

# SOLIHULL METROPOLITAN BOROUGH COUNCIL

Net Zero Action Plan Report

November 2021

#NetZeroSolihull 



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# BACKGROUND & CONTEXT

# 1. BACKGROUND & CONTEXT

## INTRODUCTION

### Action Plan Overview & Scope

This report was commissioned by Solihull Metropolitan Borough Council (SMBC), who aspire to meet a borough-wide net zero target of 2041 in-line with the West Midlands Combined Authority (WMCA) ambition. As an organisation, the Council itself has a 2030 net zero ambition.

The Net Zero Action Plan Report is an exploration of the actions Solihull will need to consider to meet its ambition of a net zero borough. The Council will use this work to help inform the nature and extent of action and the report is **a key element in planning the borough's response to the Climate Emergency**.

- Chapter 1 of this report provides the background to the action plan and explores the purpose of the document.
- Chapter 2 dives into each key sector, outlining:
  - Progress to date on reducing emissions,
  - Key national, regional and local policies relevant to the area,
  - The goals to support the net zero ambition, and
  - Specific actions to deliver on these goals.
- Chapter 3 provides the conclusions and recommendations for next steps in taking the Net Zero Action Plan forward.
- Chapter 4 provides a technical appendix containing emissions modelling assumptions for each intervention to understand the scale of action needed as well as references for carbon savings estimates.

### A Collaborative Approach

**We recognise that the Council can't achieve the borough's target by themselves.** The Net Zero Action Plan seeks to help the Council understand which stakeholders in the borough will need to be engaged and to help focus resourcing and funding towards actions with the greatest positive impact. Where stakeholders across society can contribute; it stands to make the plan more relevant, more deliverable and more likely to unlock the various social & economic co-benefits that climate change mitigation can offer.

### Action Plan Objectives

1. Identify actions SMBC can take to reduce greenhouse gas emissions across the borough;
2. Estimate the carbon savings, costs or payback and co-benefits associated with implementing the actions;
3. Explore a method of prioritising actions needed to enable the net zero transition.

**This will help Solihull Metropolitan Borough Council to:**

- Develop a priority list of actions to take forward;
- Understand the different stakeholders in the borough who will need to be engaged in action and their role;
- Focus resource and funding towards actions with the greatest positive impact.

# 1. BACKGROUND & CONTEXT

## A CALL TO ACTION

### A Growing Consensus

It is now widely agreed that climate change poses an unprecedented threat, and that action is required across all aspects of society. The recognition of urgency is no longer just a message from environmental groups, but is now being reiterated across a variety of sectors:

- UK Local Authorities: The majority of Local Authorities in the UK have now declared a climate emergency, including almost all local authorities within the WMCA. Climate Emergency Declarations **were first issued following the IPCC's special report**, published in October 2018.
- UK Climate Strike action: In June 2019, the WMCA Board declared a climate emergency inspired by the Youth Strike 4 Climate movement. Over 3,000 people attended a climate strike in Birmingham last year.
- Global Businesses: Nearly 800 companies globally are setting Science Based Targets. As part of the lead up to **COP26**, the campaign 'Race to Zero' was launched across businesses, cities and nations.

### Dangerous Impacts

The UK Climate Projections Report is the latest generation of national climate projections in the UK which helps to predict the changes that will occur with future climate change. The main trends from the projections are increasing warmer, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extreme weather events.

Communities in Solihull are already seeing more extremes in weather events, with flooding being a particular issue. The Solihull Lodge area has been particularly prone to flooding for many years, with the most recent deluge in February 2020 following Storm Dennis.

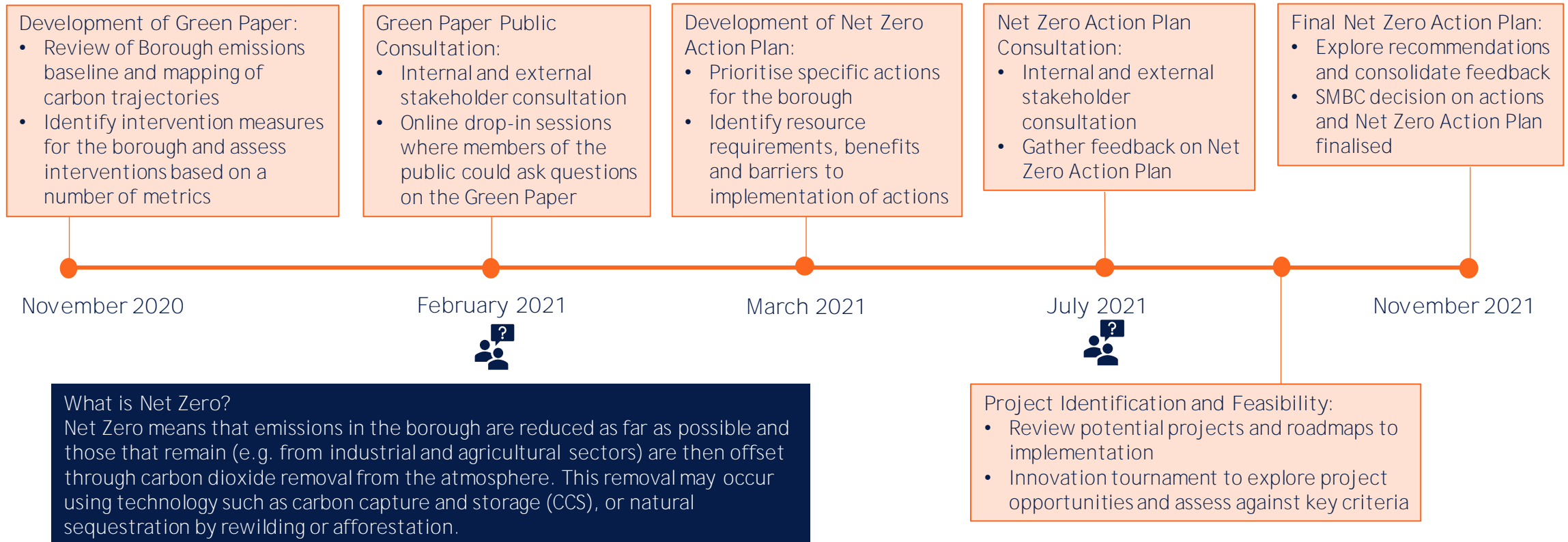
In the 2018 Emissions Gap Report, the UN identified local action as a key driver for change: *"...non-state and subnational action plays an important role in delivering national pledges. Emission reduction potential from non-state and subnational action could ultimately be significant, allowing countries to raise ambition."*



# 1. BACKGROUND & CONTEXT

## OVERVIEW OF NET ZERO ACTION PLAN PROCESS

The Council's corporate priorities on low carbon growth and the development of the annual Climate Change Prospectus (formerly Green Prospectus) has enabled the progression of Solihull's net zero agenda to date. The Net Zero Action Plan was preceded by several other workstreams as part of the wider program of work detailed below. This diagram shows the wider programme of work along with current expected timescales for each stage (please note timings may change):



# 1. BACKGROUND & CONTEXT

## TAKING ON FEEDBACK

### Solihull Climate Change Commission

Solihull Climate Change Commission first met in early 2021 to provide independent, cross-sector, cross-party advice to the Council and Cabinet Member for Climate Change Planning and Housing. The Commission acts as a **‘critical friend’ to the Cabinet Member for Climate Change, Planning and Housing** and makes recommendations to how the Council can further the aims of its Climate Change Prospectus and Climate Emergency Statement of Intent.

The Climate Change Commission conducted a review of the Green Paper and provided formal feedback. The comments received informed the Net Zero Action Plan including:

- The importance of considering actions relating to the full life-cycle of **emissions outside of Solihull’s boundaries, also known as ‘consumption’** emissions.
- Considering actions to tackle air travel emissions.
- **The importance of the Council’s opportunity to lead by example.**
- The role of digitisation in achieving the net zero ambition.
- The importance of defining other stakeholders and their roles.
- Feedback on tailoring the natural environment goals to ensure key agricultural stakeholders are supported to deliver actions that support carbon reduction.
- The significant role of behaviour change in delivering action.

### Green Paper Public Consultation Responses

An online public consultation was held to gather opinions from residents and businesses across Solihull on the actions the borough needs to consider to reach its net zero ambition. The responses from the public consultation highlighted key opportunities for taking action, some of which have been highlighted below:

#### Buildings



- The importance of education and communication to encourage individuals to monitor and manage energy use in buildings
- Ensuring the Local Plan Review considers both carbon reduction and adaptation due to climate change

#### Transport



- The importance of public and active travel infrastructure to encourage low-carbon travel

#### Waste



- The importance of food waste collections to support increased recycling
- More awareness raising and communication on waste and its environmental impacts

#### Natural Environments



- Encouraging local produce purchasing
- **Supporting “friends of” parks groups for communities to get** local residents involved in green spaces

#### Energy Supply



- The importance of a holistic energy system and balancing increased electrification of vehicles with green energy

# 1. BACKGROUND & CONTEXT

## TAKING ON FEEDBACK

### Further dialogue

To ensure continued engagement with key borough stakeholders, the Council carried out a further consultation on the Net Zero Action Plan.

This included:

- **Raising awareness of the Council's efforts to decarbonise the borough** and defining a timescale for doing so.
- Working with key stakeholders and partners to identify areas of collaboration, aligning communications and thereby strengthening and amplifying the message.
- Working with elected Members to ensure they had a sense of buy in to the strategy.
- Monitoring media coverage and key stakeholder communications to assess progress and capture relevant information.
- Communicating through a variety of channels including emails, calls, news releases, social media, Stay Connected bulletin, the Net Zero Solihull microsite, webinars and roadshow events.

The COVID-19 pandemic prevented face to face consultation on the Net Zero Green Paper and the Net Zero Action Plan.

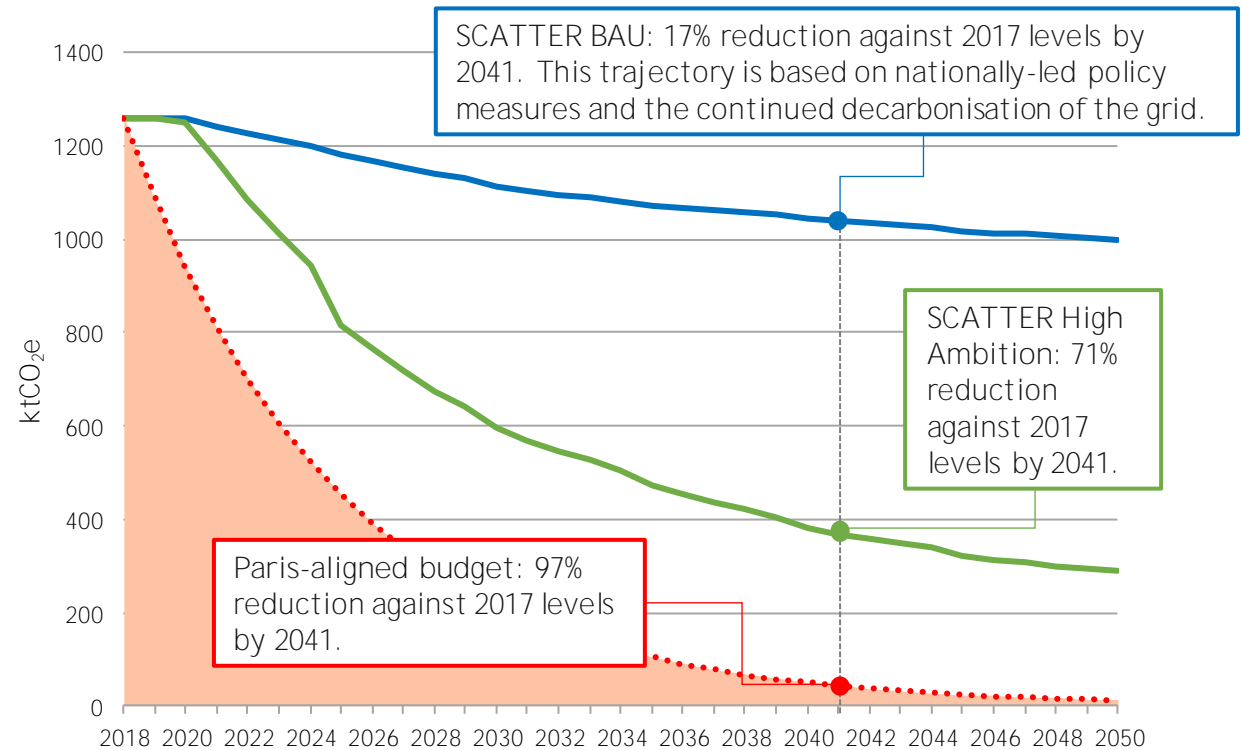


Figure 1. 1: Future emissions pathways (2018-2050) as modelled by the SCATTER tool compared against a pathway representative of the Tyndall Centre's recommended annual reduction rate.



# 1. BACKGROUND & CONTEXT

## INNOVATION TOURNAMENT

As part of the Net Zero Action Plan development, two Innovation Tournaments were held online to gather ideas for projects that could be implemented in Solihull to accelerate the shift to net zero. The sessions were held to focus on the following topics:

1. Natural Environments, Waste and Industry
2. Buildings, Energy and Transport

The workshop goals were to identify areas of innovation that can help go beyond the high ambition pathway to **meets Solihull's net zero ambition**. Project ideas were assessed across 3 rounds:

1. Location
2. Value for money
3. Other barriers

Through each round, the most feasible projects were identified and moved onto the next round, while the rest remained on a long list for later consideration. The project actions that passed feasibility in all 3 rounds have been highlighted here as key actions, while those that passed at least one round have been listed as other action opportunities. These ideas will be developed into a suite of projects that Solihull Council can prioritise and work with key stakeholders to seek investment in.

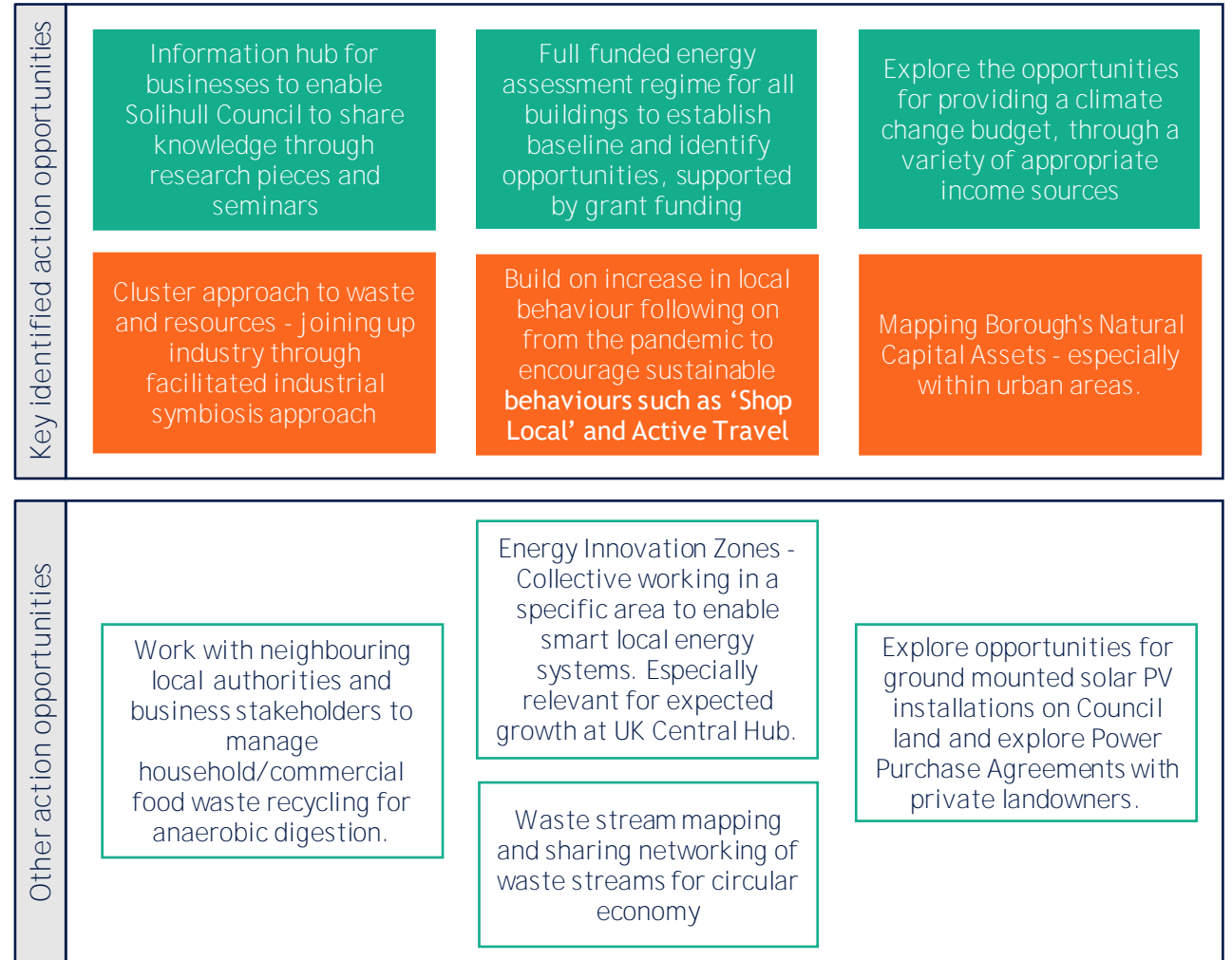


Figure 1.2: Key identified action opportunities from Solihull's Innovation Tournament.

# 1. BACKGROUND & CONTEXT

## DELIVERING CLIMATE ACTION

In order to facilitate climate action across the borough, a number of key foundational pillars will need to be driven across all areas:

1. **Policy & Governance:** Both local and national policy need to align towards supporting ambitious carbon reduction measures. These policy changes can have a significant impact on the success of the actions outlined in this report.
2. **Resource & Leadership:** Many of the actions considered in this report require additional personnel and organisational structures that do not currently exist. In order to ensure there is clear ownership over these actions and that they are taken forward and monitored, there will need to be resources dedicated to deliver and lead in all sectors.
3. **Finance:** Actions will require varying degrees of financing to be delivered. SMBC will need to consider new and alternative models of financing such as private sector partnerships, community financing and inssetting to deliver the actions set out in this report, alongside more traditional mechanisms such as national government funding.
4. **Communication & Engagement:** Internal and external stakeholders such as businesses, officers, members and residents will have a significant role to play in ensuring the actions set out are able to **be sustained and continue to support Solihull's ambitions.** Maintained communication through engagement and education to provide information and guidance to support behaviour change will be crucial in ensuring the plan is delivered for the benefit of all.

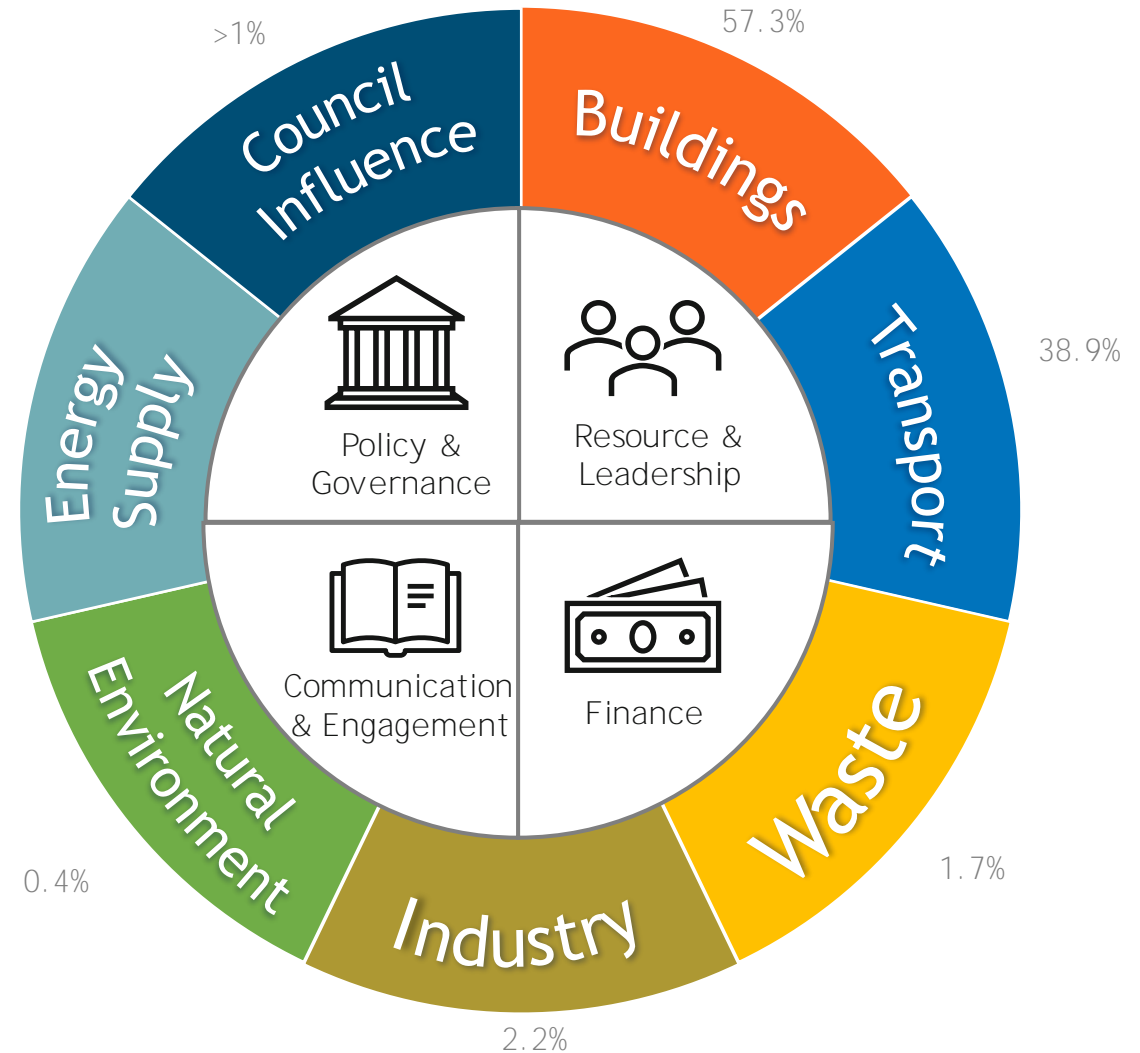


Figure 1.3: Four key foundational pillars driven across all sectors within the Net Zero Action Plan. The relative impact on direct and indirect emission has been included for key sectors (see page 17 for sectors requiring the most action).

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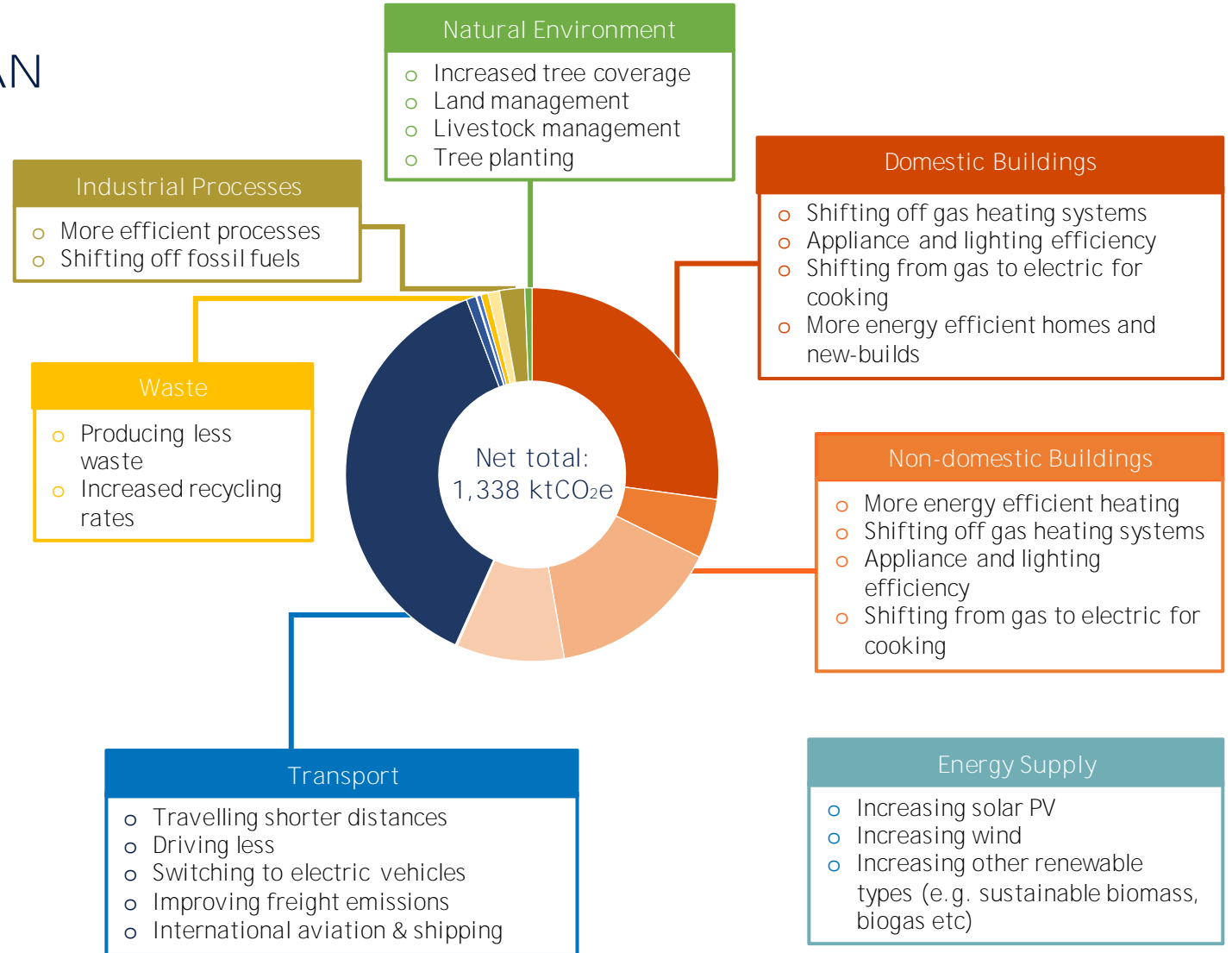
# NET ZERO ACTION PLAN

## 2. NET ZERO ACTION PLAN INTRODUCTION

The Net Zero Action Plan explores a number of different actions SMBC can take to maximise its influence in driving climate action across the Borough. Recognising that the Council cannot achieve its ambitions alone, collaboration and partnerships will play a key role in delivering this action plan. The following section of the plan identifies the actions that the Council can take, either alone or working with others to deliver on its ambition. Within each sector, actions have been grouped into overarching goal areas to connect similar actions and an overview of the possible opportunities from carbon savings, costs and payback as well as co-benefits have been explored.

For each action, this section will:

- **Explore the Council's role in delivering the action**
- Identify key external stakeholders
- Explore timelines of delivering the action



## 2. NET ZERO ACTION PLAN INTRODUCTION

### SCATTER Pathways: Defining Targets for a Zero-Carbon Trajectory

This chapter provides the basis for the strategic response to the Borough's commitment to carbon neutrality. It is intended to underpin the delivery of projects and actions within Solihull.

The SCATTER Pathways\* tool models future emissions pathways based upon defined activity levels within Solihull. The more ambitious the level of defined activity in each area, the closer the emissions trajectory tracks towards zero carbon. When taken together, these interventions define future emissions projections. The defined targets indicate *what is needed* to achieve carbon reductions across a number of intervention or action groupings, within eight sectors. Targets for each measure are given at a **“checkpoint” milestone of 2030 to guide progress in the near term. We also** provide cumulative emissions savings, and an indication of current (i.e., 2020) performance in the Borough, in line with these targets.

Conversations around *how to get there* are also provided. This includes an overview of key emissions sources in each sector, relevant plans and policies, and any other context relating to the impacts of the COVID-19 pandemic and opportunities around a green recovery.

\* SCATTER is a emissions modelling tool funded by the Department for Business, Energy & Industrial Strategy (BEIS) and is free for all Local Authorities to use. See <https://scattercities.com/> for further information.

### Action Planning Measures

Within each sector, we present recommended actions for Solihull aligned with each of the SCATTER interventions. Measures may be focused on demand-side reductions, such as switching to electrified systems, or greening of the energy supply. **Naturally, some measures carry more “weight” within** the model than others, and we encourage the reader to consider this by referring to the carbon impact calculations provided. The plan also contains recommendations on **the sequence in which actions should be taken, and the Council's role in leading** on the actions, or convening other stakeholders. This is further detailed later in this chapter.

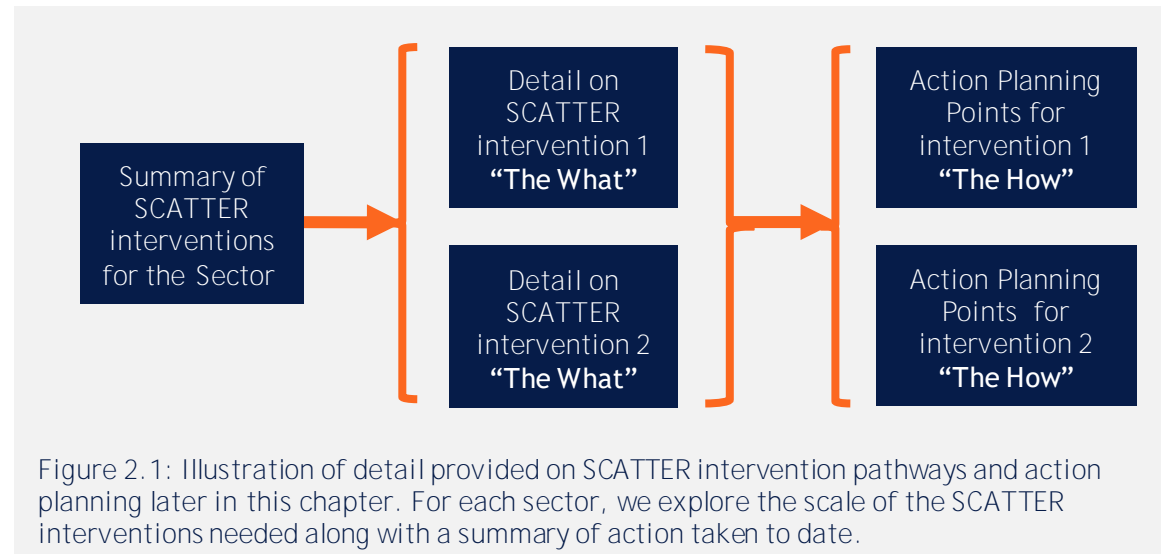


Figure 2.1: Illustration of detail provided on SCATTER intervention pathways and action planning later in this chapter. For each sector, we explore the scale of the SCATTER interventions needed along with a summary of action taken to date.

## 2. NET ZERO ACTION PLAN PRIORITISING ACTIONS

### Considering Action Impact

When planning a climate strategy, it is important to consider the sequence **with which actions are addressed. This ensures the “groundwork” is laid** first, before undertaking actions more dependent on other enabling factors. For example, being able to implement engineering solutions around renewable energy supply is contingent on there being a supportive local policy context, availability of funding, and appropriate local infrastructure.

Actions have been assessed in terms of their:

1. Cost and payback - an indication of the relative cost and financial payback opportunities where relevant
2. Carbon savings - an indication of the relative carbon reduction impact
3. Co-benefits - with Inclusive Growth, Environment and Health selected as the priority benefit areas

### Sequencing and Prioritising Actions

Throughout the plan we present recommended actions in groupings of **“Goals” aligned around a common theme or objective.** The prioritisation method was devised through combining estimated impacts across cost and payback, carbon savings and co-benefits, enabling us to pull out key actions and other actions to consider. This relative priority order is based on Anthesis' judgement and discussions with SMBC officers and other key stakeholders and is intended to support Solihull in more efficiently formulating next steps upon receiving this action plan, rather than eliminating any actions at this stage.

### Strategic Actions



Strategic actions ensure stakeholders have the best possible operational, administrative, and governance practices in place to support climate action.

*For example: establishing business partnerships, making commitments, baselining impacts*

### Indirect Actions



Indirect actions are specific supporting actions which can facilitate and underpin the development of carbon saving actions, but do not lead to a direct saving themselves.

*For example: Policymaking, securing funding, undertaking energy audits*

### Direct Actions



Direct actions are those which lead directly to reduced carbon emissions, such as through reduced consumption, improved efficiency, or more renewable supply.

