

# Report

Report to:	<b>Climate Change and Sustainability Committee</b>
Date of Meeting:	<b>14 June 2023</b>
Report by:	<b>Executive Director (Community and Enterprise Resources)</b>

Subject:	<b>Area Wide Emissions Route Map</b>
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## 1. Purpose of Report

1.1. The purpose of the report is to:-

- ◆ update the Climate Change and Sustainability Committee on consultancy work carried out on area wide carbon emissions and discuss next steps

## 2. Recommendations

2.1. The Committee is asked to approve the following recommendations:-

- (1) note the progress on baselining area wide carbon emissions and agree next steps.

## 3. Background

- 3.1. An application was made in April 2022 to the Council's Climate Emergency Fund for £35,000 to appoint an industry expert to advise on how to measure and reduce area wide carbon emissions for South Lanarkshire. The purpose was to establish a baseline position and identify actions to help the Council meet its long term targets.
- 3.2. The application was approved and, after competitive tender in August 2022, Aether Ltd. was appointed. Aether employs a number of consultants who are experts in environmental data analysis and interpretation and have provided a number of Scottish local authorities with advice. It was agreed that a report would be prepared by Aether and presented to the appropriate Committee in 2023.
- 3.3. As part of the scope of works, two workshops were held to inform the final report. One workshop was held in September 2022 with internal stakeholders, and a second workshop with external stakeholders was held in November 2022. The list of invitees, attendees and participants can be found at Appendix 1.
- 3.4. The Council has actively monitored and reduced its own carbon footprint since 2005 but, as reported to this Committee on 26 April 2023, there are many legislative milestones that the Council must work towards. Many of these milestones include action much wider than just the Council's own footprint. Some of the long term national targets are also under considerable external scrutiny with calls for further support for local authorities.

#### **4. Aims and Objectives of Project**

4.1. The project brief detailed that the final report should:-

- ◆ identify and baseline the biggest contributors to South Lanarkshire's emissions
- ◆ outline the scale of reduction required to meet net-zero by 2045
- ◆ provide details of cost effective, carbon effective and transformational action required to meet net-zero
- ◆ outline the Council's scope of influence to reduce emissions through its regulatory powers and policies

4.2. The project was undertaken with the knowledge that the final report would provide the foundation for area wide emissions reduction. It was expected that key stakeholders would be identified and, whilst some high level actions were anticipated, there was no expectation that costs or skills would be specified.

4.3. It is worth highlighting that statutory duties to deliver the area wide carbon reductions fall on a number of bodies including councils, the Scottish Government, and other national agencies. Work will be undertaken to identify lead agencies and partners in respect of South Lanarkshire.

#### **5. Key findings and messages**

5.1. The full report is attached at Appendix Three, however, the key messages include:-

- ◆ the biggest contributors to area-wide emissions is from transport (31%) and domestic energy (31%)
- ◆ the scale of action required for area-wide emissions reduction is extensive
- ◆ the timeframe for meeting national net zero targets is unachievable within current levels of resourcing
- ◆ the potential for the Council to use its powers of influence and policy is extensive
- ◆ the proportion of the area's carbon footprint that comes from Council services is minimal (2.5%)
- ◆ engagement with local businesses, developers, organisations and communities is key to future area-wide emissions reduction
- ◆ the potential for local businesses to invest in Council led offsetting opportunities is significant but the appetite for this is unknown
- ◆ examples of good practice in other Scottish local authority areas can be used to inform how South Lanarkshire could reduce area-wide emissions

5.2. The Council's carbon footprint has reduced significantly, by 64.2% between 2005 and March 2022. As expected, however, the proportion of area wide emissions that come from the Council's own carbon footprint is minimal. Nevertheless, the Council does have a significant influencing role to play and should continue to lead by example and take action internally to reduce its own emissions where possible, whilst recognising the limitations within current financial and resourcing constraints. Focus should also now be given to:-

- ◆ engaging more with external stakeholders to work together in reducing area wide emissions
- ◆ considering offsetting opportunities within the South Lanarkshire area, given the potential for carbon absorption through our peatland and forestry resources

5.3. The Aether report is considered to be the initial step in area wide emissions reduction, and it can be used to engage and work with wider stakeholders to plan and develop emissions reduction projects and actions to best assist South Lanarkshire in achieving

net zero by 2045. If partnership engagement and widespread innovation is not forthcoming, then it is unlikely that the net zero targets set by Scottish Government will be met.

- 5.4. Table six within the report sets out a series of actions which the Council needs to undertake to reduce emissions across different sectors. This table has been expanded and attached at Appendix Two to detail what progress has already been made within these areas, and where there are gaps.

## **6. Next steps**

- 6.1. The suggested next steps are detailed in Appendix Three, but in summary these include:-

- ◆ subject to clarity on who has primary duty, agree how to engage with key stakeholders and involve them in area wide emissions reduction
- ◆ agree, in conjunction with key stakeholders, set targets for area wide emissions reduction
- ◆ consider how to link area wide emissions reduction with the Net Zero Town project and Town Centre Visioning project, and other key Council strategies/policies/projects
- ◆ ensure that due consideration is given to climate justice and ensuring the transition to net-zero does not exacerbate poverty or inequalities

## **7. Employee Implications**

- 7.1. All Resources are required to contribute to the implementation of the Sustainable Development Climate Change Strategy to ensure that actions and targets are met. The Sustainable Development Officer and Carbon Management Officer will lead on the development of an area wide emissions route map.

## **8. Financial Implications**

- 8.1. Significant financial consideration will be required for the Council and area wide stakeholders to contribute to the challenging national net zero carbon targets and the global sustainable development goals.
- 8.2. There may be the opportunity for organisations to contribute to Council led carbon reduction projects.

## **9. Climate Change, Sustainability and Environmental Implications**

- 9.1. Any efforts that can be made to reduce the area's carbon footprint will contribute to national targets, and to the global sustainable development goals.

## **10. Other Implications**

- 10.1. 'Failure to meet sustainable development and climate change objectives' is one of the top risks for the Council, with a score of 15.

## **11. Equality Impact Assessment and Consultation Arrangements**

- 11.1. This report does not introduce a new policy, function or strategy or recommend a change to an existing policy, function or strategy and, therefore, no impact assessment is required. The Sustainable Development and Climate Change Strategy 2022-2027 has undergone full Strategic Environmental Assessment and Equality Impact Assessments.

**David Booth**

**Executive Director (Community and Enterprise Resources)**

25 May 2023

**Link(s) to Council Values/Priorities/Outcomes**

- ◆ Fair, open and sustainable
- ◆ We will work towards a sustainable future in sustainable places
- ◆ Good quality, suitable and sustainable places to live
- ◆ Caring, connected, sustainable communities

**Previous References**

- ◆ None

**List of Background Papers**

- ◆ Sustainable Development and Climate Change Strategy 2022-2027

**Contact for Further Information**

If you would like to inspect the background papers or want further information, please contact :-

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## Appendix 1

### Aether - Stakeholder Engagement

#### Organisation

#### Organisation type and function

##### Attended

Forestry and Land Scotland

Agriculture and Land Use

National Farmers Union Scotland

Agriculture and Land Use

SAC Consulting

Agriculture and Land use

East Kilbride Housing Association

Housing Association

NHS Lanarkshire

Health Service

CALA

Housing developer

Stewart Milne

Housing developer

Taylor Wimpey

Housing developer

Elected Members

South Lanarkshire Council

Glasgow City Region

Transport & Economic Development

New College Lanarkshire

Skills development

Scottish Enterprise

Transport & Economic Development

Strathclyde Partnership for Transport

Transport & Economic Development

University of West Scotland

Education

Sustainable Scotland Network

Public Sector

##### Expressed interest but were unavailable to attend

Clyde Valley Housing Association

Housing Association

Clydesdale Housing Association

Housing Association

Miller

Housing developer

Robertson

Housing developer

Banks Group

Property development and renewable generation

Scottish Communities Action Network

Third Sector

##### Invited but did not attend

Scottish Power Energy Networks

Energy

East Kilbride Housing Association

Housing Association

West of Scotland Housing Association

Housing Association

West Whitlawburn Housing Cooperative

Housing Association

Business Gateway

Skills development

Skills Development Scotland

Skills development

VASLan

Skills development

## Appendix 2

### Aether - Key priority actions for SLC to enable decarbonisation across the council area

Key priority actions	Possible implementation methods	Progress to date
<b>Transport</b>		
Promote cycling and walking in South Lanarkshire through network improvements to create safe cycling and walking routes	Engage Services to identify their plans for improvements. Appoint external agency e.g. Sustrans or Cycling Scotland to review and assess infrastructure and make recommendations on connecting neighbourhoods	<ul style="list-style-type: none"> <li>• Active Travel Studies for each main town and links between towns and villages are complete.</li> <li>• The above studies include liaison between various organisations / agencies and residents and are being used to the develop priorities identified as resources permit.</li> <li>• Works are currently being programmed for the construction of new cycle routes for this financial year.</li> </ul>
Increase the amount of EV charging points across the council area.	Engage with relevant EV charging solutions companies. Install chargers in all public car parks and at council and other public buildings. Ensure that all new residential and commercial developments include charging infrastructure. Trial on street chargers in areas where there is no off-street parking.	<ul style="list-style-type: none"> <li>• The Council and 7 other Local Authorities commissioned Mott McDonald to undertake a review and develop a regional and local strategy and plan. This is currently being reviewed and further work to consider financial / implementation models is to be taken forward shortly.</li> <li>• EV charging infrastructure already forms part of the considerations given to new developments and relevant conditions are attached to planning applications.</li> </ul>
Improve public transport provision across the council area and support its use through incentives	Engage with local public transport providers to ensure joined up provision for employment, education and retail etc. Connections with the planned park and ride scheme. Consider financial incentives to increase use rates, potentially in parallel with changes to parking provision if appropriate.	<ul style="list-style-type: none"> <li>• On-street charging infrastructure at 13 locations will be commissioned in the coming weeks. There are currently 145 dual chargers in public spaces throughout South Lanarkshire.</li> <li>• The Council currently participates in the Glasgow Bus Partnership, have developed the Clydesdale STAG, and work with Network Rail / ScotRail, Transport Scotland / SPT and bus operators. Through these projects, current ongoing works include Bus Priority corridor works, Lanark Interchange, East Kilbride Rail Enhancement and various other bus stop infrastructure improvements.</li> </ul>

## Buildings

Enable skills development for net zero building retrofits.

