributions and fulfilment centres, this doesn't remove the need to move goods from there to the end consumer.

Freight trips and home deliveries are forecast to increase, which will further contribute towards congestion as well as vehicle emissions. As well as decarbonising light and heavy goods vehicles, we need to reduce journeys and vehicles numbers.

How does Sheffield compare to the rest of UK?

Due to its proximity to the M1, Sheffield is already home to a number of large distribution centres, from Amazon to Marks & Spencer, the majority of which are located to the north of the city. We also have several businesses utilising e-cargo bikes for smaller local deliveries.


















What does the future look like?

While Sheffield City Council has limited control over how goods move around our city, we still have a key role to play in influencing and facilitating the consolidation of freight.

Sheffield's people and businesses are the key actors in reimagining how goods move around our city and consolidating freight. By working with organisations and communities, and using our planning powers, we can find solutions that meet the needs of our local people.

OBJECTIVE D: Goods and services provided via a consolidated freight system to reduce vehicle journeys and road traffic.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Freight movements within the city meets the needs of local residents and businesses, whilst minimising the harm associated with goods vehicles.	Through the production of the Local Transport Plan 4 we will ensure that decarbonisation of freight is taken into consideration.	SCC/SYMCA	Summer 2024	  
Organisations with large fleets operating in the city will be supported in consolidating freight, in particular for last-mile deliveries.	Through the development of the refreshed transport strategy we will identify and work with organisations with larger fleets of LGVs operating in the city to identify barriers and solutions.	SCC/others	Summer 2024	  
Residents have access to collection points and collection lockers within 20 minutes walking, wheeling or cycling.	Through planning powers we will work to ensure that neighbourhoods have access to services to enable the commercial provision of collection lockers.	SCC/Others	March 2024	  
Use of alternative, low carbon transport modes for freight and last mile delivery is increased.	We will work with partners to review provision for heavy and light rail freight, to exploit opportunities for freight to be moved from road to rail, improve access to the rail network for manufacturers, and support improvements to passenger services.	Network Rail, SCR, SCC	Summer 2024	  
	We will continue to identify and communicate emerging alternative vehicles, including investigating the opportunity to provide “try before you buy” trials to local businesses and promote existing options including electric vans and e-cargo bikes.	SCC	Ongoing	  
Shared freight and distribution services and infrastructure result in fewer delivery vehicles and warehouses.	Through the transport strategy refresh and Local Transport Plan 4 we will investigate advantages and disadvantages of consolidation centres compared with likely trajectory for transition towards electric HGVs coming into the city and act accordingly.	SCC/SYMCA	Summer 2024	 

OBJECTIVE E: Decreased vehicle emissions and improved air quality through a shift to electric and zero-emission



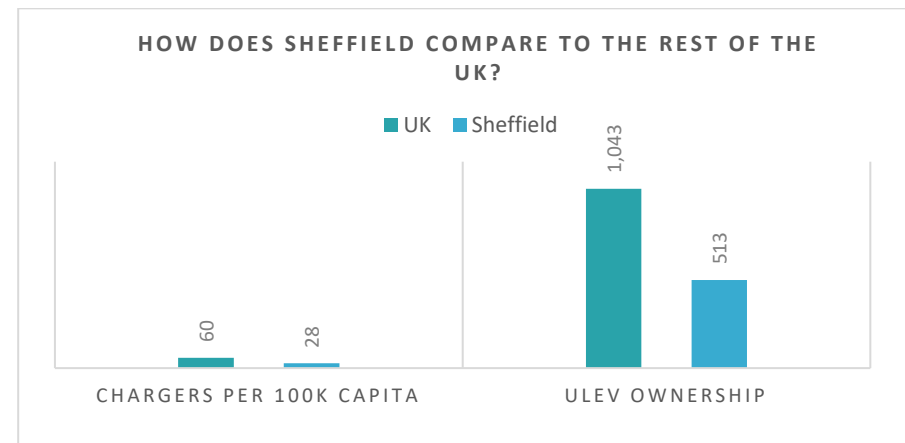
OUTCOMES

1. Regional and local policy and strategy supports delivery that maximises investment, collaboration, and regional network coverage.
2. The needs of people and communities that might find decarbonising vehicles more difficult are supported to enable improved travel choices.
3. Accelerated delivery of a catalysing number of chargers within a commercially sustainable electric vehicle charging network.
4. The economy in Sheffield grows to provide the services required to support decarbonising vehicles.
5. The city invests in the transition to zero-carbon public and taxi transport.

Why do we need to decarbonise our vehicles?

A shift to walking, wheeling, cycling, public transport is crucial to meeting Sheffield’s net zero target, and will in turn, reduce the number of vehicles on the roads. Where it is not possible for people to travel in these ways, shifting the remaining vehicles to low carbon alternatives will decarbonise those necessary journeys, as well as contribute to improved air quality and health in the city.
























How people and businesses will fuel or charge their vehicles in the longer-term future, and how the technology will develop, is still uncertain. A significant barrier to EV ownership in Sheffield is a lack of charging options for the many households across the city without access to their own off-street residential parking. Roll out of public electric vehicle charging infrastructure to support residents, businesses and visitors will help facilitate this switch to ultra-low emission or electric vehicles, supporting the economy, as well as a more inclusive transition for those without access to off street parking.




Electric Vehicle Charging Device Statistics, Gov.UK, Dec 2022

OBJECTIVE D: Decreased vehicle emissions and improved air quality through the uptake of electric and zero-emission vehicles.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Regional and local policy and strategy supports delivery that maximises investment, collaboration and regional network coverage and consistency.	We will develop a sub-regional Electric Vehicle Strategy and future development, as outlined in UKs 'Taking Charge - the Electrical Vehicle Infrastructure Strategy.	SYMCA	2023	 
	We will continue to review parking tariffs.	SCC	Annually	
The needs of people and communities that might find decarbonising vehicles more difficult are supported to enable improved travel choices.	We will ensure a just transition to accessible charging network by working with disability interest groups and lobby for further government guidance on provision if required.	SCC/Others	Ongoing	 
	We will keep innovative solutions such as cable channels and gulleys under review as the outcomes of trials are further understood, technology developed and practical issues explored You cannot currently install a cable gully or channel in the public highway	SCC	Summer 2024	
	We will design in booking systems into charging hubs to reduce anxiety about accessible charging bays being available for use.	SCC	March 2024	 
	We will continue to prioritise Motability EV/scooter charging requests in our council housing.	SCC	Ongoing	 
	We will explore options to facilitate ultra-low emission car club development in Sheffield.	SCC	March 2024	
	We will develop an online portal for residents, businesses, and visitors to suggest locations for new EV chargepoints to inform future planning and vision.	SCC	2023	
	Accelerated delivery of a catalysing number of chargers within a commercially sustainable electric vehicle charging network.	We will ensure that the council's existing network of chargers are maintained and operational.	SYMCA/SCC	Ongoing
We will continue to utilise publicly available toolkits to maximise shared knowledge and facilitate pilots of emerging and innovative technologies where feasible to understand application and scalability in Sheffield.		SCC	2023	 
We will access funding and private investment to roll out a programme of publicly available electric vehicle charging points, subject to approval of appropriate delivery model as necessary.		SCC	2023-24	
We will develop a detailed delivery plan for public charging infrastructure in Sheffield which delivers and builds on this routemap and the SYMCA strategy.		SCC	2024	 
The economy in Sheffield grows to provide the services required to support decarbonising vehicles.	We will undertake work to understand the city's need for electric vehicle servicing and support for residents and businesses in 'going electric'.	SCC	2024	
	We will monitor the development of hydrogen locally and nationally as an alternative to electric vehicles for buses, RCVs, HGVs and specialist plant, and explore the opportunity to develop a local hydrogen economy.	SCC	Ongoing	
The city offers greater modal choice over private vehicles and invests in the transition to zero-carbon public and private hire transport.	All newly licensed taxis and private hire vehicles will be required to be zero emission from 2027, and licensees incentivised through longer licenses for zero emission capable vehicles.	SCC	2023	 
	Electric bus charging facilities to be introduced to Pond Street Bus Station.	SYMCA	Late 2023	
	Sheffield Hallam University will deliver an all EV fleet by 2024 and work to support EV travel by staff and students through the actions laid out in its Travel Plan 2023-2030 (2024 and ongoing)	Sheffield Hallam	Ongoing	 



Chapter Three
Energy generation
and storage

GOAL: By 2030, Sheffield will have commenced its transition to a smart, decentralised, and decarbonised energy system with the capacity to meet changing energy demands in the future.