*For example: Building retrofit, developing renewable supply infrastructure*

## 2. NET ZERO ACTION PLAN COST AND PAYBACK

### Defining Cost

Where possible, actions within this plan have been assessed for indicative **costs. Owing to a lack of direct data, this is often calculated through a ‘by proxy’ approach based on secondary research, or expressed as a range. “Expenditure” can relate to a number of financial metrics, which represent very different things:**

<b>Capital costs</b>	<b>Operational / ‘Revenue’ costs</b>
For example, the cost of EV, that is then recognised on a balance sheet and depreciated over its useful economic life	For example, monthly energy bills or asset maintenance that reduce <b>the organisation’s annual surplus (profit)</b>
<b>Resource / time costs</b>	<b>Savings / payback</b>
Typically a type of operational cost, but expressed in units of time or full time employees, as a reallocation of an existing role may be possible	Many low carbon costs result in direct and indirect benefits, many of which are financial. It is important that any savings or payback periods are considered. This will give critical balance to the investment appraisal process

### The Role of Finance in Decision Making

We are seeing an emergence of alternative forms of finance that can help accelerate carbon savings but reduce the burden on needing to make significant capital outlays. For example, many technology providers now offer capital investment to Councils and other end users (at no cost to the Council / commercial tenant), in return for a share of the operational return. In this scenario, the beneficiary may not need to make any outlay (other than perhaps legal fees or time relating to contractual matters). An example of technology provider and a district network operator (DNO) supporting low carbon capital investment at no cost to the tenant can be found [here](#). **Energy Service Companies or ‘ESCO’s are commonly able to offer this service if access to finance is limited.**

Cost considerations are a natural priority for stakeholders when choosing which actions to undertake. As a result, stakeholders often seek to calculate a carbon saving per pound spent (£/tCO<sub>2</sub>) to offer a basis for prioritising measures against each other. Comparisons may also be made between different actions and the price of purchasing carbon offsets.

We advise against applying this approach to inform decision making in isolation, and if the method is applied, users must ensure any comparisons are fair, and on 'like-for-like' terms.

Resource constraints are likely to pose significant challenges in delivering the Net Zero Action Plan and further exploration into priority areas for focus and governance structures to support delivery of actions should be undertaken.

## 2. NET ZERO ACTION PLAN

### KEY STAKEHOLDERS

#### Key stakeholders and their role in delivering net zero

The purpose of the Net Zero Action Plan is to identify actions that Solihull Metropolitan Borough Council can lead on delivering, with the support of key external stakeholders to deliver on its net zero ambition. The actions explored in the following section are all expected to be led only by the Council, with key delivery roles for supporting stakeholders as outlined below.

National Government	WMCA	SMBC	Other stakeholders
<p>National Government can support more ambitious local action by:</p> <ul style="list-style-type: none"><li>• Providing stronger local and regional powers to Councils to drive action towards net zero.</li><li>• Supporting local action with consistent funding opportunities and related guidance.</li><li>• Investing in technology and skills development to deliver net zero.</li><li>• Ensuring wider national policy frameworks support decarbonisation.</li></ul>	<p>With aligned target timeframes with Solihull, WMCA will play a significant role in net zero delivery and should look to:</p> <ul style="list-style-type: none"><li>• Support Solihull and other local Councils in taking forward actions relating to areas outside of local control e.g. transport</li><li>• Continue to set high levels of ambition and policies for carbon reduction through the WMCA 2041 Action Plan.</li><li>• Lobby national government to provide funding for net zero action in the region and to develop higher standards to support action.</li></ul>	<p>Solihull Council should look to:</p> <ul style="list-style-type: none"><li>• Take a leadership role and demonstrate best practice <b>through the Council's direct</b> activities and suppliers.</li><li>• <b>Use the Council's ability to</b> influence and convene key stakeholders such as businesses and residents to provide guidance and support towards net zero behaviours.</li><li>• Ensure internal governance structures enable ownership over Net Zero actions and continued monitoring and reporting of progress.</li></ul>	<ul style="list-style-type: none"><li>• <b>Businesses can support Solihull's</b> net zero ambition by making a commitment through the WMCA Business Pledge, taking action to engage their staff and delivering decarbonisation through their supply chains.</li><li>• Residents can participate in engagement sessions run by the Council on net zero, take action to decarbonise their own activities and share their knowledge with others.</li><li>• Other organisations such as academic, third sector and community groups can enable change through their networks.</li></ul>

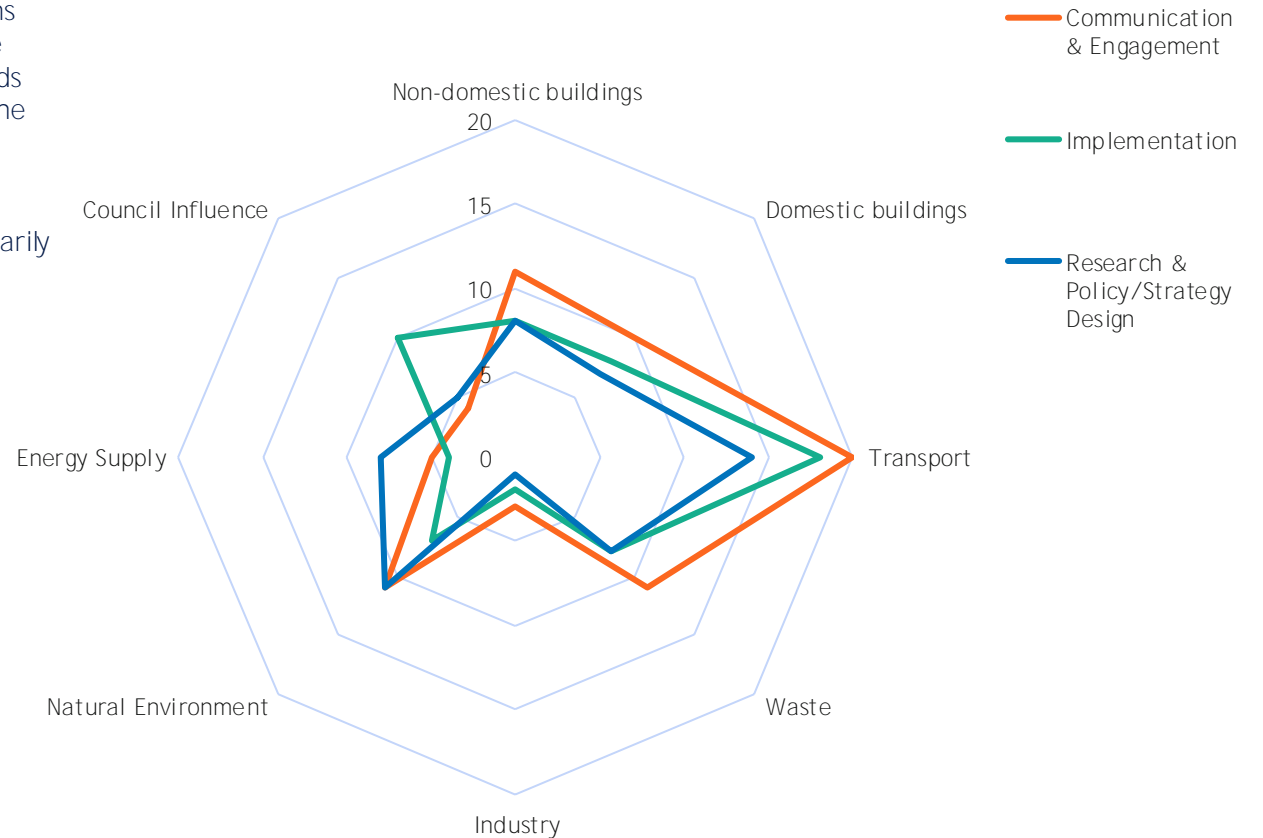


## 2. NET ZERO ACTION PLAN DELIVERING CLIMATE ACTION

Across the Net Zero Action Plan, we will explore the role of the Council in delivering actions to support the prioritisation of resources and finance. From the categorisation of actions into key types, we can see:

- There is a clear message of the importance of dedicated resource and support through external communications and engagement, particularly to address non-domestic buildings and transport related emissions.
- Transport is an area that SMBC has strong influence and ability to enact change with its existing powers and those of other stakeholders such as WMCA.
- Research and design of strategies and policies will be key in driving action in the natural environment area along with engagement and communication.

Figure 2.2: Overview of the number of actions classified by key role that the Council needs to play, by sector. The majority are communication and engagement related roles in nature, primarily across buildings and transport.



## 2. NET ZERO ACTION PLAN DELIVERING CLIMATE ACTION

### Carbon Savings

For each goal within the Net Zero Action Plan, relative carbon savings potential has been estimated and examples included where possible for carbon savings. The calculations, assumptions and references for carbon savings figures have been included in the Appendix of this report, where relevant.

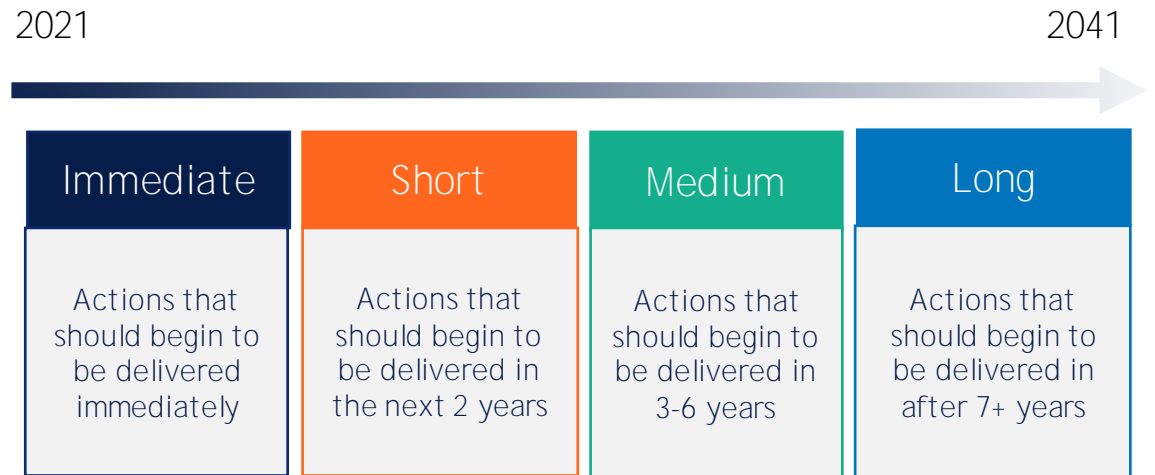
From these estimated savings we can see that:

- Transport has the highest number of goals considered to have a high carbon savings potential, highlighting the importance of focusing resources to action in this sector.
- There are also a relatively large number of goals across Non-Domestic and Domestic Buildings which have a high carbon savings potential.
- Waste and Industry have a the highest number of goals considered to have a low carbon savings potential, due to the overall low emissions **impact of these sectors and the council's limited influence over industrial emissions.**
- None of the goals within the Transport, Buildings or Council Influence sectors are considered to have low carbon savings potential, further highlighting the significant potential for emissions reductions in these areas.

### Timescales for Actions

The actions outlined in the Net Zero Action Plan have been categorised based on the timescale to support prioritisation of resource and efforts within the Council. Below is an overview of the timescale categories and their definitions to support the understanding of the actions in the next section.

It is expected that these timescales may shift depending on national policy and grant availability, resource constraints and financing mechanisms, and the Council should therefore look to ensure that regular monitoring and updates are made to the Action Plan to reflect these changes. Timescales of actions being delivered will also be heavily dependent on the availability of resources.



# 2.1 NON-DOMESTIC BUILDINGS

## 2.1 NON-DOMESTIC BUILDINGS BACKGROUND

### Scope of section

Emissions from non-domestic buildings represent a over a quarter of Solihull's emissions which means tackling energy consumption and fuel usage in this sector is a priority for Solihull. Buildings emissions cover only the emissions produced either within the building during use (direct) or emissions associated with the grid-supplied electricity (indirect). The life cycle cost or embodied carbon of the building is not covered here, however actions to address these emissions are considered in the action plan.

Solihull Metropolitan Borough Council's properties (excluding those used for residential purposes) are included in this part of the pie chart but represent around 1% of emissions from buildings, so interventions are aimed at both the Council and the Borough.

### Progress to date

- As part of the Ashden Low Carbon Schools Programme SMBC choose 10-15 schools to take part each year and receive information of how to reduce energy demand. **As part of the program which has been running for 5 years, 50 out of Solihull's 80 schools have had energy audits completed.**
- Solihull's leisure centres have CHP and the feasibility of joining the heat network and getting heat pumps installed has been assessed.**
- Automatic meter readers have been installed in Council owned corporate buildings and in schools. Training on how to use these tools has also been provided.
- 58% of EPC-rated non-domestic properties are rated D or below and in 2020, 62% of buildings registered had a Display Energy Certificate (DEC) at D rating or below.
- The Council's street lighting strategy has delivered a 60% carbon saving since 2014.**

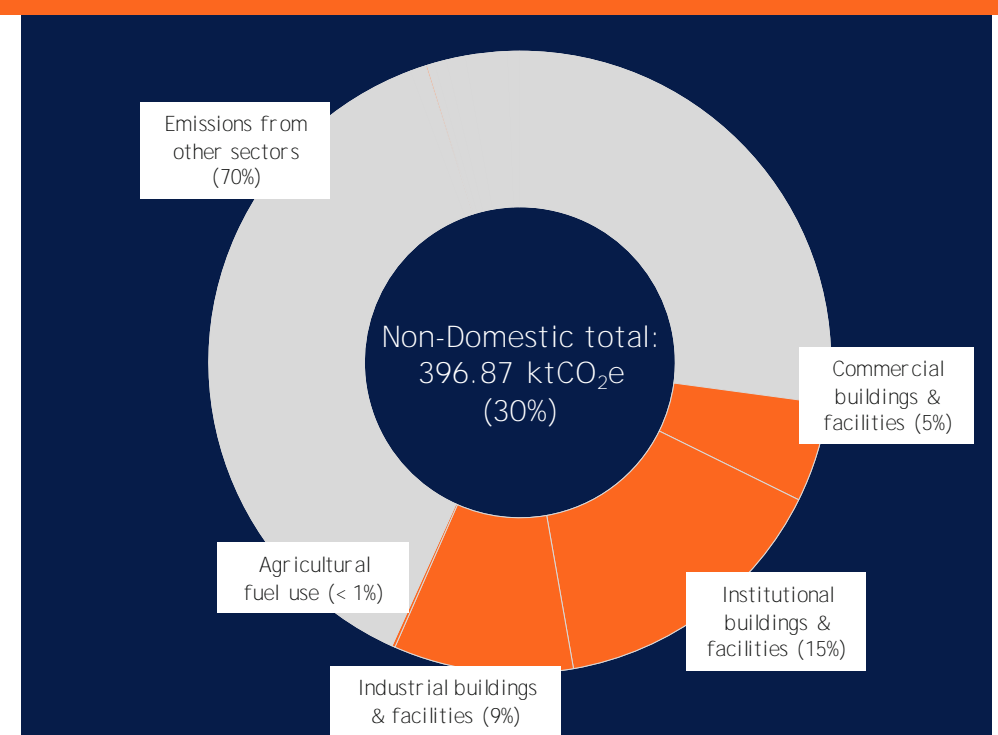


Figure 2.1.1: Emissions from different non-domestic building types in Solihull

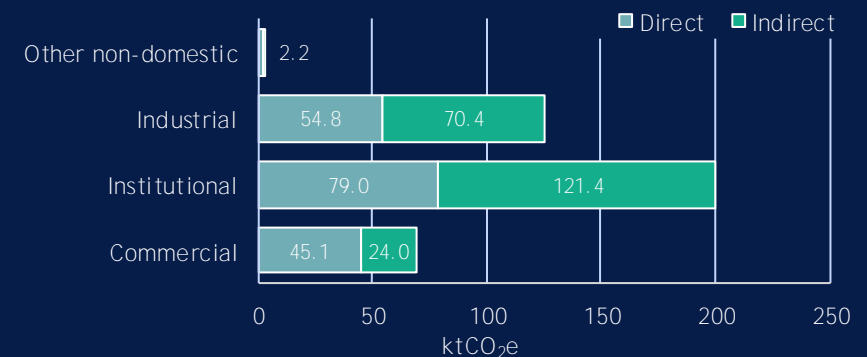


Figure 2.1.2: Non-domestic building emission sources broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)

## 2.1 NON-DOMESTIC BUILDINGS KEY PLANS AND POLICIES

### National UK Policy



- The [UK Green Building Council](#) was set up in 2013 to investigate and recommend new ways forward to reach zero-carbon buildings.
- [Salix Finance](#) offers 100% interest-free capital across Great Britain to deliver energy-saving measures across public sector organisations.
- The [Net Zero Strategy](#), published in October 2021, sets out plans and policy to decarbonise non-domestic buildings. Key commitments including setting a minimum energy efficiency standard of EPC Band B by 2030 for privately rented commercial buildings and using regulation and performance-based measurement to reduce commercial and industrial energy consumption.
- The [Public Sector Decarbonisation Scheme](#) provides funding for energy efficiency and heat decarbonisation. The Government has committed to investing a further £1.425 billion into the scheme, with the aim of reducing direct emissions from public buildings by 75% by 2037.

### West Midlands Combined Authority



- [West Midlands Industrial Strategy](#) sets out the vision to maximise the clean growth opportunities **presented by the region's skills, infrastructure and history of innovation**. It includes scope to support the skills and infrastructure needed to overcome barriers and deliver retrofit at scale.
- [Powering West Midlands Growth: A Regional Approach to Clean Energy Innovation](#) is mainly focused on clean energy technologies but covers retrofit and efficiency improvements in buildings.
- The [WM2041 Five Year Plan 2021-26](#) identifies the importance of energy efficiency measures in commercial property types.

### Solihull Metropolitan Borough Council



- [Corporate Buildings and Schools Reporting](#) includes plans to improve energy management, assess opportunities leisure centres and produce a Net Zero Dashboard, in line with the Councils energy strategy
- [Solihull Town Centre Energy Network](#) project is currently in the first phase of its development, with an aim of generating 75% of heat from low carbon renewable sources.
- [Urban Growth Company Business Plan](#). A new **approach to maximising Solihull's economic potential**. This includes sustainability - embedding and integrating a responsible and tangible approach to sustainability into everything at The Hub.
- [Local Plan](#). The draft submission plan includes policies on protecting the environment and include policy on connection to heat networks and new sites applying the energy hierarchy. Non-residential developments will conform to BREEAM standards.

## 2.1 NON-DOMESTIC BUILDINGS

### GOALS TO TACKLE NON-DOMESTIC EMISSIONS

Focusing on demand reduction first is a key priority to reduce the need for energy use in private owned buildings such as businesses. SMBC has a key role to play through strategic partnerships with WMCA and GBSLEP to ensure businesses are supported and encouraged to reduce their energy demand through improving the energy efficiency of their buildings. These actions can also result in cost savings for businesses and providing opportunities for energy efficiency training and new jobs locally. SMBC can lead by example and raise awareness of the benefits of reporting and provide businesses information on relevant reporting tools, guidance and software. SMBC may be able to use various levers to encourage business reporting, e.g. business rate rebates, access to funding/finance for businesses disclosing energy performance. SMBC can use its own procurement processes to encourage building operators to report carbon and energy data on their portfolios.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Private sector non-domestic buildings	1.1 Improve energy efficiency standards in existing non-domestic buildings	<b>Low cost, high payback</b> Energy audits can cost around 1% of energy costs. (Typically, less than £3k).	<b>Medium</b> It is estimated that a 5% reduction in emissions from procurement could save 5,779 tCO <sub>2</sub> e over a fiscal year	<b>Inclusive Growth:</b> If Solihull invested in all profitable energy efficiency and low carbon options for schools, hospitals and offices the Borough would save £13m a year in energy bills <sup>1</sup> <b>Inclusive Growth:</b> Energy efficiency in commercial buildings increases worker productivity by up to 10%
	1.2 Policy used to drive higher energy efficiency standards in new builds & developments	<b>Medium cost, high payback</b> Heat network buried pipe costs are typically around £150 / MWh annual, whilst the connection costs range significantly from £25 / MWh for bulk schemes to £624 / MWh for non-bulk schemes. [1] Payback period around 7-9 years.	<b>Medium</b> Potentials from replacing primary with secondary materials are: <ul style="list-style-type: none"> <li>• 0.95-1.42 kgCO<sub>2</sub>e avoided per kg of WPC (Wood Plastic Composite)</li> <li>• 0.008 kgCO<sub>2</sub>e per kg aggregate prepared for concrete production</li> <li>• 0.025 kgCO<sub>2</sub>e avoided per kg brick manufactured</li> </ul>	<b>Inclusive Growth:</b> Creation of jobs for low carbon engineers and the upskilling of residents <b>Health:</b> Energy efficiency in commercial buildings improves the health and wellbeing of individuals, with employee sick days decreasing by up to 40%

## 2.1 NON-DOMESTIC BUILDINGS

### GOALS TO TACKLE NON-DOMESTIC EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Private sector non-domestic buildings	1.3 Guidance and support to improve energy efficiency made available to private sector	<b>Low cost</b> Additional staff time required to provide support to businesses	No direct carbon savings but enables private sector savings	<b>Inclusive Growth:</b> Skilled jobs will be needed to take forward energy efficiency measures.
	1.4 Maximise the number of non-domestic buildings connected to Solihull's Town Centre Energy Network	<b>High cost, high payback</b>	<b>High</b> The town centre network hopes to achieve carbon savings of 280,247 tCO <sub>2</sub> e once fully built out (phases 1, 2 & 3) over 40 years	<b>Inclusive Growth:</b> Protection from future fossil fuel price increases <b>Health:</b> Heat pumps can help to reduce the air pollution caused by heating. They do not emit NO <sub>x</sub> , SO <sub>x</sub> or particulate matter (PM) locally

## 2.1 NON-DOMESTIC BUILDINGS

### GOALS TO TACKLE NON-DOMESTIC EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Public sector non-domestic buildings (including hospitals, academies, leisure centres & libraries)	1.5 Policy used to drive higher energy efficiency standards in new developments	<b>High cost, medium payback</b>	<b>High</b> The briefing paper 'Assessing carbon emissions in BREEAM' published in 2016 demonstrated that the average CO2 saving for a BREEAM assessed building is 22%, whilst a BREEAM Excellent building is expected to reduce carbon emissions by 33%	<b>Inclusive Growth:</b> Protection from future fossil fuel price increases
	1.6 Opportunities to improve energy efficiency in cooking, lighting and other appliances are maximised	<b>Low cost, medium payback</b> LED lighting 2 month payback with a 525% ROI.	<b>Medium</b> For every traditional halogen bulb you switch to a similarly bright LED bulb you save around 5kg of CO <sub>2</sub> emissions	<b>Health:</b> Gas cookers can be less safe to use, and research suggests there are some health impacts from increased indoor air pollution <b>Environment:</b> Energy efficient appliances can also save water
Council-owned non-domestic buildings (including SMBC buildings, schools, leisure centres)	1.7 Improve energy efficiency in Council-owned buildings	<b>Medium cost, medium payback</b> As an example, £6,415 – ASHP (5.4kW) and £13,380 – GSHP (8.1kW). 10% ROI with a Payback of around 12 years.	<b>High</b> A 20% reduction in energy used for heating would produce a savings of around 1,221 tCO <sub>2</sub>	<b>Inclusive Growth:</b> Creation of jobs for low carbon engineers and the upskilling of residents <b>Environment:</b> Improved green & blue infrastructure – Energy efficiency improvements may be one aspect of more sustainable building design, which could also incorporate principles such as enhancing surrounding natural assets and integrating green infrastructure. <b>Environment:</b> Reduced damage to the environment from harmful air pollutant <b>Environment:</b> Energy efficient appliances can also save water



## 2.1 NON-DOMESTIC BUILDINGS

### KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver on non-domestic buildings:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Private sector non-domestic buildings	1.1b Encourage annual energy reporting across the Borough's non-domestic buildings	Communication & Engagement	Developers and Property Owners	Medium	Indirect
	1.1d Ensure that retrofit measures are prioritised in all redevelopment projects and promote the benefits of retaining and repairing older buildings, such as Solihull Town Centre	Implementation	UK Central Solihull	Long	Direct
	1.2d Ensure new private sector non-domestic developments connect to low carbon district heating schemes where schemes exist, or in areas where planned but not yet built, ensure buildings are futureproofed for connection, through Draft Local Plan	Communication & Engagement	Developers	Medium	Direct
	1.2e Investigate using Section 106 developer contributions to deliver net zero projects as part of a Net Zero Action Plan Fund	Implementation	Developers	Long	Direct
	1.4a Extend Town Centre Energy Network to fulfil its maximum viability to connecting supply to non-domestic buildings in the Town Centre, ensuring as it expands, it continues to decarbonise heat production and supply	Research & Design	Developers	Medium	Indirect
	1.4b Explore options to deliver an additional low-carbon energy network for the Hub area	Research & Design	UGC, Hub Businesses	Immediate	Indirect
	1.4c Conduct feasibility studies for additional low-carbon heat networks and other micro-networks across Solihull	Research & Design	N/A	Short	Indirect
	1.4d Where district heating opportunities are not available, encourage alternative low carbon solutions through guidance and information	Communication & Engagement	Businesses	Medium	Indirect

## 2.1 NON-DOMESTIC BUILDINGS

### KEY ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Public sector non-domestic buildings (including hospitals, academies, leisure centres & libraries)	1.5a Encourage new public sector developments to be built to highest energy efficiency standards e.g. BREEAM outstanding	Implementation	Public sector organisations	Immediate	Indirect
	1.6a Provide guidance and support to businesses on low carbon energy efficiency appliances and lighting improvements	Communication & Engagement	Public sector organisations	Immediate	Indirect
	1.6b Explore finance opportunities to deliver improvements to lighting and appliances in academies and leisure centres	Research & Design	Academies & leisure centres	Medium	Strategic
Council-owned non-domestic buildings (including SMBC buildings, schools, leisure centres)	1.7a Update policy to ensure any new properties built in the Council's portfolio (new offices/commercial property) are built to the highest energy efficiency standards in line with Solihull's net zero ambition e.g. BREEAM outstanding	Policy & Strategy	Developers	Long	Strategic
	1.7c Develop a decarbonisation plan for all Council owned buildings to identify the most viable solutions to achieving net zero by 2030/2041 in line with the corporate building energy strategy	Implementation	N/A	Immediate	Strategic
	1.7e Implement energy efficiency measures at all leisure centres	Implementation	Leisure Centres	Medium	Direct
	1.7h Review the opportunities for low-carbon heat within the Council's own buildings in light of Borough-wide heat decarbonisation assessment to ensure investment decisions match most suitable decarbonisation opportunity	Research & Design	N/A	Immediate	Indirect
	1.8a Improve energy efficiency of appliances and lighting in own Council buildings	Implementation	N/A	Long	Direct

## 2.1 NON-DOMESTIC BUILDINGS OTHER ACTIONS

The below table highlights the other actions for Solihull Metropolitan Borough Council to consider on non-domestic buildings:

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Private sector non-domestic buildings	1.1a Encourage the use of standardised performance measurements aligning with the Local Plan for all existing commercial buildings	Communication & Engagement	Developers and Property Owners	Medium	Indirect
	1.1c Provide guidance on how low carbon practices can be embedded into business procurement activities, drawing on Social Value and the Council's own procurement activities.	Communication & Engagement	Businesses	Immediate	Indirect
	1.2a Encourage the use of recycled or low-carbon materials and modern methods of construction in new development as a means of reducing the embodied carbon of new-builds through the SPD	Communication & Engagement	Developers	Immediate	Indirect
	1.2b Encourage the use of standardised measuring framework to ensure compliance with planning policies for improved energy efficiency in all new build properties and train Building Council Officers on low-carbon and net-zero technologies	Communication & Engagement	Developers	Medium	Indirect
	1.2c Encourage new developments to report to the As Built energy performance of within 1 year of following building completion through engagement	Communication & Engagement	Developers and Property Owners	Short	Indirect
	1.3a Set up a mechanism through which stakeholders can achieve sustained collaboration and showcase leading examples of decarbonisation.	Communication & Engagement	Businesses	Short	Indirect
	1.3b Signpost and promote carbon reduction measures (i.e. energy efficiency measures) within Council's existing business support programme, initially targeting sectors with the most need	Communication & Engagement	Businesses	Immediate	Indirect
	1.3c Support businesses in accessing green finance by providing staff resources for guidance and advice via business networks and WMCA	Communication & Engagement	Businesses	Immediate	Indirect

## 2.1 NON-DOMESTIC BUILDINGS

### OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Council-owned non-domestic buildings (including SMBC buildings, schools, leisure centres)	1.7b Explore options for installing living roofs (brown and green), facades and cool roofs to improve local air quality on Council owned buildings	Communication & Engagement	N/A	Medium	Direct
	1.7d Carry out remaining energy audits on schools, as part of the Ashden Low Carbon Schools Programme and set up a mechanism for schools to share good practice or initiatives	Implementation	N/A	Immediate	Indirect
	1.7f Implement public annual reporting of energy use and results of Display Energy Certificates at all Council sites, in line with the corporate building energy strategy	Implementation	N/A	Short	Indirect

# 2.2 DOMESTIC BUILDINGS

## 2.2 DOMESTIC BUILDINGS BACKGROUND

### Scope of section

Domestic households within Solihull are the second type of buildings described within this report. They represent over a quarter of the total area emissions, making it a significant source to target action. It is the second biggest sub-category of emissions. This section covers interventions related to all domestic dwelling types, covering private households, social housing and all rented dwellings. This includes the ~10,000 properties managed by Solihull Community Housing (SCH). As with non-domestic buildings, the emissions analysed here are those associated with energy consumption within the buildings themselves and not any life-cycle costs.

### Progress to date

- 70% of EPC-rated domestic properties that were rated D or below.
- SCH are building seven bungalows on Faulkner Road which are of Passivhaus design
- SCH installed 163 new heating systems and boilers during 2019/20, including first time central heating systems delivered through the national Warm Homes Fund programme.
- SCH have a number of schemes in place to improve energy efficiency of domestic properties e.g. energy efficiency advice is provided via Act on Energy and the Winter Warmth campaign with Age UK helps over 200 residents a year.
- 8,793 households in Solihull have received ECO measures.
- Government funding opportunities have been identified through LADS2, LADS3 and HUGs. Act On Energy are contracted by SMBC to provide energy advice and support to residents.

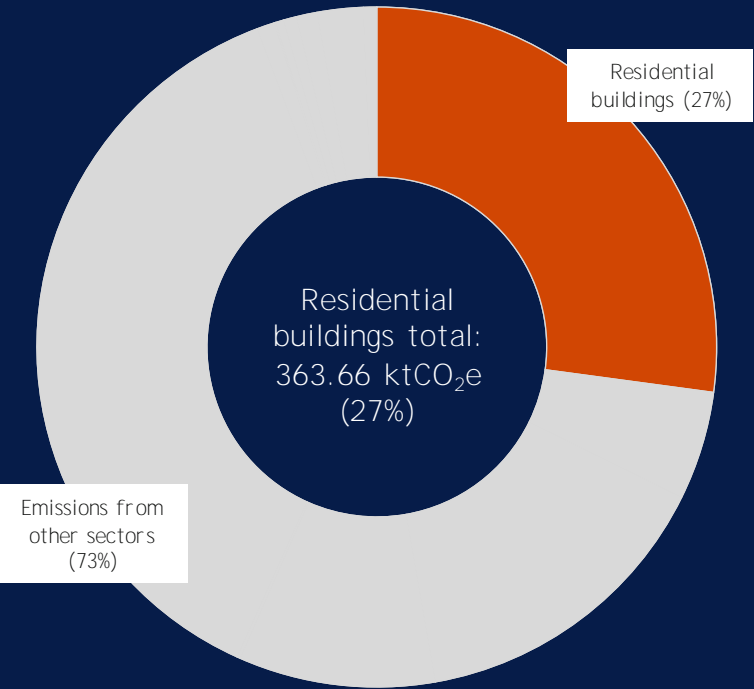


Figure 2.2.1: Emissions from domestic buildings in Solihull

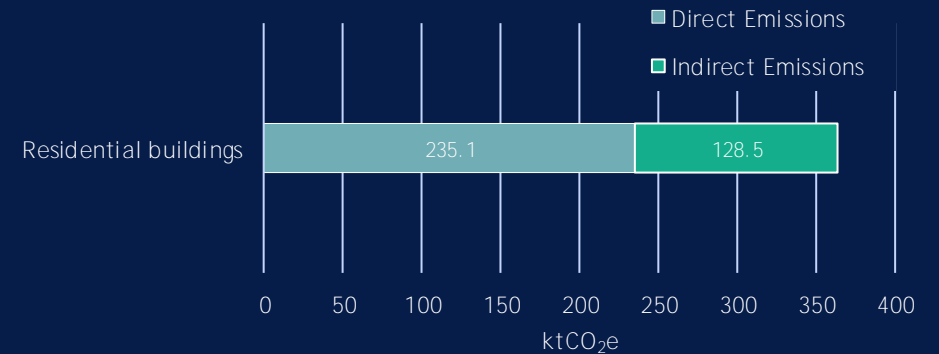


Figure 2.2.2: Domestic building emissions broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)

## 2.2 DOMESTIC BUILDINGS BACKGROUND

Progress to date continued

### Fuel Poverty

A household is considered to be in fuel poverty if they have required fuel costs that are above the national average and if they were to spend that amount they would be left with an income below the poverty line. Mapping the fuel poverty locally can be used to highlight opportunities for retrofit where health co-benefits will have the greatest benefits.