Provision of training courses and apprenticeships by local colleges. Provide carbon literacy information and training for the public.

The Council is liaising with higher education establishments to better understand the courses and skills being offered and identify any gaps in training. The Council has employed a Sustainable Communities Engagement Officer who works with a range of community groups across South Lanarkshire, providing information and training where appropriate

Review and update South Lanarkshire Development Plan 2 when appropriate to require high standards of energy performance and low carbon heat for new build and refurbishment of commercial properties

Work collaboratively with Planning and Building Standards Service to ensure energy performance standards are included, enforced and reviewed.

- The Council is carrying out a review of the Residential Development Guide. The updated version will cover both planning and building standards functions and will incorporate measures relating to the energy performance of buildings and the siting and design of new build properties.
- Building standards surveyors are implementing revised building regulations introduced in February 2023 when assessing building warrants. In addition, online learning on Passivhaus has been made available to surveyors and planners.
- Planning policy in the National Planning Framework 4 which was adopted by the Scottish Government in February 2023 is being used in decision making on planning applications. A separate Supporting Planning Guidance document on Climate Change is being prepared.
- Supporting Planning Guidance on Electric Vehicle Charge Points has been approved and is in operation.

## Residential

Set targets for % homes retrofits needed per year to meet EESSH2, ensuring those in fuel poverty are not adversely affected

Engage Housing and Technical Resources for scoping exercise for improvements to social housing properties. Identify the likely cost of homes retrofits required to meet EESSH2 following the outcomes of the Scottish Government's review of the specifications and timescales within the standard.

- Over 91% of Council homes are currently at EPC Band C or above.
- New Council homes built with grant funding applied for after December 2023 will be prohibited from installing direct emissions heating systems.

## Transport, Buildings, Residential, Non-residential

Following Stages 1-4 of the Local Heat and Energy Efficiency Strategy (LHEES) methodology outputs, determine what needs to be done to change buildings and local infrastructure over the coming years to fulfil Scottish Government objectives and local priorities.

Create a cross-Resource working group to take forward development of LHEES. Integrate LHEES appropriate actions into cross Council policies and strategies.

- A cross-Resource officer working group has been set up to take forward the development of LHEES. The group will be assisted by the environmental consultants, Changeworks, who will support the development of the LHEES and Delivery Plan.

## Non-residential

Establish a local climate change partnership

Support information sharing by local business and organisations through a local forum.

- The Council works with the Community Planning Partnership (CPP) members and has mapped the Community Plan 2022-2032 to the Sustainable Development Goals. This is with a view to identifying how the CPP can contribute to climate change and sustainability action.

Support local businesses and organisations in making good decisions about carbon reduction

Provide information about buildings energy audits, and the development of business cases. Provide links to local trades and suppliers of low carbon solutions.

- Currently local businesses are supported by external organisations such as Business Gateway and Energy Savings Trust. More could be done if the Council worked on climate action in partnership with local businesses.

## Waste

Public awareness campaign on waste prevention through changing patterns of consumption and its connection to climate change

Work with Waste Department to schedule communications to residents with a strong climate focus

- Waste awareness team engage with residents and schools on a regular basis.
- A review of kerbside refuse collection services will take place in 2023-24 to identify what can be done to improve recycling and composting rates and reduce the amount of residual waste generated.
- Waste Services work with stakeholders, including waste contractors and householders to reduce the amount of waste being sent to landfill



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# 1 Context

Scotland has a target to become net zero by 2045, as set out in the **Climate Change (Emissions Reduction Targets) (Scotland) Act 2019**, which amends the **Climate Change (Scotland) Act 2009**. South Lanarkshire Council has recognised the importance of quantifying and reducing emissions by establishing a Climate Change and Sustainability Committee in 2019 and a supporting cross-resource climate change and sustainability steering group.

The Council has an active sustainability network of employees annually reporting the greenhouse gas (GHG) emissions for their estate and wider area in compliance with climate change duties under the Climate Change (Scotland) Act 2009<sup>1</sup>.

The Council has produced multiple strategy documents that aim to address the council's role in addressing climate change in South Lanarkshire. The Council's Sustainable Development and Climate Change Strategy (SDCCS) 2022-2027<sup>2</sup> sets out the overall approach to sustainable development and addresses the challenges and opportunities of climate change. It outlines the changes in sustainable development and climate change policy since the publication of the last strategy, and the Council's strategic outcomes for sustainable development and climate change over the next five years.

The Sustainable Development and Climate Change Strategy and Local Transport Strategy cover 2022–27 and 2013–23, respectively. The Local Development Plan was published in January 2021 and covers 2020–25.

The council has already reduced emissions from its estate through projects such as installing PV systems, installing biomass boilers, and use of ground source heat pumps in council properties. South Lanarkshire Council also implemented an LED streetlighting replacement programme, which was completed in 2018. Since 2019, waste from South Lanarkshire has been treated at an Energy from Waste (EfW) facility located in Dunbar, East Lothian, resulting in diversion away from landfill.

Whilst South Lanarkshire Council continues to decarbonise their estate, the council now seeks to identify how the council can use its influence to enable actions to reduce GHG emissions in the wider area. The need to meet national targets provides an opportunity for the council to explore the ways in which it can embed climate action into the wider area.

Aether has been commissioned by South Lanarkshire Council to provide evidence and recommendations to update and influence their climate change strategy and work towards an area-wide emissions reduction route map.

The purpose of this report is to summarise this work including establishing baseline emissions in South Lanarkshire and production of potential future emission projections based a 'do nothing' and low carbon scenario for the council estate and area to 2045 (**Chapter 2**).

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<sup>1</sup> <https://www.legislation.gov.uk/asp/2009/12/section/44>

<sup>2</sup> [https://www.southlanarkshire.gov.uk/info/200303/climate\\_change\\_and\\_sustainability/2100/sustainable\\_development\\_and\\_climate\\_change\\_strategy](https://www.southlanarkshire.gov.uk/info/200303/climate_change_and_sustainability/2100/sustainable_development_and_climate_change_strategy)

Findings from the workshops held with council staff and external stakeholders were held to understand current action in the local area alongside potential barriers and solutions to future actions and findings from these are included in **Chapter 4**.

**Chapter 5** covers the co-benefit review and matrix developed, which rates a range of co-benefits across a range of recommended mitigation actions.

Recommendations and next steps for the council to work towards an area-wide emissions reduction route map are included in **Chapter 6**.

## 2 Area-wide historical emissions

An emissions inventory is a dataset which presents estimates of emissions of various GHGs from a wide range of activities in an organisation, country or other geographical area. The latest historical data is used to construct an emissions inventory to best reflect historical emission levels, from which emission trajectories can then be developed.

The standard approach to estimate GHG emissions is by multiplying activity data by an emission factor associated with the activity being measured (**Equation 1**).

*Equation 1: Emission factor approach for calculating GHG emissions.*

$$\text{GHG emissions} = \text{activity data} * \text{emission factor}$$

**Emission Factor** - This is the emissions per unit of activity, which usually comes from scientific literature. It is typically derived from measurement.

**Activity data** - This is a measure or estimate of the activity which is taking place, such as number of cows or tonnes of fuel. This data typically comes from national or sub-national statistical datasets or from the organisation in question.

### 2.1 Scope of emissions

The sources in **Figure 1** included in the area-wide emissions inventory are presented and the datasets used to compile the baseline are listed in **Table A1** in Appendix 1.

**Figure 1** also shows sources that are not in scope of the analysis within this report, because either the data are not available or not good enough for making estimates, or the sources were felt to be outside the influence of council action.

The council is responsible for collecting and transporting municipal waste for disposal. Emissions resulting from council-owned waste collection vehicles were included within the inventory as part of the council estate fleet, rather than reported as waste transfers, due to lack of granularity in the fuel data. The remaining emissions (waste processing emissions) were included in the area-wide baseline, as these emissions are dependent on amounts and composition of waste from residents and organisations across the council area.