Key objectives

- A Heat supplied to buildings is decarbonised.
- B Small-scale renewable energy generation is increased.
- C Large-scale renewable energy generation is increased.

Energy in Sheffield

The Pathways to Decarbonisation report identified that approximately 151GWh of energy is generated from the city's biomass and energy from waste district heat networks. It estimated that 21GWh of renewable electricity is generated from the domestic, industrial, and commercial sectors. Combined, these meet approximately 2.5 per cent of the city's current energy needs.

This routemap sets out the short-term enabling measures that will be undertaken over the next 2-3 years.

What needs to change?

The Pathways to Decarbonisation report proposed a number of interventions to increase the amount of low carbon and renewable energy generation within Sheffield including:

- Increasing the district heat networks to decarbonise heat.
- Increasing renewable energy generation from small-scale systems, such as building mounted photovoltaics (PV's) and solar thermal panels.
- Increasing renewable energy generation from large-scale systems, such as solar PV farms and wind turbines.

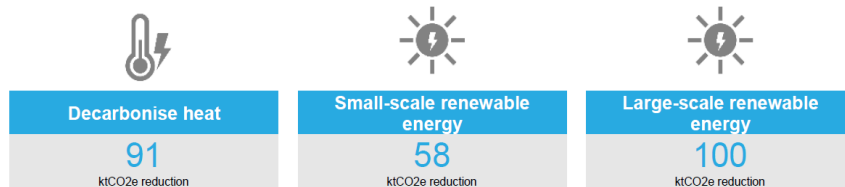
The impact of COVID

During the lockdown imposed in response to the Covid-19 pandemic, like many places, Sheffield saw a shift in energy consumption patterns. Domestic energy consumption increased as people were at home more. A reduction in non-domestic energy consumption was seen as some businesses had to close and many people started to work from home. This is also reflected in emissions data, particularly the industrial and commercial sector which reported larger energy related emissions reductions in 2020, but then increases in 2021 as the economy started to reopen and recover.

The rate of small-scale renewable energy deployment also reduced during this time, but 2022 installation levels were nearly back to pre-Covid levels.

What carbon reduction will this achieve?

The Pathways to Decarbonisation analysis shows that there is potential for a total reduction of 249kt/CO₂e through the decarbonisation of heat and increased renewable electricity generation. This would result in a nearly 10 per cent reduction of the city's baseline greenhouse gas emissions.



City-level Zero Carbon Mitigation pathway for Sheffield, 2020

In addition to the measures identified above, as a way in which to reduce emissions, the Pathways to Decarbonisation study also recognises the role that energy storage in the form of batteries for power and thermal stores for heat can play in achieving carbon reductions. Energy storage can be used to shift consumption to periods of time when the carbon intensity of energy production is lower to then be used by the end user when demand is high, and the carbon intensity of energy production is higher. For example, drawing power during the day when generation from solar is high to then use at peak times in the early evening when demand is high but solar generation is lower.

It is worth noting that the Pathways to Decarbonisation study recommended immediate delivery and as such the delivery timescales and net zero trajectories are now out of date. This routemap sets out

our statement of intent of the enabling measures that we need to action in the short term to deliver on our longer-term net zero objectives.

Benefits and barriers

Improvements to local energy infrastructure not only increase the scale and pace of the decarbonisation of our buildings and transport, but also bring about many other benefits such as:

- Creation of skilled green jobs and skills, leading to economic growth.
- Opportunities for income generation for both the private and public sector.
- Improved local air quality as we move away from fossil fuel heating systems to decarbonised systems.
- Reduced energy costs through on-site renewable generation.
- Localised smart and resilient energy systems that are less reliant on volatile external markets.
- Community owned infrastructure empowers local people in local decision making and increases awareness on climate and energy issues and encourages behaviour change.

However, there are a number of social, political, financial and technological barriers that need to be overcome:

- Current electricity grid constraints expand project delivery time for the deployment of new renewable generation.
- Significant investment is required for large infrastructure projects, with limited revenue funding available to develop the feasibility and commercialisation of some projects.

- Global influences have escalated costs and impacted supply chain availability, increasing delivery costs and timescales of project delivery.
- Political appetite to level of risk in developing and delivering large infrastructure projects.
- Insufficient number of skilled workforces required to deliver infrastructure projects.

Opportunities for growth and investment

Sheffield's energy transition presents many opportunities for growth and investment in the city. Sheffield's draft Local Plan sets the spatial strategy for the approach to urban renewal, prioritising development within the central city area with 20,000 new homes proposed. The draft Local Plan provides a sustainable planning framework that recognises and supports economic drivers, including job creation, in the city and identifies the investment in transport and infrastructure requirements. The Plan strengthens Sheffield's climate and net zero objectives with policies in place to support sustainability, Biodiversity Net Gain, blue and green infrastructure, and a cut off for planning applications that are not net zero by 2030.

The council is currently developing its guiding principles for its Growth Plan, which will aim to achieve prosperity for all. The transition to decarbonised energy will adhere to the principles of the Growth Plan and support growth and investment in the city.

Local Area Energy Plan

The development of a Local Area Energy Plan (LAEP) is a data driven process to undertake spatial and collaborative planning of local energy systems. The process involves the mapping of existing energy systems and scenario modelling for future heat, power, and transport needs, which together with stakeholder engagement identifies the least cost pathway to the energy transition needed to achieve net zero targets.

The council secured funding from the South Yorkshire Mayoral Combined Authority's (SYMCA) Project Feasibility Fund to commission a LAEP in 2024, this place-based approach will provide the detailed evidence base delivery plan for decarbonising Sheffield's energy, including future infrastructure needs and the move to smart local energy systems. The LAEP will provide a costed, spatial plan identifying the change needed to the local energy systems and built environment detailing what will be carried out and where along with timescales and allocating responsibilities to those responsible for delivery. It will be ensured that the LAEP adheres to and supports the growth principles of the city.

Through the process, we'll be engaging with stakeholders including utilities and infrastructure providers such as Northern Powergrid and Cadent, businesses, citizens, and community groups.

Working together

The transition to a local, decarbonised energy supply cannot be achieved by the council in isolation due to the limits of our control and influence. However, we'll work in partnership with private, public and the voluntary and community sector stakeholders to realise the level of ambition needed to achieve our net zero targets. As previously set out in the [10 Point Plan for climate action](#), we will need to work with our local Distribution Network Operator, Northern Powergrid, to ensure the electricity grid infrastructure is fit for the future and can support our net zero goals.

In November 2022, a city-wide climate event was held with a range of organisations. The event aimed to map out what action was already taking part and plan how we can work together to decarbonise the city and address the climate emergency. Participants identified the city's strong starting position with existing local businesses and organisations with expertise in renewable and low carbon energy, such as ITM Power, Magnomatics, Sheffield's District Energy Network operated by Veolia and E.ON's biomass Combined Heat and Power (CHP) plant. Working in partnership with the city's businesses and private sector partners will be crucial to achieve net zero and in ensuring we have the local skills and supply chain to enable the transition.

The voluntary and community sector also has a vital role to play. Sheffield and the wider South Yorkshire region has the lowest uptake of community owned renewables across the country. The council's 10 Point Plan for climate action set an objective to increase the amount of community owned renewables in the city to maximise the wider socio-economic opportunities community energy brings to an area.

Sheffield has a strong research and development base with both the University of Sheffield and Sheffield Hallam University in the city. Through its Energy Institute, the University of Sheffield is undertaking world leading research into sustainable aviation fuels, green energy solutions and electrical storage solutions and its recently opened Energy Innovation Centre provides industry partners access to world leading research facilities. Sheffield Hallam University's Centre for Regional Economic and Social Research undertakes much needed research to understand the socio-economic impacts of net zero transitions, which will enable us to ensure we decarbonise in a just and fair way.

During 2022, the universities in partnership with the South Yorkshire Mayoral Combined Authority (SYMCA), the four South Yorkshire local authorities and a range of private and voluntary sector organisations, created the South Yorkshire Sustainability Centre (SYSC). The SYSC connects innovative research with regional partners to develop and implement plans to reduce greenhouse gas emissions, whilst addressing inequalities and providing economic growth opportunities.

Whilst there has been a lot of good partnership working over the years, we recognise the need to formalise this and ensure there is robust city-wide climate governance and oversight. We will explore with partners how we can approach this and recommend that we work to set up an external group that can carry out this function.

By working together, and by designing change around the system's most important component – the people and businesses that use it, we can transition to a zero-carbon energy system and realise the wide-reaching benefits for the people of Sheffield.

Acting to ensure a fair and just transition.