- The percentage of households in Solihull living in fuel poverty is 8.2% which is equivalent to 7,428 households.
- Warmer Homes West Midlands programme has been awarded nearly £1 million to provide energy advice and support to residents struggling to keep homes warm. The latest data on fuel poverty rates in England, show that the West Midlands has higher than average rates of fuel poverty.<sup>4</sup>

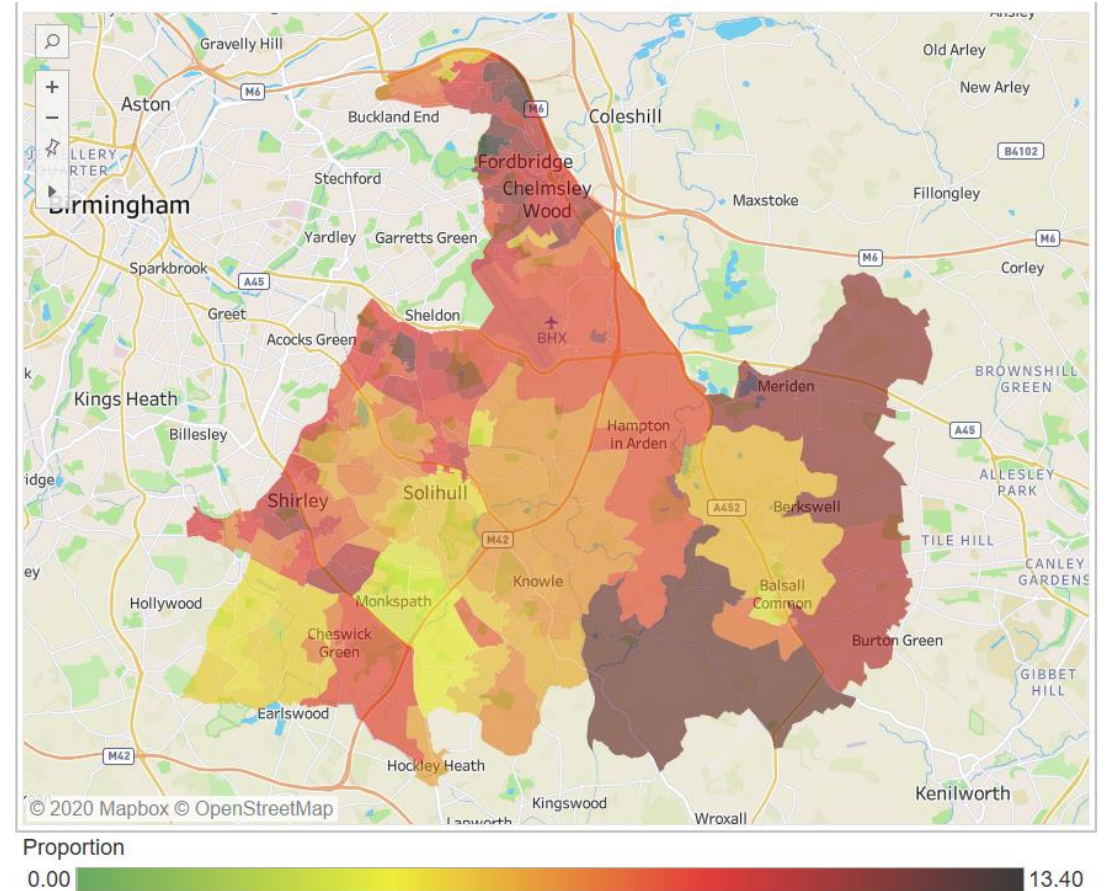


Figure 2.2.3: The map below shows the Fuel Poverty by LSOA split in Solihull (Source: Anthesis).

## 2.2 DOMESTIC BUILDINGS KEY PLANS AND POLICIES

### National UK Policy



- Gas boilers will be banned in new homes from 2025 (may be brought forward to 2023).
- [The Clean Growth Strategy](#) sets targets to upgrade as many homes to EPC Band C by 2035 (2030 for all fuel-poor households).
- Third phase of the [Energy Company Obligation \(ECO3\)](#) will conclude in 2022.
- [The Future Homes Standard](#) provides an update to Part L of the building regulations.
- [Minimum energy efficiency standards \(MEES\)](#) in the private rented sector and non-domestic property prevents landlords from letting properties rated below EPC Band E.
- The [Net Zero Strategy](#), published in October 2021, outlines several key commitments relating to domestic buildings, including a new £450m Boiler Upgrade Scheme and investment of £60m into heat pump innovation, making them smaller and easier to install

### West Midlands Combined Authority



- [Zero Carbon Homes Taskforce](#) - WMCA set up the taskforce to support the region in meeting zero carbon standards by 2025. The taskforce will add new requirements for low carbon development for housing projects seeking WMCA investment.
- [Warmer Homes West Midlands Programme](#) - WMCA's fuel poverty task force aims to identify funding opportunities to improve fuel poverty in the region.
- WMCA has set out ambitious [plans](#) to retrofit 50,000 homes in the region by the end of 2022.
- WMCA [Spatial Investment & Delivery Plan](#) describes the challenges and opportunities in delivering housing in the region. Objective 7 states that the **SIDP will build on the region's environmental strengths.**

### Solihull Metropolitan Borough Council



- [Solihull Community Housing & Solihull Metropolitan Borough Council Transitional Asset Management Strategy](#) details how SCH and Solihull Council will **work together to manage Solihull Council's housing stock**. Objective 1 outlines a data driven Green approach to managed portfolio.
- [Local Plan](#) - The draft submission plan includes a policy that from April 2025 all new dwellings will be net zero carbon.
- [Home Energy Efficiency and Affordable Warmth Strategy](#) sets out the objective to improve the energy efficiency of homes and promote low and zero carbon technologies as well as supporting the emerging green economy.
- [SCH Future Strategic Vision \(2017-22\)](#) - to provide homes, improve wellbeing and strengthen communities. However, there is no direct inclusion of carbon reduction objectives.



## 2.2 DOMESTIC BUILDINGS

### GOALS TO TACKLE DOMESTIC EMISSIONS

With its ambitious plans for growth, ensuring Solihull is not locked into energy intensive new builds will form a critical part of the net zero transition. The following table outlines key areas for action to reduce domestic building emissions.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Existing private housing	2.1 Improve energy efficiency standards in existing buildings	<b>Medium cost, good payback</b> May require specialist reporting insight on air quality and green technology. Green Roof maintenance £850-£8,500 per year. Gov. modelling suggests landlords will spend £4,700 getting to a C rating.	<b>Medium</b> An average semi-detached home built to meet the Future Homes Standard would produce 75-80% less CO <sub>2</sub> emissions than one built to current requirements 273 ktCO <sub>2</sub> e	<b>Health:</b> Improving the energy efficiency of homes can reduce ill- health, children living in inadequately heated households are more than twice as likely to suffer from conditions such as asthma and bronchitis than those living in warm homes. Significantly reduce illness and death related to air pollution due to cleaner combustion and better air ventilation. <b>Inclusive Growth:</b> If Solihull invested in all the profitable energy efficiency and low carbon options, households in the area would save £24m a year from their energy bills. Long term financial investment for residents. Efficiency savings free up money for other investments.
	2.2 Enable changes to resident attitudes and behaviours concerning energy efficiency in the home	<b>Low cost, good payback</b> 10% ROI for decarbonisation measures with a payback of around 12 years.	<b>Medium</b> By replacing all bulbs in a home with LED alternatives, a home is able to save around 63kg of CO <sub>2</sub> emissions	<b>Inclusive Growth:</b> Households will have greater protection against future energy price rises as well as being more physically resilient during heatwaves <b>Inclusive Growth:</b> If Solihull invested in all the profitable energy efficiency and low carbon options, households in the area would save £24m a year from their energy bills <b>Health:</b> Improving the energy efficiency of homes can reduce ill- health
New housing developments and builds	2.3 Drive higher energy efficiency standards in new developments	<b>Low cost, good payback</b> Cost of reporting included in energy bill. 0 upfront cost.	<b>High</b>	<b>Inclusive Growth:</b> Households will have greater protection against future energy price rises as well as being more physically resilient during heatwaves <b>Health:</b> Improving the energy efficiency of homes can reduce ill- health, <b>Environment:</b> Energy efficiency improvements may be one aspect of more sustainable building design, which could also incorporate principles such as enhancing surrounding natural assets.

## 2.2 DOMESTIC BUILDINGS

### GOALS TO TACKLE DOMESTIC EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
New housing developments and builds	2.4 Facilitate district heating opportunities for new developments	<p><b>High cost, medium payback</b></p> <p>Heat network buried pipe costs are typically around £150 / MWh annual, whilst the connection costs range significantly from £25 / MWh for bulk schemes to £624 / MWh for non-bulk schemes. Payback period is estimated around 7-9 years.</p>	<p><b>Medium</b></p> <p>The CO2 emissions from heat distributed by heat networks depend on the type of heat source and the fuel used.</p>	<p><b>Inclusive Growth:</b> If Solihull invested in all the profitable energy efficiency and low carbon options, households in the area would save £24m a year from their energy bills</p> <p><b>Inclusive Growth:</b> Households will have greater protection against future energy price rises as well as being more physically resilient during heatwaves</p> <p><b>Health:</b> Improving the energy efficiency of homes can reduce ill-health</p>
	2.5 Improve energy efficiency in existing Council-owned residential properties	<p><b>Low cost, good payback</b></p> <p>Previous government costs for low EPC rating were estimated at around £3000.</p>	<p><b>High</b></p> <p>SCH manage just under 10,000 tenanted homes, with possible savings of 27.5 ktCO<sub>2</sub> through retrofit of all SCH tenanted homes</p>	
Solihull Community Housing	2.6 Maximise energy efficiency in new build Council-owned residential properties	<p><b>Low cost, good payback</b></p> <p>10% ROI decarbonisation measures with a payback of around 12 years. Additional costs in relation to under floor heating, ventilation and so on need to be considered.</p>	<p><b>Medium</b></p> <p>By replacing all bulbs in a home with LED alternatives, a home is able to save around 63kg of CO<sub>2</sub> emissions</p> <p>Per house savings:            Passivhaus: 1.36tCO<sub>2</sub> per year            Net Zero: 2.04tCO<sub>2</sub> per year</p>	

## 2.2 DOMESTIC BUILDINGS

### KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver on domestic buildings:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Existing private housing	2.1a Encourage standardised performance measurements with standards beyond Part L for all existing buildings such as Future Homes Standard (between 20-31% depending on specific standards chosen)	Communication & Engagement	Developers and Property Owners	Long	Strategic
	2.1d Encourage higher energy efficiency standards (MEES) from the current D up to a C where appropriate for private rented properties and improve its enforcement to capture non-compliance, providing support to tenants and landlords where needed	Communication & Engagement	Developers	Immediate	Strategic
	2.1e Develop a coordinated programme plan for retrofitting Solihull's homes which focuses on communication and partnership for private housing retrofit, and includes trusted suppliers/contractors	Policy & Strategy	Residents	Immediate	Strategic
	2.2a Support households in accessing finance for installation of heat decarbonisation measures linked to heat opportunities assessment and personalised home energy advice through existing channels e.g. Act on Energy, Energy Savings Trust. This may include maintaining a list of advisory sources on the Council website and should include provision of an updated Energy Performance Certificate	Communication & Engagement	Householders	Long	Indirect
	2.2b Set up a mechanism for residents to collaborate and showcase leading examples of decarbonisation e.g. Bristol Green Doors Open Home Events	Implementation	Residents	Medium	Indirect
	2.2c Publicise opportunities associated with improving energy efficiency standards and provide communications to owner-occupied homes	Communication & Engagement	Householders	Immediate	Indirect
	2.2e Target properties/areas of high need and high opportunity using household fuel poverty data to identify 'hotspots' of low energy efficiency properties with high energy bills	Research & Design	Householders	Medium	Indirect
	2.2f Provide guidance and support to residents on low carbon energy efficient cooking and lighting improvements, including switching from gas	Communication & Engagement	Householders	Immediate	Indirect
	2.2g Support households and vulnerable groups e.g. the elderly in accessing energy supplier sourced funding by providing guidance and advice. Utilise powers under ECO3 Local Authority Flexible Eligibility to enable the Council to qualify private sector residents as eligible for funding	Communication & Engagement	Householders	Long	Strategic

## 2.2 DOMESTIC BUILDINGS

### KEY ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
New housing developments and builds	2.3a Encourage the use of low carbon materials in new development as a means of reducing the embodied carbon of new-build properties	Communication & Engagement	Developers	Medium	Strategic
Solihull Community Housing	2.5a Prioritise energy efficiency improvements and maximise funding for the worst-performing social housing properties, i.e. those with EPC rating D-G	Implementation	N/A	Medium	Direct
	2.5c Implement the decarbonisation recommendations of the SCH net zero strategy commission, with reference to the area-based opportunities identified for e.g. heat networks, building level heat pumps etc.	Implementation	N/A	Short	Direct
	2.6a Require all new homes led by the Council to be built to beyond Building Regulation standards (e.g. Passivhaus or net zero)	Implementation	Developers	Medium	Direct

## 2.2 DOMESTIC BUILDINGS OTHER ACTIONS

The below table highlights the other actions for Solihull Council to consider on domestic buildings:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Existing private housing	2.1b Encourage building technologies such as living roofs (green and brown), facades and cool roofs to improve local air quality within domestic planning policy	Communication & Engagement	Developers	Medium	Strategic
	2.1c Support tenants in private rented sector properties with energy efficiency concerns and seek to engage landlords where properties do not meet MEES or EPC standards	Implementation	Tenants	Medium	Indirect
	2.2d Consider green accreditation schemes for private landlords including access to finance, suppliers, installers and discounted EPC surveys as an incentive to the private rental sector to improve the energy efficiency of their stock	Research & Design	Private Landlords	Long	Strategic
	2.2h Provide guidance and advice on energy efficiency benefits of low energy appliance selection at end of life, including example savings calculations. Potential to link with energy suppliers providing tailored advice via smart meter data.	Communication & Engagement	Residents	Immediate	Indirect

## 2.2 DOMESTIC BUILDINGS OTHER ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
New housing developments and builds	2.3b Encourage standardised measuring framework to ensure compliance with planning policies for improved energy efficiency in all new build properties	Communication & Engagement	Developers	Medium	Strategic
	2.3c Encourage the accurate reporting of the operational carbon of new developments following building completion, use smart systems to enable operational energy use	Communication & Engagement	Developers	Long	Indirect
	2.3d Encourage new developments to be to highest energy efficiency standards, e.g. Passivhaus for domestic buildings	Communication & Engagement	Developers	Medium	Strategic
	2.3e Develop a Sustainable Design and Construction Supplementary Planning Document to dispel cost misconceptions, promote whole life cost models and support higher development standards	Research & Design	N/A	Short	Strategic
	2.4a Publish evidence base for low or zero carbon district heating viability, including sources of heat (renewable and waste heat opportunity) and locations of existing, planned or potential district heating schemes.	Research & Design	Developers	Medium	Strategic
	2.4b Consider requirement for district heating where type and scale of new development triggers viability, plus natural or waste heat resources are present.	Policy & Strategy	Developers	Long	Direct
Solihull Community Housing	2.5b Utilise existing fuel poverty data to develop a segmented approach to improvements, initially targeting areas of high need and high opportunity	Research & Design	N/A	Short	Indirect
	2.5d Carry out lighting improvements to Solihull Community Housing stock. Advise and support residents on appliance choices for improved efficiency	Implementation	N/A	Short	Direct

# 2.3 TRANSPORT

## 2.3 TRANSPORT BACKGROUND

### Scope of section

This next section on transport assesses SCATTER high ambition targets for a range of activities including modal share, travelling shorter distances, uptake of EV and domestic freight transport. Emissions from transport represents a significant proportion of Solihull's emissions profile (39%), with on-road transport contributing to almost all of transport emissions. Despite the Council's limited influence on reducing national motorway emissions from the M6 and M42 which run through Solihull's boundary, tackling transport emissions and encouraging active travel is a priority for Solihull. It will also be important to prioritise a shift towards active and public transport and away from private car use over electrification of vehicles to make the most of the co-benefits associated with reduced car use including congestion.

### Progress to date

- Improvements to A45 being progressed through design and planning stages, the A45 Coventry Road is already beginning to see major junction improvements.
- **Solihull Council's Cycle & Walking Strategy along with Town Centre Access Strategy** will focus attention on providing new cycle and pedestrian links to Solihull town centre.
- Progress towards remodelling both Birmingham International Railway Station and Solihull Railway Station, as well as Park & Ride improvements at both stations.
- Improvements have been made to bus links to/from Solihull town centre and TfWM Sprint bus routes will start operating within the Borough next year.
- At the end of Q3 2019, there were 2,296 ULEVs registered to Solihull residents, the 13<sup>th</sup> highest local authority area in the UK.
- As of October 2020, Solihull has 71 public EV charging devices across the Borough and 8 public rapid charging devices.

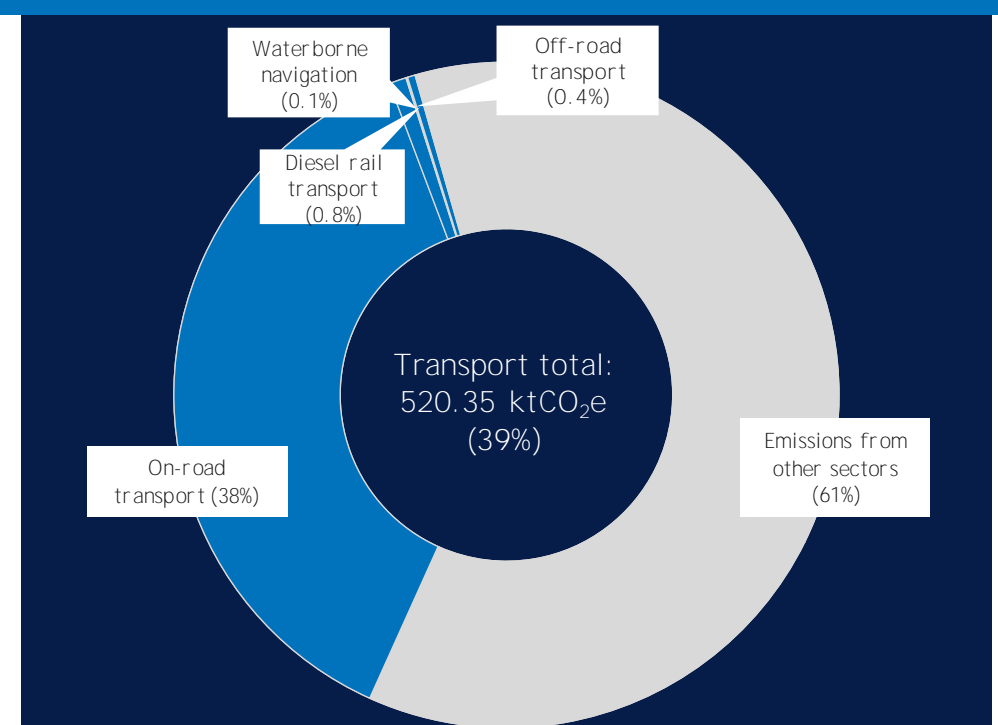


Figure 2.3.1: Emissions from different transport types in Solihull

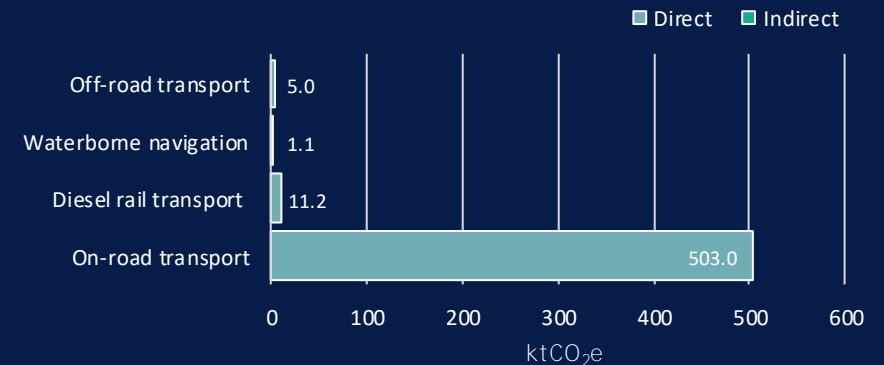


Figure 2.3.2: Transport emission types broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)



## 2.3 TRANSPORT KEY PLANS AND POLICIES

### National UK Policy



- The UK [Transport Decarbonisation Strategy](#) was published in July 2021
- The [Road to Zero Strategy](#) 2018 sets out measures to establish the UK as a world leader in the development, manufacture and use of zero emission road vehicles. The strategy examines reducing emissions from vehicles already on our roads, setting a pathway for reducing HGV emissions, the development of EV infrastructure and leadership at all levels.
- In November 2020, the government outlined a [Ten Point Plan for a Green Industrial Revolution](#) which includes ending the sale of new petrol and diesel cars and vans by 2030, ten years earlier than originally stated.
- The [Moving Forward Together](#) strategy commits bus operators to only purchase ultra-low or zero carbon buses from 2025.
- The [Net Zero Strategy](#), outlines the UK's key commitments to decarbonising the transport industry

### West Midlands Combined Authority



- [TfWM Movement for Growth](#) is a set of policies and plans for the West Midlands transport system designed to complement the WMCA Strategic Economic Plan.
- [TfWM Future Mobility](#) promotes strategic actions to deliver a mobility eco-system befitting of a rapidly evolving world.
- [HS2 Connectivity Programme](#) (2015) ensures the benefits from the Birmingham HS2 high speed rail link hub are spread as far as possible across the region.
- [WM Congestion Management Plan](#) (2018) aims to address and mitigate issues around increase road usage through improving capacity, improving efficiency and managing demand.
- [TfWM Cycling Charter Action Plan](#) (2018) outlines the key activities that will be undertaken to achieve the target of increasing cycling levels to 5% of all trips by 2023 across the West Midlands.

### Solihull Metropolitan Borough Council



- The [Solihull Connected Transport Strategy](#) (2016) **outlines the Borough's vision for future transport infrastructure and initiatives to 2036.** This is in the process of being updated.
- The [Solihull Connected Delivery Plan](#) (2016) follows the Solihull Connected Transport Strategy and outlines a delivery plan clearly defining specific transport priorities and routes to investment.
- The [Cycling and Walking Strategy](#) facilitates and encourages active travel within the Borough. The vision for the strategy is to develop Solihull into a cycling and walking Borough, increasing physical activity and improving wellbeing. As part of the strategy, a [Local Cycling and Walking Infrastructure Plan](#) (LCWIP) has been developed.
- Solihull's [Electric Vehicle Strategy](#) (2020) seeks to address the issues currently restricting further EV adoption throughout the Borough.

## 2.3 TRANSPORT GOALS TO TACKLE TRANSPORT EMISSIONS

The table below outlines the different areas of transport emissions that need action to drive emissions reductions in these areas.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Active travel	3.1 Infrastructure and policy are designed to facilitate walking and cycling	<b>Medium cost, no direct payback</b>	<p><b>High</b> Walking and cycling are assumed to have 0 operational emissions.</p> <p>11,486 tCO<sub>2</sub>e per annum potential savings</p>	<p><b>Inclusive Growth:</b> Saving households money as they don't need to own a car or have lower petrol costs. Increasing active travel could save the NHS £17bn within 20 years by reducing the prevalence of conditions such as type 2 diabetes, dementia, heart disease and cancer. Cycling UK predicts that doubling traffic in congested conditions could cost over £15b a year</p> <p><b>Health:</b> Less NO<sub>2</sub> and pollution from vehicle exhaust fumes leads to health benefits, poor air quality has been linked to around 40,000 deaths a year in the UK. Reduction in transport poverty as active and public transport modes can improve accessibility.</p> <p><b>Health/Environment:</b> Re-allocation of space also improves safety and air quality</p> <p><b>Environment:</b> Reduction of traffic congestion. Considerable improvements in air quality and noise reduction from vehicles increases an individual's quality of life</p>
Electric Vehicles	3.2 EV infrastructure improved	<p><b>Low cost, good payback</b> Vehicle to grid opportunities could result in payback</p>	<p><b>High</b> 151,768 tCO<sub>2</sub>e per annum potential savings</p>	<p><b>Inclusive Growth:</b> Providing EV charging infrastructure has the potential to develop local labour markets by both unlocking business growth and opening up new employment opportunities.</p> <p><b>Inclusive Growth:</b> EV charge point installations can add value to multiple other areas of the supply chain. Increasing demand for skilled labour to install and maintain EV charging infrastructure. The increasing provision of effective EV charging infrastructure is likely to become a key factor that individuals and businesses consider when choosing to visit, trade and invest in local areas. Encouraging the organisations of the future to invest in the local area by providing infrastructure essential to operating EVs.</p> <p><b>Health:</b> Increasing patronage of local businesses, improving access to employment and improving public health.</p> <p><b>Environment:</b> improving air quality through the increased adoption of EV vehicles, and subsequent reduction in carbon emissions from vehicles.</p>
	3.3 EV Uptake	<b>Medium cost, no direct payback</b>		<p><b>Inclusive Growth:</b> Electric vehicles are cheaper to run, costing £2-4 to charge for 100 miles whereas diesel cars cost around £13-16 for 100 miles. Pure EV's are also usually cheaper to service and maintain</p>

## 2.3 TRANSPORT GOALS TO TACKLE TRANSPORT EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Carbon intensive private vehicles	3.4 Reduce distances for essential services	<b>Low cost, no direct payback</b>	<b>High</b> 3,247 tCO <sub>2</sub> e per annum	<p><b>Inclusive Growth:</b> Encourages residents to shop locally and engage in local activities, boosting local economy spending. Saving households money as they don't need to own a car or have lower petrol costs</p> <p><b>Health:</b> Health benefits associated with increased cycling and walking, less NO<sub>2</sub> and pollution from vehicle exhaust fumes leads to health benefits. Improving air quality can also reduce health inequalities, air pollution levels have been found to have strong association with deprivation</p> <p><b>Health/Environment:</b> Decreased air pollution in lower traffic neighbourhoods</p> <p><b>Environment:</b> Considerable improvements in air quality and noise reduction from vehicles increases an individual's quality of life. Reduction of traffic congestion, in noise pollution especially in urban centers, and in emissions as travelling shorter distances can support the uptake of active travel modes. Driving less reduces the demand for land used for roads and car parking, providing an opportunity for more green spaces.</p>
	3.5 Reduce private vehicle use	<b>Medium cost, no direct payback</b>	<b>Medium</b> 9.6 tCO <sub>2</sub> e per annum	<p><b>Health:</b> Less NO<sub>2</sub> and pollution from vehicle exhaust fumes leads to health benefits</p> <p><b>Environment:</b> Reduction of traffic congestion. Considerable improvements in air quality and noise reduction from vehicles increases an individual's quality of life</p>
Public transport	3.6 Accessibility of public transport improved to increase uptake	<b>Low cost, good payback</b>	<b>High</b>	<p><b>Inclusive Growth:</b> Saving households money as they don't need to own a car or have lower petrol costs</p> <p><b>Health:</b> Less NO<sub>2</sub> and pollution from vehicle exhaust fumes leads to health benefits</p>
	3.7 Switch public transport to electric vehicles	<b>Medium cost, no direct payback</b> ROI estimated at around 7-10 years	<b>Medium</b>	<p><b>Inclusive Growth:</b> Economic mobility - efficient and affordable public transport enables economic advancement in cities and facilitates access to markets and resources. Electric transport requires less maintenance and is less likely to breakdown. As a result, investment in electric transport infrastructure delivers better performance and better support. EV vehicles are also cheaper to operate in the long term.</p> <p><b>Environment:</b> Offers significant reduction in pollution</p>

## 2.3 TRANSPORT

### GOALS TO TACKLE TRANSPORT EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Connectivity	3.8 Support remote working	<b>Low cost, no direct payback</b>	<b>High</b> 5,587 tCO <sub>2</sub> e per annum	<b>Inclusive Growth:</b> Saving households money as they don't need to own a car or have lower petrol costs <b>Environment:</b> Reduction of traffic congestion
Commercial journeys	3.9 Reducing business journeys	<b>Low cost, no direct payback</b>	<b>Medium</b> Smart driver training: 380.9 tCO <sub>2</sub> e per annum Urban freight consolidation centres: 16,096 tCO <sub>2</sub> e	<b>Inclusive Growth:</b> Save time and money through more efficient travel policies and practices and can improve organisations reputation which, in turn, can lead to competitive advantage <b>Health:</b> Reduction in the number of accidents, fatigue and stress for staff
	3.10 Reducing Council journeys	<b>Low cost, no direct payback</b>	<b>Medium</b>	<b>Inclusive Growth:</b> Save time and money through more efficient travel policies and practices and can improve the Council's reputation which, in turn, can lead to competitive advantage <b>Health:</b> Reduction in the number of accidents, fatigue and stress for staff. Less NO <sub>2</sub> and pollution from vehicle exhaust fumes leads to health benefits <b>Environment:</b> Considerable improvements in air quality and noise reduction from vehicles increases an individual's quality of life
	3.11 Use local suppliers to reduce miles travelled	<b>Low cost, no direct payback</b>	<b>Medium</b>	<b>Inclusive Growth:</b> Encourages residents to shop locally and engage in local activities, thereby boosting local economy spending
Aviation	3.12 Reduce unnecessary flights	<b>Low cost, no direct payback</b>	<b>High</b>	<b>Inclusive Growth:</b> Increase in local tourism <b>Health/Environment:</b> Reduction in air pollution and subsequent health benefits <b>Environment:</b> Reduction in noise pollution
	3.13 Improve efficiency of flights	<b>Medium cost, no direct payback</b>	<b>Medium</b>	<b>Inclusive Growth:</b> Opportunities for skills development and economic opportunities for innovation to support R&D in battery and low-carbon fuel development

## 2.3 TRANSPORT KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver on transport:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Active travel	3.1a Deliver the Solihull Cycling and Walking Infrastructure Plan to identify a long-term Cycling Network Plan and key core walking zones (CWZs), considering street space allocation in favour of active travel. Ensure connectivity and capacity of network is suitable for growth in use e.g. size of lanes, towpaths.	Implementation	Residents	Long	Strategic
	3.1c Further encourage cycling through accelerating strategic high-quality walking and cycle routes across the Borough that are safe and offer secure storage.	Implementation	Residents, Businesses	Immediate	Strategic
	3.1e Continuous delivery of a behaviour change program on cycling and walking to encourage long-term uptake	Communication & Engagement	Residents	Long	Strategic
Electric vehicles	3.2a Identify sites for EV infrastructure (rapid and slower charging) through consultation and a strategic assessment, such as car parks, filling stations and taxi ranks through delivery of the EV Charging Strategy	Research & Design	Community Groups	Short	Strategic
	3.2b Implement EV-ready building codes and establish preferred EV parking policy in through the Local Plan	Policy & Strategy	Developers	Long	Strategic
	3.2c Install EV infrastructure in identified strategic sites across the Borough	Implementation	Developers	Medium	Indirect
	3.2d Review opportunities for the installation of EV charging points on Council premises	Research	Suppliers	Immediate	Indirect
	3.3a Consult with businesses on the barriers to the uptake of EV within their fleets and consult with residents on potential ultra low emission streets	Communication & Engagement	Business and Resident groups	Short	Indirect
	3.3c Implement strategic plan to introduce low emissions vehicles into the LGV/HGV fleet (including waste and highways)	Implementation	Suppliers	Medium	Strategic
	3.3d Review and update Council's fleet management plan. Specify that for certain vehicles, only Ultra-Low-Emissions Vehicles (ULEV) are permitted and enable the switch to ULEV	Policy & Strategy	Suppliers	Medium	Strategic
3.3e Collaborate and support key partners, such as JLR, to develop low carbon transport technologies	Communication & Engagement	Key partners, such as JLR	Long	Indirect	