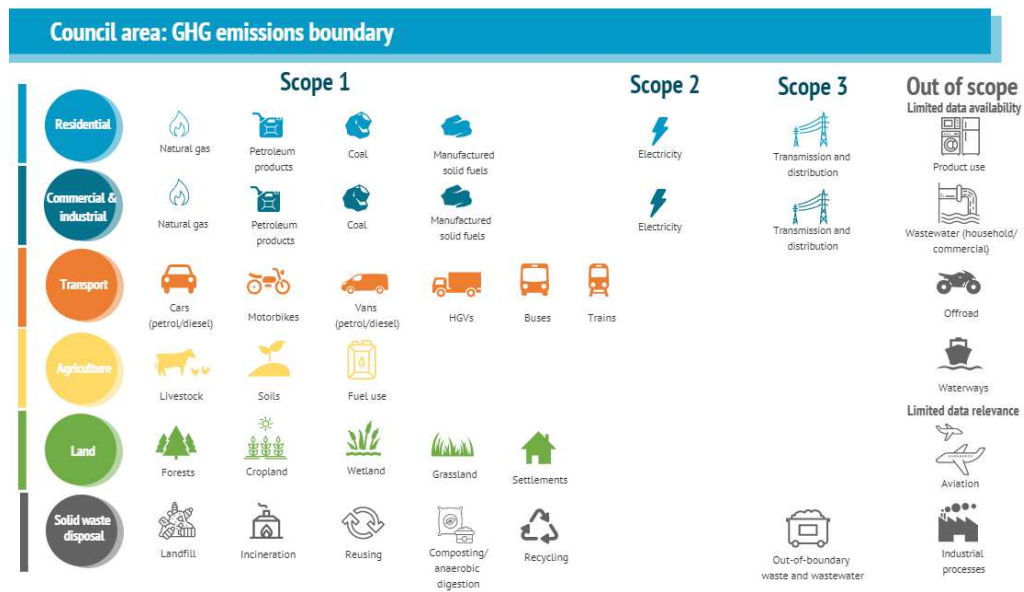
The UK Government GHG Conversion Factors for Company Reporting<sup>3</sup> account for both the transport and processing of waste emissions in a single emission factor, so new emission factors were calculated to estimate emissions from transport and processing separately, thus avoiding double counting.

Therefore, due to the allocation of waste emissions across the council fleet and area-wide waste processing, estimates differ from those reported by South Lanarkshire Council where their Public Bodies Duties Climate Change Report accounts for emissions from collection, transport, and disposal in their estimates.

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<sup>3</sup> <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

Figure 1: Diagram of the sources that are in and out of scope of the area-wide baseline



## 2.2 Historical emissions estimates

For this report, 2018 was selected as the first year (baseline) for emissions estimates. Estimates have also been made for 2019 and 2020 based on the latest data available.

The council's own emissions were calculated to compare against the area-wide emissions (see below). Data on energy consumption for the estate's buildings and fleet vehicles, in addition to distances travelled as business travel were provided by the council and used to calculate emissions for the estate.

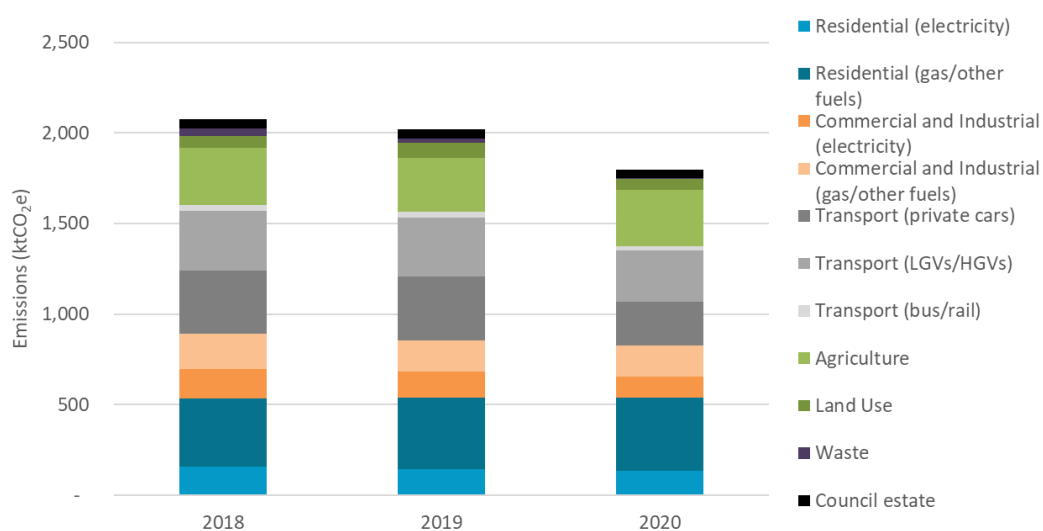
South Lanarkshire area's GHG emissions were estimated at 2,023 ktCO<sub>2</sub>e in 2018, decreasing to 1,751 ktCO<sub>2</sub>e in 2020. Emissions by sector are presented in **Figure 2** and **Table 1**.

The most significant emissions source in 2018 was the transport sector, comprising 35% of total emissions. Car and HGV use were the largest sources of transport emissions.

There was also a large contribution from the residential sector, the majority of which were emissions from natural gas for heating and electricity for heating and lighting homes, businesses and other buildings such as hospitals and schools.

Emissions from land use and land use change and waste in South Lanarkshire are small, at 3% and 2% respectively. Land use was a source of emissions due to emissions from cropland, grassland, wetland and settlements being greater than removals from forests.

Figure 2: Estimated ktCO<sub>2</sub>e emissions for South Lanarkshire Council estate and area in 2018 - 2020



Transport emissions remained constant across 2018 and 2019 and decreased in 2020, representing 31% of emissions in 2020. Commercial energy use steadily decreased across the timeseries, from 361 ktCO<sub>2</sub>e in 2018 to 288 ktCO<sub>2</sub>e in 2020. Emissions from the residential, agriculture, and land use sectors remained relatively constant across the timeseries.

Table 1: Estimated ktCO<sub>2</sub>e emissions for South Lanarkshire area in 2018 - 2020

	Emissions (kt CO <sub>2</sub> e)	% of total emissions	Emissions (kt CO <sub>2</sub> e)	% of total emissions	Emissions (kt CO <sub>2</sub> e)	% of total emissions
Residential (electricity)	158	8%	142	7%	136	8%
Residential (gas/other fuels)	374	18%	396	20%	404	23%
Commercial and Industrial (electricity)	165	8%	145	7%	116	7%
Commercial and Industrial (gas/other fuels)	196	10%	171	9%	172	10%
Transport (buses and rail)	29	1%	32	2%	24	1%
Transport (LGVs and HGVs)	330	16%	322	16%	280	16%
Transport (cars and motorbikes)	348	17%	355	18%	242	14%
Agriculture	318	16%	299	15%	309	18%
Land use	67	3%	85	4%	61	4%
Waste	39	2%	22	1%	7	0%
<b>Total</b>	<b>2,023</b>		<b>1,968</b>		<b>1,751</b>	

Out of the total emissions in the area, an estimated 2.5% were direct emissions from the council's estate (see **Table 2** for a breakdown of the council's emissions. Energy used in council buildings were the largest source of emissions, at 78% of total emissions.

Emissions resulting from gas and other fuel use was the largest contributor at almost half of total emissions. A breakdown of the data by building service area was provided but was not complete enough to present emissions by department.

We would recommend that this data is analysed further to enable council departments to estimate and set carbon budgets. Aether is happy to advise on this process and the most effective ways to engage different council departments.

*Table 2: Estimated ktCO<sub>2</sub>e emissions for South Lanarkshire council in 2018/19 – 2020/21*

	Emissions (kt CO <sub>2</sub> e)	% of total emissions	Emissions (kt CO <sub>2</sub> e)	% of total emissions	Emissions (kt CO <sub>2</sub> e)	% of total emissions
Council Business Travel	0.38	1%	0.47	1%	0.21	0.4%
Council Fleet	8.80	17%	8.94	18%	7.16	15%
Streetlighting	2.43	5%	2.04	4%	1.95	4%
Council Buildings (electricity)	16.2	31%	14.37	28%	11.51	25%
Council Buildings (gas/other fuels)	24.1	46%	25.12	49%	25.55	55%
<b>Total</b>	<b>51.97</b>		<b>50.93</b>		<b>46.38</b>	

### 3 Emission trajectories to 2045

Estimates of emission trajectories provide an indication of the impact that climate action within South Lanarkshire could have on the area's carbon emissions. The emission trajectory analysis for South Lanarkshire Council has been undertaken using the Carbon Scenario Model (CSM). Originally developed for use by local authorities (funded by Resource Efficient Scotland and Sustainable Scotland Network<sup>4</sup>), this Excel-based tool has been adapted by the project team to provide a bespoke modelling solution for South Lanarkshire. The CSM has been used to compile emission reduction trajectories up to 2045 in line with the Scotland net zero target.

Within the model, emissions are disaggregated by sector (e.g. transport, domestic, industrial/commercial) and by "fuel" type (e.g. electricity, natural gas, petrol). This allows for the identification of key emission sources, and for the impact of decarbonisation actions on sectors to be displayed in model outputs.