The move to a local, clean, and smart energy system needs to be fair and affordable. We will do everything we can to ensure that future policy and programme development considers inequalities and have a positive impact on those already disadvantaged so that no one is left behind as we transition to a decarbonised energy system.

The energy transition needed to achieve net zero provides opportunities for local manufacturing of energy infrastructure, retraining of skilled workers as well as local training and skills development for the additional green infrastructure jobs.

This commitment is further supported by the recently adopted City Goals:

Goal 4: We adapt our economy and city to a changing climate, restore our relationship with nature and safeguard it for future generations, while ensuring a just transition for people of all abilities.

Goal 5: We foster and grow businesses, organisations and local initiatives that look after people, place, and planet, and lead the way on decarbonisation, re-use and the rewilding of nature.

Goal 6: We invest in our wellbeing and mental health, and work with nature to create better, more resilient places and communities that can better understand and act on the challenges they face.

Community energy

Community energy is the term used to define energy efficiency, renewable energy and energy supply projects that are delivered through a community-led model. Whilst these projects may be wholly

owned and operated by communities, community energy schemes may also be delivered in partnership with the public and private sector. Community energy schemes that empower communities to have shared responsibility for and collective ownership of energy generation enable the just transition as the focus is on the local energy needs and the communities directly benefit, in terms of reduced cost and income from their schemes.

Within their [Energy Strategy](#), SYMCA have committed to enabling community energy schemes by working with community groups to develop and support community schemes across South Yorkshire. Through the South Yorkshire Sustainability Centre, the University of Sheffield, Sheffield Hallam University and SYMCA are collaborating on research to inform regional energy policy making that SYMCA can implement to achieve this, with the aim to install 100kW per year of community energy by 2030 and double the number of community energy organisations across South Yorkshire by 2040.

Community Energy England is headquartered in Sheffield and there are some notable community energy organisations delivering community energy projects across the city. Sheffield Renewables is a community benefit society that is run by volunteers and owned by members. They fund, develop, own, and operate renewable energy schemes financed through investment from members of the community. Any surplus profit is either reinvested in future projects or benefit people through their Community Benefit Fund.

The Upper Don Valley Community Energy group was formed in 2012 to look at renewable energy potential. More recently this group has been raising awareness and knowledge of domestic energy efficiency measures through open homes visits and events. They're conducting domestic surveys, including the use of a thermal imaging camera to

identify heat loss. They're currently running a community warming project that gives households in fuel poverty free access to insulation materials and LED lightbulbs. They're looking at the development of local community share energy generation projects with local businesses and community buildings.

Sheffield Community Energy has recently been established, a group of like-minded individuals representing various groups including, Sheffield Renewables, Green New Deal UK, and the South Yorkshire Climate Alliance. Sheffield Community Energy aim to build knowledge and work with partners to stimulate the development of community owned energy in and around Sheffield.

OBJECTIVE A: Heat supplied to buildings is decarbonised.



OUTCOMES

1. Heat Network Zoning opportunities are maximised.
2. Existing heat networks in Sheffield are expanded and densified.
3. The needs of people and businesses are supported.
4. Sheffield has the skills and supply chain needed to deliver Heat Network Zones.
5. Innovative finance and ownership models increase the pace and scale of delivery.
6. A Local Area Energy Plan is adopted.

Why do we need to decarbonise heat supply?

The Pathways to Decarbonisation evidenced that approximately 6,300 GWh of energy used for heating buildings in Sheffield is supplied by fossil fuels (gas, coal, and oil), approximately 74 per cent of total

energy use. To achieve net zero as well as improve air quality, we need to move away from fossil fuels and increase the amount of heat from low carbon sources such as heat networks and heat pumps. Heat decarbonisation is lagging behind the progress of electricity decarbonisation and will impact the deliverability of net zero if concentrated effort is not made.

What does the future look like?

Our vision for the future is that Sheffield's homes and businesses have a secure, affordable, and low carbon source of heat. Through building fabric improvements, buildings have reduced their heat demand in the first instance. Heat networks served by low carbon and waste heat sources are a primary source of heat in the city with buildings connected to them where viable to do so. The Pathways to Decarbonisation study indicated that an additional 15,000 domestic properties and 8,000 industrial and commercial buildings could be connected to the existing heat networks, saving 91kt/CO₂e. Heat pumps are deployed at scale for those buildings unable to connect to low carbon heat networks and where electricity grid infrastructure allows.

The Pathways to Decarbonisation study estimated that 10 per cent of houses in the city will be suitable for the installation of solar thermal, with the potential to save a further 4 kt/CO₂e. These domestic opportunities are explored further in the Our Council routemap and will be considered in the emerging housing decarbonisation routemap.

The future role of hydrogen in heat decarbonisation is still unclear, with the Government recently terminating its hydrogen village pilots in the North East and North West of England due to local opposition and lack of local hydrogen supply. They are still assessing evidence from trials in Scotland and across Europe ahead of making a decision on

hydrogen for heating in 2026. As such, the role of hydrogen in heating isn't a feature of this routemap but we will keep up to date with learnings from trials elsewhere and Government policy as it develops.

However, the production of hydrogen for transport and processing is an area of development within Sheffield. The city has been home to ITM Power, a developer and manufacturer of electrolyzers, since 2001. The University of Sheffield have installed an electrolyser to produce hydrogen for its research into sustainable aviation fuels and EON are in receipt of Industrial Hydrogen Accelerator (IHA) funding from DESNZ to support the demonstration of end-to-end industrial fuel switching to hydrogen within the local steel industry. If deemed to be viable, EON will install an electrolyser at its Blackburn Meadows site in Sheffield, generating green hydrogen from its biomass CHP plant, which will be transported to local manufacturers for use in their industrial processes.

Heat networks

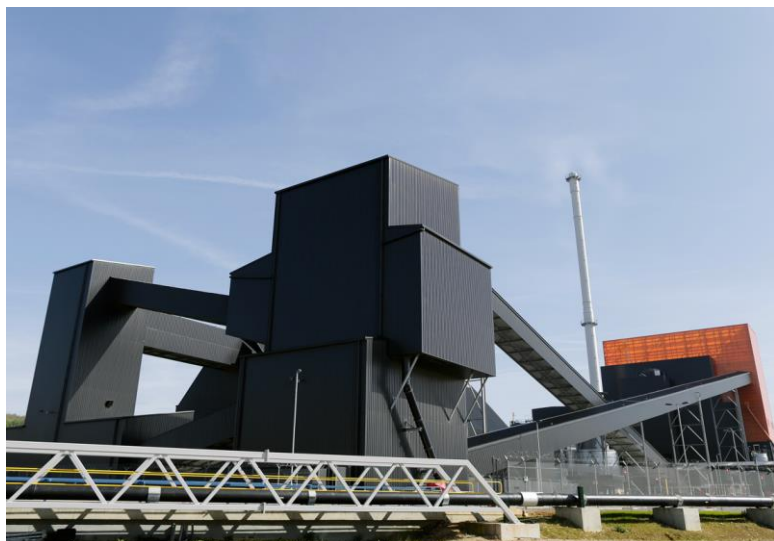
Sheffield is fortunate to have two existing heat networks in the city. The Veolia District Energy Network is powered from Sheffield's Energy Recovery Facility. The network has been in existence since the 1970's, serving the Park Hill apartments at the time. The network, as it is today, was conceived in the 1980's and has continually expanded since, coupled with the development of a state-of-the-art Energy Recovery Facility (ERF) which also generates electricity for the national grid. In 2006, a new ERF was opened to meet the waste needs of the city and to comply with stricter environmental legislation regarding emissions.



Veolia Energy Recovery Facility; Bernard Road, Sheffield.

The Veolia network is one of the UK's largest with over 45km of pipework serving around 130 buildings in and around the city centre. The ERF is able to produce over 20MW of electrical energy and has a peak capacity of 60MW available for the district heating network. Additional capacity is available via a number of auxiliary boiler houses, serving the 130 connected buildings. Annually, an average of 25 per cent of its 60MW capacity is currently supplied.

EON own and operate a biomass Combined Heat and Power (CHP) plant at Blackburn Meadows that has been operational since 2015. The CHP uses waste wood to generate 30MW of electricity and up to 25MW of thermal energy of which it currently supplies about 20 per cent of this capacity through its 8km of district heating network serving commercial connections in the Lower Don Valley area of Sheffield.