## 2.3 TRANSPORT KEY ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Carbon intensive private vehicles	3.4a Implement planning policy / supporting developers to build development that reduce the need for travel, making sure people can access amenities without a car e.g. walkable neighbourhoods.	Policy & Strategy	Businesses	Long	Strategic
	3.4b Consider car parking strategies and provision of car parking for new developments to make local centres more attractive.	Policy & Strategy	Developers	Long	Strategic
	3.5a Active campaign to limit short trips to discourage driving for commute or school run e.g. Car free days, 'Walk to School' week and similar business initiative.	Implementation	Residents	Immediate	Indirect
	3.5d Enforce restrictions on idling through ongoing anti-idling campaigns, introduce parking zones and road closures near schools during peak hours.	Policy & Strategy	Residents	Immediate	Indirect
Public transport	3.6a Work with TfWM to identify gaps in public transport connectivity for key areas of the Borough through the delivery of Solihull Connected strategy, including rail and road. Work with public transport providers and local larger employers to introduce demand responsive transport.	Implementation	Transport for West Midlands	Immediate	Strategic
	3.6b Communications campaign with case studies illustrating how journeys across the Borough can be taken on public transport (rail, bus) and active travel rather than private car. Illustrative map with journey times.	Communication & Engagement	Transport for West Midlands	Immediate	Indirect
Connectivity	3.8b Provide guidance and support to businesses/large employers to maintain recent behaviour change on working from home and reduced business travel and assess the impact of increased remote working on plans for future developments	Communication & Engagement	Businesses	Immediate	Indirect
	3.8c Provide support for businesses to adopt technology to enable hybrid remote and office working patterns, particularly for teleworking and service digitalisation businesses across the Borough, sharing best practice on co-benefits of remote working. Develop strategies following a review of the likely impact on office space in Solihull of increased remote working	Communication & Engagement	Businesses	Short	Indirect
	3.8d Use the Digital Infrastructure Strategy to facilitate the provision of widespread WiFi and high-speed internet to less-well connected areas across the Borough to facilitate agile/teleworking and use CSW Broadband to engage and promote broadband services available for low-income households	Implementation	Network Providers	Medium	Indirect
	3.8e Continue to support agile working for Council employees.	Implementation	Council's Human Resources Team	Long	Indirect

## 2.3 TRANSPORT KEY ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Commercial journeys	3.9c Assess the feasibility of local distribution hubs for home deliveries in Solihull town centre which utilise low-carbon "Last Mile" deliveries.	Research & Design	Council's Planning, Design & Engagement Team	Short	Strategic
	3.10b Strengthening procurement policies for suppliers who provide services using freight vehicles.	Policy & Strategy	Suppliers	Immediate	Indirect
	3.10d Offer organisations with large fleets eco-driver training and link private hire licensing/ qualifications to vehicle emissions with incentives for Solihull licensed drivers	Communication & Engagement	Organisations with large fleets	Medium	Indirect
	3.11c Develop an e-cargo bike scheme for local deliveries.	Implementation	Council's Highways and Environment Team	Medium	Direct
Aviation	3.13a When other technologies become more widely available, lobby for electric or hydrogen to be a standard for the aviation and shipping sectors.	Communication & Engagement	National Government, Businesses	Long	Strategic

## 2.3 TRANSPORT OTHER ACTIONS

The below table highlights the other actions for Solihull Metropolitan Borough Council to consider on transport:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Active travel	3.1b Include recommendations in building and planning policy which further incentivise active travel, such as the provision of secure storage and drying rooms.	Policy & Strategy	Developers	Medium	Strategic
	3.1d Identify sites of high levels of cycling/walking and introduce Low and Slow Traffic Neighbourhoods (LTNs & STNs), time restricted street closures or speed limits at these sites. This should include prioritising pedestrians and cyclists at traffic lights and junctions to enable safer, more available and improved active travel infrastructure.	Research & Design	Residents, Businesses	Short	Strategic
	3.1f Work with all schools to set up walking buses and provide cycling workshops.	Communication & Engagement	Schools	Immediate	Indirect
Electric vehicles	3.3b Incentivise and support taxi drivers in switching to EV through interest-free loans or other mechanisms.	Communication & Engagement	Taxi companies	Medium	Indirect
	3.5c Organise EV leasing opportunities and funding schemes to enable lower-income communities to access EVs	Implementation	Community Groups	Short	Indirect
Carbon intensive private vehicles	3.5b Assess viability of imposing a surcharge/congestion charge for the worst-performing/most polluting vehicles whilst avoiding penalising lower-income households, aligning with other local schemes.	Research	N/A	Short	Strategic
	3.5c Organise EV leasing opportunities and funding schemes to enable lower-income communities to access EVs.	Research	Community Groups	Short	Indirect
	3.5d Organise a scheme offering mobility credits for alternative transport for the able-to-pay market to scrap cars.	Research	Residents	Short	Indirect
	3.5e Set up a car sharing/car club scheme in the Borough where feasible to reduce number of journeys and expand user choice without requiring personal ownership e.g. EV car clubs run by commercial operators. The Council could have their own group for employees.	Implementation	Residents	Short	Direct
	3.5f Conduct regular surveys of Council staff commuting and business travel to target actions and develop guidance on sustainable travel.	Research	Council staff	Long	Indirect



## 2.3 TRANSPORT OTHER ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Public transport	3.6c Research and consider the opportunities for school bus collection services to reduce morning school commutes. Develop trial initiatives with local primary and secondary schools and members of public.	Research & Design	Schools	Short	Strategic
	3.7a Enable the rapid shift to electric vehicles through bus fleet	Implementation	Suppliers	Long	Direct
	3.7b Encourage and support the use of electric buses to schools in the Borough through financial mechanisms such as funding and opportunities to trial EV	Implementation	Schools	Medium	Direct
	3.7c Work with TfWM to accelerate the switch to electric buses and low-carbon trains in Solihull	Communication & Engagement	TfWM	Medium	Direct
Connectivity	3.8a Develop a Digital Infrastructure Strategy	Policy & Strategy	N/A	Short	Strategic
Commercial journeys	3.9a Council should opt where possible for local suppliers e.g. local produce if providing food	Implementation	Suppliers	Immediate	Indirect
	3.9b Equip any drivers of Council vehicles with the necessary knowledge to more appropriately plan journeys in order to minimise disruption and maximise carbon savings.	Implementation	N/A	Immediate	Direct
	3.9d Encourage local stakeholders to consider the sustainability of their supply chains.	Communication & Engagement	Residents, Businesses	Short	Indirect
	3.9e Create business Sustainable Travel resource pack to encourage businesses to support employees in alternative travel to private car use, including advice on amenities businesses should provide.	Communication & Engagement	Businesses	Immediate	Indirect
	3.9f Work with logistics companies to improve the efficiency of journeys and reduce their frequency e.g. through route optimisation	Communication & Engagement	Logistics Companies	Short	Indirect

## 2.3 TRANSPORT OTHER ACTIONS

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Commercial journeys	3.10a Create forums & groups for businesses to explore consolidating journeys, e.g. restaurants based near each other could utilise the same supplier	Communication & Engagement	Businesses	Short	Indirect
	3.10c Support and require large fleets operating in the Borough, such as waste services, to practice journey optimisation	Policy & Strategy	Organisations with large fleets	Medium	Indirect
	3.11a Encourage residents to consider miles travelled in their purchasing decisions and buy locally where possible	Research & Design	Residents	Immediate	Indirect
	3.11b Encourage businesses across the Borough to use procurement policies to favour local suppliers e.g. local produce if providing food	Communication & Engagement	Businesses	Short	Indirect
Aviation	3.12a Undertake more refined baselining to understand which groups contribute most significantly to aviation emissions and target actions to reduce flight use	Research	N/A	Short	Strategic
	3.12b Promote reduction of flights (targeted more at frequent fliers) and promote alternative means of transport (rail)	Communication & Engagement	Residents, Businesses	Medium	Indirect
	3.12c Work with WMCA and local businesses to share examples of reducing reliance on business air travel and innovations in alternatives	Communication & Engagement	Businesses	Medium	Indirect
	3.13b Work with aviation, government and R&D partners to foster opportunities for innovation in zero emissions flights and 'first mover' advantage on low-carbon hydrogen applications.	Communication & Engagement	WMCA, Business	Long	Indirect

# 2.4 WASTE

## 2.4 WASTE BACKGROUND

### Scope of section

Waste management represents a much smaller proportion of Solihull's emissions than the sectors previously discussed, representing approximately 2% of Solihull's total emissions.

The waste measures described here relate to all waste streams; reuse, open and closed-loop recycling, combustion and composting & landfill. We can think of reducing the quantity of waste as a demand-side reduction and a priority when examining the waste hierarchy of reduce, reuse and recycle. The Extended Producer Responsibility scheme is likely to have some bearing on waste reduction and recycling and is currently out to consultation. The actions in this section are not listed as key actions due to the relatively low emissions impact of the sector however we recognise there is still significant opportunities and interest from the public in this area.

### Progress to date

- Solihull currently has a household recycling rate of 36.7% and a non-household recycling rate of 79.6%<sup>1</sup>.
- In 2017, there were 13 permitted waste facilities operating in Solihull handling over 1 million tonnes of waste. The largest tonnage of waste is from the construction & demolition sector, followed by municipal waste which together comprise of 86% of waste received.
- Planning permission has been granted for an in-vessel composting/biomass/waste water plant and Meridian Quarry for Beechwood Recycling, which will provide capacity for up to 30,000 tonnes of composting and food waste.<sup>2</sup>
- Only 13% of waste deposited in Solihull originated in the Borough in 2017, with over 90% of waste originating across the West Midlands.<sup>2</sup>

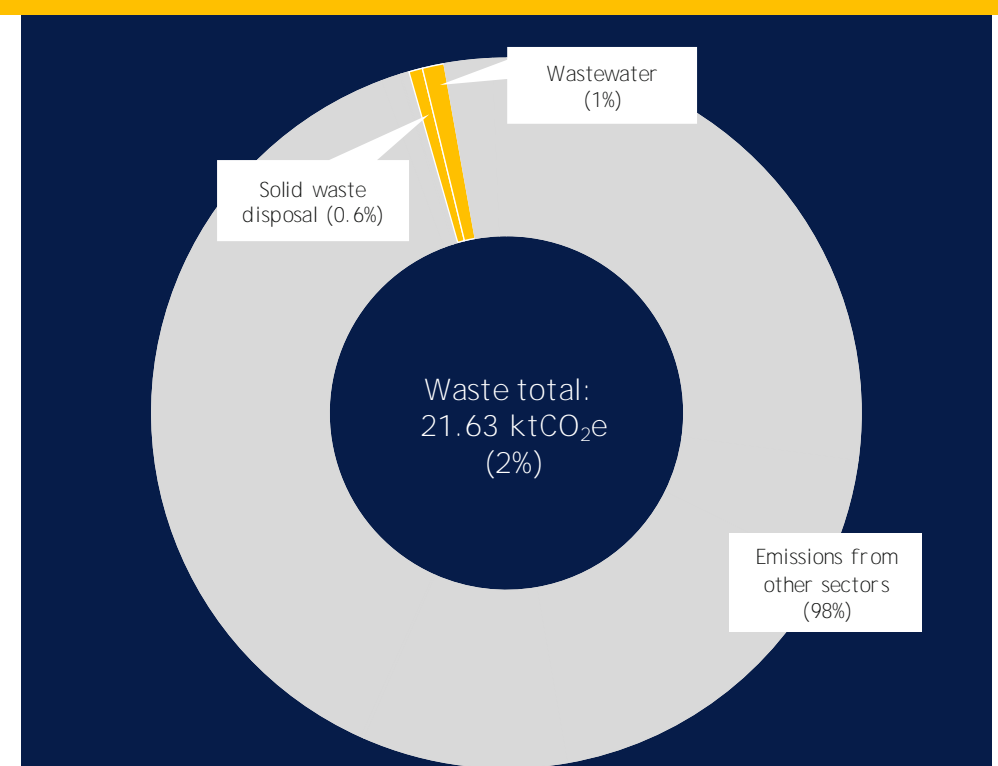


Figure 2.4.1: Emissions from waste in Solihull

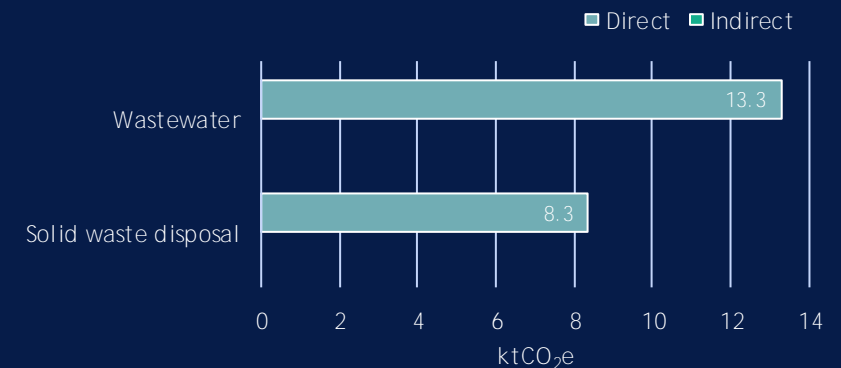


Figure 2.4.2: Waste emission types broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)

<sup>1</sup> Based on 2019/2020 data (Ex NI192).

<sup>2</sup> Reviewing the Plan for Solihull's Future, Waste Management

## 2.4 WASTE KEY PLANS AND POLICIES

### National UK Policy



- [Our Waste, Our Resources: A Strategy for England](#) (2018) supports the 25-year Environment Plan and sets out how the country will preserve resources by minimising waste, promoting resource efficiency and moving to a circular economy.
- [Waste and Recycling: Making Recycling Collections Consistent in England \(2019\)](#) The government are working with local authorities and waste management businesses to implement a more consistent recycling system in England. The UK has a recycling target for packaging of 70% by 2030.
- The [Net Zero Strategy](#) highlights the **government's key commitment to explore options** for the near elimination of biodegradable municipal waste to landfill from 2028 as well as £295m of capital funding which will allow local authorities in England to prepare to implement free separate food waste collections for all households from 2025

### West Midlands Combined Authority



- [The DEFRA WMCA work](#) looks at all waste management options across WMCA. This will map current waste streams and what this could look like if streamlined across the combined authority, as all cities currently use individual incineration. The project is led by the Local Partnerships, with WRAP involved. The target by 2030 is to achieve a household recycling rate of 55% (from 43% in 2019) across the West Midlands.
- The WMCA formed the [West Midlands Circular Economy Taskforce](#) in September 2020 to identify possible benefits from a circular economy approach across the region, which encourages repair, reuse and regeneration of resources. The Taskforce intends to launch the West Midlands Circular Economy Routemap in February 2021.

### Solihull Metropolitan Borough Council



- A [Waste Needs Assessment for Solihull](#) (2018) was published, which sets out existing waste management facilities within the Borough, waste arisings for various waste streams and forecasts for future waste arisings.
- **Solihull's waste management policy is detailed in [Solihull's Local Plan](#)** (2013). The SLP recognised the challenge of providing sufficient waste management facilities within the Borough and addressed predicted shortfalls.
- **The Council's waste strategy is due to be reviewed and updated this year.**

## 2.4 WASTE

### GOALS TO TACKLE WASTE EMISSIONS

Emissions from the treatment of waste and wastewater represent a small proportion of Solihull’s carbon footprint, however actions to reduce waste and increase recycling can deliver multiple benefits as well as contributing to carbon reduction. The table below outlines the different areas of emissions that need action to drive emissions reductions and overall goals to deliver reductions in these areas.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Residents	4.1 Encourage citizens to reduce waste and wastewater	<p><b>Low cost, good payback</b> Average costs for treatment and disposal of general waste at c.£100 per tonne compared to £65 per tonne for food waste. Reduction in waste emissions equivalent to the change in recycling and waste.</p>	<p><b>Low</b> Waste emissions are a small proportion of Solihull’s overall footprint</p>	<p><b>Inclusive Growth:</b> Free up consumers’ financial resources for potentially more economically productive endeavours - consuming less will use fewer financial resources to purchase products that become waste. <b>Inclusive Growth/Health:</b> Encourages social inclusion and economic development through creating jobs, volunteer schemes and training opportunities as well as improving access to reduced price goods for lower income families. <b>Environment:</b> Reduces demands on finite natural resources and the associated environmental impacts of the extraction, harvesting and processing of those resources. Minimises greenhouse gas emissions associated with waste collection, transportation and treatment.</p>
	4.2 Increasing recycling	<p><b>Medium cost, good payback</b> Capex of specialist engagement: £10-£15,000.</p>	<p><b>Low</b> Waste emissions are a small proportion of Solihull’s overall footprint</p>	<p><b>Inclusive Growth:</b> In some cases cheaper than waste collections and disposal for the Council, and there is also an opportunity to offer a financial incentive to recycle. <b>Inclusive Growth:</b> Creation of green jobs within recycling directly as well as in supply chain and the wider economy. <b>Environment:</b> Reduces demands on finite natural resources and the associated environmental impacts of the extraction, harvesting and processing of those resources. Protects ecosystems and wildlife.</p>

## 2.4 WASTE

### GOALS TO TACKLE WASTE EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Businesses	4.3 Encourage businesses to reduce waste	<b>Low cost, no direct payback</b> Additional staff needed for business support	<b>Medium</b> Dependent on business uptake. Waste treatment is a small proportion of Solihull's overall footprint	<b>Inclusive Growth:</b> Businesses can save money through more efficient use of raw materials, packaging and technology. Allows businesses to cut waste disposal costs. Compliance with environmental legislation becomes cheaper and more straightforward. Can improve businesses reputation among customers, suppliers, potential employees and insurers, who may want to be sure that businesses take their environmental responsibilities seriously.
	4.4 Increasing recycling and promoting circular economy benefits	<b>Low cost, no direct payback</b> Additional staff needed for business support	<b>Medium</b> Dependent on business uptake. Waste treatment is a small proportion of Solihull's overall footprint	<b>Inclusive Growth:</b> Reduces a company's exposure to ever more volatile raw materials prices and increasing resilience. Threat of supply chains being disrupted by natural disasters or geopolitical imbalances is reduced as decentralised operators provide alternative materials sources. Creation of demand for new business services such as: collection and reverse logistics companies, product remarketers and sales platforms, parts and components manufacturing. Improved customer interaction and loyalty as circular solutions offer new ways to creatively engage customers.

## 2.4 WASTE

### GOALS TO TACKLE WASTE EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Council's own waste	4.5 Council demonstrates circular economy leadership	<b>Low cost, no direct payback</b> Additional staff time required	<b>Low</b> Council waste is a relatively small proportion of overall waste	<p><b>Inclusive Growth:</b> Lower Council costs associated with waste collection and disposal due to decreased quantities of waste. Organisations developing innovation in biodegradable and reusable products can benefit from Government grants such as the Plastics Research and Innovation Fund. Recycling acts as an input into economic activity. Friends of the Earth estimate that if a target of 70% recycling rate is reached across the UK it could create 50,000 new UK jobs with 30,000 of the new jobs in recycling directly and 20,000 in supply chains and the wider economy.</p> <p><b>Health:</b> Improves access to reduced price goods for lower income families.</p> <p><b>Environment:</b> Recycling reduces the need to grow, harvest or extract new raw materials from the Earth. That in turn lessens the harmful disruption and damage being done to the natural world. Reduction in pollution from waste treatment.</p>
	4.6 Improve Council's waste collection and management	<b>Low cost, no direct payback</b> Additional staff time required	<b>Low</b> Council waste is a relatively small proportion of overall waste	<p><b>Inclusive Growth:</b> Reduces spending towards waste collection and disposal.</p> <p><b>Environment:</b> Encourages staff to recycle.</p>



## 2.4 WASTE OTHER ACTIONS

The below tables highlight other actions for Solihull Metropolitan Borough Council to consider on waste:

Intervention area	Actions	Council's role	Other stakeholders	Timing	Action Type
Residents	4.1a Support community groups to develop sharing/circular economy e.g. repair café, library of things, community fridge, food redistribution centres. Provide community groups with access to advice, resources via Council's Social Value commitments from contractors.	Communication & Engagement	Community Groups	Medium	Indirect
	4.1b Signpost zero waste cafes and plastic free business and work with WMCA to highlight sustainable alternative to plastics	Communication & Engagement	Residents	Immediate	Indirect
	4.1c. Consider decreasing the number of general waste collections and increasing recycling collections, if appropriate, and ensure suitable waste storage is provided	Implementation	Waste contractor	Short	Direct
	4.1d Consider opportunities through Love Solihull schools partnerships to develop waste reduction programs with schools	Communication & Engagement	Schools	Short	Direct
	4.1e Organise a food waste campaign using community growing projects and education in schools	Communication & Engagement	Residents, businesses and schools	Short	Indirect
	4.1f Ensure where feasible households across Solihull have access to recycling bins and a food waste bin	Implementation	Waste contractor	Short	Direct

## 2.4 WASTE OTHER ACTIONS

Intervention area	Actions	Council's role	Other stakeholders	Timing	Action Type
Residents	4.1g. Once all suitable households have food and recycling bins, consider setting targets for food waste and recycling and ensure infrastructure and engagement supports this	Implementation	Waste contractor	Medium	Strategic
	4.1h. Provide information on minimising waste of water to residents	Communication & Engagement	Citizens, Businesses and Schools	Immediate	Indirect
	4.2a Develop further education campaigns for residents to raise awareness of what can be recycled	Communication & Engagement	Residents	Immediate	Indirect
	4.2b Use information on levels of recycling in different areas of the Borough to launch communication/educational campaign on recycling with support of community leaders	Communication & Engagement	Residents	Short	Indirect
	4.2c Consider and identify opportunities for local community composting centres to support local food waste collection - could also link to urban farming locations.	Communication & Engagement	Residents	Short	Direct
	4.2d Identify what recycling facilities exist in schools and other public sector locations in the borough and coordinate access to Council facilities through joint waste management procurement and recycling provision.	Research & Design	Residents	Short	Strategic
	4.2e Review adequacy of existing council managed household recycling centres and act on findings, which may include increasing opening hours, increasing provision etc.	Research & Design	Residents	Immediate	Indirect

## 2.4 WASTE OTHER ACTIONS

Intervention area	Actions	Council's role	Other stakeholders	Timing	Action Type
Businesses	4.3a Support construction waste reduction innovation through new materials specification in planning policy	Policy & Strategy	Developers	Short	Strategic
	4.3b Provide better incentives to commercial sites and workplaces to adopt improved waste management measures	Implementation	Businesses	Short	Indirect
	4.3c Consider policies to reduce or repurpose waste in construction, demolition and excavation of buildings through circular economy models	Implementation	Businesses	Short	Strategic
	4.3d Expand networks facilitating the donation of edible surplus food, such as food banks	Implementation	Food businesses	Short	Indirect
	4.3e Provide start up support to organisations that seek to offer members of the public refilling services e.g. cereals, rice for household goods and therefore reducing food packaging waste.	Communication & Engagement	Businesses	Medium	Indirect
	4.4a Work with WMCA to share case studies from businesses on circular economy practices to maximise environmental and economic opportunities	Communication & Engagement	WMCA & Businesses	Short	Indirect
	4.4b Encourage businesses to segregate their waste including their commercial organic waste to reduce food waste through incentives and sharing best practice	Implementation	Local Businesses	Medium	Indirect
	4.4c Identify sectors/businesses which require support to improve waste reporting	Research	Local Businesses	Medium	Indirect

## 2.4 WASTE OTHER ACTIONS

Intervention area	Key Actions	Council's role	Other stakeholders	Timing	Action type
Businesses	4.5a Develop a circular economy roadmap for the Borough in line with WMCA Circular Economy, mapping material flows within area to identify opportunities for circularity and co-location	Communication & Engagement	Council's Waste and Recycling Team	Medium	Strategic
	4.5b Encourage suppliers to adopt circular economy principles through procurement policies	Policy & Strategy	Suppliers	Short	Indirect
	4.5c Explore opportunities to install recycling bins and facilities in public spaces alongside general waste bins and support the development of deposit return schemes (DRS)	Research & Design	Citizens	Short	Indirect
Council's Own Waste	4.6a. Lead by example and report publicly on the Council's waste. Ensure emissions reduction and waste reduction is a key priority in the Council's waste strategy, decisions and investments	Implementation	N/A	Short	Strategic
	4.6b Building on the Council's Plastic Free Strategy, consider banning single use plastics within the Council's buildings and events and develop a Plastic Free campaign	Implementation	N/A	Short	Strategic
	4.6c Explore options for smart bins in public areas to improve the efficiency of waste collections	Implementation	Suppliers	Medium	Direct

# 2.5 INDUSTRY

## 2.5 INDUSTRY BACKGROUND

### Scope of section

Industrial process emissions, like those arising from waste, represent a much smaller **proportion of Solihull's 2017 inventory, with around 2% of emissions as a result of industry processes**. Tackling industrial emissions can be extremely challenging, particularly the decarbonisation of very energy-intensive processes and reducing the emissions from the processes themselves.

The emissions associated with industrial buildings are considered as part of the non-domestic buildings sector as a form of stationary energy. Therefore, this section relates to emissions arising directly from industrial processes where materials are chemically or physically transformed. Examples of industrial processes include production and use of mineral products; production and use of chemicals and production of metals. Further information on the emission sources included under these sectors can be viewed in the [GHG Protocol for Cities](#).

### Progress to date

- Industrial carbon emissions in the UK, including those from energy-intensive industries have halved since 1990, which has mainly been due to efficiency gains, fuel switching, a change to industrial structure of the UK and re-location of production overseas.
- Since 1990, the UK chemical sector has improved its energy efficiency by 35%.
- WMCA Materials and Metals cluster - According to West Midlands Growth Company, the West Midlands has the largest concentration of materials related jobs in the UK.
- In the UK, 35% of energy consumed by the industrial sector in 2019 was electric.

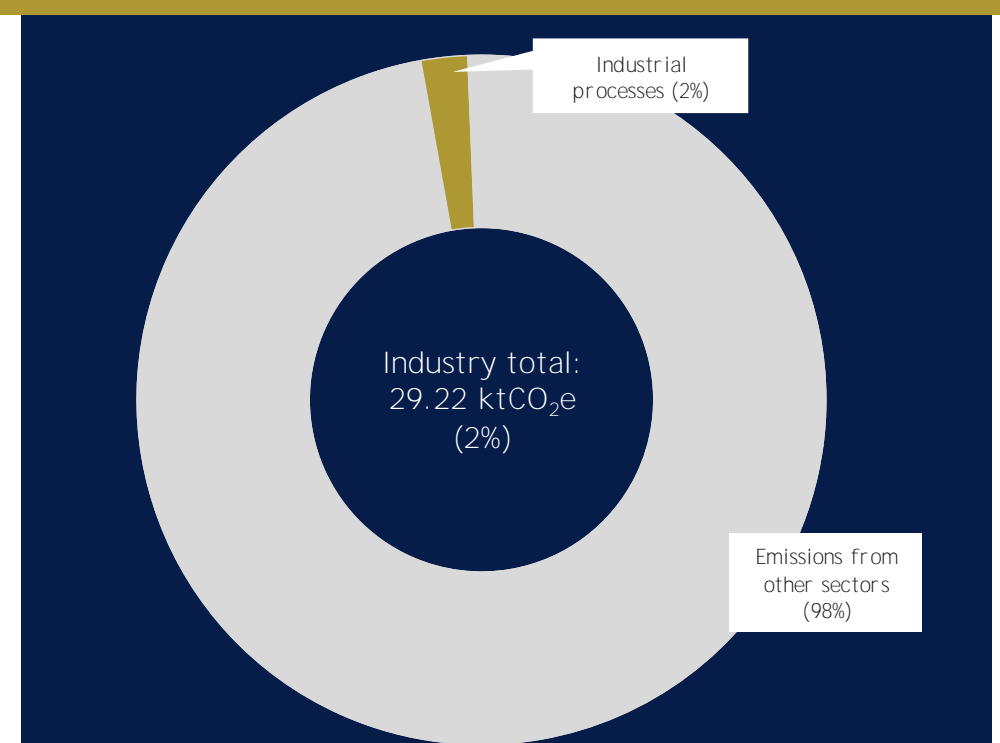


Figure 2.5.1: Emissions from industry in Solihull

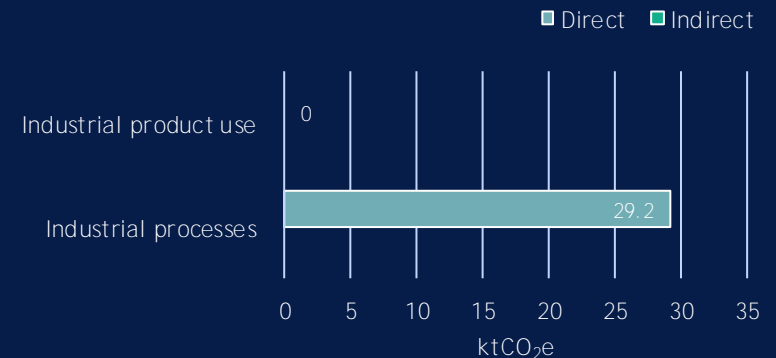


Figure 2.5.2: Waste emission types broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)

## 2.5 INDUSTRY

### KEY PLANS AND POLICIES

#### National UK Policy



- [The UK's Industrial Strategy](#): Building a Britain fit for the future, includes grand challenge of clean growth and maximising the advantages for UK industry.
- [The Clean Growth Strategy](#) includes improving business and industry efficiency. BEIS also published joint industrial decarbonisation and energy efficiency [action plans](#) with seven of the most energy intensive industrial sectors.
- [The Route to Clean Growth](#): Using Industrial Strategies to drive change, Localis and Green Alliance.
- The [UK Climate Change Levy](#) (extended until March 2025) supports industrial businesses who meet agreed energy or carbon reduction targets to benefit from tax reductions.
- The [UK Government's 10-Point Plan](#) for a Green Industrial Revolution includes plans to invest in carbon capture for industries that are particularly difficult to decarbonise.

#### West Midlands Combined Authority



- [The West Midlands Local Industrial Strategy](#) (2019) demonstrates how the West Midlands is forging its future, driving growth by strengthening the foundations of productivity and building an inclusive economy.
- [West Midland Growth Company: Make your Mark](#) outlines the key industries in the region and provides further insight on the Advanced Manufacturing sector in the region.
- [West Midlands Low Carbon & Environmental Technologies Sector Action Plan](#) developed by GBSLEP aims to ensure the low-carbon businesses in the region are well-placed to grow during the transition to net zero and recovery from COVID-19. The action plan intends to provide solutions necessary to support the transition to a low carbon economy and incorporates a large proportion of the energy system which is leading the low carbon transition.

#### Solihull Metropolitan Borough Council



- Solihull Chamber of Commerce released the [Doing Business in Solihull: An Economic Snapshot](#) (May 2019) report providing insight into current business activities in Solihull.
- [Solihull's Economic Recovery Plan](#) identifies a number of Council recovery actions for businesses & sectors, including business signposting and access to support programs, supply chain engagement with HS2 and Commonwealth Games 2022 opportunities and inward investment marketing and investor support.

## 2.5 INDUSTRY

### GOALS TO TACKLE INDUSTRY EMISSIONS

Emissions from industrial processes and energy intensive industries will be challenging to reduce without working in collaboration with organisations and national government. SMBC has a key role to play through strategic partnerships with WMCA and GBSLEP to foster collaboration amongst industrial clusters. Adopting new technologies and low carbon infrastructure offer benefits for the local economy.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Innovative technologies	5.1 Clean growth and low-carbon technology are advanced in the Borough	<b>Low cost, no direct payback</b> Capex workshop with larger industrial neighbours and partners to provide introduction to climate action: £2-5,000.	<b>Medium-High</b> Innovation has a key long-term role to play in carbon reduction but most technologies such as low-carbon hydrogen and CCS have not been proven at scale at this stage	<b>Inclusive Growth:</b> Increases productivity and competitiveness of local businesses <b>Inclusive Growth:</b> Creates opportunities to export knowledge, skills and products to other local authorities
Industrial sector support	5.2 Industrial sector is supported to decarbonise and develop low-carbon infrastructure	<b>Low cost, no direct payback</b> Capex consultation with larger industrial neighbours and partners to develop strategic business partnerships: £10-30,000.	<b>Low</b> Potential 15% reduction in Iron and Steel industry from energy and material efficiency and fuel switching.	<b>Inclusive Growth:</b> Creates green jobs, particularly in low carbon technology <b>Environment:</b> Reduces carbon emissions which will contribute to the UK's net zero carbon emissions target



## 2.5 INDUSTRY OTHER ACTIONS

The below table highlights other actions for Solihull Metropolitan Borough Council to consider on industry:

Intervention area	Actions	Council's role	Other stakeholders	Timing	Action Type
Innovative technologies	5.1a Work collaboratively with WMCA and GBSLEP to deliver the industrial strategy, particularly focusing on the clean growth challenge	Implementation	GBSLEP/WMCA	Medium	Strategic
	5.1b Develop refresh of the Borough's Economic Growth Vision and Strategy to put Solihull and the region on the map for investors and investment in low carbon technologies and industries.	Research	N/A	Short	Strategic
Industry support	5.2a Support setting up of a forum through which industry can achieve sustained collaboration and showcase leading examples of industrial decarbonisation, building on successful engagement forums such as the Solihull Sustainability Visioning Group.	Communication & Engagement	Businesses	Immediate	Indirect
	5.2b Encourage local industry to measure and understand emissions, develop a carbon reduction strategy and share best practice by providing support and guidance in collaboration with regional approaches	Communication & Engagement	Businesses	Short	Strategic
	5.2c Set guidance and provide training for promoting zero and low-carbon infrastructure when assessing industrial/commercial planning applications	Implementation	Businesses	Short	Indirect
	5.2d Signpost carbon reduction support for relevant industrial sectors which offers support to decarbonise	Communication & Engagement	Businesses	Medium	Direct

# 2.6 NATURAL ENVIRONMENT

## 2.6 NATURAL ENVIRONMENT BACKGROUND

### Scope of section

The use of green spaces and the natural environment has a significant role in acting as a **carbon “sink”** - meaning that it removes carbon emissions from the atmosphere in the form of trees and other natural features. Management of natural infrastructure also forms an important part of achieving significant co-benefits for Solihull, in terms of net biodiversity gain, improved air quality and improving quality of place. This may be through increasing trees in agricultural landscapes, or by improving soil health to maximise its potential for sequestration.