In 2020, the Climate Change Committee (CCC) published *The Sixth Carbon Budget*<sup>5</sup>, a series of reports and datasets which summarises and presents the required action, enabling policy drivers, and estimated emissions outcomes of climate action needed for the UK to reach net zero. The CCC developed a series of national projections under differing levels of climate ambition, which are summarised as follows:

- **Business As Usual:** Assume no additional climate action is taken; there is no significant behaviour change or technological innovation.
- **Headwinds:** Assumes small-scale behaviour change and new technology developments, which doesn't reduce the cost of green technologies ahead of current projections. This scenario is more reliant on the use of large hydrogen and Carbon Capture and Storage (CCS) infrastructure.
- **Widespread engagement:** Assumes greater societal and behaviour changes. There is reduced demand for the most high-carbon activities and there is uptake of some climate mitigation measures. This scenario also assumes the cost of green technology doesn't decrease ahead of current projections.
- **Widespread innovation:** This scenario assumes there is greater success in reducing the costs of low-carbon technologies, allowing for more widespread electrification, a more resource- and energy-efficiency economy. It also allows for more cost-effective technologies to remove CO<sub>2</sub> from the atmosphere. This scenario assumes small-scale behaviour change similar to that seen in the Headwinds scenario.
- **Balanced Net Zero Pathway:** This pathway is based on known technologies and behaviours and takes a whole-system approach to decarbonisation. In this scenario, key options for decarbonisation are developed in the 2030s and 2040s, with action in the 2020s, accepting that some actions will not work but need to be tried to identify the best options and develop effective policies. The CCC believe that the Balanced Pathway is challenging but feasible.
- **Tailwinds:** This scenario assumes considerable success in both innovation and societal/behavioural changes and goes beyond the Balanced Pathway to achieve Net Zero before 2050. This scenario represents the highest level of ambition.

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<sup>4</sup> <https://sustainablesotlandnetwork.org/resources/carbon-footprint-and-project-register-tool>

<sup>5</sup> <https://www.theccc.org.uk/publication/sixth-carbon-budget/>



The analysis presented within this report uses the 'Business As Usual' (BAU) and 'Tailwinds' (TW) national scenarios. The sector level emission reductions within these scenarios were applied to the local historical emissions to provide estimates of potential emission reduction within South Lanarkshire. There is significant uncertainty in the application of these fairly high-level scenarios and therefore the modelling outputs need to be treated as indicative.

### 3.1 Business as usual scenario

The BAU scenario estimates South Lanarkshire emissions if no further climate action is taken beyond 2020. This includes currently funded low-carbon policies, for example existing government-backed renewable energy contracts, but does not include unfunded policy proposals or further uptake of low-carbon technologies. There are no technological innovations or societal changes regarding climate change in this scenario<sup>6</sup>. This can be viewed as the 'worst-case' at both the national and local level. ONS population projections were used to project emissions from waste.

Due to a limitation of the CSM model, the same emission factors are applied for both model scenarios. The emission factor for grid electricity is based on the Balanced Net Zero Pathway in the Sixth Carbon Budget and predicts significant decarbonisation of electricity generation.

The Balanced Net Zero Pathway is a scenario which represents a whole-system approach to decarbonisation and is one that the CCC believe is challenging but feasible. Therefore, the BAU scenario includes reductions in emissions from grid electricity that goes further than currently funded climate policies. This means there will be a slight overestimate of emission reductions in the BAU scenario.

The changes in the baseline emission profile are a response to pressures and actions from outside the area such as the national process of decarbonising electricity generation, expected changes in population, growth forecasts for traffic, changes in technology and so on.

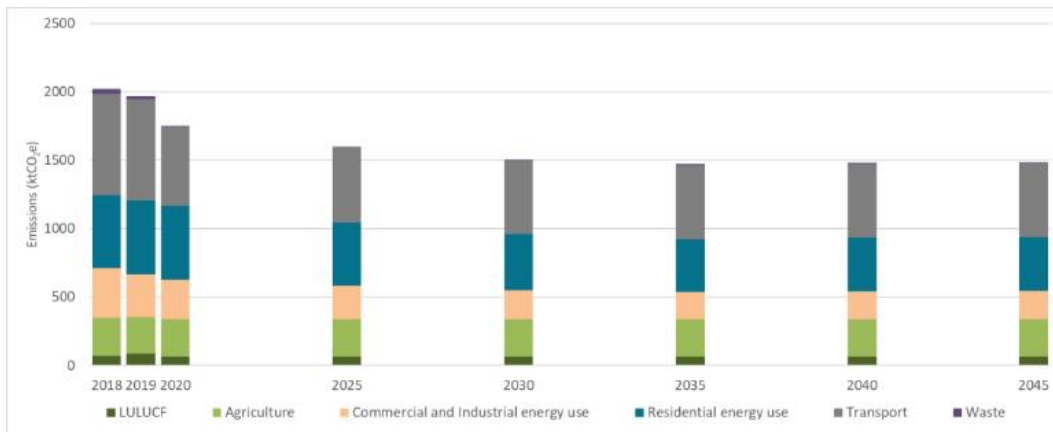
The results of the modelling are shown in

**Figure 3.** Under the BAU scenario emissions decrease 26% from 2023 ktCO<sub>2</sub>e in 2018 to 1487 ktCO<sub>2</sub>e in 2045. Transport remains the significant source throughout. There is a small amount reduction across residential and commercial sectors due to electrification of the national grid. The Dunbar Energy from Waste (EfW) facility became operational in early 2019 which resulted in a diversion of waste from landfill. Therefore, direct emissions from waste become negligible from 2019 onwards.

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<sup>6</sup> Sixth Carbon Budget, CCC: <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

Figure 3: South Lanarkshire area-wide emissions trajectory under a business as usual scenario



### 3.2 Tailwinds scenario

The Tailwinds scenario estimates South Lanarkshire’s emissions assuming significant climate action is taken at the national level beyond 2020. In this scenario, the CCC has assumed there is widespread engagement in climate action<sup>7</sup>. People and business make significant beneficial changes to their behaviour, reducing demand for carbon producing activities while buying in to climate mitigation measures. There are high levels of societal and behavioural change to climate action. Additionally, there is considerable success with widespread innovation, and the economy becomes more resource and energy efficient. Widespread innovation and engagement synergise and lead to significant carbon reductions. This can be viewed as a ‘best-case’ scenario.

There are some key sector-specific assumptions for the Tailwinds scenario as implemented within Scotland. Some significant Scottish policies across the sectors include:

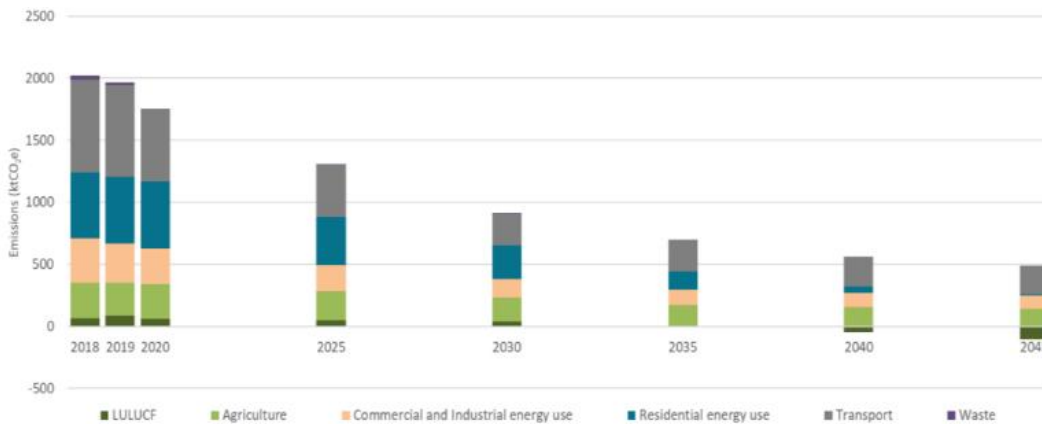
- **Transport:** The phase out of new petrol and diesel vehicles and vans by 2030 and a reduction of car kilometres by 20% by 2030
- **Buildings:** 50% of homes and non-domestic buildings will need to convert to a low or zero carbon heating system by 2030, and the rate of zero emission heat installations in new and existing homes and buildings double every year out to 2025
- **Electricity:** Delivery of the actions in the Scottish Government Offshore Wind Policy Statement to support the development of between 8 and 11 GW of offshore wind capacity by 2030 and supporting the achievement of 2 GW of renewable energy being in local community ownership by 2030
- **Waste:** a commitment to end landfilling of biodegradable municipal waste by 2025 and recycling 70% of all waste by 2025
- **Agriculture and land use:** an increase of new woodland creation from current target level of 12,000 hectares annually in 2020-21 up to 18,000 hectares in 2024-25 and go beyond the current 20,000 hectare annual peatland restoration target

The Tailwinds emissions trajectory estimate is shown in **Figure 4**. Under this scenario, the emissions decrease from 2023 ktCO<sub>2</sub>e in 2018 to 383 ktCO<sub>2</sub>e by 2045. The greatest

<sup>7</sup> <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-Methodology-Report.pdf>

reduction is estimated to be in the residential sector, where emissions decrease by 524 ktCO<sub>2</sub>e between 2018 and 2045 (98% reduction).

Figure 4: South Lanarkshire area-wide emissions trajectory under a tailwind scenario



### 3.3 Taking action locally

Historically the transport sector was the greatest emissions source in South Lanarkshire, followed by the residential sector. The largest contributors within these sectors were gas usage in residential homes, petrol car use and diesel car usage. Therefore, the council should prioritise reducing emissions across these areas to maximise emission reduction.

A list of recommended actions to tackle emissions reduction across each sector has been developed to enable the council to identify where action could be taken (see **Chapter 5** for further information). The council should engage with local housing association organisations as well as landlords and private owners to discuss how to incentivise replacing gas and oil-fired boilers with low-carbon alternatives as well as improving building fabric to reduce heat demand.