EON, Blackburn Meadows biomass CHP

Heat Network Zoning

Since the production of the Pathways to Decarbonisation study, the Government in their 2020 Energy White Paper set out its ambitions to introduce Heat Network Zoning legislation by 2025. Heat networks currently provide about 3 per cent of heat in the UK and to meet the UK's legally binding target to achieve net zero by 2050, the Climate Change Committee have said that this needs to increase to 20 per cent. Heat Network Zones are defined as geographical locations within which heat networks can provide the lowest cost solution to heat decarbonisation, and within which certain buildings will be mandated to connect to new or existing heat networks within a certain timeframe.

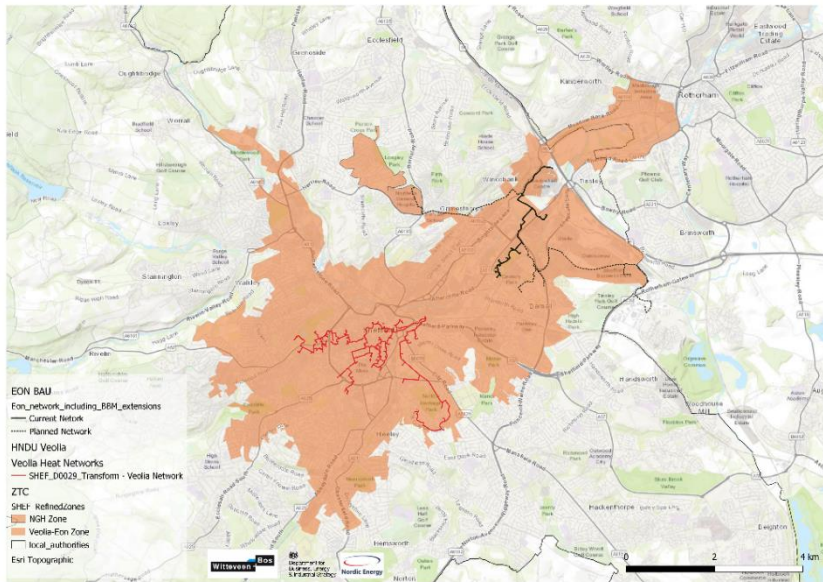
The Energy Act which received Royal Assent in October 2023 sets out the primary legislation for this and the development of secondary legislation will be consulted on throughout 2024. It is currently anticipated that buildings that will be required to connect will be new buildings that receive planning permission following the designation of a zone; existing communally heated buildings, including residential; multi-unit residential homes undergoing refurbishment; existing non-domestic buildings that meet a heat demand threshold (proposed >1000MWh per annum).

Sheffield was invited to participate in the Department for Energy and Net Zero's (DESNZ) Heat Network Zoning Pilot Programme during 2022 – 2023 along with 27 other towns and cities. This programme sought to develop and test the methodology to identify and designate Heat Network Zones. Subsequently, Sheffield was selected to be part of DESNZ's Advanced Zoning Programme (AZP), which aims to support the construction of new zonal scale heat networks as quickly as possible following the introduction of heat network zoning to accelerate the implementation of the legislation. In addition, the AZP aims to establish best practice in zone delivery and operation, offer project development support and promote market transformation to prepare the market and supply chain for the scale and pace of delivery ahead required when national heat network zoning policy comes into force in 2025.

In addition to the above mentioned DESNZ programme, the council, alongside EON and Veolia, secured revenue funding from DESNZ's Heat Network Delivery Unit (HNDU) to undertake techno-economic feasibility studies to assess early opportunities for heat network expansion as well as the integration of waste heat sources.

Advanced Zoning Programme

The zonal scale opportunity selected by DESNZ for the AZP encompasses the proposed zone around the existing networks of Veolia (serving the city centre) and EON (serving the Lower Don Valley and including a zone around the Northern General Hospital).





















































N.b. the outputs from the Heat Network Zoning Pilot Programme and Advanced Zoning Programme are still subject to change awaiting secondary legislation.

A detailed assessment of heat demand and potential heat sources has been undertaken. There are a total of 90,168 buildings within this area with a total heat demand of 1,930GWh. Under current proposed secondary legislation, only 2 per cent of those buildings will be required to connect to a heat network, but they make up nearly 60 per cent of the total heat demand in the proposed zone as seen in the following table:

	All buildings			Mandatable buildings		
	No. of buildings	Total demand (GWh/yr)	Average per connection (MWh/yr)	No. of buildings	Total demand (GWh/yr)	Average per connection (MWh/yr)
City centre network area	71,900	1,206	19	1,160	640	493
Lower Don Valley network area	18,268	724	60	712	502	1,507
TOTAL	90,168	1,930	26	1,872	1,142	667

The transition to a lower carbon source of heat from gas of this scale could saving in the region of 230kt/CO₂. The existing heat sources of the ERF serving the Veolia network area and the biomass CHP serving the EON network area will not provide sufficient heat for the scale of the proposed heat network zone. Under the proposed Heat Network Zoning legislation, heat sources will also be mandated to connect into new and existing heat networks, and this will be needed to meet increased future demands as well as contributing to heat decarbonisation. Through the AZP and HINDU studies, a number of waste heat sources, from manufacturing, data centres and waste wastewater treatment plants have been identified along with opportunities for thermal storage potential, providing a further 204MW capacity.

OBJECTIVE A: Heat supplied to buildings is decarbonised.

Outcome	Action	Who	When	Co-benefits
Heat Network Zoning opportunities are maximised.	We will actively participate in forthcoming DESNZ consultations on Heat Network Zoning legislation and encourage our businesses to do so.	SCC / Others	March 2025	 
	We will continue to keep updated on forthcoming legislation to understand and be prepared for legislation coming into effect and be in a position to act in the role of Zoning Coordinator should that fall to Local Authorities to deliver.	SCC	Dec 2025	 
	We will continue to participate in the DESNZ Heat Network Zoning Pilot Programme to understand the likely zones to be designated Heat Network Zones under new legislation.	DESNZ / SCC / Veolia / EON	March 2024	 
	We will continue to participate in the DESNZ Advanced Zoning Programme to enable the build out of a Heat Network Zone in 2025.	DESNZ / SCC / Veolia / EON	March 2026	 
Existing heat networks in Sheffield are expanded and densified.	We will complete and publish the Heat Network Delivery Unit (HNDU) funded techno-economic feasibility studies of both existing network areas and ascertain next steps and proceed to Detailed Project Development where applicable. This will include assessment of new connections, heat sources that will further decarbonise the heat supply, and thermal storage opportunities.	SCC / Veolia / EON	March 2025	 
	We will deliver a first phase of our planned network expansion, part funded by the Green Heat Network Fund.	EON	March 2026	   
	We will continue to work with stakeholders to connect additional buildings onto the District Energy Network.	Veolia	March 2026	  
	We will continue to trial and implement innovative solutions to further decarbonise our Energy Recovery Facility and District Energy Network, including our worlds-first trial of algae based carbon capture from an ERF and implementation of the first Artificial Intelligence (AI) district energy control system.	Veolia	March 2026	   
	We will continue to seek opportunities, develop business cases, and secure funding to connect our buildings (domestic and non-domestic) on to heat networks.	SCC	March 2026	  
	We will work collaboratively with other public sector bodies to explore opportunities to connect our estate to heat networks.	SCC	December 2025	  
The needs of people and businesses are supported.	We will engage with citizens and businesses on infrastructure schemes and develop a consultation and engagement programme once more detail on Heat Network Zoning legislation is known.	SCC / Veolia / EON	March 2026	   
	We will work to increase the amount of community energy projects in Sheffield and surrounding areas, which we'll kick start with a community energy engagement event.	Sheffield Community Energy	March 2024	   
Sheffield has the skills and supply chain needed to deliver Heat Network Zones.	We will work with partners and training providers to ensure the rights skills are in place for the delivery of Heat Network Zones.	SCC	March 2026	 
	We will identify and support local supply chain opportunities that support the delivery of heat network infrastructure.	SCC	March 2026	 
	We will participate in a 12-month mentoring programme delivered by DESNZ and the Danish Embassy to build heat network knowledge and capacity in Local Authorities.	SCC	September 2025	 
Innovative finance and ownership models increase the pace and scale of delivery.	We will develop business cases to assess financial and ownership models to include public, private and community ownership models for future heat decarbonisation schemes.	SCC	March 2026	 
A Local Area Energy Plan is adopted.	We will commission a Local Area Energy Plan (LAEP) that will assess the future electrification of heat requirements and inform a delivery plan across the city.	SCC	March 2026	  
	We will engage with people and businesses to ensure the energy transition is fit for purpose and meets local needs.	SCC	March 2026	   

OBJECTIVE B: Small-scale renewable energy generation and storage is increased.