The net contribution of Agriculture, Forestry and Other Land Use (AFOLU) emissions to **Solihull’s overall emissions total is very small, at less than 1%.** Solihull’s total land use emissions act as a net sink of -2.69 ktCO<sub>2</sub>e, where land use includes forestland, cropland, grassland, wetlands and settlements.

### Progress to date

- **Solihull’s Urban Forestry Strategy** indicates that across the Borough there are 600ha of parks and open spaces, 23 local nature reserves, 29,500 highway trees, 50,000 park trees, 5,600 cemetery trees and 13,060 housing trees.
- In Spring 2020, Solihull Council completed a three-year programme of habitat and nature improvements in publicly accessible green spaces in the urban areas of Solihull. 30 hectares of grassland were improved, 4 wetland improvement schemes took place and **woodland management took place across 12 of the Borough’s woodlands.**
- The Arden Free Tree Scheme allows individuals or groups to apply for funding to create hedgerows or small woodlands on their own land, within Solihull.
- SMBC have committed to planting 250,000 trees over the next 10 years as part of the **‘Planting our Future’ campaign**

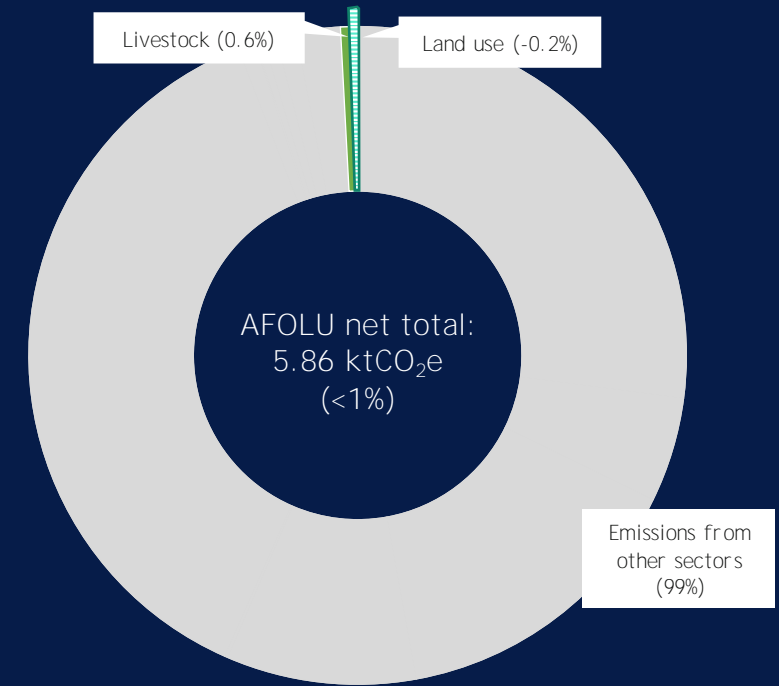


Figure 2.6.1: Emissions from AFOLU (Agriculture, Forestry and Other Land Use) Solihull

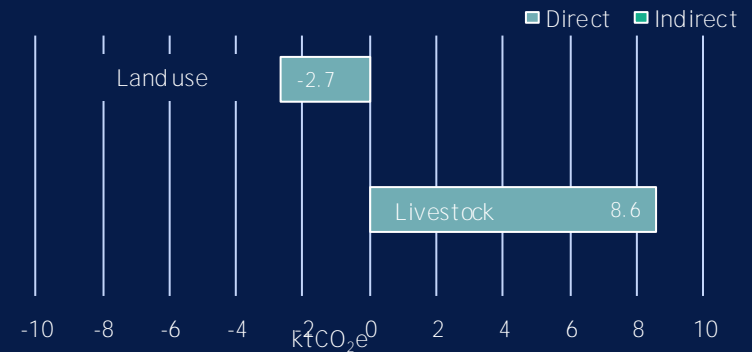


Figure 2.6.2: AFOLU emissions broken down by scope (where direct are scope 1, and indirect are scope 2 emissions)

## 2.6 NATURAL ENVIRONMENT KEY PLANS AND POLICIES

### National UK Policy



- [The 25 Year Environment Plan](#) - The '25YEP' sets out the UK Government's goals for improving the environment over the next 25 years. It includes commitments to create new forests/woodlands, incentivise tree planting, explore innovative finance for afforestation; and increase protection of existing trees.
- [Land use: Policies for a Net Zero UK \(2020\)](#) - The CCC report sets out the policies and actions **required to deliver the land sector's contribution** to the UK net zero target including converting 22% of agricultural land (mostly from livestock) to forestry.
- [Woodland Trust Emergency Tree Plan](#) for the UK - Recommends Local Authorities: write an Emergency Tree Plan to identify land for trees; protect existing native woodland and trees, set annual expansion targets for tree/woodland cover, ensure all development land includes a minimum 30% tree canopy cover.

### West Midlands Combined Authority



- [#WM2041: Our Actions to Meet the Climate Challenge \(Green Paper\)](#) outlines the WMCA's plans for climate mitigation, adaptation and social equity. Includes plans to invest in tree planting. Includes plans for a Natural Capital Investment Plan.
- [Birmingham and Black Country Nature Improvement Area Ecological Strategy 2017 - 2022](#) aims to protect Core Ecological Areas (least developed); enhance Linking Areas (matrix of **'connecting tissue' in the landscape**); and create new sites in Opportunity Areas (intensively used green space including parks and agricultural land). The Wildlife Trust is working with >60 partners in the region to achieve its strategy.

### Solihull Metropolitan Borough Council



- [Solihull Green Spaces Strategy Review](#) provides a framework to inform the strategic planning of green space and ensures links are made with operational delivery.
- [Solihull Urban Forestry Strategy 2019 - 2029](#) outlines how urban forestry (including private gardens, streets, public parks, small woodlands and semi-natural ancient woodlands) across the Borough will be planned, managed and protected for future years. The Council is also in the process of developing a natural capital road map to outline the steps for Solihull to develop its Natural Capital Investment Strategy (NCIS).
- [Solihull Habitat & Nature Improvements Project](#) In Spring 2020, Solihull Council completed a three-year programme of habitat and nature improvements in publicly accessible green spaces in the urban areas of Solihull.

## 2.6 NATURAL ENVIRONMENT

### GOALS TO SUPPORT THE NATURAL ENVIRONMENT

Protecting and enhancing the Natural Environment in Solihull has the potential to deliver multiple benefits not just carbon reduction. Better managing and increasing natural capital can provide an important ‘sink’ of carbon and will play an important role in reaching Solihull’s Net Zero target.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Tree Coverage	6.1 Maintain existing tree cover & hedgerow coverage	<p><b>Medium cost, no direct payback</b></p> <p>External mapping analysis of current tree abundance, diversity and cover statistics estimated at £15-25,000</p>	<p><b>Low</b></p> <p>Additional carbon savings as existing trees continue to grow and store an increasing amount of carbon.</p>	<p><b>Inclusive Growth:</b> On average, house prices increase between 5-18% when a property is associated with mature trees. Reduction in building energy costs as trees lower temperatures and shade buildings in the summer.</p>
	6.2 Increase tree coverage & hedgerow coverage	<p><b>Low cost, no direct payback</b></p> <p>Capex of planting lone trees £14-£152 for tree seed packs.</p> <p>Capex of planting large scale wooded areas: £1-5k per hectare dependent on species and spacing.</p>	<p><b>High</b></p> <p>Planting one hectare of trees in 2021 could sequester around 120 tCO<sub>2</sub>e by 2041. Planting one hectare equivalent of hedges could save 134 tCO<sub>2</sub>e by 2041. *Note the extended lifecycle of a tree will sequester more carbon past the 2041 deadline.</p>	<p><b>Environment:</b> Trees can reduce noise pollution by up to 6-8 decibels. Trees can also help to reduce temperature by providing natural cooling thus helping to mitigate the impact of heatwaves. Increased tree coverage leads to biodiversity benefits and native trees provide many ecosystem services, such as improving water quality, water management (reducing flooding) and soil retention and stability.</p>

## 2.6 NATURAL ENVIRONMENT

### GOALS TO SUPPORT THE NATURAL ENVIRONMENT

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Land Use Management	6.3 Maintain and enhance green space	<b>Medium cost, no direct payback</b> Capex external mapping analysis: £15-25,000	<b>Low</b> Limited direct carbon savings but supports maintaining natural environment as a natural carbon sink	<p><b>Inclusive Growth:</b> If everyone had access to sufficient green space, the benefits associated with increased physical activity could save the health system £2.1 billion per year.</p> <p><b>Health:</b> Green spaces can provide a space for communities to engage, which can improve community cohesion, walkability or neighbourhoods, reduce crime levels and develop a connection to local place. Children living in areas with good access to green spaces have lower prevalence of obesity (11-19%) compared with children limited access to green spaces. Those living closer to green space in urban areas have been found to experience lower stress, anxiety and depression.</p>
	6.4 Improve biodiversity	<b>Medium cost, no direct payback</b> Capex facilitation of external engagement programme with residents and businesses: £20-30,000	<b>Low</b> Limited direct carbon savings but supports maintaining natural environment as a natural carbon sink	<b>Environment:</b> Creates and enhances habitats, support species and helps create more resilient ecosystems.

## 2.6 NATURAL ENVIRONMENT

### GOALS TO SUPPORT THE NATURAL ENVIRONMENT

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Livestock and Agriculture Management	6.5 Support farmers and landowners to reduce carbon emissions	<b>Medium cost, no direct payback</b> Capex consultation with landowners and farmers: £10-25,000	<b>Medium</b> Better managing grassland e.g., reducing grazing can increase sequestration to 3.6 tCO <sub>2</sub> e/ha/year	<b>Inclusive Growth:</b> Boosts productivity by improving farming efficiency.
	6.6 Switch to sustainable food consumption	<b>Medium cost, no direct payback</b> Capex facilitation of external engagement programme with residents, schools and local businesses: £20-30,000	<b>Medium</b> Cutting meat and dairy from your diet can reduce your carbon footprint by 73%	<b>Health:</b> Health benefits from reduced meat consumption. <b>Inclusive Growth:</b> Promoting shorter supply and distribution chains can benefit the local economy
Natural carbon sequestration	6.7 Residual emissions are addressed through offsetting	<b>High cost, no direct payback</b>	<b>Low</b> Net zero ambition assumes need for some validated offsets to tackle residual emissions, though this approach should only be taken in combination with significant actual emissions reductions.	<b>Health/Environment:</b> Carbon offsetting can increase the amount of tree cover and green space in an area

As an example of offsetting costs, the below estimation has been provided. It is not, however appropriate to use these costs as a comparison to the affordability of other actions, but rather to understand the scale of cost of offsets should they be used. It is recommended that actions delivering reductions in emissions are prioritised.

Solihull would need to offset a cumulative total of 17,266 ktCO<sub>2</sub> in order to achieve net zero by 2041. Based on Anthesis' judgement of an average price of £10/tonne, this would cost £172,660,000.

*These figures do not account for the cost of offsetting future emissions should the Borough continue exceed net zero after the target date.*

## 2.6 NATURAL ENVIRONMENT

### KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver to support the natural environment:

Intervention Area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Tree & Hedgerow Coverage	6.1a Review Solihull's Urban Tree Strategy and Woodland Strategy and collate actions into a holistic strategy on biodiversity and natural capital, including long term plans to protect and manage existing trees and woodland	Research	Council's Highways and Environment Team	Short	Strategic
	6.2b Engage with private landowners to identify opportunities for tree and hedge planting through Planting our Future or Arden Free Tree Scheme	Communication & Engagement	Local Business	Immediate	Indirect
	6.2c Carry out a opportunity mapping to assess areas of the Borough which could be converted to woodland in line with Solihull's Urban Forestry Strategy. Assess viable land for smaller plots of available land for tree planting	Research	Council's Growth and Development Team	Short	Strategic
Land Use Management	6.4b Engage with residents on the value of land use and habitats	Communication & Engagement	Love Solihull	Immediate	Indirect
Natural carbon sequestration	6.7a Develop an offsetting strategy to address residual emissions not tackled by direct actions in the Borough with a validated offsetting method, including a variety of natural sequestration options such as wetlands	Policy & Strategy	N/A	Immediate	Strategic
	6.7c Engage with local farmers and land owners to distribute information on improving and maintaining soil health for carbon storage	Communication & Engagement	Landowners	Medium	Indirect



## 2.6 NATURAL ENVIRONMENT OTHER ACTIONS

The below table highlights the other actions for Solihull Metropolitan Borough Council to consider to support the natural environment:

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Maintain existing tree & hedgerow cover	6.1b Carry out ongoing inventory and report on tree & hedgerow abundance, diversity and cover statistics through the Planting our future initiative	Research	Council's Growth and Development Team	Short	Indirect
	6.1c Engage with community groups (e.g. friends of parks groups) and schools to carry out tree monitoring and inventories through Tree Warden programme	Communication & Engagement	Community Groups	Immediate	Indirect
Increase tree & hedgerow coverage	6.2a Plant trees, woodland or hedgerows on Council owned land (where appropriate) - including strategic land, agricultural tenancies, SCH and along grass verges or highways	Implementation	N/A	Immediate	Direct
	6.2d Engage with community groups (e.g. friends of parks groups) and schools to carry out tree planting through WMCA Virtual forest	Communication & Engagement	Community Groups	Immediate	Indirect
	6.2e Ensure tree cover is considered for all new developments through the Local Plan and ensure explore incentives for developers to retain trees	Policy & Strategy	Council Planning Team	Medium	Direct

## 2.6 NATURAL ENVIRONMENT OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Land use management	6.3b Clarify green space requirements for development in Local Plan, including the protection of existing landscapes. Ensure that carbon benefit is factored into the decision-making process on land use	Research/ Implementation	N/A	Short	Strategic
	6.3c Restore, retain and protect existing land uses which store CO2 on Council owned land	Policy & Strategy	N/A	Immediate	Indirect
	6.3d Refresh mapping of green infrastructure assets across Solihull and develop a sustainable garden template for social housing tenants	Research	Council's Growth and Development Team	Short	Strategic
	6.4a Review Solihull's Biodiversity Strategy to encourage reducing pesticides and herbicides use on Council owned land in the Borough, including engagement with Pesticide Action Network UK on the development of a framework to transition to non-chemical alternatives	Research / Implementation	N/A	Short	Strategic
	6.4c Run a campaign/training on Biodiversity Net Gain and develop communications to residents of the multiple benefits of green space and biodiversity	Communication & Engagement	N/A	Short	Indirect
	6.4d Work with Wildlife Ways and rewild verges and plant and sensitively manage hedgerows to connect and enhance wider ecological network	Implementation	Warwickshire Wildlife Trust, Wildlife Ways	Short	Direct

## 2.6 NATURAL ENVIRONMENT OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Livestock and Agriculture Management	6.5a Work with WMCA to facilitate a forum to support local farmers across Solihull to discuss carbon reduction opportunities and share best practice on livestock productivity and feeds to reduce methane	Communication & Engagement	WMCA	Short	Strategic
	6.5b Work with key agriculture stakeholders such as NFU and Environment Agency to encourage local landowners to uptake sustainable livestock management practices. Warwickshire Wildlife Trust and Local Nature Partnerships	Communication & Engagement	NFU, Warwickshire Wildlife Trust, Environment Agency	Short	Strategic
	6.6a Commit to a target or pledge for more climate-friendly diets across the Borough, such as the WRI Cool Food Pledge	Implementation	N/A	Immediate	Strategic
	6.6b Identify key partners/stakeholders in the Borough to increase the sustainability of local diets, e.g. more local products for shorter supply chains	Research/ Implementation	N/A	Immediate	Strategic
	6.6c Set up a campaign to shift to local and sustainable produce in local diets, e.g. local food markets and events	Implementation	Local Business	Immediate	Indirect
	6.6d Set up a campaign to encourage residents to eat less meat and dairy and more locally sourced food	Implementation	N/A	Immediate	Indirect
	6.6e Provide locally sourced, vegetarian or vegan meals in Council offices and Council led events	Implementation	Council suppliers	Immediate	Direct
	6.6f Set up procurement contracts with local producers or Meat Free Mondays in schools across the district	Implementation	Schools	Short	Direct
6.6g Explore opportunities for urban farming, providing local community opportunities as well as improving sustainable food choices and reducing food miles e.g. District Eating	Research & Design	Businesses	Short	Direct	

## 2.6 NATURAL ENVIRONMENT

### OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Natural carbon sequestration	6.7b Encourage businesses to support Borough-wide insetting initiatives where possible, keeping the benefits within the Borough, through Authority Based Insetting	Communication & Engagement	Businesses	Medium	Indirect
	6.7d Assess the carbon sequestration of current Council land and identify opportunities to increase sequestration, looking into different natural carbon capture options	Research & Design	N/A	Short	Direct

# 2.7 ENERGY SUPPLY

## 2.7 ENERGY SUPPLY BACKGROUND

### Scope of section

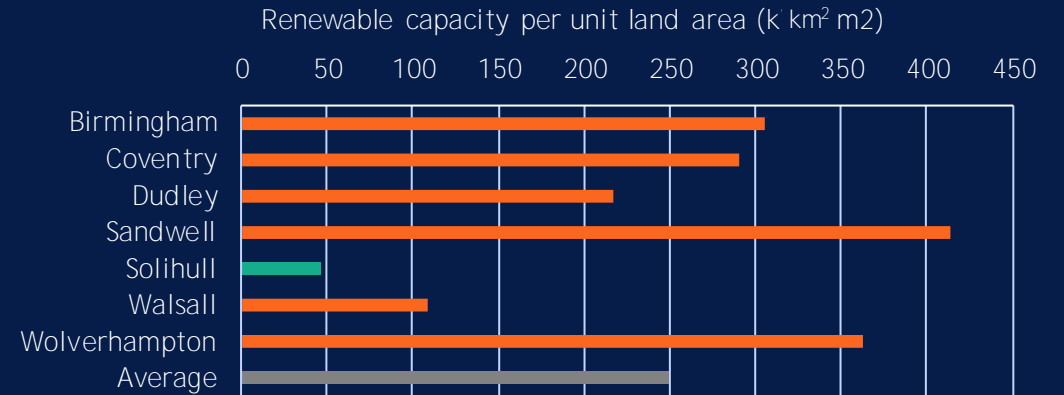
Throughout the sections of the action plan, reference has been made of the importance of providing decarbonised electricity to Solihull. The following **analysis provides details for the scale and ambition required to meet Solihull's** energy consumption with renewable sources.

The method by which SCATTER apports local renewable capacity is based upon the scaling up of installed capacity in a given local authority. These are **based on the National Grid's Two Degrees Scenario and weighted according to** current installed capacity.

### Progress to date

- 8.2 MW total installed renewable electricity capacity, see breakdown of [installed renewable capacities](#) opposite.
- Since 2014, the capacity of installed renewables in Solihull has increased by 54% from 5.3 MW to 8.2 MW.
- **SCH's [Switch and Save scheme](#)** for residents only considers providers which supply 100% green electricity.
- SMBC has installed solar PV systems to the communal areas of two [major new build projects](#) providing care and support services.

SMBC is currently undertaking a Renewable Energy Feasibility Study which will inform the strategy for increasing local renewable energy generation (see page 118 for more information).



WMCA Local Authorities	Installed renewable capacity (kW)				Renewable capacity per unit land area (kW/km²)
	Solar PV	Local wind	Organic Fuels*	Total	
Birmingham	29,124	6	52,582	81,711	305
Coventry	11,087	0	17,600	28,687	291
Dudley	11,650	0	9,672	21,322	218
Sandwell	11,135	4	24,295	35,434	414
Walsall	8,185	0	3,096	11,281	108
Wolverhampton	15,930	0	9,221	25,150	362
Solihull	7,946	0	240	8,186	46
Average	13,580	1	16,672	30,253	249

Figure 2.7.1: Comparison of the renewable energy statistics<sup>1</sup> for Solihull with other West Midlands Local Authorities.

Current installed renewable capacity within WMCA local authorities \*encompasses anaerobic digestors, sewage & landfill gas, municipal solid waste generation and plant biomass.

## 2.7 ENERGY SUPPLY KEY PLANS AND POLICIES

### National UK Policy



- UK [National Energy and Climate Plan](#) sets out integrated climate and energy objectives, targets, policies and measures for the period 2021-2030.
- [Contracts for Difference](#) scheme is the government's principal mechanism for encouraging investment in larger scale renewables.
- The [UK Government's 10-Point Plan](#) for a Green Industrial Revolution includes plans for renewable technologies such as offshore wind, nuclear, hydrogen and heat pumps
- [Energy white paper: Powering our net zero future](#) This builds on the 10 Point Plan for a green industrial revolution and sets out the visions for **the UK's energy system and the key commitments** of national government.
- The [Net Zero Strategy](#) outlines various key commitments to deliver a decarbonised power system by 2035, ensuring by this date all of the UK's electricity will come from low carbon sources

### West Midlands Combined Authority



- [A Regional Energy Strategy for the West Midlands](#) (2018) - Brings together energy mapping into a high-level strategy for the region's energy capital.
- [Greater Birmingham and Solihull Local Enterprise Partnership](#) (GBSLEP) - sets out the aim for the LEP to deliver jobs and growth for the city region. No direct reference to renewable energy.
- [Powering West Midlands Growth: A Regional Approach to Clean Energy Innovation](#) - The report builds the case for the creation on Energy **Innovation Zones in the region to create a "risk-managed and commercial-scale context for the development of new local clean energy markets"**.

### Solihull Metropolitan Borough Council



- [Urban Growth Company Business Plan](#) - A new **approach to maximising Solihull's economic** potential. This includes sustainability - embedding and integrating a responsible and tangible approach to sustainability into everything at The Hub.
- [Renewable Energy Feasibility Study](#) (due 2021) - Work is underway for a Renewable Energy Feasibility Study to inform the Low Carbon Energy Framework.
- [Low Carbon and Energy Framework](#) - Sets out the hierarchy approach to emissions reduction which includes prioritising local generation over buying green energy.
- [Local Plan](#) - The draft submission plan includes a policy that developments must provide at least 15% of energy from renewable sources. It also states that the Council will support Renewable Energy Service Companies and community-led initiatives.

## 2.7 ENERGY SUPPLY

### GOALS TO SUPPORT ENERGY SUPPLY

There are a number of opportunities to increase local renewable energy supply to decarbonise electricity and heat across the borough. SMBC has a key role to play to bring together key stakeholders to drive investment and strategic planning for low carbon energy.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Energy Infrastructure	7.1 Local understanding of feasibility is improved	<b>Low cost, high payback</b> Capex renewable energy feasibility study (ongoing): £10 – 50,000	<b>Low</b> No direct carbon savings but supports renewable energy installations	<b>Inclusive Growth:</b> Helps to ascertain exactly which current funding options the Council might be able to take advantage of and with which technologies.
	7.2 Improve local energy storage infrastructure	<b>High cost, medium payback</b> Capital cost (in £/MW) and cost of storage (in £/kWh) can vary widely depending on the type of technology and length of energy storage. For the duration of 12 hours, short-term technologies such as Lithium-Ion Batteries can cost £252/kWh, whilst long-term Pumped Hydrogen Storage can cost £79/kWh.	<b>High</b> Renewable energy storage can allow up to 57% emissions reduction compared to a non-renewables case.	<b>Inclusive Growth:</b> Storage technologies improve our energy security by optimising supply and demand, thus reducing the need to import electricity via interconnectors. Large amounts of energy storage can significantly reduce energy loss during transmission and distribution.
	7.3 Improve Council owned energy infrastructure	<b>Medium cost, good payback</b> Capex cost of £55 per MWh of Solar PV. Payback estimated at 5 – 15 years.	<b>Medium</b> The average solar PV farm could save 5,200 tCO <sub>2</sub> e by 2041 in comparison to using UK Grid Electric emissions (4.75m kWh per year)	<b>Inclusive Growth:</b> Creation of jobs and upskilling of local people. In the UK, low carbon and renewable energy activities generated £46.7 billion turnover in 2018, directly employing 224,800 people (full-time equivalents).  <b>Health:</b> Reduction in fuel poverty through improving access to low-cost energy in Council housing stock.



## 2.7 ENERGY SUPPLY

### GOALS TO SUPPORT ENERGY SUPPLY

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Renewable energy	7.4 Residents and organisations are supported to maximise renewable energy installations	<p><b>Low cost, high payback</b></p> <p>Capex consultation with landowners and residents specifically on renewable energy installations £10-15,000</p>	<p><b>Medium</b></p> <p>The average domestic household could save 11 tCO<sub>2</sub>e by 2041 by switching from UK Grid Electric to Solar.</p>	<p><b>Inclusive Growth:</b> Through own-power generation, residents can cut annual electricity bills by up to £400. Renewable energy isn't subject to price fluctuations unlike fossil-fuel generated energy.</p> <p><b>Health:</b> Community energy schemes have benefits such as increased autonomy, empowerment and resilience by providing a long-term income and local control over finances. With smart metering technology, there is also the potential to offer discounted energy linked to local energy generation.</p>
	7.5 Economies of scale are leveraged in order that businesses maximise the uptake of renewable energy	<p><b>Low cost, high payback</b></p> <p>Capex consultation with businesses specifically on development of collaborative investment in renewable energy infrastructure £10-15,000</p>	<p><b>High</b></p> <p>The average commercial building could save 105 tCO<sub>2</sub>e by 2041 by switching from UK Grid Electric to Solar.</p>	<p><b>Inclusive Growth:</b> Greater business cohesion across the Borough.</p>
	7.6 Increase renewable energy installations	<p><b>High cost, high payback</b></p> <p>Capex of commercial-scale solar PV installations: £20-50,000.</p> <p>Capex of average residential PV installation: £3-7k per household.</p> <p>Capex of small anaerobic digester £50-70k, large anaerobic digester of 1MWe capacity is likely to cost £3-7m</p>	<p><b>High</b></p> <p>Increasing solar PV capacity to 401.5MW and other renewable technologies to 27.6MW could result in savings of 2.7 million tonnes of CO<sub>2</sub>e by 2040</p>	<p><b>Inclusive Growth:</b> Creation of jobs and upskilling of local people. In the UK, low carbon and renewable energy activities generated £46.7 billion turnover in 2018, directly employing 224,800 people (full-time equivalents).</p> <p><b>Environment:</b> Renewable energies like solar also help to reduce air pollution and damage to ecosystems.</p>

## 2.7 ENERGY SUPPLY KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver to increase renewable energy supply:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Energy Infrastructure	7.1a Review renewable potential across the Borough and identify barriers and enablers through a renewable energy feasibility study	Research	N/A	Immediate	Strategic
	7.2a Explore ways to expand on or develop opportunities around large scale energy storage solutions	Research	N/A	Medium	Indirect
	7.3b Investigate suitable opportunities for installing solar panels on Council owned buildings or ground mounted on Council owned land where feasible	Implementation	N/A	Medium	Direct
Green energy for businesses and residents	7.4a Consult with residents on the benefits of installing solar panels and the potential opportunities from initiatives like solar streets	Communication & Engagement	Residents	Short	Indirect
	7.5a Develop business-owned renewable technology projects in commercial areas through collaborations and partnerships	Communication & Engagement	Businesses	Medium	Direct

## 2.7 ENERGY SUPPLY OTHER ACTIONS

The below table highlights the other actions for Solihull Metropolitan Borough Council to consider to increase renewable energy supply:

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Energy Infrastructure	7.1b Provide a solar map for businesses and residents to indicate how appropriate their building is for rooftop solar panels	Research	Businesses	Immediate	Indirect
	7.1c Coordinate with UK Power Network/WPD (the DNO) to improve understanding of energy profiles across the Borough to highlight what the grid connection and/or reinforcement needs are and ensure alignment of available energy with growth	Communication & Engagement	Energy Suppliers	Medium	Indirect
	7.3a Install Solar PV on suitable Solihull Community Housing	Implementation	Council's Growth and Development Team	Medium	Direct
Renewable energy	7.4b Identify existing power producers in the Borough and explore a Power Purchase Agreement with other organisations. If this is not possible, ensure any excess demand not met by Council owned renewables is from (3rd party) purchased renewables	Research	Businesses	Medium	Indirect
	7.4c Support community energy projects and provide guidance to residents and schools through an awareness raising program	Communication & Engagement	Residents & Community groups	Short	Indirect
	7.4d Provide support for SMEs to access funding and skills for energy projects. Facilitate better access to finance, such as the Carbon Offset Fund	Communication & Engagement	Businesses	Immediate	Indirect

## 2.7 ENERGY SUPPLY OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Green energy for businesses and residents	7.5b. Facilitate coordinated investment in energy infrastructure at key locations such as the Hub, to enable developers to benefit from infrastructure required to achieve net zero buildings	Implementation	Businesses & Investors	Medium	Indirect
	7.5c Review the role of low carbon hydrogen in the net zero transition as appropriate to Solihull and working alongside partners to foster commercial opportunities and borough wide applications	Research & Design	WMCA & GBSLEP	Long	Indirect
	7.6a Review heritage building planning policy to allow for more buildings to be retrofit with renewable energy solutions in line with the Local Plan	Research	Council's Growth and Development Team	Short	Strategic
	7.6b Ensure the Supplementary Planning Document (SPD) includes recommendations for the provision for renewable technologies, such as solar PV, on new-build development where relevant	Implementation	Developers	Medium	Strategic
	7.6c Explore options to improve anaerobic digestion / biogas plant capacity in the area	Research	Businesses	Medium	Indirect
	7.6d Develop an investment scheme to provide funding to residents to install renewable technologies with payback as dividends	Implementation	Residents	Medium	Indirect

# 2.8 COUNCIL INFLUENCE

## 2.8 COUNCIL INFLUENCE COUNCIL EMISSIONS

This section explores actions that Solihull Council will need to deliver internally to support the delivery of key net zero themes.

SMBC has been measuring and publicly reporting on its own emissions since 2014 and this work is overseen by the Carbon Management Group.

**The Council's targets for its own operations are (based on a baseline year of 2009/10):**

- 45% by 2021
- **'at least 50%' by 2025**
- Net zero emissions by 2030

By improving the efficiency of Council building operations, installing energy efficient LED street lighting and introducing new vehicles through the Strategic Environment Contract, the Council has seen reductions of 49% since 2009/10.

**Acknowledging that the emissions from the Council's operations relate to a relatively small proportion of the Borough's emissions, it is important for SMBC to maximise its influence to encourage change elsewhere.** Through the actions in this section, we look to what the Council can do to build on the work done to date and further support the Borough-wide ambition for net zero.

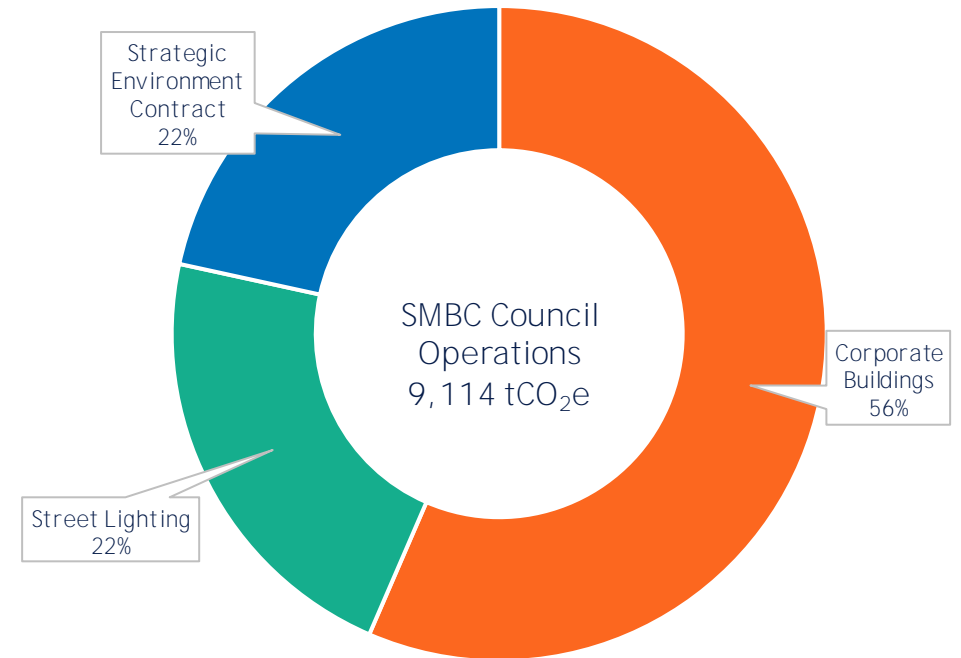


Figure 2.8.1: SMBC Council operations emissions, Carbon report 2019/20  
<https://www.solihull.gov.uk/About-Solihull/Carbon-emissions>

## 2.8 COUNCIL INFLUENCE

# GOALS TO REDUCE COUNCIL'S INDIRECT EMISSIONS

The Council should lead the way for the borough by demonstrating best practice and encouraging key partner organisations to act.