Reducing emissions from private car use involves both incentivising active travel and public transport through increasing accessibility, as well as reducing emissions from continued car use through enabling electrification or use of biofuels. The former should be prioritised due to associated co-benefits (see **Chapter 5**) and would involve engagement with bus and rail stakeholders to discuss ways to improve the frequency, connectivity, and cost of services within South Lanarkshire.

### 3.4 Residual emissions

Under the Tailwinds scenario there are currently predicted to be residual emissions in 2045 because not all emissions can be removed within this timescale according to the CCC data, but the amount of these emissions is highly uncertain.

Specifically, a significant portion of South Lanarkshire’s transport emissions are from HGVs, and the optimal decarbonisation technology for HGVs is not yet certain<sup>8</sup>. The size and range of HGVs is a limiting factor in electrification.

<sup>8</sup> <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-Methodology-Report.pdf> Page 56.

The agriculture sector will not be able to reach zero carbon emissions without offsetting due to biologically occurring greenhouse gas emissions from livestock.

Overall, there is currently a projected estimated total residual emissions of 383 ktCO<sub>2</sub>e. Therefore, offsetting these emissions would be necessary to reach net zero in the council area.

### 3.5 Considerations for offsetting

Offsetting enables individuals and organisations to compensate for any emissions they cannot avoid or reduce (residual emissions), by paying for a carbon credit i.e. to pay for an equivalent amount of emissions to be reduced or removed elsewhere. However, there is a significant amount of confusion around carbon offsetting, with variations in definitions and an immature market.

It is important to distinguish between funding activities which reduce emissions (either locally or elsewhere) and activities where emissions are removed from the atmosphere. The latter is needed to ensure true net zero is reached overall but the currently variable definitions of offsetting mean that some schemes do include carbon reduction projects due to varying demands and priorities.

Because climate change is a global issue and GHGs mix in the atmosphere, in practical terms it does not matter precisely where the GHGs are removed. However, carbon offsetting must always be considered last within the net zero strategy and the mitigation hierarchy, where GHG emissions are always reduced as far as practical first and offsetting should be used to counterbalance residual emissions<sup>9</sup>. The Climate Change Committee warns that offsetting is not a solution and that to reach net zero, “most sectors will need to reduce emissions close to zero without offsetting; the target cannot be met by simply adding mass removal of CO<sub>2</sub> onto existing plans.”<sup>10</sup>

These offsets, in the context of net zero, can be made through a wide variety of projects across a wide range of locations and might range from planting trees to enhanced weathering, from peat bog restoration to Carbon Capture and Storage (CCS).

Key considerations in weighing up offsetting options include:

- **Carbon Price:** Current offsetting costs are relatively low, sometimes under £10 per tonne. However, it is expected that offsetting costs will increase, partly due to rising demand but also because of increasing costs of abatement through time. However, there are two different types of data, which can cause confusion. Carbon values are used across government for valuing impacts on GHG emissions resulting from policy interventions. They represent a monetary value that society places on one tonne of carbon dioxide equivalent (£/tCO<sub>2</sub>e). They differ from carbon prices, which represent the observed price of carbon in a relevant market (such as the UK Emissions Trading Scheme). In the current BEIS valuation of greenhouse gas emissions, for policy appraisals and evaluation policy paper, the carbon **values** in £ 2020 prices per tonne CO<sub>2</sub> under the Central series trajectory rise from £241 per tonne in 2020 to £351

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<sup>9</sup> ISO Net Zero Guidelines: <https://www.iso.org/netzero>

<sup>10</sup> Committee on Climate Change (2019), Net Zero – The UK’s contribution to stopping global warming, 2019

per tonne in 2045<sup>11</sup>. But, the most recent data on the projected **price** of carbon<sup>12</sup> grows from £14 (central estimate) per tonne of CO<sub>2</sub> in 2020 to £43 per tonne in 2030. Alternatively, a 2019 report has suggested a shadow price consistent with a net-zero target would start at £50 per tonne of CO<sub>2</sub> (with a range of £40–100) in 2020 and complete decarbonisation will require the use of negative emissions technology, which, at the scale required, could cost in the order of £160 (£125–300) per tonne of CO<sub>2</sub> in 2050<sup>13</sup>.

- **Location:** The geographic origin of carbon offsets is important to consider. Most carbon offsets available for purchase are generated by activities taking place in countries other than the UK. Carbon offsets from international activities can offer particular benefits: they tend to be lower cost than abatement options in the UK, maximising the value of each pound spent on climate change mitigation, and can also support wider sustainable development goals. However, domestic schemes can provide homegrown environmental and economic benefits (literally, in the case of tree planting) and may be a preferable option.
- **Timing:** South Lanarkshire Council will need to consider when any push to begin offsetting the council's or area's emissions should begin. One approach could be to wait until 2045 before offsetting residual emissions. This may focus minds on emissions reductions until that point. But other options could include setting up offsetting schemes and policies sooner, to help normalise the process and costs of offsetting, to increase the 'price' of carbon-intensive activities (and therefore de-incentivise them) and to help fund emissions reductions within the council area.
- **Budget and ownership:** South Lanarkshire Council will need to think carefully about the potential costs of offsetting area-wide emissions, particularly if the aim is to offset all scopes (i.e. including scope 3 emissions). The costs of doing this could be prohibitive, although support and collaboration with stakeholders could provide an opportunity to contribute to local carbon sequestration projects. And who should be responsible for offsetting? How will this be monitored and reported, ensuring transparency of data? One option could be for South Lanarkshire Council to choose to commit to offsetting all emissions from its own operations, and then encourage individuals and organisations to offset their own emissions (direct and indirect).
- **Scopes:** Should emissions from all scopes be offset? As highlighted above, costs of offsetting all indirect emissions could be prohibitive. And given they are difficult to quantify; it may not be possible to robustly measure how much carbon needs to be offset. Limiting the scope of what should be offset (e.g. Scopes 1 and 2) may be a pragmatic option and might also help avoid double counting.
- **Quality and verification:** Whichever option or scheme(s) South Lanarkshire opt for, it will be important to select an offset strategy that involves the purchase of robust, verifiable carbon offsets to ensure that any carbon offset:
  - Is additional

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<sup>11</sup> [Valuation of greenhouse gas emissions: for policy appraisal and evaluation - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/79418/6/2018-short-term-traded-carbon-values-for-appraisal-purposes.pdf)

<sup>12</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/79418/6/2018-short-term-traded-carbon-values-for-appraisal-purposes.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/79418/6/2018-short-term-traded-carbon-values-for-appraisal-purposes.pdf)

<sup>13</sup> [https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2019/05/GRI\\_POLICY-REPORT\\_How-to-price-carbon-to-reach-net-zero-emissions-in-the-UK.pdf](https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2019/05/GRI_POLICY-REPORT_How-to-price-carbon-to-reach-net-zero-emissions-in-the-UK.pdf)

- Avoids carbon “leakage”
- Is not double-counted
- Is permanent
- Does not overestimate the GHG reduction
- Does not cause the buyer to postpone its own mitigation actions
- Does not cause other environmental or social damage
- Is not claimed by other entities<sup>14</sup>.

In practice, it is very difficult to find carbon offset purchases that truly meet all of the quality criteria listed above<sup>15</sup>.

The Oxford Principles for Net Zero Aligned Carbon Offsetting<sup>16</sup> provides a useful framework for considering priorities within the currently immature market place. Their four key principles are stated as:

- Cut emissions, use high quality offsets, and regularly revise offsetting strategy as best practice evolves
- Shift to carbon removal offsetting
- Shift to long-lived storage
- Support the development of net zero aligned offsetting.

With these concepts in mind, it is important that focused investments, whether defined as offsets or some other mechanism, are encouraged locally to support systematic GHG emissions reductions to as close to zero as possible. This will in turn limit the level of offsetting to be made by South Lanarkshire which pay for emission removals elsewhere.

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<sup>14</sup> Broekhoff, D., Gillenwater, M., Colbert-Sangree, T., and Cage, P. (2019) Securing Climate Benefit: A Guide to Using Carbon Offsets. Stockholm Environment Institute & Greenhouse Gas Management Institute.

<sup>15</sup> <http://www.anjakollmuss.com/posts/understanding-carbon-offsets/>

<sup>16</sup> <https://www.smithschool.ox.ac.uk/sites/default/files/2022-01/Oxford-Offsetting-Principles-2020.pdf>

## 4 Stakeholder engagement

In September 2022, Aether led an internal Council workshop to engage all relevant departments and teams including Education and Learning, Planning and Building Standards, Housing, Roads and Transport, Waste, Economic Development and Corporate Communications.

The workshop was used as an initial touch point with the departments to engage them on the South Lanarkshire Plan for Net Zero and to identify current and future planned actions within each department to reduce emissions across the council area.

Following this internal workshop and to expand discussions on the projects and actions identified at the internal workshop, Aether led a workshop for external stakeholders deemed crucial in reducing emissions across the South Lanarkshire area.

Delegates from across 14 organisations attended, as well as elected members from South Lanarkshire Council. Attendees are listed in **Table 3** which also includes the list of organisations who wished to attend but who were unable to, in addition to those who were invited and did not attend.