OUTCOMES

1. Innovative finance and ownership models increase the pace and scale of delivery.
2. A Local Area Energy Plan is adopted.
3. Planning policy supports net zero transition.

Why do we need to increase the amount of small-scale renewable energy generation?

Whilst energy efficiency improvements have been made over recent years in lighting and appliances, efforts to decarbonise heat and transport through electrification will lead to increased electrical demand in the future. Not only will that put further constraints on the electricity grid, we also won't achieve net zero if the amount of renewable energy generation doesn't increase. Generating on-site renewable energy generation and storage potential will also ensure a secure, affordable supply of power to the building user.

According to the Department for Energy Security and Net Zero's renewable energy statistics, the installed capacity of solar PV in Sheffield has increased by 10 per cent between 2017 and 2022, compared to a national increase in the same period of 33 per cent.





















What does the future look like?

The Pathways to Decarbonisation study identified that there is potential to generate up to 518GWh of electricity by the installation of solar PV across 53,000 buildings in Sheffield by 2030. This would save in the region of 54ktCO₂e.

This would require rapid deployment of solar PV as figures at the end of 2022 indicate that there are currently 7,300 buildings in Sheffield with solar PV installed, generating 26 GWh of electricity. To enable this, small-scale renewable generation is delivered through various public, private and community funded models. Actions relating to the council's domestic and non-domestic estate and skills are included in the Our Council routemap.

OBJECTIVE B: Small-scale renewable energy generation and storage is increased.

 Social  Health  Economic  Biodiversity

Outcome	Action	Who	When	Co-benefits
Innovative finance and ownership models increase the pace and scale of delivery.	We will explore the options for procuring and promoting a collective purchasing offer for citizens and businesses to procure small-scale renewable energy for their homes and businesses.	SCC	March 2026	 
	We will identify and promote opportunities for increased community owned energy in the city.	SCC	March 2026	   
	We will work to increase the amount of community energy projects in Sheffield and surrounding areas, which we'll kick start with a community energy engagement event.	Sheffield Community Energy	March 2024	   
A Local Area Energy Plan is adopted.	We will commission a Local Area Energy Plan (LAEP) that will assess small-scale renewable energy generation capacity across the city.	SCC	March 2026	 
	We will engage with people and businesses to ensure the energy transition is fit for purpose and meets local needs.	SCC	March 2026	   
Planning policy supports net zero transition.	We will have an adopted Local Plan and will develop Supplementary Planning Guidance following its adoption.	SCC	2025	   

OBJECTIVE C: Large-scale renewable energy generation and storage is increased.



OUTCOMES

1. Innovative finance and ownership models increase the pace and scale of delivery.
2. Council land is used to generate local renewable energy.
3. A Local Area Energy Plan is adopted.
4. Planning policy supports net zero transition.
5. Sheffield has the skills and supply chain needed to deliver large-scale renewable energy.

Why do we need to increase the installed capacity of large-scale renewables?

The electricity grid needs to decarbonise in order to meet net zero targets and to increase capacity for future increases in demand from the electrification of transport and heat. The majority of large-scale renewable energy generation will be fed directly into the grid and therefore won't

directly contribute to the city's net zero target trajectory as grid decarbonisation has already been factored into the setting of the 2030 net zero target. However, all areas must play their part in creating opportunities for increased renewable energy generation.

What does the future look like?

The Pathways to Decarbonisation study highlighted that there is 31km² of land in Sheffield that may be suitable for ground mounted solar PV arrays, which could generate in the region of 750GWh of electricity annually, avoiding 98ktCO₂. In addition, the study highlighted that there may be the potential for wind generation of up to 16 GWh annually, saving 2ktCO₂.

There are currently no large-scale wind or ground mounted solar projects in Sheffield. As with small-scale renewable energy deployment, this will need to take place using a range of public, private and community finance models.































Where feasible, opportunities to private wire renewable generation to nearby buildings will be explored to ensure as much locally produced energy is used locally where possible. Failing that, alternative ways to supply generated energy through for example, Power Purchase Agreements will be explored.

Energy storage opportunities are maximised as a way in which to use renewable generated power at a time when it is most needed.

Large scale renewable energy projects are designed and delivered to protect sensitive sites and vulnerable species and to maximise biodiversity net gain opportunities.

OBJECTIVE C: Large-scale renewable energy generation and storage is increased.

 Social
  Health
  Economic
  Biodiversity

Outcome	Action	Who	When	Co-benefits
Innovative finance and ownership models increase the pace and scale of delivery.	We will identify and promote opportunities for increased community owned energy in the city.	SCC	March 2026	   
	We will work to increase the amount of community energy projects in Sheffield and surrounding areas, which we'll kick start with a community energy engagement event.	Sheffield Community Energy	March 2024	   
Council land is used to generate local renewable energy.	We will commission a renewable energy and electrical storage scoping study to identify opportunities on council owned land for large scale energy projects. (Our Council decarbonisation routemap).	SCC	June 2024	   
	We will undertake business cases to assess finance and operating models, including the identification and promotion of opportunities for community owned energy.	SCC	March 2026	   
A Local Area Energy Plan is adopted.	We will commission a Local Area Energy Plan (LAEP) that will assess large-scale renewable energy generation capacity and electrical storage opportunities across the city.	SCC	March 2026	 
	We will engage with people and businesses to ensure the energy transition is fit for purpose and meets local needs.	SCC	March 2026	   
Planning policy supports net zero transition.	We will have an adopted Local Plan.	SCC	2025	   
Sheffield has the skills and supply chain needed to deliver large-scale renewable energy.	We will work with partners and training providers to ensure the rights skills are in place for the delivery of large-scale renewable energy.	SCC	March 2026	 
	We will identify and support local supply chain opportunities that support the delivery of large-scale renewable energy.	SCC	March 2026	 



Chapter Four
Sheffield's Land

GOAL: By 2030, Sheffield's land is contributing to our net zero goal by reducing emissions, sequestering carbon and building climate resilience.



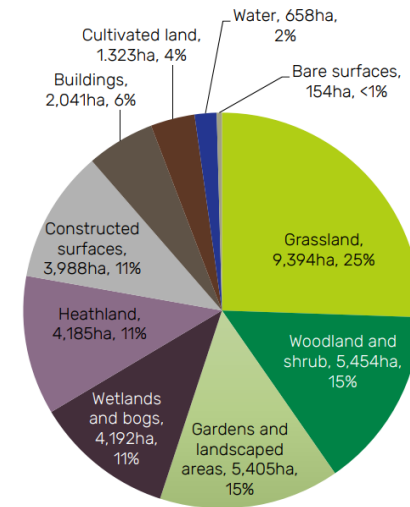
Key objectives

A The city's land is planned and managed to reduce greenhouse gas emissions.

B The city's land supports people and nature to be resilient to the changing climate.

Managing Sheffield's land and water to tackle the climate emergency

Sheffield is known as the Outdoor City, and for good reason: trees cover nearly one-sixth of the city (Fig. 1), and one third falls within the Peak District National Park. The city is thus well placed to scale up climate action to sequester and store carbon, whilst helping the city adapt to climate change and contributing to tackling the nature emergency.



Composition of habitats across Sheffield (Source: State of Nature in Sheffield, 2018)

Like all UK cities, land in Sheffield is in demand - for housing, transport, recreation, agriculture and much more. Land-use planning should aim to produce the most co-benefits and the least trade-offs, but that can be hard to realise. For example, planting non-native conifer forests can sequester large amounts of carbon quickly and provide sustainable fuel and local construction materials, but may be at the expense of using that land for development, food growing or nature recovery.

The city's land offers other benefits too, known as ecosystem services: helping the city adapt to climate change by reducing floods and urban heat islands; supporting nature recovery; improving health and wellbeing; and crucially for this chapter, it has a role to play in reducing emissions and storing carbon in nature.

We must therefore try to manage our land in a way that benefits all. That's why the City Goals and our Council Plan embed climate and

environmental action front and centre in our work, and we should aim to achieve sustainability for people, prosperity and the planet.

Sheffield City Council now has numerous plans and strategies that relate to land, so we will not duplicate these in this routemap:

- The **Our Council Decarbonisation Routemap, Green and Open Spaces Strategy** and the **Rural Estates Management Plan** covered how we will manage council-owned land to support our net zero target.
- The **Energy Decarbonisation Routemap** covered how we will use land to increase renewable energy in Sheffield.
- For **housing**, our vision will be set out in the Housing Strategy and a Residential Net Zero delivery plan.
- Our revised **Local Plan** will set out a new planning framework for the development and use of land in the city, including how this can support climate goals.
- The forthcoming **South Yorkshire Local Nature Recovery Strategy** will identify priority actions to restore nature. Climate mitigation, adaptation, and nature recovery ideally need to be considered together to maximise co-benefits and reduce trade-offs. In our **10 Point Plan for Climate Action**, one of our key principles is that actions should be nature focused.