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Procurement	8.1 Reduce direct carbon impact of existing procurement contracts	<b>Low cost, no direct savings</b>	<b>Medium</b> Procurement accounts for a round 60-95% of an organisations emissions impact, through downstream and upstream processes.	<b>Inclusive Growth:</b> Long-term efficiency savings Encourages innovation, provides strong signals to the sustainable products market and demonstrates leadership <b>Health/Environment:</b> Reduces the impact of hazardous substances on human health and the environment <b>Environment:</b> More efficient and effective use of natural resources <b>Environment:</b> Reduces the harmful impact of pollution and waste
	8.2 Net zero aligned future procurement contracts	<b>Low cost, no direct savings</b>		<b>Inclusive Growth:</b> Automating supplier processes removes the likelihood of discrepancies. Councils have an opportunity to influence wider emissions by including carbon as part of the social value requirement in commissioning and procurement.
National policy	8.3 Lobby national government to deliver national policy changes	<b>Low cost, no direct savings</b>		<b>Inclusive Growth:</b> Funding opportunities for Solihull <b>Environment:</b> Can catalyse significant improvements to tackle climate change

## 2.8 COUNCIL INFLUENCE

# GOALS TO REDUCE COUNCIL'S INDIRECT EMISSIONS

Intervention area	Goal	Cost and payback	Carbon savings	Co-benefits
Council Influence	8.4 Internal behaviour change	<b>Low cost, no direct savings</b> Less than £5,000 for Carbon Literacy training and certification <b>See above</b>	<b>Medium</b> Carbon Literate citizens have typically realised carbon savings of 5-15% per person. <b>See above</b>	<b>Health/Environment:</b> Staff can take lessons learnt beyond the office into their communities <b>See above</b>
	8.5 Decision making supports net zero			
	8.6 Encourage net zero behaviours			
	8.7 Support skills development to support net zero			



## 2.8 COUNCIL INFLUENCE KEY ACTIONS

The below table highlights the key actions for Solihull Metropolitan Borough Council to deliver using the Council's extended levels of influence to tackle indirect emissions relating to Council activities:

Intervention area	Key actions	Council's role	Other stakeholders	Timing	Action Type
Procurement	8.2a Ensure the importance of carbon reduction and environmental sustainability is clearly stated in procurement activities by increasing the weighting of carbon-focused TOMS for relevant procurement activities	Implementation	Council's Procurement Team	Immediate	Strategic
	8.2b Introduce a net zero aligned procurement policy	Implementation	Prospective suppliers	Medium	Strategic
Council Influence	8.4a Deliver Carbon Literacy Training, or a similar educational programme, to all Council staff & members and incorporate this training into the onboarding process	Implementation / Communication & Engagement	All internal Council staff	Immediate	Indirect
	8.4c Develop a strategy for reducing staff and Council's own emissions alongside ambitions for the Borough	Research	All internal Council staff	Immediate	Strategic
	8.5a Consider requirement for all Council decisions of a specific value to undertake an environmental impact assessment, including contribution to net zero commitments	Policy & Strategy	N/A	Short	Indirect
	8.6d Develop a communications campaign to provide regular, clear and simple net zero 'calls to action' to all in the Solihull community	Communication & Engagement	WMCA and GBSLEP	Immediate	Indirect
	8.6e Link calls to action to projects, resources or funding that can enable people to take action	Research & Design, Implementation	WMCA and GBSLEP	Short	Indirect

## 2.8 COUNCIL INFLUENCE OTHER ACTIONS

The below table highlights other actions for Solihull Metropolitan Borough Council to consider using the Council's extended levels of influence to tackle indirect emissions relating to Council activities:

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Procurement	8.1a Establish standards of effective carbon management in contracts	Research / Implementation	Suppliers	Immediate	Strategic
	8.1b Deliver training to contract managers on sustainable procurement and how it relates to the Borough's strategy	Implementation / Communication & Engagement	Suppliers	Short	Indirect
	8.1c Define and weight Social Value outcome (TOMS) which incentivises Council contractors to support the creation of new apprenticeships in net zero skills	Implementation	Council Contractors	Short	Indirect
	8.2c Require suppliers to set Science Based Targets (SBTs) or at the very least have a climate strategy or target in line with the Borough	Implementation / Communication & Engagement	Suppliers	Medium	Indirect
National policy	8.3a Encourage more ambitious national action in key areas relating to Solihull, working with WMCA to identify the local powers needed to support implementation of the net zero actions	Communication & Engagement	N/A	Immediate	Strategic

## 2.8 COUNCIL INFLUENCE OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Council Influence	8.4b Monitor and track progress to implement actions in the Net Zero Action Plan, ensuring annual reporting and regular scheduled review of the action plan and implementation planning	Communication & Engagement	All internal Council staff	Long	Indirect
	8.4d Ensure a complete council's own emissions inventory is calculated annually and reported publicly following recognised standards	Policy & Strategy	All internal Council staff	Immediate	Indirect
	8.6b Consider the use of incentives to encourage business behaviour or choices that support net zero goals, e.g. EV charging points and solar PV. Business Improvement District opportunity. Consider linking to DEC ratings	Implementation	Central Government, WMCA, Valuation Office, Business Improvement District(s)	Short	Indirect
	8.6c Consider incentivising personal/resident behaviour or choices that support net zero goals, for example heat pump installation to replace gas boilers, EV charging point installation. Consider linking to EPC ratings	Implementation	WMCA and GBSLEP	Short	Indirect
	8.6f Investigate the ESG rating of the Council's investments and explore decarbonising the council's pension schemes from fossil fuel investments	Policy & Strategy	N/A	Long	Indirect

## 2.8 COUNCIL INFLUENCE OTHER ACTIONS

Intervention area	Other actions	Council's role	Other stakeholders	Timing	Action Type
Council Influence	8.7a Collaborate with local training colleges and educational centres to ensure sufficient, relevant skills capacity exists within the local workforce	Communication & Engagement	Local Training Colleges	Short	Indirect
	8.7b Work with WMCA and GBSLEP to support businesses in identifying and quantifying what skills are required to take forward the net zero actions	Communication & Engagement	WMCA and GBSLEP	Immediate	Indirect

03

# CONCLUSIONS & NEXT STEPS

# 3. CONCLUSIONS & NEXT STEPS

## PATHWAYS TO NET ZERO FOR SOLIHULL

### Conclusions

**Achieving Solihull’s ambition of net zero by 2041 will require rapid and significant shifts from current activities across all sectors. SMBC will need to work in close collaboration with the West Midlands Combined Authority (WMCA) and the Greater Birmingham and Solihull Local Enterprise Partnership (GBSLEP) to deliver the ambitious changes needed to meet the region’s net zero goal. While this journey will require action from all actors across the Borough, there are also huge opportunities during this transition.**

- Going beyond the SCATTER High Ambition Pathway is a necessity **in order to reach the Borough’s carbon neutral goal. Nevertheless,** the interventions outlined in this report should be prioritised, as the evidence base behind them ensures these savings can be achieved most quickly and reliably.
- The importance of SMBC working closely with other stakeholders to deliver climate action is clear, since the Council has limited direct control over many high emissions sources in the Borough. Working closely with businesses, community and third sector organisations, town and parish councils, regional and national government will be key in delivering the actions set out in this report and beyond. Many actions in the plan require collaboration with WMCA including the regional mayor and neighbouring councils.

- When making the case for climate action, consider the impacts of climate action holistically. Climate actions offer co-benefits to the local economy, communities and environment. Many offer a return on investment or **operational cost savings. There are also opportunities for a “Green Recovery” as we bounce back from the COVID-19 pandemic.**
- Consider a variety of funding streams to support financing local carbon reduction initiatives including community investment schemes and government grants. Combine efforts between the Council to maximise available government funding to decarbonise buildings and other assets that the Councils own.
- The Council has a key role to play in communicating and engaging external stakeholders to take action by enabling the transition to low carbon behaviours and technologies. In addition the Council can act as a leader by demonstrating best practice in its own activities.

# 3. CONCLUSIONS & NEXT STEPS

## NEXT STEPS

### Taking forward the Net Zero Action Plan

The next step for SMBC will be to:

- Confirm priority action areas. In this report, we have sequenced actions in line with their impact, and the next steps that they enable. We also provide an indication of **actions' carbon impact potential, their cost, and some co-benefits. The Council's role and ability to influence each action area varies greatly. This should be considered when identifying which actions it is best equipped to lead on, focusing resource and efforts on those areas with highest impact.**
- Ensure co-benefits are valued and considered in the implementation planning of actions.
- Allocate and seek funding for additional resources needed within the Council to implement the Net Zero Action Plan, focusing on key immediate actions.
- Identify areas of opportunity to work with West Midlands Combined Authority, Greater Birmingham and Solihull LEP and other local authorities.
- Define accountability and governance structures for key actions and agree on the process to monitor and regularly track progress against actions.
- Working closely with external stakeholders from a variety of different groups, such as youth clubs, sports club and organisations, alongside residents and businesses and identify where they can get involved to support behaviour change.



# 04 TECHNICAL APPENDIX



# APPENDIX 1: GLOSSARY OF TERMS

AFOLU - Agriculture, forestry & land use.

BEIS - UK Government Department for Business, Energy and Industrial Strategy, the successor to the Department for Energy & Climate Change (DECC).

Carbon budget - a carbon budget is a fixed limit of cumulative emissions that are allowed over a given time in order to keep global temperatures within a certain threshold.

Carbon dioxide equivalent (CO<sub>2</sub>e) - the standard unit of measurement for greenhouse gases. One tonne of CO<sub>2</sub> is roughly equivalent to six months of commuting daily by car or burning **1-2 bathtubs' worth of crude oil**. **“Equivalent” means that other greenhouse gases have been included in the calculations.**

Carbon Neutral/ Net Zero - these two terms typically mean the same thing in the context of CO<sub>2</sub>-only emissions. Whilst emissions are reduced overall, those that remain (e.g. from industrial and agricultural sectors) are then *offset* through carbon dioxide removal from the atmosphere. This removal may occur through technology such as carbon capture and storage (CCS) technologies, or through natural sequestration by rewilding or afforestation.

Carbon offset - defined by the IPCC as a reduction in emissions of carbon dioxide or other GHGs made in order to compensate emissions made elsewhere.

Carbon sink - a process or natural feature that removes carbon from the local atmosphere (e.g. trees or wetlands). The carbon is said to be *sequestered* from the atmosphere.

Climate Emergency - a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it.

Decarbonisation - the process of changing our activities and industry practices to create an economy that sustainably reduces emissions of carbon dioxide.

Deep/Medium Retrofit - the aim of retrofit is to drive down the energy demand for heating and hot water in buildings; typical measures include things like insulation for floors, windows and ceilings and improved ventilation. Medium retrofit represents a 66% reduction in energy demand and a deep retrofit represents an 83% reduction in energy demand.

Energy system - the consumption of fuel, heat and electricity across buildings, transport and industrial sectors, from solid, liquid and gaseous sources.

Gross emissions - the emissions total before accounting for local carbon sinks.

IPCC - Intergovernmental Panel for Climate Change.

Indirect emissions - GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat and/or cooling within the city boundary.

Insetting/Offsetting - the action of compensating for carbon emissions by utilising an equivalent or unrelated carbon dioxide saving elsewhere. Insetting refers to more local **activity within a 'sphere of influence'**.

LULUCF - Land use, land use change & forestry.

SCATTER - Anthesis-developed tool which is used to set emissions baselines and reductions targets. See the [SCATTER website](#) for more information.

# APPENDIX 2: DATA TABLES FOR SCATTER EMISSIONS BASELINE

Sub Sector	Direct (Scope 1)	Indirect (Scope 2)
	ktCO <sub>2</sub> e	ktCO <sub>2</sub> e
Residential buildings	235.14	128.52
Commercial buildings & facilities	45.09	24.02
Institutional buildings & facilities	78.96	121.40
Industrial buildings & facilities	54.85	70.37
Agriculture	2.18	0.0037
Fugitive emissions	NO	0
On-road	503.01	IE
Rail	11.23	IE
Waterborne navigation	1.07	IE
Aviation	158.6	IE
Off-road	5.03	0
Solid waste disposal	8.34	0
Biological treatment	NO	0
Incineration and open burning	NO	0
Wastewater	13.29	0
Industrial process	29.22	0
Industrial product use	0.00	0
Livestock	8.55	0
Land use	-2.69	0
Other AFOLU	NE	0
Electricity-only generation	NO	0
CHP generation	0.72	0
Heat/cold generation	NE	0
Local renewable generation	0	NO
Sub-total	994.00	344.32
Net total	1338.32	

## Notes:

- SCATTER GHG baseline for Solihull for 2018 is presented here.
- Within the SCATTER model where available local data is used, otherwise national figures for emissions within certain sectors are scaled down to a local authority level based upon a series of assumptions and factors.
- Figures for land use and aviation were omitted from the overall emissions profile. The gross totals described in the emissions inventory have been adjusted to reflect this.

IE	= Included Elsewhere
NE	= Not Estimated
NO	= Not Occurring
<span style="background-color: #c6e0b4; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	= included as part of profile
<span style="background-color: #f4cccc; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>	= excluded as part of profile

# APPENDIX 3: BIRMINGHAM AIRPORT AVIATION EMISSIONS

## Why is aviation excluded from the SCATTER emissions baseline?

Birmingham Airport is located within the boundary of Solihull; however aviation emissions have been excluded from the SCATTER emissions profile on page 16 in line with the approach SMBC took in their baseline report. Emissions from aviation have been presented separately because:

- SMBC has a 7% stake in the airport, therefore limited influence.
- Aviation emissions are a global issue and therefore need to be addressed at a global scale.
- Aviation emissions remain within the national UK carbon budget but are not scaled down to sub-national budgets.

Birmingham Airport identify their Scope 3 emissions as 259,216 tCO<sub>2</sub>e and Scope 1 & 2 as 16,691 tCO<sub>2</sub>e. Differences in accounting methods mean there is a slight variance in these figures comparatively.

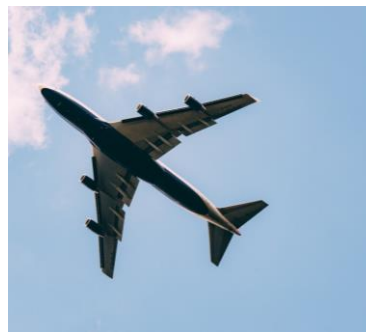
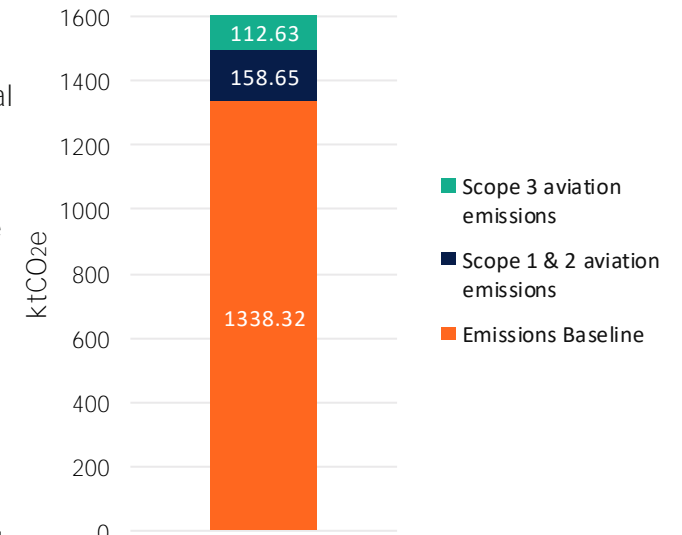
If **Scope 1 aviation emissions** were to be included in Solihull's emissions baseline, they would contribute an additional **158.65 ktCO<sub>2</sub>e**

## How are aviation emissions calculated?

Data for aviation emissions was extracted from the [Greenhouse Gas Inventories Report: 1990-2017](#) for Aviation Spirit and Aviation Turbine Fuel. This gave total emissions for landing and take-off and cruise phases of UK flights.

Scope 1 emissions - Landing and take-off emissions are used as a proxy for flights that take off and land within the boundary of the local authority area. Landing and take-off emissions have been allocated to UK airports based on the percentage of total aircraft movements.

Scope 3 emissions - Cruise impacts were allocated to local authorities based on percentage of population, assuming that flying is uniformly distributed across the whole population. Cruise tonnes of fuel were calculated from the total impacts using BEIS fuel emission factors.



## Birmingham Airport Profile

- Birmingham Airport is the 7<sup>th</sup> largest airport in the UK with around 12.5 million passengers and 100,000 air transport movements in 2018/19.
- The Airport has committed to become a net zero carbon airport by 2033, focusing on airport operations (Scope 1 and 2) and minimising the use of offsets.
- The Airport has a [Sustainability Strategy](#) and Carbon Management Plan.

# 4.1 NON-DOMESTIC BUILDINGS

# 4.1 TECHNICAL APPENDIX

## NON-DOMESTIC BUILDINGS

### 1) Improve energy efficiency

This measure describes energy demand reduction for space heating and hot water heating as a result of improvements to building fabric and positive behaviour changes.

**“Retrofit” in this context refers to insulation, draughtproofing, double glazing and so on, as opposed to the installation of renewable energy technologies.** The demand-side reductions are focused on changes to the building fabric, which are considered separately to any changes to electrified systems.

These forecast reductions in demand take into account improvements to the efficiency of new water heating systems. Reductions are applied to whatever fuel the building is using i.e., accounting for more efficient gas boilers as well as electrical heating systems.

This measure considers a broad spectrum of building types. Emissions reductions are calculated in terms of an overall reduction in net energy demand, without prescribing specific targets for numbers of buildings to be retrofit.

### Key Milestones

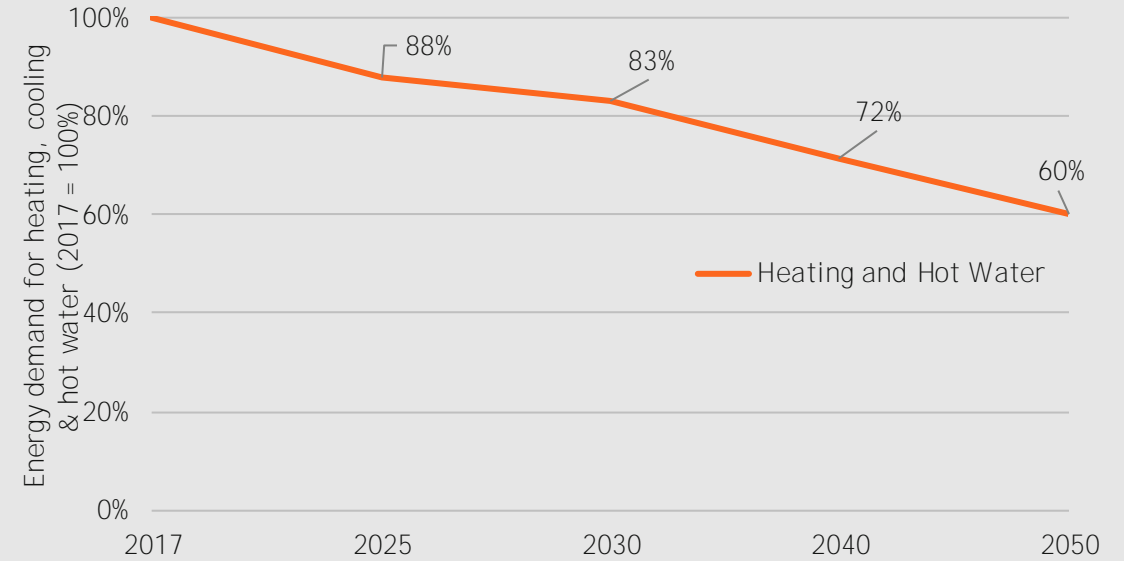


Figure 4.1.1: Modelled changes in energy demand for space heating and hot water relative to a 2017 baseline.

2025	12% reduction in overall energy demand for space heating and hot water
2030	17% reduction in overall energy demand for space heating and hot water
2040	28% reduction in overall energy demand for space heating and hot water
2050	40% reduction in overall energy demand for space heating and hot water

# 4.1 TECHNICAL APPENDIX

## NON-DOMESTIC BUILDINGS

### 2) Improve appliance and lighting efficiency

This intervention considers the reduction in energy demand due to the installation of more efficient lighting and appliances, including electrical devices. It also considers all types of cookers and catering equipment, regardless of their source fuel.

The transition towards electric systems for cooking is considered separately to the reduction in demand (e.g., through improved efficiency of gas systems).

Energy demand reductions are applied to whatever fuel the building is using, such as mains electricity or gas-fired CHP. Lighting, cooling and appliances use approximately 45% of the total building's day to day use energy, heating and hot water use approximately 46% of the total building's day to day use of energy.<sup>1</sup>

### Key Milestones

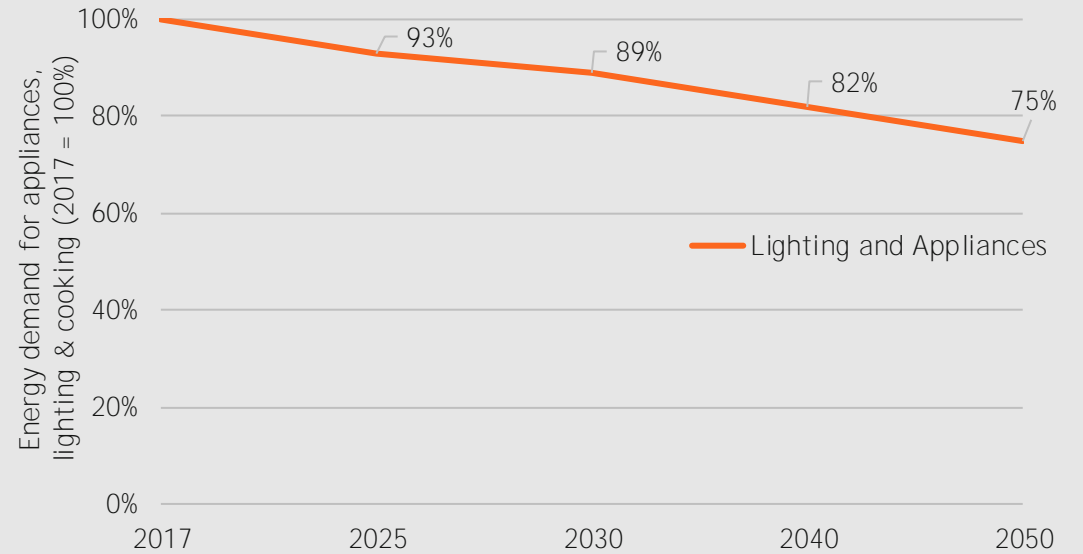


Figure 4.1.2: Modelled changes in the energy demand for lighting and appliances in non-domestic buildings against a 2017 baseline.

2025	7% reduction in lighting, appliance & cooking energy demand
2030	11% reduction in lighting, appliance & cooking energy demand
2040	18% reduction in lighting, appliance & cooking energy demand
2050	25% reduction in lighting, appliance & cooking energy demand

# 4.1 TECHNICAL APPENDIX

## NON-DOMESTIC BUILDINGS

### 3) Shift from gas heating systems

This measure describes the transition away from fossil fuel-source heating technologies in favour of less carbon-intensive systems. In particular, the High Ambition Pathway fuel mix represents a transition to heat pumps and combined heat and power networks (CHP).

This endpoint fuel mix offers the most significant emissions reductions, though it should be noted that the impact of this measure on emissions is heavily influenced by the availability of renewable energy. CHP systems can be fed by fully renewable technologies (e.g., solar thermal) but still offer significant carbon savings when compared against other heating systems.

The more rapidly the electricity grid can decarbonise, the greater the impact on emissions from transitioning to electrified heating systems. If the grid is slow to decarbonise the emissions factor for electricity will remain high and emissions savings will be diminished. Switching to an electrified heating system can also provide incentive to property owners to install on-site electricity generation technologies (such as solar PV).

### Key Milestones

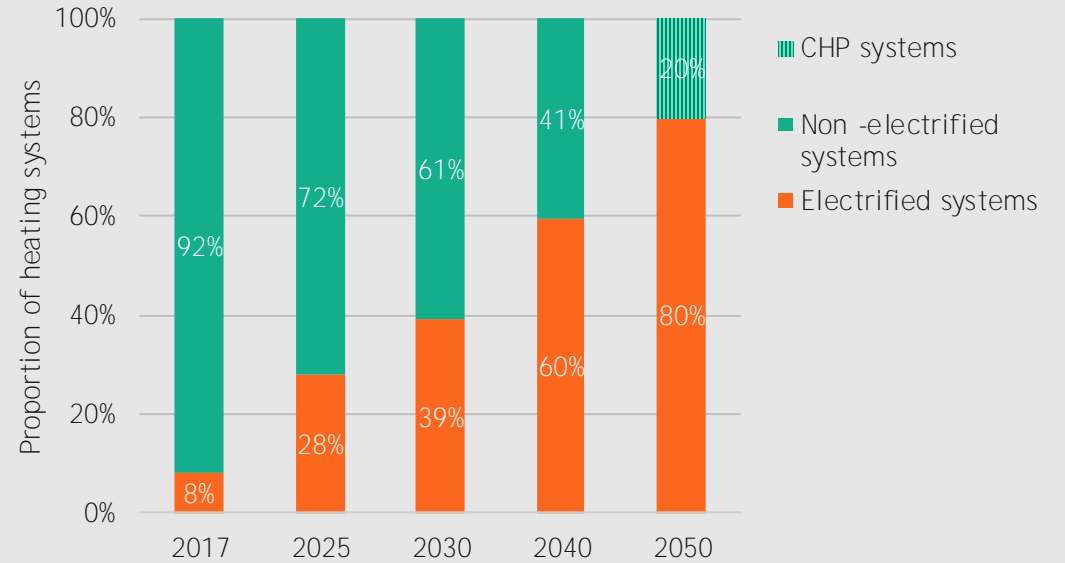


Figure 4.1.3: Modelled changes in the technology mix for non-domestic heating technologies. Figures may not sum to 100% due to rounding.

2025	28% of non-domestic buildings have low-carbon heating systems
2030	39% of non-domestic buildings have low-carbon heating systems
2040	60% of non-domestic buildings have low-carbon heating systems
2050	80% of non-domestic buildings have low-carbon heating systems

# 4.1 TECHNICAL APPENDIX

## NON-DOMESTIC BUILDINGS

### 4) Shift from gas cooking facilities

This measure describes the uptake of electrical cooking systems and discontinuation of gas cookers. It accounts for a transition to fully electrified systems by 2050. For the most part, the uptake of electrified cooking systems directly reduces other fossil fuel usage, though this does constitute an overall increase in electricity consumption.

As with the heating systems measure, the projected change towards electric systems delivers emissions savings in tandem with decarbonisation from the grid.

### Key Milestones

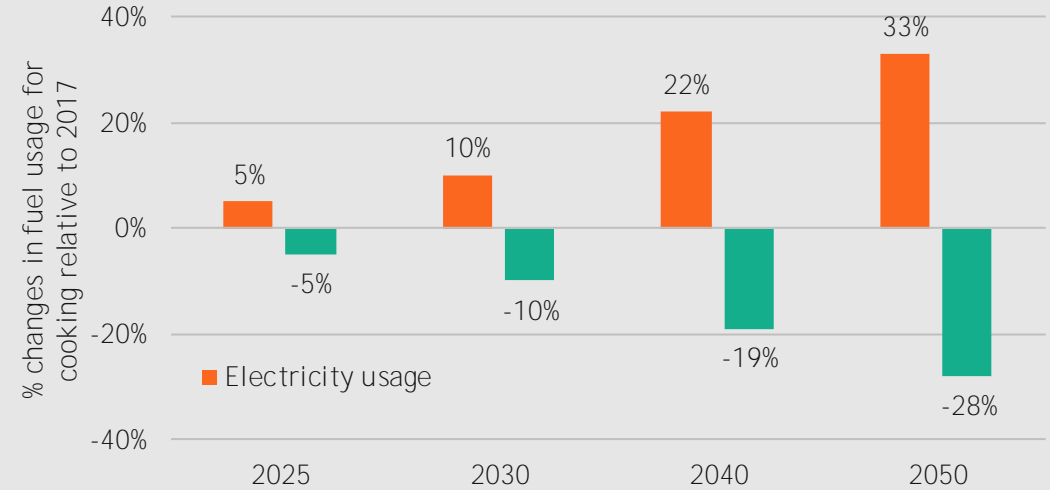


Figure 4.1.4: Modelled changes in non-domestic cooking energy demand. The transition can be thought of as a direct swap between gas/solid fuel systems and electrified systems.

2025	5% increase in electricity usage for commercial catering; 5% decrease in gas & solid fuel usage
2030	10% increase in electricity usage for commercial catering; 10% decrease in gas & solid fuel usage
2040	22% increase in electricity usage for commercial catering; 19% decrease in gas & solid fuel usage
2050	33% increase in electricity usage for commercial catering; 28% decrease in gas & solid fuel usage



## 4.1 TECHNICAL APPENDIX

### NON-DOMESTIC BUILDING CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	References
Private sector non-domestic buildings	1.1 Improve energy efficiency standards in existing non-domestic buildings	<p>Medium</p> <p>It is estimated that a 5% reduction in emissions from procurement could save 5,779 tCO<sub>2</sub>e over a fiscal year</p>	5% is indicative
	1.2 Policy used to drive higher energy efficiency standards in new builds & developments	<p>Medium</p> <p>Potentials from replacing primary with secondary materials are:</p> <ul style="list-style-type: none"> <li>• 0.95-1.42 kgCO<sub>2</sub>e avoided per kg of WPC (Wood Plastic Composite)</li> <li>• <b>0.008 kgCO<sub>2</sub>e per kg aggregate prepared for concrete production</b></li> <li>• <b>0.025 kgCO<sub>2</sub>e avoided per kg brick manufactured</b></li> </ul>	<p><a href="https://www.researchgate.net/publication/328879787_Circular_building_materials_Carbon_saving_potential_and_the_role_of_business_model_innovation_and_public_policy/link/5da064be299bf116fe9cf020/download">https://www.researchgate.net/publication/328879787_Circular_building_materials_Carbon_saving_potential_and_the_role_of_business_model_innovation_and_public_policy/link/5da064be299bf116fe9cf020/download</a></p>
Private sector non-domestic buildings	1.3 Guidance and support to improve energy efficiency made available to private sector	No direct carbon savings but enables private sector savings	
	1.4 Maximise the number of non-domestic buildings connected to Solihull's Town Centre Energy Network	<p>High</p> <p>The town centre network hopes to achieve carbon savings of 280,247 tCO<sub>2</sub>e once fully built out (phases 1, 2 &amp; 3) over 40 years</p>	<p>Carbon savings highly dependant on heat source technology - note also that additional carbon savings from heat network connection over and above BAU alternatives e.g. heat pumps will become more difficult over time.</p> <p><a href="https://tp-heatnetworks.org/supporting-solihulls-ambitious-net-zero-targets/">https://tp-heatnetworks.org/supporting-solihulls-ambitious-net-zero-targets/</a></p>

# 4.1 TECHNICAL APPENDIX

## NON-DOMESTIC BUILDING CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	References
Public sector non-domestic buildings (including hospitals, academies, leisure centres & libraries)	1.5 Policy used to drive higher energy efficiency standards in new developments	High The briefing paper 'Assessing carbon emissions in BREEAM' published in 2016 demonstrated that the average CO2 saving for a BREEAM assessed building is 22%, whilst a BREEAM Excellent building is expected to reduce carbon emissions by 33%	<a href="https://tools.breeam.com/filelibrary/Briefing%20Papers/BREEAM-Briefing-Paper---The-Value-of-BREEAM--November-2016---123864.pdf">https://tools.breeam.com/filelibrary/Briefing%20Papers/BREEAM-Briefing-Paper---The-Value-of-BREEAM--November-2016---123864.pdf</a>
	1.6 Opportunities to improve energy efficiency in cooking, lighting and other appliances are maximised	Medium For every traditional halogen bulb you switch to a similarly bright LED bulb you save around 5kg of CO2 emissions	<a href="https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/">https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/</a>
Council-owned non-domestic buildings (including SMBC buildings, schools, leisure centres)	1.7 Improve energy efficiency in Council-owned buildings	High A 20% reduction in energy used for heating would produce a savings of around 1,221 tCO2	Based on <a href="#">Ashden 31 Climate Actions</a> method where they estimate that 67% of energy is used for heating and that interest free loans available to upgrade heating and controls can cut the energy used for heating by about 20%. Total emissions from Council and Council owned buildings = 9,114 tonnes Year 19/20

# 4.2 DOMESTIC BUILDINGS

## 4.2 TECHNICAL APPENDIX DOMESTIC BUILDINGS

### 1) Improve energy efficiency in homes & new builds

This measure considers changes to the energy demand for heating homes, in both existing properties and newly built homes. Different retrofit options are considered for existing households, as well as the performance of new builds.