This workshop was used as initial engagement and to garner support from external stakeholders on South Lanarkshire's Plan for Net Zero. The workshop gave each organisation to provide information on their current and planned actions that could support South Lanarkshire Council in their journey to Net Zero.

Breakout discussions were held between similar organisations to gain an understanding of the sector-specific planned and implemented actions within the area. The topics in the breakout groups covered:

- How South Lanarkshire Council's plan fits with external organisation objectives;
- How organisations can support South Lanarkshire Council in achieving net zero; and
- What matters to the clients and customers of organisations when aiming for net zero

Responses varied across groups (see **Table 4**), with some stakeholders wishing for greater clarity on the council's plans. Funding, return on investment, and cost of energy prices were identified as the main concerns to organisation's clients.

The topics in a second set of breakout group discussions covered:

- How likely the attendees felt their organisations or South Lanarkshire Council will meet their emission reduction targets/implement plans and projects;
- What barriers and challenges are in place for attendees' organisations and/or South Lanarkshire Council's aspirations in meeting net zero; and
- What South Lanarkshire Council and/or attendees could do to drive action or reduce these barriers

Generally, barriers identified covered gaps in funding (from central government and private sector) and skills in manufacturing and deploying low carbon technologies (see **Table 5**).

Proposed solutions to these barriers included wider knowledge sharing and use of case studies to highlight climate action efforts (local or otherwise) to reflect on successes and failures to learn from other areas.



*Table 3: List of organisations who attended the external stakeholder workshop*

<b>Attended</b>	
Forestry and Land Scotland	Agriculture and Land Use
National Farmers Union Scotland	Agriculture and Land Use
SAC Consulting	Agriculture and Land use
East Kilbride Housing Association	Housing Association
NHS Lanarkshire	Health Service
CALA	Housing developer
Stewart Milne	Housing developer
Taylor Wimpey	Housing developer
Elected Members	South Lanarkshire Council
Glasgow City Region	Transport & Economic Development
New College Lanarkshire	Skills development
Scottish Enterprise	Transport & Economic Development
Strathclyde Partnership for Transport	Transport & Economic Development
University of West Scotland	Education
Sustainable Scotland Network	Public Sector
<b>Expressed interest but were unavailable to attend</b>	
Clyde Valley Housing Association	Housing Association
Clydesdale Housing Association	Housing Association
Miller	Housing developer
Robertson	Housing developer
Banks Group	Property development and renewable generation
Scottish Communities Action Network	Third Sector
<b>Invited but did not attend</b>	
Scottish Power Energy Networks	Energy
East Kilbride Housing Association	Housing Association
West of Scotland Housing Association	Housing Association
West Whitlawburn Housing Cooperative	Housing Association
Business Gateway	Skills development
Skills Development Scotland	Skills development
VASLan	Skills development

*Table 4: Summary of the first breakout discussions*

Housing Associations	Opportunities to contribute to decarbonisation through air source heat pumps (ASHP) and EV chargers in new builds, retrofit insulation in existing buildings.	Cost of energy bills is important to clients/customers, which ASHPs should reduce, although current prices may delay uptake.	Organisations are keen to support South Lanarkshire's net zero plan. Funding opportunities will need to be identified.
Housing Developers	All have emission reduction targets, ranging from gas free by 2024 to decarbonisation by 2045.	Can provide timelines for planning regulations and review Section 75 contributions to support SLC in achieving net zero.	Reduced bills, return on investment, ease of use, and longevity identified as matters important to clients/customers.
Transport and economic development	Plans broadly align with SLC, in addition to wider plans on economic opportunities, skills development etc. Clearer messaging on SLC's plans would be appreciated.	Education institutions can equip people (particularly locally) with the knowledge and skills to communicate and deploy low carbon technologies.	Current energy prices are main concern for businesses and transport companies, along with recovery from COVID-19.
Agriculture and land use	A change in consumption is not that linked at a local authority level – livestock reduction in South Lanarkshire will mean a rise in consumption emissions elsewhere to meet current demand.	SLC can be supported through discussions with stakeholders e.g. farmers, Forestry and Land Scotland to discuss carbon reduction opportunities through land use e.g. peat restoration, tree planting and regeneration.	Funding that delivers practical actions e.g. agroforestry, peatland restoration, habitat creation.

Table 5: Summary of the second breakout discussions

Cross-cutting	Communication and consistency between departments (facilitated by long lead up times) highlighted as important needs.	Barriers include renewables costs while keeping rents affordable, predictable funding, and addressing a risk-adverse culture.	Addressed through leadership, cross-agency work, mapping green job opportunities, community planning, and officers challenging national government
Housing	Overall feeling that targets could be met but thinking and action is fragmented across stakeholders. Confident in zero gas in new builds by 2024.	Barriers include retrofitting and maintenance of existing buildings and supporting elderly and vulnerable populations - cost/messaging around uptake and understanding the technology. Is the grid equipped for an electricity transition?	Solutions include review the planning system for renewables, apply for more funding (in collaboration with other HAs), consumer education programmes to educate residents, and development of a Scotland equivalent of the England Future Homes Hub Roadmap.
Transport and economic development	Reaching net zero currently feels unlikely due to the scale of the challenge. Action currently feels like it is driven from top down rather than bottom up. Climate change currently low priority for businesses and general public due to cost of living, COVID-19 etc.	Skills gap identified as a major barrier. Staff and infrastructure lacking due to lack of funding and encouragement. Negative mindset also identified, linked to scale of problem, and lack of individual action. Infrastructure development needed – transport network developed in/out of city centre but remaining areas less connected. Funding is an overarching issue.	Barriers can be addressed through communication plans and ideas; local and wider knowledge sharing. Use of case studies to encourage businesses to take risks/show that actions can be beneficial. Reframe discussions – job and skills opportunities, new growth, wider impacts of emissions reduction. Celebrate successes and note where actions weren't as successful.
Agriculture and land use	<i>No response was provided to this question.</i>	One barrier identified was on liability e.g. who is responsible for peatland restoration? Others included inconsistencies in carbon trading schemes and their accreditation proposed to individual farms and uncertainty around what the environmental conditionality of payment will look like.	Support could include biodiversity net gain funding, SLC embedding carbon mitigation into the land use planning process, biochar application, and use of local renewables to decarbonisation farm operations e.g. community windfarms.

## 5 Co-benefit review and action matrix

An Action Matrix has been developed for South Lanarkshire Council to present a list of actions needed across the council area to reach net zero. The list has been supplemented with additional information such as potential emissions savings and insight gained from the internal and external stakeholder workshops. The Matrix has been presented in an excel file (titled *ActionsCo-benefitsMatrixFinal.xlsx*) enabling users to filter for specific parameters. It is illustrated below but is best viewed in Excel.

It is proposed that the council use the Action Matrix as a reference internally, to periodically review progress of ongoing actions, and to identify future climate actions. The resource can also be updated with new information on ownership and partnerships for actions once external stakeholders have been engaged in more detail.

The recommended actions to reduce the area-wide emissions were developed and framed around the actions assumed within the CCC Tailwinds scenario, presented by sector (**Figure 5**). Details of the CCC Tailwinds scenario are provided in **section 3.2**.

The content of the action matrix is as follows:

- **Sector:** The actions are colour-coded by sector the action is relevant for
- **Category:** Summary of the type of action
- **Recommended action:** Actions recommended by the CCC to reach net zero linking to local actions identified in stakeholder workshops
- **Emissions saved:** Indicative emissions savings for each action, categorised in high, medium, and low
- **Implementation:** Whether the action is led by the council, or the council provides an enabling role
- **Timeframe:** Indicative timeframes for when the planning, implementation, and widespread rollout for each action should occur
- **Council role:** Identifying whether the council is leading, coordinating, or enabling engagement
- **Stakeholders:** Examples of lead and support stakeholders that could lead or assist in the completion of the action
- **Co-benefits:** Matrix of rating the co-benefits associated with each actions classified under the following headings: social, economic and environmental

There will be considerable co-benefits accrued as a result of taking significant action to reduce GHG emissions in the area. The co-benefits for each action identified were given a rating ranging from ‘++’ where the climate action could have significant positive wider impacts to ‘-’ where the climate action could conflict with other priorities. Ratings were assigned based on previous analysis and literature review undertaken by Aether<sup>17,18,19</sup>.