This land routemap therefore focuses primarily on how the city manages its non-built land and water to address the climate crisis, setting out the delivery framework needed to reach our climate goals for Sheffield's land. It summarises where the city is with reducing emissions and adapting to climate change, highlights what needs to change, and identifies key priorities and actions to increase the scale and pace of change in the near-term. There are also actions we have not listed that individuals and organisations can take, including planting

trees in their own land, volunteering with environmental and land organisations, and using their voice to call for action. Actions in other routemaps can also help address land decarbonisation and resilience, for example through green/blue infrastructure alongside housing and business development.

Given the complexity of land ownership and management in the city, delivery is dependent on a range of stakeholders, not just the Council. We have worked with a range of stakeholders to co-develop this routemap chapter (Fig. 2). Whilst the Council is key in delivering action, other stakeholders and partnerships have been leading the way already in some areas - these include (but are not limited to) Moors for the Future, South Yorkshire Woodland Partnership, Sheffield Lakeland Landscape Partnership, Sheffield Street Tree Partnership and Connected by Water. The council's role can help convene, develop strategy, broker connections and only lead where necessary.



Stakeholders involved in co-developing this land routemap, July 2024

Where we are now

Reducing emissions

Land both sequesters (i.e. captures) and emits greenhouse gas emissions; the Intergovernmental Panel on Climate Change (IPCC) separates land emissions into 1) **land, land-use-change and forestry (LULUCF)** and 2) **agriculture**. During 2022, net LULUCF emissions were -7 kt CO₂e, meaning a total of 7 kt CO₂e was sequestered, primarily from forestry (-31.1 kt CO₂e) and grassland (including scrub) (-7.5 kt CO₂e); LULUCF emissions mostly came from peatland (19.6 kt CO₂e) and settlements (11.2 kt CO₂e).¹ For **agriculture**, net emissions were 37.4 kt CO₂e, with all sub-sectors emitting rather than sequestering, with most emissions coming from livestock (25.4 kt CO₂e). Total net emissions from land and agriculture were 30.4 kt CO₂e, which is approximately 1.3% of the city's emissions.

Climate change adaptation in Sheffield

Sheffield's geography and land use put it at risk from climate change; models show increased chances of more intense storms, increasing flooding risk. The city has experienced river flooding throughout its history, including significantly in June 2007 where, 1,200 homes and 1,000 businesses were flooded, over 10,000 homes left without power and many major infrastructure routes were cut off.² The Council's infrastructure repair bill was £22.5 million.³ Total losses to the UK due to the Sheffield 2007 flooding was estimated at £4 billion.⁴

Since the devastating floods of 2007, Sheffield has heavily invested in flood defence improvements; impacts from floods in 2019 and 2023 significantly reduced. However, we can never entirely eliminate the risk of flood, so developments in flood risk areas need to be resilient to the residual risk of flooding for their lifetime.

Alongside flooding, other climate risks include extreme heat, drought, storms, and wildfires. In the July 2022 heatwave, some schools and businesses closed and, alongside prolonged dry weather, contributed to wildfires, destroying homes. Climate models predict that Sheffield will have warmer, drier summers, meaning risks of drought, heatwaves and wildfires will increase unless adaptation actions are implemented.



Sustainable Urban Drainage at Manor Fields

¹ [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021](#)






²² [Sheffield Flood Risk Management Strategy.pdf](#)

³ [Sheffield Floods](#)

⁴ [2007 Floods report](#)

What needs to change?

The table below provides a summary of the key changes needed to reduce emissions and adapt to climate change on Sheffield's non-built land. There are many aspects that could address better land-use in the city, though here we focus on near-term, strategic actions that will provide the biggest impact in helping the city achieve our climate goals.

<p>The city's land is planned and managed to reduce emissions</p>	 <p>More, better managed trees, hedgerows, forestry and woodland</p>	 <p>Restored peatland</p>	 <p>Sustainable agriculture and land practices</p>
<p>The city's land supports people and nature to be resilient to the changing climate</p>	 <p>Nature-based and engineered solutions to build resilience to climate change</p>	 <p>Nature recovery supports climate resilience</p>	

Tables 1 and 2 below show more detail about the actions needed to achieve these objectives. There are also many drivers affecting how land is managed, including Government policies, market drivers, planning laws, and much more. Underpinning all of this is the funding required to dramatically upscale implementation. We discuss more about creating the conditions for success in the final section of this chapter and in Table 3.

What carbon reduction will this achieve?

Sheffield's 3.86 million trees store approximately 545kt CO₂, and our peatlands may store even more. However, to help reduce emissions, it is not just the maintained storage but also the *additional* sequestration that is important in getting to net zero. Creating this additionality means needing to plant even more trees that sequester and store carbon rapidly and sustainably managing the existing tree stock. The right trees must be planted in the right places, as planting trees on organic soils such as upland peat can increase emissions. Rapid land decarbonisation also requires restoring more peatland and shifting to lower-carbon agricultural and land management practices.

Together, there is potential for a total reduction of 21 kt CO₂, though this will require significant changes in land use – dramatically more than the actions that have taken place to date.



Table 1. OBJECTIVE A: Sheffield's land is planned and managed to reduce the city's emissions


















Outcome	High-priority, near-term actions to help achieve Objective A	Who	When	Co-benefits
More, better managed trees, hedgerows, forestry and woodland	Ensure refreshed Trees and Woodland Strategy and developing Local Nature Recovery Strategy include a focus on increasing and managing forests, woods, hedges, trees (including wet woodland) and scrub at a citywide level for improved sequestration	SCC	2025	
	Increase work and scale with partners and stakeholders to expand tree/hedgerow planting and managements, ensuring the right location, management and tree species are chosen to sequester and store carbon whilst supporting adaptation and nature recovery.	SY Woodland Partnership, SCC, SYMCA, landowners, farmers, Forestry England, Woodland Trust, foresters	Ongoing	
	Explore sustainable forestry options, including setting up public and private commercial forests, and using locally produced wood in construction, to maximise carbon sequestration and storage	SY Woodland Partnership, Forestry England, foresters, land managers	Ongoing	
	Consider the need and feasibility for setting up local tree nurseries to help fulfil resilient sapling demand for the area and wider region and, if appropriate, look to develop	SY Woodland Partnership, private sector or social enterprise	2026	
Restored peatland	Seek opportunities for increasing funding, collaboration and scaling up of peatland restoration programmes	Moors for the Future, Peak District National Park, landowners (inc. Yorkshire Water), estates, Environment Agency	Ongoing	
	Work towards ending the practice of moorland burning, where possible, and reduce wildfire risk to reduce carbon emissions and help restore peatland habitats	SCC, landowners, Moors for the Future Partnership, Peak District National Park, SRWT	Ongoing	
	Increase education, awareness and research about peatlands and other wetlands	Moors for the Future, Peak District National Park, universities	Ongoing	
Sustainable agriculture and land practices to support decarbonisation	Identify and work with farms and estates to improve agricultural and land management practices that shift to lower carbon practices. Support applying for funding/finance to enable this transition, particularly farms that produce significant emissions	Natural England, farming clusters, Peak District National Park, Defra, agricultural advisors	Ongoing	
	Aim to reduce development on greenbelt land, focusing developments on brownfield sites where possible	SCC, developers	Ongoing	

Table 2. OBJECTIVE B: The city's land supports people and nature to be resilient to the changing climate