The aim of retrofit is to drive down the energy demand for heating and hot water in buildings; typical measures include things like insulation for floors, windows and ceilings as well as improved ventilation. Currently household retrofit is led largely by government-supported schemes, such as ECO (and more recently the Green Homes Grant). ECO retrofit measures vary, though around two thirds involve some form of insulation. SCATTER models future energy demand based on the uptake of two “modes” of retrofit:

- Medium - a 66% reduction in annual average energy demand through inner wall insulation.
- Deep - an 83% reduction in annual average energy demand, through inner & external wall insulation.

New builds must also be constructed to extremely high energy performance standards.<sup>1</sup> SCATTER forecasts an increase in the number of households of around 13% on the existing number by 2040. The High Ambition Pathway demands these new builds meet Passivhaus standard.

<sup>1</sup> The Association for Environmentally Conscious Buildings deems a “high performance” building as requiring 25% of the average energy demand for heating. Passivhaus standards are typically 10% of the average demand.

### Key Milestones

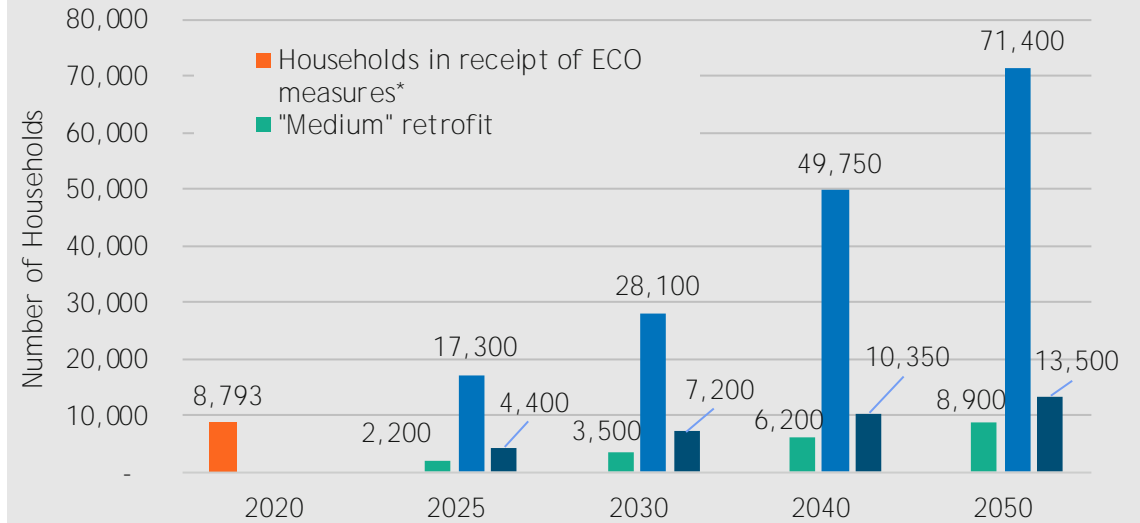


Figure 4.2.1: Retrofit rates and new-build standards. \*ECO measures are included as a proxy for comparison, though the average improvements to energy demand fall well short of medium retrofit in practice.

2025	<b>2,200 households have received “medium” retrofit measures; 17,300 households have received “deep” retrofit</b>
2030	<b>3,500 households have received “medium” retrofit measures; 28,100 households have received “deep” retrofit</b>
2040	<b>6,200 households have received “medium” retrofit measures; 49,750 households have received “deep” retrofit</b>
2050	<b>8,900 households have received “medium” retrofit measures; 71,400 households have received “deep” retrofit</b>

## 4.2 TECHNICAL APPENDIX DOMESTIC BUILDINGS

### 2) Improve appliance and lighting efficiency

This measure considers the reduction in energy demand due to the installation of more efficient lighting and appliances, including electrical devices. This also covers all types of cookers and catering equipment, regardless of their source fuel.

As in the non-domestic measures, the transition towards electric systems is considered separately - demand reductions are applied to whatever fuel the building is using.

Reductions in this area are anticipated through the uptake of newer, more efficient devices (e.g., smart-controlled technology) as well as positive changes in behaviour.

### Key Milestones

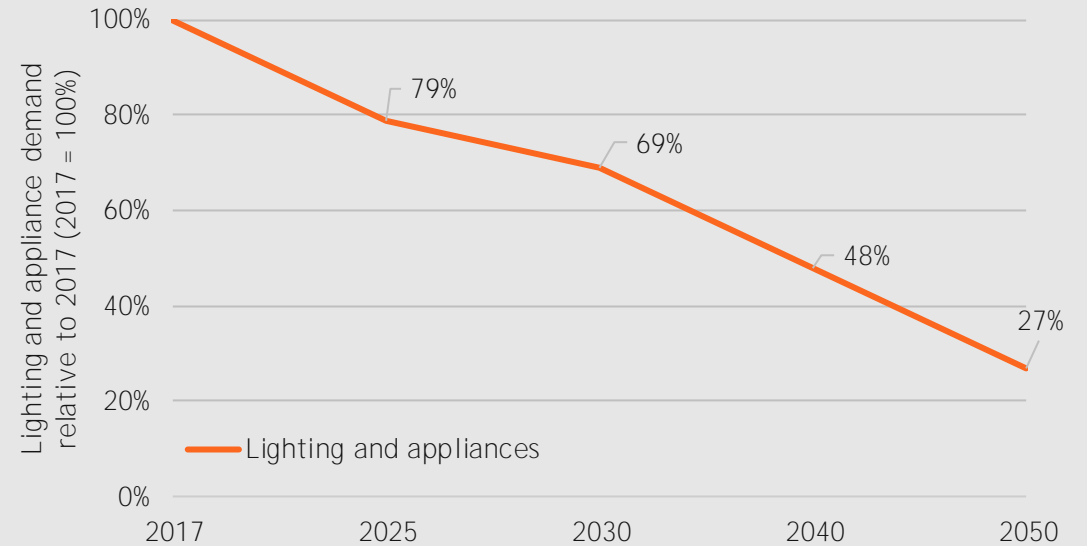


Figure 4.2.2: Changes in the energy demand for lighting, appliances and cooking relative to a 2017 baseline.

2025	21% reduction in energy demand for domestic lighting and appliances
2030	31% reduction in energy demand for domestic lighting and appliances
2040	52% reduction in energy demand for domestic lighting and appliances
2050	73% reduction in energy demand for domestic lighting and appliances

## 4.2 TECHNICAL APPENDIX DOMESTIC BUILDINGS

### 3) Shifting from gas heating systems

This measure models the emissions savings resulting from the increased uptake of non-fossil fuel sources for heating.

For domestic properties, the High Ambition Pathway fuel mix is projected to adopt a transition to fully electric or low-carbon technologies. These are split for the most part between air- and ground-source heat pumps, with a smaller contribution from resistive heaters and electric-sourced CHP.

The impact of this transition on emissions savings is heavily influenced by the increased availability of renewable energy. The same principles apply to domestic heating as in the non-domestic case around reducing the carbon factor of the energy supply through rapid growth of renewable energy technologies.

### Key Milestones

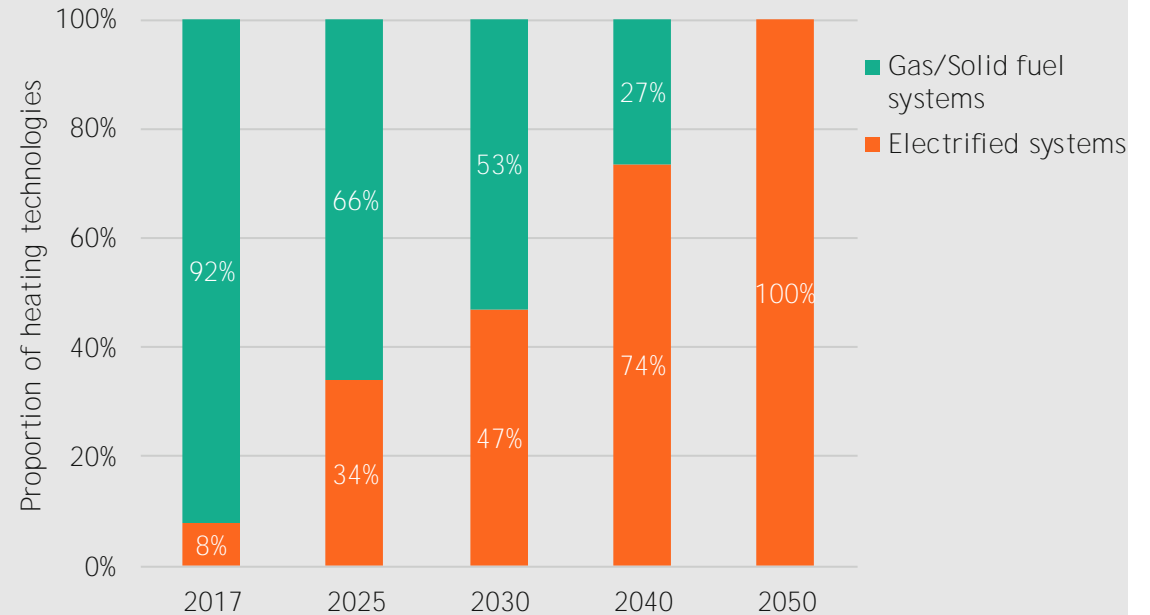


Figure 4.2.3: Modelled increase in the proportion of domestic heating systems that are low-carbon. Figures may not sum to 100% due to rounding.

2025	34% of households have low-carbon heating systems
2030	47% of households have low-carbon heating systems
2040	74% of households have low-carbon heating systems
2050	100% of households have low-carbon heating systems

## 4.2 TECHNICAL APPENDIX DOMESTIC BUILDINGS

### 4) Shift from gas cooking systems

This measure models the uptake of electrical cooking systems and discontinuation of gas cookers within domestic homes.

Similarly, to the non-domestic intervention, the uptake of electrified cooking systems directly reduces other fuel usage, with some efficiency improvements also reducing the fossil fuels used for cooking. The decoupling between the direct transition in energy demand from gas- and solid-fuel systems to electric can also be attributed to efficiency gains and improvements.

As with the heating systems measure, the projected change towards electric systems delivers emissions savings in tandem with decarbonisation from the grid.

### Key Milestones

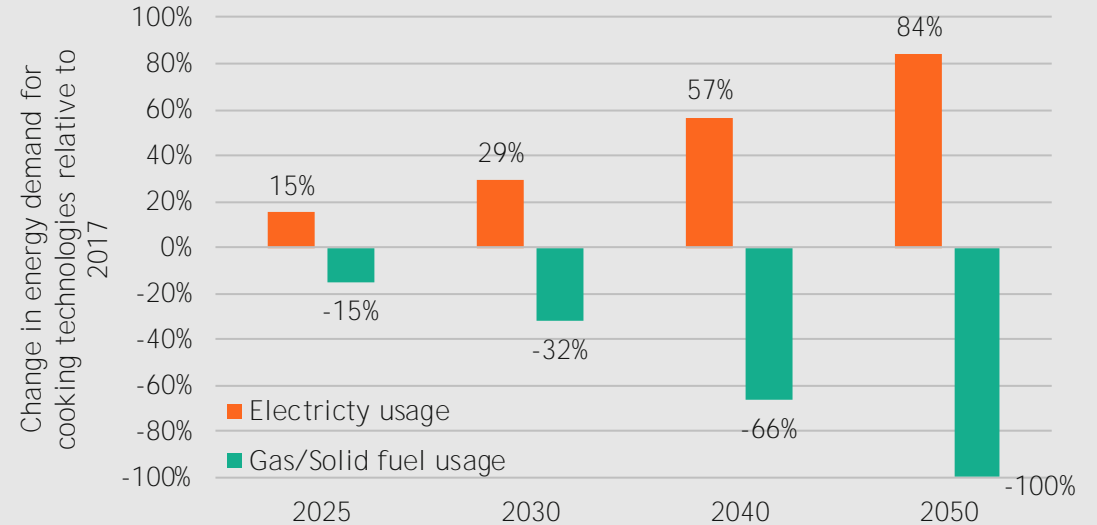


Figure 4.2.4: Modelled changes in the fuel usage for domestic cookers. By 2050, all cookers will be electrified under this scenario.

2025	15% increase in electricity usage for domestic and cooking; 15% reduction in use of gas/solid fuels
2030	29% increase in electricity usage for domestic and cooking; 32% reduction in use of gas/solid fuels
2040	57% increase in electricity usage for domestic and cooking; 66% reduction in use of gas/solid fuels
2050	84% increase in electricity usage for domestic and cooking; 100% reduction in use of gas/solid fuels

## 4.2 TECHNICAL APPENDIX

### DOMESTIC BUILDING CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Existing private housing	2.1 Improve energy efficiency standards in existing buildings	<p>Medium</p> <p>An average semi-detached home built to meet the Future Homes Standard would produce 75-80% less CO<sub>2</sub> emissions than one built to current requirements</p> <p>273 ktCO<sub>2</sub>e</p>	<p>The Ministry of Housing, Communities &amp; Local Government expects an average semi-detached home built to meet the Future Homes Standard would produce 75-80% less CO<sub>2</sub> emissions than one built to current Building Regulation requirements. Calculation based on 75% reduction in residential SCATTER emissions.</p> <p><a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/956094/Government_response_to_Future_Homes_Standard_consultation.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/956094/Government_response_to_Future_Homes_Standard_consultation.pdf</a></p>
	2.2 Enable changes to resident attitudes and behaviours concerning energy efficiency in the home	<p>Medium</p> <p>By replacing all bulbs in a home with LED alternatives, a home is able to save around 63kg of CO<sub>2</sub> emissions</p>	<p><a href="https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/">https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/</a></p>
New housing developments and builds	2.3 Drive higher energy efficiency standards in new developments	<p>High</p>	
	2.4 Facilitate district heating opportunities for new developments	<p>High cost, medium payback</p> <p>Heat network buried pipe costs are typically around £150 / MWh annual, whilst the connection costs range significantly from £25 / MWh for bulk schemes to £624 / MWh for non-bulk schemes. Payback period is estimated around 7-9 years.</p>	<p><a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/424254/heat_networks.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/424254/heat_networks.pdf</a></p>



## 4.2 TECHNICAL APPENDIX

### DOMESTIC BUILDING CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Solihull Community Housing	2.5 Improve energy efficiency in existing Council-owned residential properties	High SCH manage just under 10,000 tenanted homes, with possible savings of 27.5 ktCO <sub>2</sub> through retrofit of all SCH tenanted homes	<a href="#">Ashden 31 Actions</a> notes the average existing home emits 3.2 tCO <sub>2</sub> from home energy use - this has been multiplied by the number of <a href="#">SCH properties</a> . Retrofit of Energiesprong homes in Nottingham resulted in 86% reduction in CO <sub>2</sub> emissions.
	2.6 Maximise energy efficiency in new build Council-owned residential properties	Medium By replacing all bulbs in a home with LED alternatives, a home is able to save around 63kg of CO <sub>2</sub> emissions  Per house savings: Passivhaus: 1.36tCO <sub>2</sub> per year Net Zero: 2.04tCO <sub>2</sub> per year	<a href="https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/">https://energysavingtrust.org.uk/getting-best-out-your-led-lighting/</a>  SCH are currently building 28 new properties at Lakeside and these will be net zero. Using this specific example, and the methodology from Ashden, a typical new dwelling built to current building regs dwelling results in emissions of 30kg/m <sup>2</sup> year. For a certified Passivhaus, this would be around 10kg/m <sup>2</sup> year. For an average area of 68m <sup>2</sup> , the saving is 1360 kgCO <sub>2</sub> /year. 28 homes = 38 tonnes. For a net zero property, carbon savings would be 2040 kgCO <sub>2</sub> /year per property.

# 4.3 TRANSPORT

## 4.3 TECHNICAL APPENDIX TRANSPORT

### 1) Travel shorter distances

This measure models the reduction in total travel demand - across all transport modes - per person.

Travelling shorter distances can be achieved in a number of ways. The COVID-19 pandemic has certainly encouraged large numbers of people to find remote home working solutions. The future of office working remains uncertain, as many businesses become receptive to future working patterns which incorporate home-working. Following the introduction of lockdown measures in March 2020, road traffic fell to around one third of pre-pandemic levels on weekdays, however following the re-opening of office spaces and schools in September, this number recovered to approximately 90% of typical levels.<sup>1</sup>

Changes to transport infrastructure, public transport services and traffic management can also drive reductions in the average distance travelled per person. This intervention also considers increases in population between 2030 & 2050.

### Key Milestones

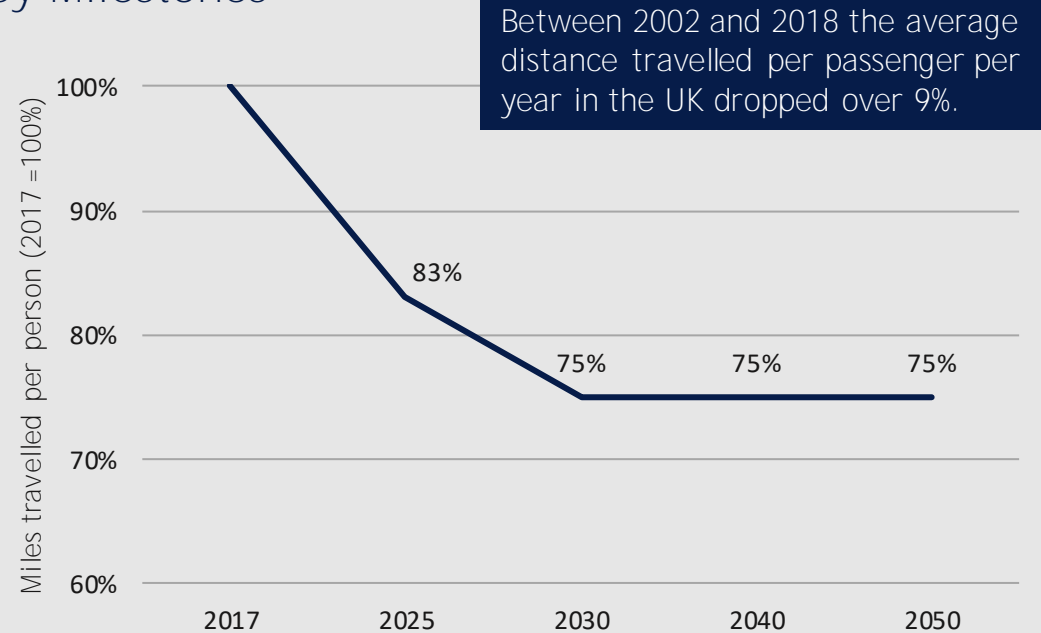


Figure 4.3.1: The shortening of the average number of miles travelled per passenger across all modes within Solihull.

2025	17% reduction in total distance travelled per individual per year
2030	25% reduction in total distance travelled per individual per year
2040	25% reduction in total distance travelled per individual per year
2050	25% reduction in total distance travelled per individual per year

## 4.3 TECHNICAL APPENDIX TRANSPORT

### 2) Drive less

As well as reducing the average distance travelled per passenger, SCATTER also considers changes to the mode of travel i.e., the means by which the journey was completed. SCATTER breaks these modes of transport into private vehicles (i.e., cars), public (which includes buses and trains) and active (i.e., walking and cycling).

Data in the [Solihull Connected Transport Strategy 2016](#) indicate that more than 60% of all journeys to work made by Solihull commuters are made by car. Whilst many local authorities saw a decline in car use for commuting between 2001 and 2011, in Solihull this figure increased.

The strategy also states that on average, half of all households in Solihull have access to a bike; yet less than 2% of commuters cycled to work prior to the COVID-19 pandemic.

### Key Milestones

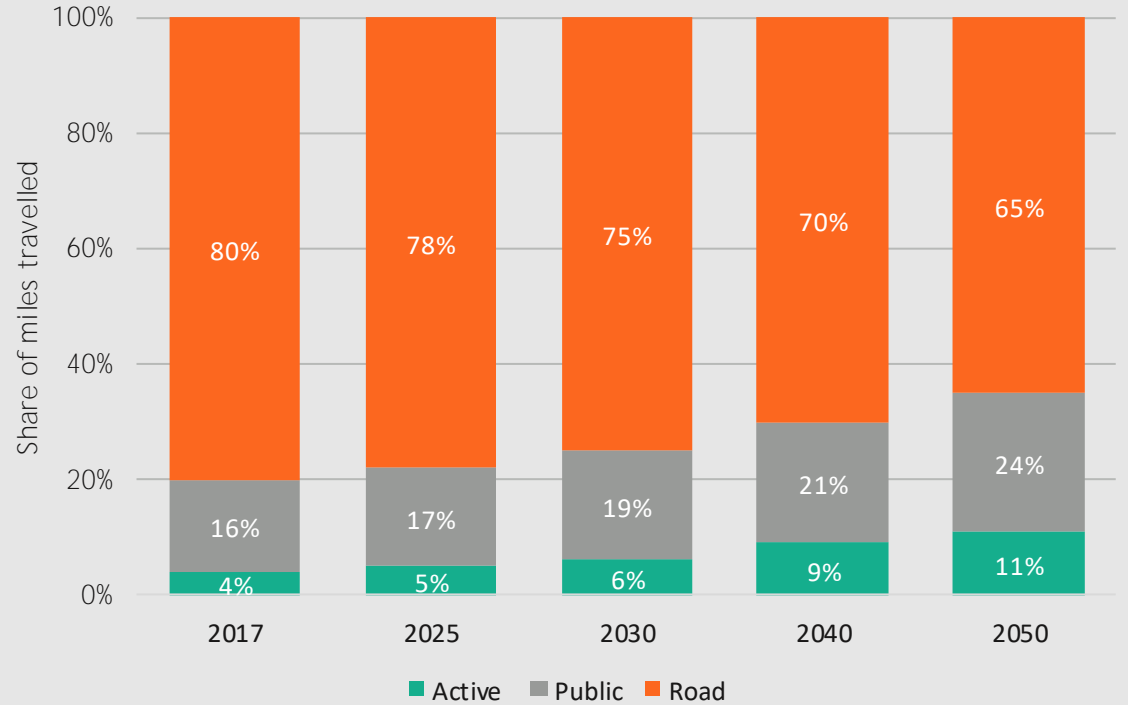


Figure 4.3.2: Changes in mileage share for different modes of transport.

2025	No or minimal changes to modal share
2030	6% reduction in road transport mileage; 17% increase in rail transport
2040	13% reduction in road transport mileage; 34% increase in rail transport
2050	19% reduction in road transport mileage; 50% increase in rail transport

## 4.3 TECHNICAL APPENDIX TRANSPORT

### 3) Switch to electric vehicles

One of the most important steps to reducing transport emissions in Solihull is the transition to electric vehicles. As with other measures around electrification, the success of a Borough-wide switch to EV relies heavily on grid decarbonisation and renewable electricity supply.

Data from the DfT and the DVLA indicates that 6,522 ULEVs were licensed in Solihull during Q3 of 2020, which comprised over half of the West Midlands ULEV total.<sup>1</sup> Solihull has the potential for high levels of electric vehicle adoption, with a significant proportion of residents earning above average salaries and many properties across the Borough having off-street parking provision suited for domestic EV charging.<sup>2</sup> This potential is reflected in the relatively high EV uptake across the Borough to date, with 17,558 ULEV vehicles licensed between September 2019 and September 2020.<sup>1</sup>

#### Transport glossary

**EV** - Electric Vehicle.

**HEV** - Hybrid Electric Vehicle.

**ULEV** - Ultra Low Emissions Vehicle (currently defined as a vehicle which emits <75 gCO<sub>2</sub>/km travelled).

**ICE** - Internal Combustion Engine (petrol and diesel vehicles)

**LGV** - Light Goods Vehicle.

### Key Milestones

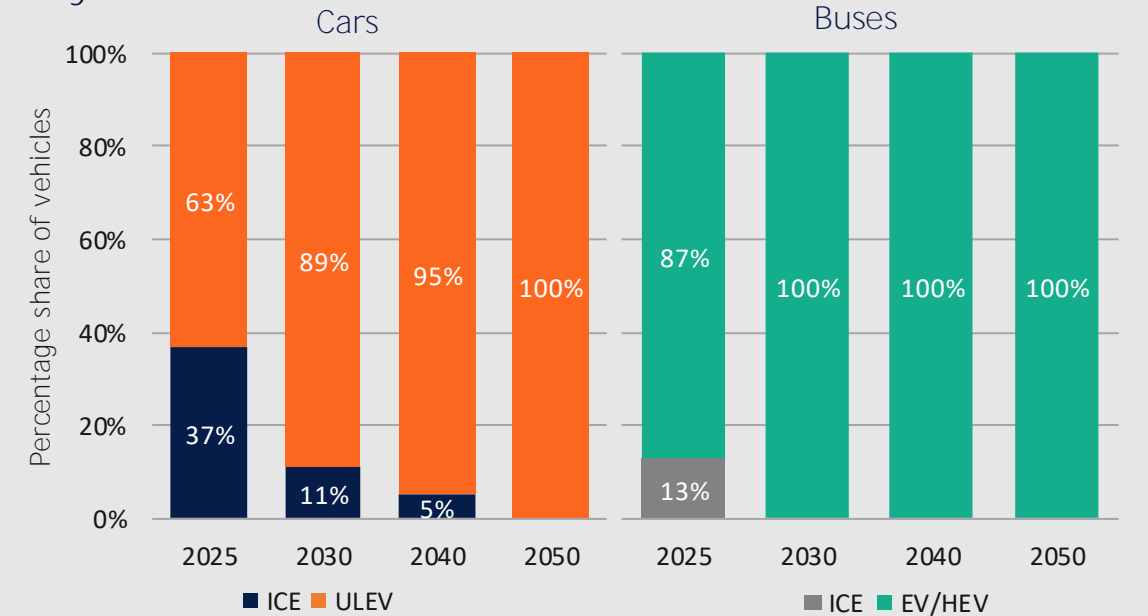


Figure 4.3.3: Transitioning away from fossil-fuel powered road vehicles.

2025	63% of cars in use change to EV/HEV; 87% of buses are EV/HEV. Across the country, 100% of diesel rail is replaced with electric
2030	89% of cars in use change to EV/HEV; 100% of buses are EV/HEV. Across the country, 100% of diesel rail is replaced with electric
2040	95% of cars in use change to EV/HEV; 100% of buses are EV/HEV. Across the country, 100% of diesel rail is replaced with electric
2050	100% of cars in use change to EV/HEV; 100% of buses are EV/HEV. Across the country, 100% of diesel rail is replaced with electric

## 4.3 TECHNICAL APPENDIX TRANSPORT

### 3) Reduce freight emissions

Freight emissions are notoriously difficult to tackle, posing challenges both in terms of operational technology and emissions accounting. SCATTER operates on three metrics which reduce freight emissions:

1. Improved journey efficiency: reducing the mileage travelled by HGVs **through more efficient infrastructure and fewer “empty-trailer” journeys.**
2. Improved efficiency of freight vehicles themselves i.e., reduction in energy used per mile travelled as more fuel-efficient (and eventually electric) vehicles are used
3. A modal shift from road freight to waterborne transport

Whilst the waterborne freight metric is not directly applicable within **Solihull’s boundary, demand from within the Borough does shape the nature of** out-of-boundary freight transport. Within SCATTER, this metric does not **therefore influence Solihull’s transport emissions directly but is included here** to give an indication for the requisite transition towards alternative modes of freight in order to achieve the improvements to on-road freight.

<sup>1</sup> For example, limitations to existing electric battery technology for HGVs mean that within SCATTER, freight EV only becomes prevalent after 2040.

### Key Milestones

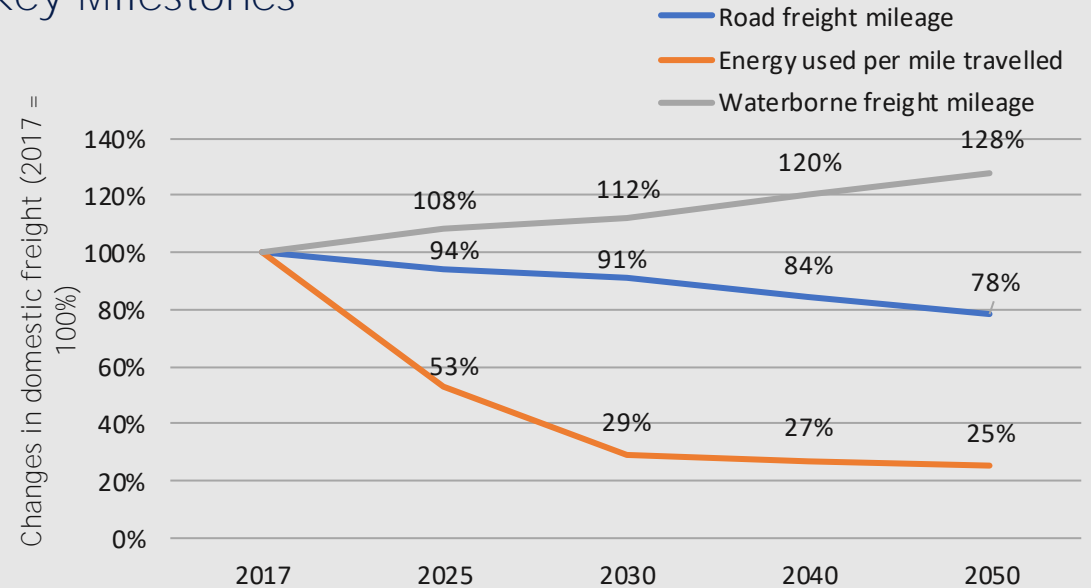


Figure 4.3.4: Improving freight emissions across three areas of activity. Percentage changes are relative to 2018 baseline.