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<sup>17</sup> Aether Wider Impacts: <https://aether-uk.com/Products-and-Services/Policies-and-Wider-Impacts/Wider-Impacts>

<sup>18</sup> Wider impacts of climate action in Luxembourg: <https://aether-uk.com/CMSPages/GetFile.aspx?guid=6ea193e8-dca3-4736-a5d5-5ca3ef8c21c9>

<sup>19</sup> Wider impacts of climate mitigation and adaptation actions in Jersey: <https://aether-uk.com/CMSPages/GetFile.aspx?guid=c8608aa3-1fbc-4ef0-af0b-c8186496b2f7>

Figure 5: Screenshot of the co-benefit and action matrix

Sector	Category	Recommended action based on CCC	Emissions saved	Implementation	Timeframe			Council role	Lead stakeholders	Support stakeholders	Co-benefits of action outcomes									
					Plan and engage	Implement (pilot and early actions)	Widespread rollout				Social				Economic				Environmental	
											Engaging local residents and businesses in climate action; changing behaviour	Improving health and wellbeing	Reducing fuel poverty	Tackling inequality	Minimizing waste	Driving a fair recovery from COVID-19	Providing skills and green jobs	Building a green, low carbon economy	Improving air quality	Increasing biodiversity, improving soil and water quality
Transport	Active travel	Continue to work with schools, colleges and large employers to <b>develop travel plans</b> which decrease u	Low	Enabling	2023	2025	2030	Coordinating		Local schools, co	++	++	0	+	0	0	0	++	0	
Transport	Active travel	Continue to promote cycling and walking in South Lanarkshire through <b>network improvements</b> to crea	Medium	Council	2023	2025	2030	Leading		SPT	++	++	0	+	0	0	0	++	0	
Transport	Active travel	Continue to implement supportive measures to <b>encourage modal shift</b> to active travel, and monitor in	Medium	Council	2023	2025	2030	Leading		Cycling Scotland,	++	++	0	+	0	0	0	++	0	
Transport	Public transp	Design and develop a <b>Park and Ride</b> (TravelHub) site	Low	Enabling	2025			Leading		First Bus, Stageo	+	+0	0	0	0	0	+0	+0	0	
Transport	Public transp	Continue to engage with and promote <b>travel schemes and discounted tickets</b>	Medium	Council	2023			Enabling engagement	SPT	Network Rail, Firs	+	+0	0	0	0	+0	0	+0	0	
Transport	Public transp	Work with local universities and colleges to investigate how <b>public transport connections</b> to/from an	Medium	Enabling	2025			Enabling engagement	University of West	Scotland, Glasgove	+	0	0	0	0	0	0	0	0	
Transport	Public transp	Continue to improve the availability, quality, frequency and reliability of public transport	Medium	Council	2024			Enabling engagement	SPT	Network Rail, Firs	+	0	0	0	0	+	+	+	0	
Transport	Public transp	<b>Transition bus fleet to electric</b> and work towards Euro 6 by retrofitting existing fleet, all buses enterin	Medium	Council	2030	2035		Enabling engagement	SPT	First Bus, Stagecoach, SPT	0	+	0	0	0	0	+	+	0	
Transport	Public transp	Maximise local and regional <b>rail connectivity</b> to South Lanarkshire	Medium	Council	2025	2030		Enabling engagement	SPT, Network Rail		+	0	0	0	+	+	+	0		
Transport	Public transp	Supportive measures to enable continued <b>electrification of the regional rail</b> network	Low	Council	2025			Enabling engagement	Network Rail	SPT	0	++	0	0	0	+	+	++	0	
Transport	Electric vehic	Work with <b>private sector partners to deliver EV charging</b> infrastructure for public charging	Medium	Council	2023	2028	2040	Coordinating		Fastned	++	+	0	0	0	0	+	+	0	
Transport	Electric vehic	To support residential EV charging and to develop the on-street EV charging network, the Council will creat	High	Enabling	2024	2024		Leading			++	0	0	+0	0	0	+	+	0	
Transport	Electric vehic	Support <b>EV infrastructure development at taxi ranks</b> for drivers across South Lanarkshire e.g. loc	Low	Enabling	2025			Coordinating		Fastned, taxi companies	+	+	0	0	0	0	+	+	0	
Transport	Infrastructure	All major residential and commercial <b>planning applications to include a Travel Plan</b> in line with cou	Low	Enabling	2023			Leading			+	+	0	0	+0	0	0	+0	0	
Transport	Other	Include <b>zero (or low) emissions policy in taxi licensing</b> , phased approach until 2045	Low	Enabling	2025	2030		Leading			+	+	0	0	0	+	+	+	0	
Transport	Freight	Supportive measures to <b>enable freight consolidation</b> , use of rail freight and renewable fuels	Medium	Enabling	2030			Coordinating		Local businesses, delivery companie	0	+0	0	0	0	+	+	+	0	
Transport	Governance	Continue to implement <b>traffic monitoring mechanisms</b> e.g. Urban Traffic Management Control, Traff	Low	Enabling	2024	2025		Leading			0	+0	0	0	0	0	0	+	0	
Transport	Governance	Establish a formal <b>partnership with bus operators</b> with the objective of a more joined up public trans	Medium	Enabling	2024			Leading		SPT, First Bus, St	+	0	0	0	0	0	0	+	0	
Transport	Governance	Incorporate 15-minute neighbourhood approach that accelerates the transition to a zero-emission road tran	Medium	Enabling	2024			Leading		Developers	++	+	0	+	0	0	+	+	0	
Residential b	Retrofit/renov	Set out the <b>level and likely cost of homes retrofits required to meet net zero by 2045</b> . Set	High	Enabling	2023	2030	2035	Leading		Social and private	+0	0	0	0	0	0	0	0	0	
Residential b	Retrofit/renov	Monitor progress towards percentage of homes retrofit annually. Achieving these targets is highly depende	High	Enabling	2023	2030	2035	Leading			++	++	++	+	0	0	0	0	0	
Residential b	Planning	Ensure that there is planning guidance available to developers, households and landlords that clearly explai	Medium	Enabling	2025			Leading		Developers, landlo	++	+	++	+	0	0	++	+	0	
Residential b	Planning	Review and update the draft Local Plan to ensure policies that <b>promote net-zero carbon developme</b>	Medium	Enabling	2025			Leading			++	+	++	+	0	0	+	0	0	
Residential b	Green jobs a	Ensure that <b>skills development</b> for housing improvements is integrated within wider employment initiat	Low	Enabling	2023			Enabling engagement		Local colleges e.g.	++	+	0	+	0	++	+	+	0	
Residential b	New build	Provision of sufficient resources for communications about and <b>enforcement of new building regul</b>	Medium	Enabling	2023			Leading		Developers	+	++	++	++	0	0	0	+	0	
Residential b	Engagement	Establish <b>Landlord licencing</b> including phased energy efficiency improvements with EPC level and carb	Medium	Enabling	2023			Leading			+	+	+	+	0	+0	+0	+	0	
Residential b	Carbon litera	Ensure that <b>residents have access to impartial advice</b> through information campaigns and sign-p	Medium	Enabling	2024			Leading			++	+	+	0	-	+0	0	+0	0	
Residential b	Green jobs a	Engage with <b>supply chain of installers</b> to encourage them to reach out to meet new demands. Suppor	Medium	Enabling	2024			Coordinating			++	0	0	+0	0	+0	++	+	0	
Residential b	Engagement	<b>Retrofit zero carbon demonstration / show home(s)</b> (council owned property) to provide real ex	Low	Enabling	2025			Leading			++	0	0	0	0	0	0	0	0	
Residential b	Retrofit/renov	Building on existing awareness raising (as above), work with neighbouring local authorities to establish a bu	Low	Enabling	2027			Leading		Neighbouring aut	++	0	0	0	0	0	+0	0	0	
Residential b	New build	New housing developers to provide low carbon <b>new homes built to the Future Homes standard</b>	Low	Enabling	2025			Coordinating		Developers	++	+	++	+	0	+	+	+	0	
Non-resident	Energy effici	Enforce, where possible, <b>minimum efficiency standards</b> for privately rented commercial properties	High	Enabling	2023			Leading			+	+	++	++	0	+	+0	+	0	
Non-resident	Energy effici	Continue to encourage detailed <b>energy audits</b> of business and public sector buildings	High	Enabling	2023			Enabling engagement		Local business an	+	0	0	0	0	0	0	0	0	
Non-resident	Planning	Review and update the <b>draft Local Plan to require high standards of energy performance</b> and	Medium	Enabling	2023	2025		Leading			++	+	+	+	0	+	+	+	0	
Non-resident	Engagement	Establish a <b>South Lanarkshire climate change partnership</b> to co-ordinate regular energy and clim	Low	Enabling	2023	2025		Leading		Business and pub	++	0	0	0	0	0	0	0	0	
Non-resident	Heat network	Develop more detailed heat network plan (based on existing heat mapping work, and town centre master plan	Low	Enabling	2023	2025		Leading			0	0	0	+0	0	0	+	0	0	
Non-resident	Engagement	Provision of support and <b>advice to local business</b> on transition to net zero	Low	Enabling	2023	2025		Leading			++	0	0	0	0	0	+	+	0	
Non-resident	Building retro	Provide support to <b>business and public sector property owners to invest in retrofit</b> to reduce	High	Enabling	2023	2025		Enabling engagement			++	0	0	0	0	+	+	+	0	
Waste	Community e	Public <b>awareness campaign on waste prevention</b> through changing patterns of consumption and	Medium	Enabling	2023	2024		Leading			++	0	0	0	++	0	0	0	0	
Waste	Planning	Review and procure <b>waste disposal contract</b> to incentivize waste reduction and increase recycling rat	Low	Enabling	2024	2025		Leading			0	0	0	0	+	0	0	0	0	
Waste	Community e	Community and business partnership initiatives applying <b>waste minimisation and circular econom</b>	Medium	Enabling	2024			Enabling engagement		Local businesses	+	0	0	0	+0	++	+0	+	0	
Waste	Retrofit	Installation of <b>carbon capture and storage technology</b> to all energy from waste plants. To be made	High	Enabling	2040	2045	2045	Leading		Local businesses	0/-	0	0	0	0	0	+	0	0	
Agriculture	Engagement	Engage with farmers, farming groups, and other related stakeholders to discuss best outcomes for <b>land</b>	Medium	Enabling	2023			Enabling engagement	NFU		+	+0	0	0	0	0	+	+	+	
Agriculture	Community e	Engage with the public to discuss how to be <b>conscious</b> about where their food is sourced, and to	Low	Enabling	2023			Enabling engagement			++	0	0	0	0	0	0	0	0	
Land Use	Planning/eng	Engage with forestry groups and land owners to discuss how to effectively <b>increase woodland</b>	Medium	Enabling	2023			Enabling engagement	Forestry and Land	Scotland	+	+	0	0	0	0	+	0	++	
Land Use	Planning/eng	Engage with key stakeholders to discuss how to effectively increase the amount of <b>peatland restored</b>	Medium	Enabling	2023			Enabling engagement			+	+0	0	0	0	0	0	0	++	