Outcome	High-priority, near-term actions to help achieve Objective B	Who	When	Co-benefits
Nature-based and engineered solutions improve resilience to climate change	Mobilise efforts from related organisations to scale up action on land and water to deliver nature-based and engineered climate resilience solutions	Land managers, farmers, SCC, Environment Agency	2025-2026	
	Seek funding to scale up action on delivering relevant published/forthcoming strategies, policies, projects and plans that use nature-based and engineered solutions to reduce climate risks to land and the wider city	SCC, land managers, SRWT, RSC, DCRT, SYWP, S&P Trust	2025-2026	
	In urban areas, use green, blue and grey infrastructure to reduce heat islands, wildfire risk and flooding whilst providing other co-benefits such as reduced air pollution, improved biodiversity, health and wellbeing outcomes	SCC, developers, land managers	Ongoing	
Nature recovery supports climate resilience	Ensure Local Nature Recovery Strategy, Biodiversity Net Gain and other related nature policies, plans and strategies integrate actions to help nature adapt to climate change and support wider climate resilience	SYMCA, SCC, developers, land managers	Ongoing	
	Integrate climate resilience into natural land and water management planning and management e.g. ensure fire-prone natural habitats are adequately managed to reduce risk of wildfires; use climate-proofed tree species in tree planting (focusing on native and near native species to support biodiversity and the effects this will have on trees); slow the flow of rivers to reduce damaging flooding of natural habitats; improve biosecurity measures to reduce climate-related pests, pathogens and diseases of wild and agricultural species	All land managers	Ongoing	
Sustainable agriculture and land/water practices to increase resilience	Help farmers and land managers adapt to the changing climate by supporting climate-resilient actions and practices through funding, research, knowledge exchange, and training provision	Defra, Natural England, agricultural advisors, AHDB, UKRI	Ongoing	
	Ensure large-scale land/water asset managers (e.g. water companies and highways agencies) support, undertake and fund sustainable land/water management practices, such as catchment-wide approaches to reduce flooding, drought and wildfire risks	Environment Agency, Ofwat, land managers	Ongoing	
	Encourage large land/water asset managers to consider creating climate risk assessments and associated climate risk management plans to determine and mitigate climate risks to organisational delivery	Land/water asset managers	Ongoing	

Creating conditions for success

To create the foundations for a successful transition to climate-friendly land-use practices, there are numerous enabling factors that will support delivery. These include:

- **Leadership and governance:** international, national, regional and local leadership and governance affect local land management. For instance, the proposed Defra Land Use Framework aims to ensure England meets its national net zero and biodiversity targets, whilst supporting farmers to adapt to a changing climate. The Environmental Land Management Scheme (ELMS) will significantly influence how land is managed, whilst locally the Sheffield Plan and Local Nature Recovery Strategy provide key opportunities for local leadership.
- **Data, research and reporting:** to understand where action is needed, we first need to gather baseline data, know how and where interventions will work, then track changes over time. The UK Greenhouse Gas Inventory tracks GHG emissions from land and agriculture annually, but data are not disaggregated sufficiently to fully understand local conditions and projects. Apart from flooding data, we also lack detailed climate adaptation indicators. Defra's Natural Capital and Ecosystem Assessment programme aims to help fill this gap, but it is not clear how localised data will be.
- **Engagement, inclusion and a just transition:** as most of Sheffield's land is not owned or managed by the council,







































delivery of climate action depends on landowners, managers and tenant farmers, including working in partnership. We must work towards a just transition, leaving no one behind in the quest to reach net zero. The farming community is an aging population, with upland farmers often living at the poverty line, whilst people living with multiple disadvantages are particularly likely to be at risk from the changing climate. Improving blue/green infrastructure can create socioeconomic challenges in deprived areas. Great care will be needed to bring everyone with us on this climate journey.




- **Jobs and skills:** transitioning to more climate-friendly land-use practices requires new skills. For instance, livestock farmers may take up lower-carbon agricultural practices and forestry plantations, but these require very different skills to animal husbandry. Restoring peatland and increasing tree plantations provide opportunities for new jobs to be created, such as tree nursery workers.
- **Funding and finance:** land-focused climate action requires sufficient funding and finance to incentivise shifts in practices. Current levels of Government funding are inadequate for the scale of change required, so rapid, high-quality investment must also be sought from the private sector and elsewhere.

Table 3 lists key actions that need to happen in the next few years to encourage large-scale shifts to more climate-friendly land practices in Sheffield.

Table 3. Creating the conditions for success

 Social
  Health
  Economic
  Biodiversity
  Adaptation

Priority area	High-priority near-term actions to help achieve climate goals of routemap	Who	When	Co-benefits
Leadership and governance	Publish the UK Government Land-Use Framework to provide a clear path for how landowners and managers can transition to climate- and nature-friendly land-use practices. This framework should be supported with adequate funding and finance to deliver the aims of the policy	Defra	Ongoing	 
	Ensure revisions to Agriculture Act and Environment Act encourage and enable land managers to fund and deliver climate-friendly land-use practices	Defra	Ongoing	
	Influence national and regional policy to ensure there are sufficient policies and funding in place to rapidly increase land-based climate action in Sheffield	SCC elected members, lobbyists	Ongoing	
	Review existing strategies and ensure that developing strategies and plans (including the Sheffield Plan and Local Nature recovery Strategy) include actions required to reduce emissions and adapt to the changing climate	SCC	2024-2026	
	Produce supplementary planning guidance covering 1) Climate Change and Design, 2) Planning for Biodiversity (covering Biodiversity Net Gain and the Local Nature Recovery Network), and 3) Sustainable Drainage Systems	SCC	Autumn 2026	 
Data, research and reporting	Publish regional and localised Natural Capital and Ecosystem Assessment data	Defra	By 2026	 
	Utilise South Yorkshire natural capital mapping data in future work	All related stakeholders	Ongoing	 
	Collect ongoing local data to establish baselines and intervention effectiveness to ensure evidence-based delivery	SCC, land managers, universities	Ongoing	 
Engagement, inclusion and a just transition	Ensure investment and action works towards a just transition to maximise social, environmental and economic benefits for all of Sheffield	All relevant stakeholders	Ongoing	    
	Encourage collaboration and increased ability to scale-up across the region by coordinated partnerships and collaborations, for example Connected by Water, Moors for the Future, and Sheffield Woodland Partnership	All relevant stakeholders	Ongoing	 
	Encourage and enable leadership by and involvement of as wide a range of people and organisations as possible to support our land's ability to tackle the climate emergency through outreach and engagement, particularly with under-served communities	All relevant stakeholders	Ongoing	    
Jobs and skills	Increase green jobs and skills to ensure sufficiently trained workforce can undertake rapid land-based climate action, for example through apprenticeship schemes	UK Government, SCC, colleges, employers, SYWP	2025-2026	 
	Invest in farmer and land manager training to ensure they have the green skills for the future to deliver climate and nature actions	Defra, Natural England, Peak District National Park, farm clusters	2025-2026	 
Funding and finance	Rapidly upscale Government funding for land-based climate mitigation and adaptation actions	Defra, DESNZ, HMT	2025-2026	   
	Build on existing funding/finance models that crowd-in private investment and work with existing climate finance organisations to dramatically scale up finance/funding of land-based climate projects	Investors, funders, Government	2025-2026	 
	Explore innovative finance mechanisms including different carbon and nature credit schemes, blended finance, green bonds, and other investments, and pilot or implement suitable new approaches	SCC, landowners, investors, Government	2025-2026	  

	Consider utilising the Community Infrastructure Levy to fund green/blue infrastructure that supports climate-friendly land-use practices	SCC	2025-2026	
	Link potential projects/organisations with funding opportunities and support e.g. through the Net Zero Hub strategic pipeline	SYMCA/SCC	2024-2025	
	Ensure social value is incorporated into procurement in line with the Social Value Act via a new Ethical Procurement Policy to create fairer opportunities for local land (and other) businesses and suppliers to deliver local contracts, including by awarding contracts based on 'most advantageous tender' (including price and quality), securing improvement to the lives of people in Sheffield and the environment	SCC	2024-25	

Glossary

Adaptation	Actions to reduce the negative effects of climate change that will build climate resilience
Advanced Zoning Programme (AZP)	Department for Energy Security and Net Zero programme to accelerate heat network zoning and help transform the market ready for legislation coming into effect.
Active travel	Carrying out journeys by walking, including with the use of mobility aids; wheeling (see wheeling below) and cycling.
Afforestation	The planting of new trees or sowing of seeds where there were previously no trees to create new forest or woodland.
AHDB	Agriculture and Horticulture Development Board
Amenity grassland	Open grassy areas (parks, playing fields, green space) used by the public.
Biodiversity Net Gain	A strategy to ensure land is developed that contributes to the recovery of nature and that habitats are in a better state than pre-development.
Building Energy Management Systems (BEMS)	A system for monitoring and controlling building services, such as heating, ventilation, air conditioning and lighting, within a building. BEMs help to identify energy wastage and improve the energy performance on a building.
Building fabric	The structural and material elements that make up a building, including the walls, roof, floors, window and doors. Improvements to building fabric can include double and triple glazing, loft, wall (external, interior and cavity) and floor insulation.
Carbon sequestration	The process of capturing and storing carbon dioxide (CO ₂) such as in trees and peat bogs.
Carbon stewardship	Activities undertaken by land holders and managers to protect or enhance the carbon sequestration potential of a forest or coastal/marine habitat.
CIA	Climate Impact Assessment.
Co-benefits	Wider benefits that will be realised from an action as well as it reducing impact on the climate, for example wellbeing, health, or economic benefits.
Combined Heat and Power (CHP)	The use of a heat engine or power station to generate electricity and useful heat at the same time.
Community energy	Energy reduction and generation projects that are managed, delivered, and owned by the community, with the benefits of these projects going back to the community.
DCRT	Don Catchment River Trust
Decarbonised/decarbonising	The reduction of carbon dioxide and greenhouse gases from processes and operations. For example, decarbonising the electricity grid through the generation of more renewable energy and reduction in fossil fuel-based power generation.