2025	6% decrease in distance travelled by road freight; 47% increase in efficiency. 8% increase in use of waterborne transport
2030	9% decrease in distance travelled by road freight; 71% increase in efficiency. 12% increase in use of waterborne transport
2040	16% decrease in distance travelled by road freight; 73% increase in efficiency. 20% increase in use of waterborne transport
2050	22% decrease in distance travelled by road freight; 75% increase in efficiency. 28% increase in use of waterborne transport

## 4.3 TECHNICAL APPENDIX

### TRANSPORT CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Active travel	3.1 Infrastructure and policy are designed to facilitate walking and cycling	<p>High</p> <p>Walking and cycling are assumed to have 0 operational emissions.</p> <p>11,486 tCO<sub>2</sub>e per annum potential savings</p>	<p>This method is based on switching short journeys (under 5 miles) currently taken by car to switch to walking and cycling where possible. The number of miles taken for short journeys (1 mile, 1-2 miles and 2-5 miles) is taken from National Travel Survey Table NST0308b which estimates 464 miles per person per year on short journeys by car (national data). Passenger miles not included. <a href="https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons">https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons</a></p> <p>To get the number of miles travelled by individuals in Solihull, this value has been multiplied by the population of Solihull - estimated to be 215,055 people.</p> <p>Research from a study based in Cardiff, found that ~41% of short journeys could be replaced by walking and cycling when taking into account journey purpose and trip chains. Although this is based on another study area, this percentage has been applied to Solihull to give an idea of the magnitude of trips that could be replaced.</p> <p>Walking and Cycling are assumed to have 0 operational emissions. For the carbon saving this replaces an average petrol car travelling the same distance. Based on DEFRA factors: <a href="https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020">https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020</a></p>
Electric Vehicles	3.2 EV infrastructure improved	<p>High</p> <p>151,768 tCO<sub>2</sub>e per annum potential savings</p>	<p><b>Based on CCC estimates of UK's EV fleet to 23.2 million EVs by 2032 applied to Solihull as in Ashden</b></p>
	3.3 EV Uptake		

## 4.3 TECHNICAL APPENDIX

### TRANSPORT CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Carbon intensive private vehicles	3.4 Reduce distances for essential services	High 3,247 tCO <sub>2</sub> e per annum	<p>Emissions from RCVs/HGVs assumed to be equal to emissions (1959 tCO<sub>2</sub>) from Solihull Strategic Environment Contract (SEC). Available: <a href="https://www.solihull.gov.uk/sites/default/files/2021-05/Carbon-Report2019-20.pdf">https://www.solihull.gov.uk/sites/default/files/2021-05/Carbon-Report2019-20.pdf</a></p> <p>Average saving from switching to electric RCVs is 89% based on research from Eunomia: <a href="https://www.eunomia.co.uk/reports-tools/ditching-diesel-analysis-electric-refuse-collection-vehicles/">https://www.eunomia.co.uk/reports-tools/ditching-diesel-analysis-electric-refuse-collection-vehicles/</a></p> <p>This does not include an assessment of the suitability of Solihull's fleet for this as an alternative fuel. For information on the assumptions see the Eunomia report. Alternative fuels will continue to develop and become more viable. Solihull may wish to begin with a trial of electric or other alternative fuel vehicles</p>
	3.5 Reduce private vehicle use	Medium 9.6 tCO <sub>2</sub> e per annum	<p>Estimate based on preventing idling outside schools. Number of children driven to school taken from the Propensity to Cycle tool from: <a href="https://www.pct.bike/m/?r=west-midlands">https://www.pct.bike/m/?r=west-midlands</a>. For Solihull, this is estimated to be 9,629 journeys. Children are in school approximately 190 days per year so the number of journeys is multiplied to get the total journeys in a year.</p> <p>The number of vehicles idling outside schools taken from a study by Renault reported in <a href="https://www.walesonline.co.uk/news/uk-news/simple-mistake-school-run-risking-18935694">https://www.walesonline.co.uk/news/uk-news/simple-mistake-school-run-risking-18935694</a>. With 10.3% of parents in West Midlands admitting to idling.</p> <p>As part of the survey above, the majority (50%) idled for 1-5 minutes so it is assumed that each car spent 3 minutes idling on each occasion.</p> <p>Analysis by TRL suggests that per minute of idling releases 17g of CO<sub>2</sub>. From: <a href="https://trl.co.uk/uploads/trl/documents/PPR987-TRL-Idling-Analysis-Summary.pdf">https://trl.co.uk/uploads/trl/documents/PPR987-TRL-Idling-Analysis-Summary.pdf</a>. This is multiplied by the estimated number of minutes spent idling outside schools in Solihull</p>



## 4.3 TECHNICAL APPENDIX

### TRANSPORT CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Connectivity	3.8 Support remote working	High 5,587 tCO <sub>2</sub> e per annum	It is estimated that the IT-enabled carbon abatement potential of e-work in the UK is 12 MtCO <sub>2</sub> by 2030. This is equivalent to reducing the UK's current carbon emissions by 2.36% in 2030. This % reduction has been applied to the Council's own emissions
Commercial journeys	3.9 Reducing business journeys	Medium 380.9 tCO <sub>2</sub> e per annum Based on Ashden method which suggests Urban Consolidation Centres can cut freight emissions by 80%	<p>This applies a similar method to that used in Ashden's 31 Actions for Councils by scaling an existing case study. This is based on Oxford City Council Rolling out smarter driver training to 330 staff saving 150 tCO<sub>2</sub>e. Case study available here:  <a href="http://lowcarbonoxford.org/case_studies/smarter-driving-slashes-fuel-use-oxford-city-Council-2/">http://lowcarbonoxford.org/case_studies/smarter-driving-slashes-fuel-use-oxford-city-Council-2/</a></p> <p>The number of staff who would require training is not available. In the absence of numbers, the ratio of staff requiring training in oxford (~25%) is applied to the number of staff in Solihull. We acknowledge that the actual number may be notably different but given the lack of information a proxy has been applied. Staff estimates from:  <a href="https://www.oxford.gov.uk/info/20050/how_the_Council_works/332/staff_and_management_structure#:~:text=We%20employ%20approximately%201%2C300%20staff,services%20benefiting%20the%20local%20community">https://www.oxford.gov.uk/info/20050/how_the_Council_works/332/staff_and_management_structure#:~:text=We%20employ%20approximately%201%2C300%20staff,services%20benefiting%20the%20local%20community</a>  <a href="https://www.coventry.gov.uk/info/134/thrive_at_work/2965/workplace_wellbeing_award_-_solihull_metropolitan_Borough_Council">https://www.coventry.gov.uk/info/134/thrive_at_work/2965/workplace_wellbeing_award_-_solihull_metropolitan_Borough_Council</a></p>

# 4.4 WASTE

## 4.4 TECHNICAL APPENDIX

### WASTE

#### 1) Reduce the quantity of waste

The first step in improving emissions from waste is a reduction in the total volume of waste produced. This reduction covers waste from households, commercial & industrial usage, construction & demolition. The scale of these reductions will require significant changes to waste services as well as increased investment in waste management.

In Solihull Borough, each household was responsible for an estimated 609kg of waste in 2018/19, of which approximately 38% was recycled.<sup>1</sup> For non-household waste, the recycling figure jumped to 87%. Waste prevention and behavioral change to stop waste from being generated in the first place is a priority area for Solihull, although this is difficult for the Council to directly influence.

<sup>1</sup> [DEFRA](#) Local Authority collected waste: annual results tables

### Key Milestones

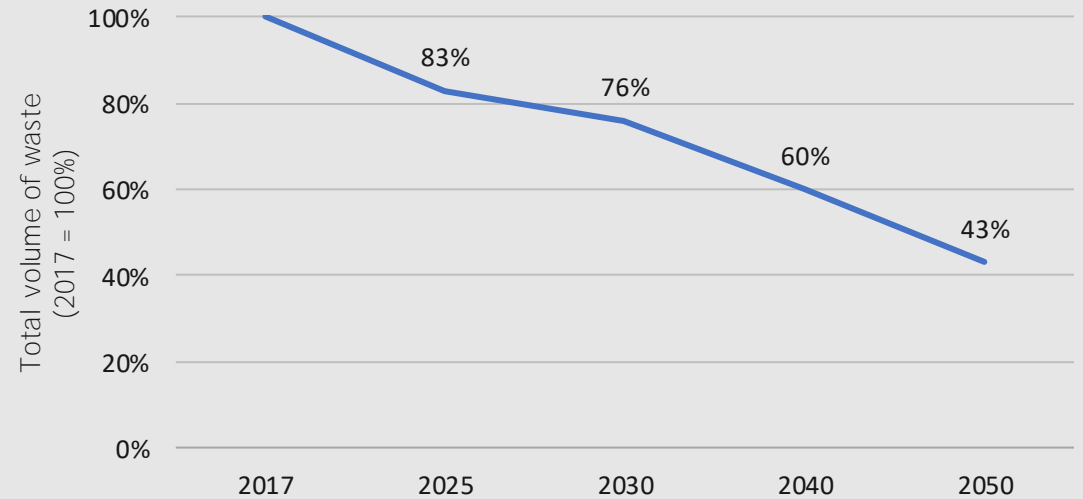


Figure 4.4.1: Reductions in the overall volume of waste produced within the Borough

2025	Total volume of waste is 83% of 2017 levels
2030	Total volume of waste is 76% of 2017 levels
2040	Total volume of waste is 60% of 2017 levels
2050	Total volume of waste is 43% of 2017 levels

## 4.4 TECHNICAL APPENDIX WASTE

### 2) Increase the recycling rate

After reducing the volume of waste outright, the second SCATTER intervention considers changes to the amount of waste that is recycled. SCATTER trajectories incorporate EU targets for recycling rates, with High Ambition projecting a more rapid transition to increased rates of recycling.

**Solihull Borough is reliant on recycling capacity outside of the Council's administrative area** due to the current facility at Bickenhill operating at near to full capacity. Co-mingled recyclables are currently being handled through a facility in Birmingham.<sup>1</sup>

### Key Milestones

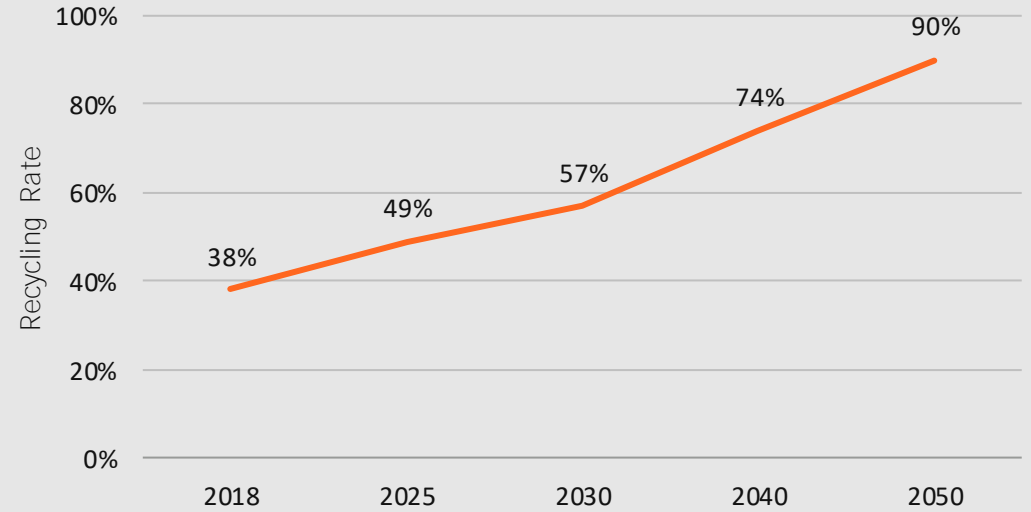


Figure 4.4.2: Growth in recycling rate within Solihull Borough

2025	29% increase in recycling rates
2030	50% increase in recycling rates
2040	94% increase in recycling rates
2050	137% increase in recycling rates

# 4.5 INDUSTRY

# 4.5 TECHNICAL APPENDIX

## INDUSTRY

### 1) Shift from fossil fuels

This intervention considers changes to the energy consumption in industrial processes, with the trajectories focused on the electrification of industry. For the chemicals, metals and minerals industries, SCATTER models the changing use of fuels for these processes, shifting off the most carbon-intensive fuels (i.e., fuel oil) in favour of transition fuels such as natural gas and electricity.

### Key Milestones

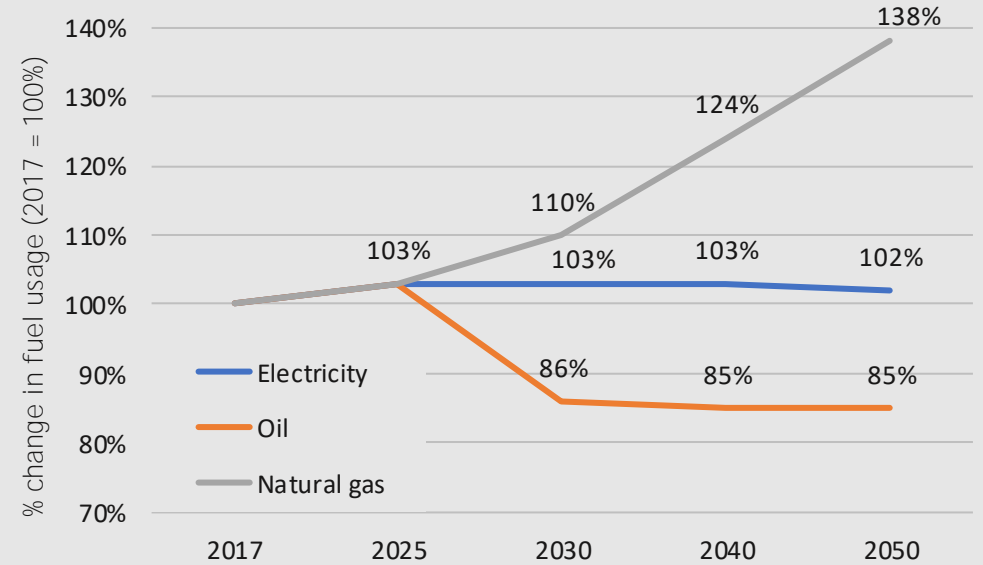


Figure 4.5.1: Changes in the fuel consumption for industrial processes and activities.

2025	Electricity consumption increased by 3%; oil consumption increased by 3%; natural gas consumption increased by 3%
2030	Electricity consumption increased by 3%; oil consumption reduced by 14%; natural gas consumption increased by 10%
2040	Electricity consumption increased by 3%; oil consumption reduced by 15%; natural gas consumption increased by 24%
2050	Electricity consumption increased by 2%; oil consumption reduced by 15%; natural gas consumption increased by 38%

# 4.5 TECHNICAL APPENDIX

## INDUSTRY

### 2) More efficient processes

This intervention considers the growth of different industries' greenhouse gas emissions that result from the industrial processes themselves. Process emissions arise from the manufacture and/or production of materials, chemicals and other products e.g. through combustion. As with some freight emissions, the direct impact of certain industries within Solihull is limited but are given here to illustrate the necessary actions in the industrial sector.

Separate trajectories are included for chemical, metal and mineral sectors, **with all other industrial activity grouped together (labelled as "other" industry)**.

### Key Milestones

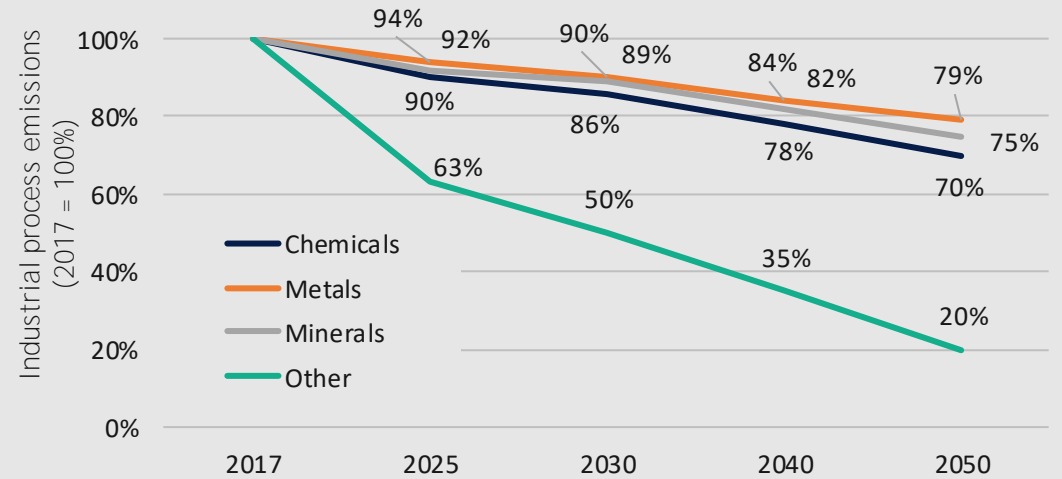


Figure 4.5.2: Reductions in process emissions by category.

2025	Process emissions from chemical industries reduced by 10%, metals industries reduced by 6%, minerals industries reduced by 8% and other industries reduced by 37%
2030	Process emissions from chemical industries reduced by 14%, metals industries reduced by 10%, minerals industries reduced by 11% and other industries reduced by 50%
2040	Process emissions from chemical industries reduced by 22%, metals industries reduced 16%, minerals industries reduced by 18% and other industries reduced by 65%
2050	Process emissions from chemical industries reduced by 30%, metals industries reduced by 21%, minerals industries reduced by 25% and other industries reduced by 80%

# 4.6 NATURAL ENVIRONMENT



## 4.6 TECHNICAL APPENDIX NATURAL ENVIRONMENT

### 1) Increase tree coverage & tree planting

Tree coverage and the associated sequestration potential has been **separated out into “forest coverage” and “lone trees”**. **Forest coverage** relates to areas of trees which can be defined as such by a land use map. It is worth noting that the ability of existing forest stocks to sequester carbon is expected to weaken in the future due to the aging profile of trees.

Lone trees instead relate to smaller wooded areas, hedgerows, trees contained within gardens and so on.

The sequestration potential of carbon dioxide per ha of trees is based on academic research, which stipulates that for a tree whose canopy coverage extends to 25m<sup>2</sup>, the lifetime uptake of carbon is around 750kgCO<sub>2</sub>.

Figure 4.6.1: Tree coverage and planting projections versus current estimates.

Year	Forest coverage	Tree planting outside woodlands
Current	2019 Woodland Trust Survey of Solihull indicates a woodland coverage of 6%. <sup>1</sup>	Tree planting outside woodlands is currently reported at around 1300 hectares, equivalent to 20 lone trees per hectare.
2040	24% increase in forest coverage.	Tree planting outside woodlands (including lone trees, hedges, and small woodlands) increases by 40% from 2017 to 1,820 hectares.

<sup>1</sup> [Woodland Trust Surveys](#) give data on tree coverage of parliamentary constituency, rather than local authority.

### Key Milestones

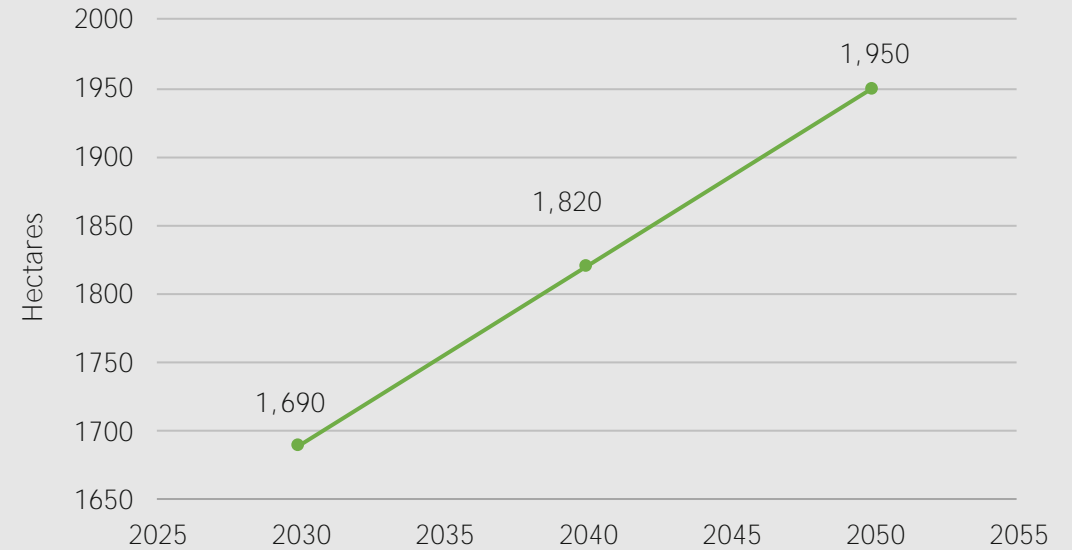


Figure 4.6.2: Increase in tree planting hectares outside of woodlands along Solihull’s High Ambition Pathway.

2030	30% increase in tree planting outside of woodlands, equivalent to 1,690 hectares
2040	40% increase in tree planting outside of woodlands, equivalent to 1,820 hectares
2050	50% increase in tree planting outside of woodlands, equivalent to 1,950 hectares

## 4.6 TECHNICAL APPENDIX

### NATURAL ENVIRONMENT

#### 2) Livestock management

SCATTER models livestock numbers based on scenarios from the DECC 2050 emissions calculator. These scenarios assume different priorities for the future of agriculture, with the High Ambition pathway forecasting a shift away from livestock. This shift could be underpinned by behavioral changes to diet or a switch to less land-intensive meats such as chicken.

SCATTER plots these emissions in terms of outright livestock numbers and does not explicitly consider changes to specific farming practices such as nitrogen usage, or feed conversion ratios.

Figure 4.6.3: Current livestock emissions figures across Solihull Borough.

Livestock type	Current emissions contribution across Solihull (ktCO <sub>2</sub> e) <sup>1</sup>
Dairy Cattle	5.22
Non-Dairy Cattle	2.12
Sheep	0.75
Pigs	0.37
Poultry	0.08

<sup>1</sup> Livestock emissions data taken from Solihull SCATTER inventory

#### Key Milestones

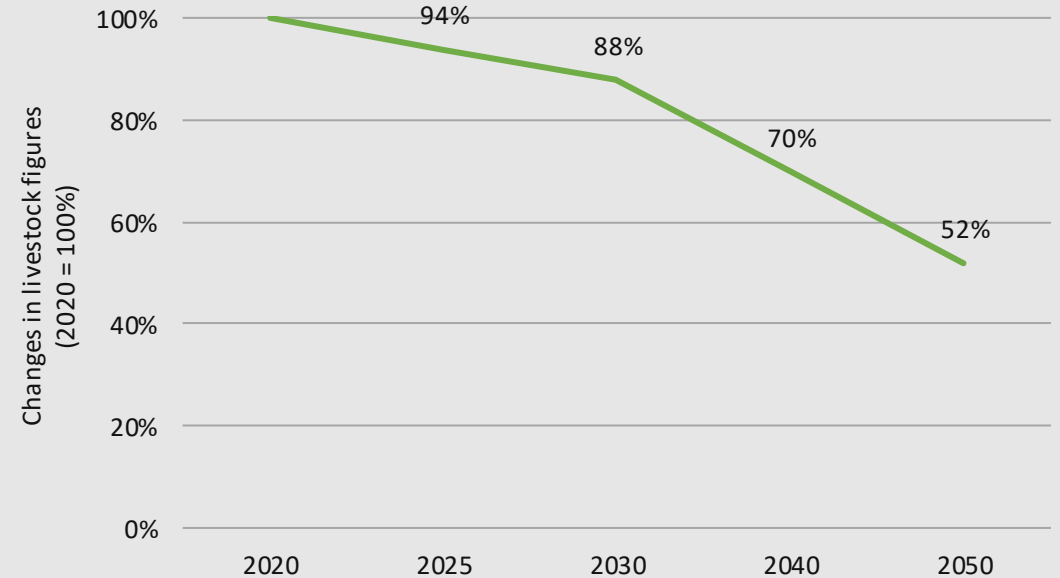


Figure 4.6.4: Reduction in livestock figures following a High Ambition emissions reduction pathway

2025	6% reduction in numbers of dairy cows and other livestock
2030	12% reduction in numbers of dairy cows and other livestock
2040	30% reduction in numbers of dairy cows and other livestock
2050	48% reduction in numbers of dairy cows and other livestock

## 4.6 TECHNICAL APPENDIX

### NATURAL ENVIRONMENT

#### 3) Land use management

Changes in land usage model a transition from open grassland and cropland to land which can be used to sequester greater levels of carbon. The land use trajectories from DECC 2050 emissions calculator have been mapped to Solihull.

#### Other research on land-use

The Committee on Climate Change (CCC) [report on land use](#) highlights the fundamental role of land as a natural asset and its provision of our food, clean water and natural regulation of the environment.

The report also recognises that the current approach to land use is not sustainable once the growth of the UK population and the associated per capita food production is considered. These concerns, coupled with the need to respond to climate change, have encouraged a future land strategy for the UK which is mindful of the current contexts around agriculture whilst securing long-term sustainability and meeting climate goals.

The recommendations call for a coordinated approach which supports landowners and land managers in terms of investment, innovation and low-carbon farming practices. By adopting more ambitious land use strategies, the proportion of carbon sequestered by the natural environment can grow significantly to help Solihull meet its carbon reduction goals.

## Key Milestones

Figure 4.6.5: Current land use emissions in Solihull and 2040 land use emissions estimates when following a high ambition pathway.

Category	Solihull 2018 Land Use Emissions (ktCO <sub>2</sub> e)	Solihull 2040 Land Use Emissions (ktCO <sub>2</sub> e)	% change in emissions between 2020 & 2040 along High Ambition Pathway
Forestland	-6.73	-8.94	32% reduction
Cropland	6.29	6.49	3.1% increase
Grassland	-6.88	-6.70	2.6% increase
Settlement	4.62	5.51	19% increase
Other	0	0	No change
<b>TOTAL</b>	<b>-2.69</b>	<b>-3.63</b>	<b>35% reduction</b>

# 4.7 ENERGY SUPPLY

## 4.7 TECHNICAL APPENDIX ENERGY SUPPLY

### 1) Solar photovoltaics

Solar PV technologies can be split out into local installations, and larger sites for ground- or roof-mounted arrays. According to the [Energy Saving Trust](#), the typical household array capacity is between 2-4 kW. The current average square meter of solar PV panel provides a capacity in the region of 0.15-0.20 kW of energy.

Solihull has some Solar PV installed locally. According to the BEIS Renewable Electricity data from 2019<sup>1</sup>, there are 1,694 installations of solar PV in the Borough which provides 7.9 MW (7,946 kW) of installed capacity.

If these levels of Solar PV are not deemed feasible in Solihull, it is expected that the residual capacity is provided by other renewable technologies which are explored on the following page.

#### Renewable Energy Feasibility Study

SMBC is currently undertaking a Renewable Energy Feasibility Study which seeks to identify the most feasible locations for renewable energy installations. The study will be conducted over two Phases:

- Phase 1: Technology review - Major renewable energy technologies and how appropriate they are to Solihull will be considered alongside a large-scale site search.
- Phase 2: Site search - this phase will search for potential locations across the borough for small wind turbines, ground and roof mounted solar installations. Renewable heat technologies, such as heat pumps and solar thermal will also be explored here.

The outcomes of the study will be critical in determining the most feasible technologies, scale and locations for renewable energy in Solihull.

### Key Milestones

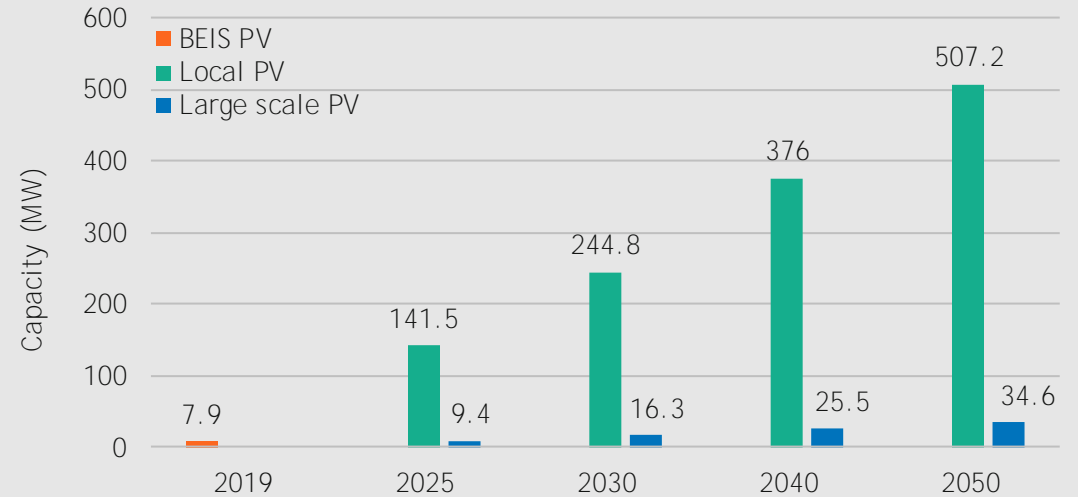


Figure 4.7.1: Comparing the SCATTER outputs against the recorded installed capacity from BEIS renewable energy statistics.

2025	Local PV capacity grows to 141.5 MW whilst large-scale PV increases to 9.4 MW
2030	Local PV capacity grows to 244.8 MW whilst large-scale PV increases to 16.3 MW
2040	Local PV capacity grows to 376 MW whilst large-scale PV increases to 25.5 MW
2050	Local PV capacity grows to 507.2 MW whilst large-scale PV increases to 34.6 MW

# 4.7 TECHNICAL APPENDIX

## ENERGY SUPPLY

### 2) Other technologies

SCATTER also considers other renewable technologies, including onshore and offshore wind as well as biomass and hydroelectric power.

- Wind:** Wind power technologies vary between local, on- or off-shore installations. A typical full-size onshore wind turbine has a capacity of around 2.5 MW. Smaller *micro-wind* turbines have much smaller capacities, typically no greater than 0.02 MW. According to the BEIS Renewable Electricity data from 2018, there is currently no installed wind capacity in Solihull.
- Biomass:** This is assumed to displace fossil fuels as an energy source for generation in power stations. The combustion of solid biomass fuels (such as woodchips) still releases greenhouse gases, albeit with a much smaller impact than coal or natural gas. For the High Ambition pathway, generation in power stations from solid biomass fuels is modelled to increase fourfold by 2025, before dropping off to very low levels by 2050. Without the coupling of biomass generation to carbon capture and storage technology, there will always be residual emissions associated with the consumption of solid biomass fuels. The phasing out of coal and natural gas follow trajectories in the National Grid Two Degrees scenario.
- Hydroelectric power:** SCATTER also considers other renewable technologies, including hydroelectric power. To this end, very small amounts of small-scale hydroelectric projects may be suitable along the River Blythe.

If a technology is not deemed feasible in Solihull, it is expected that the residual capacity is provided by other renewable technologies. Therefore, the milestones opposite are one example of technology mix.

### Key Milestones

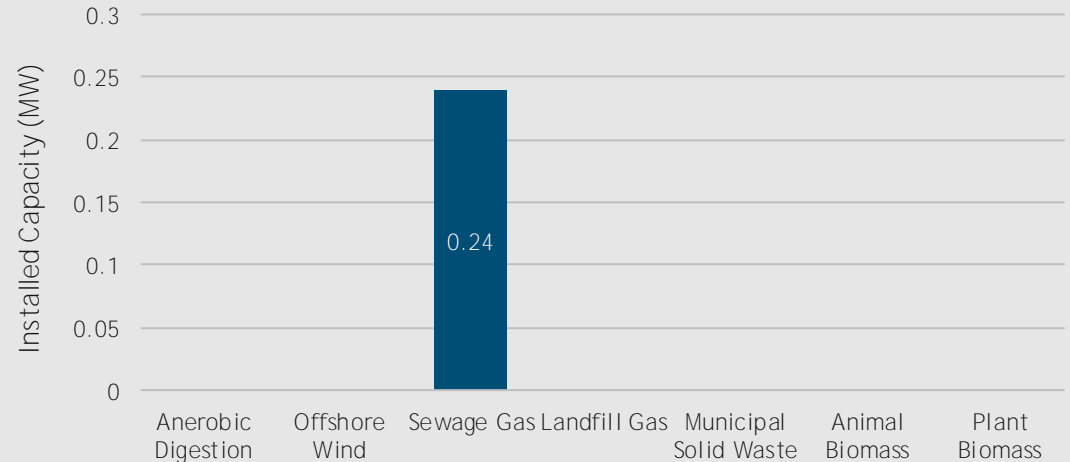


Figure 4.7.2: Current installed capacity in MW of other renewable technology types in Solihull from BEIS Regional Renewable Statistics.

2025	Local hydro capacity grows to 2 MW. Local wind generation increases to 18.4 MW, onshore wind capacity increases to 53.9 MW and offshore increases to 76.5 MW
2030	Local hydro capacity grows to 2.7 MW. Local wind generation increases to 22.8 MW, onshore wind capacity increases to 66.7 MW and offshore increases to 103.1 MW
2040	Local hydro capacity grows to 3 MW. Local wind generation increases to 24.6 MW, onshore wind capacity increases to 73.3 MW and offshore increases to 116.5 MW
2050	Local hydro capacity grows to 3.3 MW. Local wind generation increases to 26.3 MW, onshore wind capacity increases to 79.9 MW and offshore increases to 130 MW

## 4.7 TECHNICAL APPENDIX

### ENERGY SUPPLY CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Energy Infrastructure	7.1 Local understanding of feasibility is improved	Low No direct carbon savings but supports renewable energy installations	
	7.2 Improve local energy storage infrastructure	High Renewable energy storage can allow up to 57% emissions reduction compared to a non-renewables case.	
	7.3 Improve Council owned energy infrastructure	Medium The average solar PV farm could save 5,200 tCO <sub>2</sub> e by 2041 in comparison to using UK Grid Electric emissions (4.75m kWh per year)	Anthesis Project Carbon Impact Assessment Tool

## 4.7 TECHNICAL APPENDIX

### ENERGY SUPPLY CARBON SAVINGS REFERENCES

Intervention area	Goal	Carbon savings	Carbon savings references
Renewable energy	7.4. Residents and organisations are supported to maximise renewable energy installations	<p>Medium</p> <p>The average domestic household could save 11 tCO<sub>2</sub>e by 2041 by switching from UK Grid Electric to Solar.</p>	Anthesis Project Carbon Impact Assessment Tool
	7.5. Economies of scale are leveraged in order that businesses maximise the uptake of renewable energy	<p>High</p> <p>The average commercial building could save 105 tCO<sub>2</sub>e by 2041 by switching from UK Grid Electric to Solar.</p>	Anthesis Project Carbon Impact Assessment Tool
	7.6. Increase renewable energy installations	<p>High</p> <p>Increasing solar PV capacity to 401.5MW and other renewable technologies to 27.6MW could result in savings of 2.7 million tonnes of CO<sub>2</sub>e by 2040</p>	SCATTER tool



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