Examples of the co-benefits covered are as follows:

- **Improvements to health and wellbeing** as a result of improved air quality and safer streets, increased activity from people walking or cycling more, reduced fuel poverty and improved health from more energy efficient homes and healthier diets. Whilst shifting to electric vehicles from petrol and diesel is an important aspect of the route to net zero, electric vehicles are not a panacea. Actions to encourage active travel and reduce private vehicle use should be pursued with vigour.
- **Improved equity and social cohesion** through focusing on the most vulnerable in society, such as action to alleviate fuel poverty or create access to green spaces. Increasing the energy efficiency of homes can reduce fuel bills, increase comfort, and reduce the effect of heatwaves or cold spells.
- **Economic benefits** through reduced expenditure on energy as well as the creation of a wealth of economic opportunities and jobs. Transforming the transport sector has huge potential economic benefits. Reducing LGV and HGV use by increasing “first/last mile delivery” using cargo bikes can reduce emissions and save businesses on delivery costs.
- **Increased resilience of towns and their communities** to future changes in energy prices and energy systems, as well as a potential increase in the resilience of communities and infrastructure to the impacts of climate change. The temperature in homes that are highly energy efficient will be less affected by heatwaves, being more comfortable and less of a stressor on residents.

## 6 Conclusions and recommendations

### 6.1 Conclusions

This report has been designed to support South Lanarkshire Council in understanding their baseline carbon emissions and trajectory to 2045 for the wider Council area. It also summarises stakeholder engagement to date and work to identify further projects and actions to prioritise within South Lanarkshire. Actions identified have been classified in terms of potential for emissions reduction, stakeholders that should be involved in implementation and the wider social, economic and environmental impacts expected to be achieved.

Considerable emission reduction is evident across the Council estate to date and, given the relatively small proportion of emissions from the Council estate in comparison to the Council area, focus should be drawn to emission reduction projects and actions beyond the Council estate. This will maximise emissions reduction and the likelihood of the whole area reaching net zero.

This report can be used to engage and work with internal Council departments and wider stakeholders to plan and develop emissions reduction projects and actions to best assist South Lanarkshire Council in achieving net zero by 2045.

### 6.2 Recommendations

1. To achieve maximum emission reduction, priority should be given to area wide emission reduction projects particularly in the sectors of the highest emissions of transport and residential energy use, with a focus on the actions identified as having a high impact on reducing emissions and bringing important co-benefits (see Key priority actions in **Table 6** below).
2. Further engagement and co-ordination are needed across all relevant Council departments with a focus on developing area-wide emissions projects.
3. Information needs to be shared with wider stakeholders, including the public, to raise awareness and profile of South Lanarkshire's journey to net zero:
  - a. Develop a climate change landing page on the Council's website or separate a separate local climate change site to provide further information to residents and wider stakeholders.
  - b. Create an outward facing Route map document for consultation to encourage further engagement.
4. Further engagement is needed with external stakeholders to support and implement local projects and actions, building on the Council's knowledge and local influence.
5. Connect and learn from other Scottish local authorities demonstrating notable climate change action planning e.g. Aberdeenshire Council, Perth and Kinross Council, Dundee City Council and Highland Council.
6. To enable focused further action on Council carbon emissions reduction, further data analysis is required on council emissions, in particular building energy use, in order to establish council department estimates and carbon budgets.

7. Create a detailed Action Plan based on the recommendations listed above and below to define what the Council needs to do to reduce emissions across different sectors, identify gaps and need for additional resources.

*Table 6 Key priority actions for SLC to enable decarbonisation across the council area*

Transport	Roads and Transport : Active Travel Projects	Promote cycling and walking in South Lanarkshire through network improvements to create safe cycling and walking routes	Engage Transport and Streets Department to identify their plans for improvements. Appoint external agency e.g. Sustrans or Cycling Scotland to review and assess infrastructure and make recommendations on connecting neighbourhoods
Transport	Roads and Transport: Parking and Car Parks	Increase the amount of EV charging points across the council area.	Engage with relevant EV charging solutions companies. Install chargers in all public car parks and at council and other public buildings. Ensure that all new residential and commercial developments include charging infrastructure. Trial on street chargers in areas where there is no off-street parking.
Transport	Roads and Transport: Public and Community Transport	Improve public transport provision across the council area and support its use through incentives	Engage with local public transport providers to ensure joined up provision for employment, education and retail etc. Connections with the planned park and ride scheme. Consider financial incentives to increase use rates, potentially in parallel with changes to parking provision if appropriate.
Buildings	Education and Learning: Youth, Family and Community Learning	Enable skills development for net zero building retrofits.	Provision of training courses and apprenticeships by local colleges. Provide carbon literacy information and training for the public.
Buildings	Planning and Building Standards: Development Plans	Review and update the South Lanarkshire Local Development Plan 2 when appropriate to require high standards of energy	Work collaboratively with Planning and Building Standards Service to ensure energy performance standards



		performance and low carbon heat for new build and refurbishment of commercial properties	are included, enforced and reviewed.
Residential	Housing and Homelessness: Council and Social Tenants and Private Renting and Landlords	Set targets for % homes retrofits needed per year to meet EESSH2, ensuring those in fuel poverty are not adversely affected	Engage Housing and Technical Resources for scoping exercise for improvements to social housing properties. Identify the likely cost of home retrofits required to meet EESSH2 following the outcomes of the Scottish Government's review of the specifications and timescales within the standard .
Transport, Buildings, Residential, Non-residential	Roads and Transport, Education and Learning, Planning and Building Standards, Housing	Following Stages 1-4 of LHEES methodology outputs, determine what needs to be done to change buildings and local infrastructure over the coming years to fulfil Scottish Government objectives and local priorities.	Create a cross-Resource working group to take forward development of LHEES. Integrate LHEES appropriate actions into cross Council policies and strategies.
Non-residential	Climate Change & Sustainability: Sustainable Development and Climate Change Strategy	Establish a local climate change partnership	Support information sharing by local business and organisations through a local forum.
Non-residential	Business and Trade: South Lanarkshire Means Business	Support local businesses and organisations in making good decisions about carbon reduction	Provide information about buildings energy audits, and the development of business cases. Provide links to local trades and suppliers of low carbon solutions.
Waste	Waste: Bins and Recycling	Public awareness campaign on waste prevention through changing patterns of consumption and its connection to climate change	Work with Waste Department to schedule communications to residents with a strong climate focus
Agriculture	Environment: Land Management	Engage with farmers and other land owners to discuss land quality and carbon sequestration	Create a working group with local farmers and land owners to identify key sites and develop projects, potentially also including peatland restoration where applicable.

Land Use

Environment:  
Conservation

Engage forestry groups and land owners to discuss how to effectively increase woodland coverage

Work with forestry groups and land owners to identify key sites and develop projects

## Appendix 1

Table A1: Data sources for South Lanarkshire area GHG inventory

Data Source	Sector	Description
Department for Business, Energy and Industrial Strategy (BEIS): 'Sub-national electricity sales and numbers of customers'	Commercial, Residential	This dataset provides energy consumption data for domestic and commercial electricity use in the South Lanarkshire area.
Department for Business, Energy and Industrial Strategy (BEIS): 'Sub-national weather uncorrected gas sales and numbers of customers'	Commercial, Residential	This dataset provides energy consumption data for domestic and commercial gas use in the South Lanarkshire area.
Department for Business, Energy and Industrial Strategy (BEIS): 'Residual fuel consumption at regional and local authority level'	Commercial, Residential, Industrial	This data set provides consumption data for other fuels, non-gas and non-electricity for domestic, commercial, industrial and non-road transport use in the South Lanarkshire area.
Department for Business, Energy and Industrial Strategy (BEIS): 'Road transport energy consumption at regional and local authority level'	Transport	This dataset provides fuel consumption data (diesel and petrol) for road vehicles in the South Lanarkshire area.
Department for Business, Energy and Industrial Strategy (BEIS): 'UK local authority and regional carbon dioxide emissions national statistics'	Land Use	This dataset provides emissions data for land use categories in the South Lanarkshire area.
The Scottish Government's Rural and Environment Science and Analytical Services (RESAS): 'Livestock by Local Authority 2017-2019'	Agriculture	This dataset provides livestock numbers for the South Lanarkshire area.
UK Centre for Ecology and Hydrology (CEH): 'LCM land use by county 2015'	Agriculture	This dataset provides agricultural N <sub>2</sub> O emissions due to land use for the South Lanarkshire area.
Scottish Government: Scottish Agricultural Census: June 2021	Agriculture	This dataset provides agricultural data for Scotland allowing livestock numbers to be estimated for 2020.
South Lanarkshire Council Waste processing data	Waste Processing	Data received by email providing data on the tonnages of waste composted, recycled, and sent to the EfW facility (18 August 2022).



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