DESNZ	The UK Department for Energy Security and Net Zero.
Developer	A person or a company that buys land and builds houses, offices, shops, or factories on it, or buys existing buildings and makes them more modern
Distribution Network Operator (DNO)	Licensed companies that own and operate the electricity distribution network.
Domestic estate/sector	Our housing stock, including all houses, flats, maisonettes etc.
ECO Flex	The ECO Flex Grants Scheme helps those householders who are not in receipt of one of the qualifying benefits but who are living on a low income and are vulnerable to the effects of living in a cold home.
Electrolyser	A device that uses electricity to split water molecules into hydrogen and oxygen.
Energy hierarchy	A process for prioritising policies and actions to ensure energy demand is reduced in the first instance through energy conservation, then energy efficiency measures, prior to investing in renewable energy generation.
Energy Performance Contracts (EPC)	A contractual finance arrangement where whole building approaches to decarbonisation are funded through guaranteed energy savings.
Energy Recovery Facility (ERF)	The generation of energy in the form of electricity, heat, or both from the burning of residual waste.
EPC standards A-F	Energy Performance Certificates are legally required to provide information on the energy efficiency of a domestic or non-domestic property and are required when a building is built, sold, or leased out. EPCs provide an energy performance rating from A-F with A being the most efficient.
EV	Electric vehicle.
Fossil fuels	Materials that contain hydrocarbons formed from decayed plants and animals such as coal, oil, natural gas. When burned for energy generation, they produce CO ₂ .
Green and blue infrastructure	Green infrastructure relates to green landscapes such as woodlands, grasslands, and hedgerows. Blue infrastructure relates to water infrastructure such as ponds, lakes, and rivers.
Green Heat Network Fund	Capital grant for the development of new and existing low and zero carbon heat networks.
Grey (infrastructure)	Built environment is sometimes referred to as grey, with grey infrastructure referring to traditional tarmac highways and concrete
Grid/grid decarbonisation	The reduction of fossil fuel-based power generation and increase in renewable energy generated power in the national electricity grid will result in a lower carbon intensity of the grid.
GWh	Gigawatt hour – a unit of energy equal to one million kilowatt hours.
H2	Hydrogen.
Heat network	Also referred to as a district heating network, this is the supply of heat (and cooling) from a central source to consumers via a network of underground pipes.

Heat Network Delivery Unit (HNDU)	The Government's Heat Network Decarbonisation Unit established to provide the public sector with capacity to develop heat networks.
Heat Network Zoning legislation	Legislation set in the Energy Act 2023 that will mandate certain buildings to connect to new and existing heat networks and mandate heat suppliers to connect into heat networks. Secondary legislation is due to be in place by 2025.
HMT	His Majesty's Treasury
Landlord	A landlord who leases land to another individual or organisation
Land manager	Land managers are employed by owners of larger estates to manage their land use and, generally, ensure the estate generates a profit
Landowner	An individual or organisation who owns land, including individuals, businesses (including agricultural businesses), public sector organisations.
Land Use Land Use Change and Forestry (LULUCF)	Refers to the emissions and removal of greenhouse gases resulting from land use, such as commercial uses, land use change and forestry activities.
Local Area Energy Plan (LAEP)	A data drive, place-based approach to identify the lowest cost route to decarbonisation.
Local Nature Recovery Strategy (LNRS)	A Government-mandated regional plan that sets the priorities for a region on how to protect and restore habitats and species
Local Plan	A statutory spatial vision and framework for future development prepared by the local planning authority in consultation with its community.
Mixed mode journeys	Journeys taken using a variety of forms of transport, for example cycling or driving to catch a train or tram.
Modal shift	A move from one form of transport to another. In this context, to enable the decarbonisation of the way we travel, a move away from the use of private car use to public transport and active travel is required.
Motability	Motability is a charity in the United Kingdom. It oversees Motability Operations Ltd, which runs the Motability Scheme intended to enable disabled people, their families, and their carers to lease a new car, scooter or powered wheelchair, using their disability benefit.
MWh	Megawatt hour – a unit of energy equal to one thousand kilowatt hours.
Nature-based solutions (NbS)	Using nature to tackle societal challenges such as flooding and heat e.g. by managing peatlands so that they absorb more rainwater to prevent flooding, or strategic use of tree planting and woodland management to reduce flooding or provide shade
Nature recovery	Restoring nature, including species, habitats and ecosystems
Net zero	The reduction of greenhouse gases to as close to zero as possible with any remaining emissions sequestered from the atmosphere. Sheffield has taken net zero to mean a 95% reduction in emissions.
Non-domestic estate	The Council's operational estate (excluding its housing) such as schools, depots, offices, and libraries.

Offset/offsetting	Where net zero emissions cannot be achieved by energy reductions and efficiencies, residual emissions will look to be compensated by investing in other projects that sequester carbon or are projects that reduce carbon outside of the city boundary.
Pathways to Decarbonisation reports	Reports commissioned by the Council and undertaken by ARUP and Ricardo during 2019/20. They set out the baseline position of the city and Council's emissions and identify actions required to meet net zero by 2030.
Photovoltaic (PV)	A solar cell that converts sunlight into electricity.
Power Purchase Agreement (PPA)	A long-term agreement between an energy generator and customer for the purchase of energy.
Private wiring	Localised electricity grid that distributes from the generation source direct to an end-user.
PV	Photovoltaic – solar panels that convert sunlight into electricity.
RSC	River Stewardship Company
Salix Recycling Fund	Salix are a non-departmental public body that administer energy efficiency and decarbonisation funding on behalf of the Department for Energy Strategy and Net Zero. They previously administered a recycling fund that provided capital that was matched by the partner public body to fund energy efficiency schemes on an invest to save basis with energy savings continuing to be ring fenced for further energy efficiency improvements across the public sector estate.
SCC	Sheffield City Council
Scope 1 emissions	A way of categorising different kinds of greenhouse gas emissions as set by the Greenhouse Gas Protocol and now widely used across all reporting platforms. Scope 1 refers to emissions that an organisation makes directly and has full control over. This covers boilers and fleet.
Scope 2 emissions	Scope 2 refers to emissions that an organisation makes indirectly such as the energy it uses to heat and power its buildings. These covers purchased electricity and purchased heat from a heat network.
Scope 3 emissions	Scope 3 refers to emissions that an organisation has little control over and includes emissions from purchased goods and services, so these emissions occur elsewhere in the supply chain. Ensuring robust and sustainable procurement policies can address these emissions. Emissions from grey fleet (employee travel using their own vehicle for business mileage) are also included in these emissions.
Sequestration/sequester carbon	Capturing carbon from the atmosphere, such as by photosynthesis
S&P Trust	Sheaf and Porter River Trust
Smart Local Energy Systems	Place based energy assets working together through smart metering and monitoring to distribute energy (physically or virtually) from generation to point of use.

Sustainable Urban Drainage Systems (SuDS)	Designed to manage stormwater locally (as close its source as possible), to mimic natural drainage and encourage its infiltration, attenuation and passive treatment. Sometimes referred to as Sustainable Urban Drainage and often using natural resources such as ponds
SRWT	Sheffield and Rotherham Wildlife Trust
SYMCA	South Yorkshire Mayoral Combined Authority.
SYSC	South Yorkshire Sustainability Centre – led by the University of Sheffield through a partnership that includes the South Yorkshire Mayoral Combined Authority, the four local authorities and Sheffield Hallam University.
SYWP	South Yorkshire Woodland Partnership
Tenant	An individual or organisation who leases land from a land owner. Land leases are often long leases and
Trimming and dimming	Trimming - reducing the operating hours of a streetlight. Dimming - reducing lighting levels at low traffic densities.
Wheeling	Includes wheeled forms of travel for some disabled people, such as manual self- or assistant-propelled wheelchairs, including wheelchairs with power attachments or all-terrain attachments, wheeled walking aids, powered wheelchairs, mobility scooters (three and four-wheeled). Can also include manual and electric scooters for non-disabled people.
UKRI	UK Research and Innovation