

Carbon



legislation  
emissions  
recycling icon



South Lanarkshire Council

# Carbon Management Plan



Update Report

**2018**



# Contents

- Introduction
- External drivers
- Internal drivers
- Scope of carbon management
- Targets and progress
- Sources of emissions**
- Buildings
- Waste
- Street lighting
- Travel
- Future actions



## Introduction

This is the council's fifth carbon management plan, the first one published in 2008 following involvement in the Carbon Trust's Local Authority Carbon Management Programme. The report details the drivers for reducing carbon emissions and how emissions have changed over the years. All services within the council have a part to play as do all of our employees.

## External drivers

### Climate Change (Scotland) Act 2009

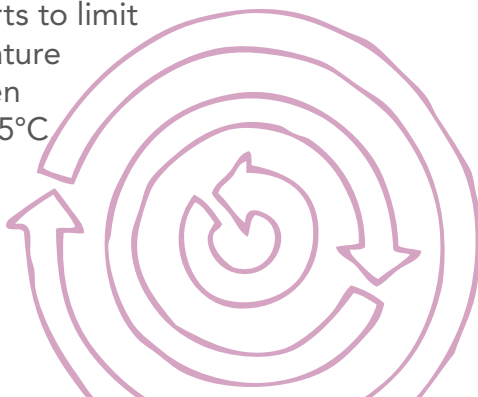
Local authorities are required to 'act in a way best calculated to contribute to the delivery' of the national targets set out in the Climate Change (Scotland) Act 2009. The Act set reduction targets in Scotland of 42% by 2020 and 80% by 2050.

The Scottish Government placed emphasis on the public sector to set an example and all public body organisations are required to submit an annual climate change report which focuses on six main areas, one of which is corporate emissions, and is looking for evidence that the public sector is measuring carbon emissions and making an effort to reduce them. The most recent report for South Lanarkshire Council can be found on the council website.

### Paris Agreement 2015

The United Nations Framework Convention on Climate Change Paris Agreement was agreed in December 2015 at the 21st Conference of the Parties in Paris.

The aim of the agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5°C



The Scottish Government signed the agreement and is committed to playing its part in limiting global temperature rises by de-carbonising the Scottish economy. Following signing the agreement, the Scottish Government have committed to a new Climate Change Bill to reduce emissions further. The proposed Bill is expected to become legislation in early 2019. Draft proposals include setting targets based on actual emissions, increasing the current 2050 target of 80% to a 90% emissions reduction, and increasing the interim reduction target of 42% to at least 56% by 2020. National targets are set against a baseline of 1990.

### Climate Change Plan 2018

The Scottish Government published the Climate Change Plan in 2018. This is the third report which sets out how Scotland should meet its emissions reduction targets for the period 2017-2032. The plan sits alongside the Scottish Government's Energy Strategy which sets out the long term vision for the future energy system in Scotland. The Climate Change Bill, mentioned above, which will be published in 2019 is expected to increase the targets detailed in the Climate Change Plan.

## Internal drivers

Carbon management is an integral part of the council's Sustainable Development and Climate Change Strategy. The current strategy covers the period 2017-2022 and can be found on the council's website.

The strategy has three themes

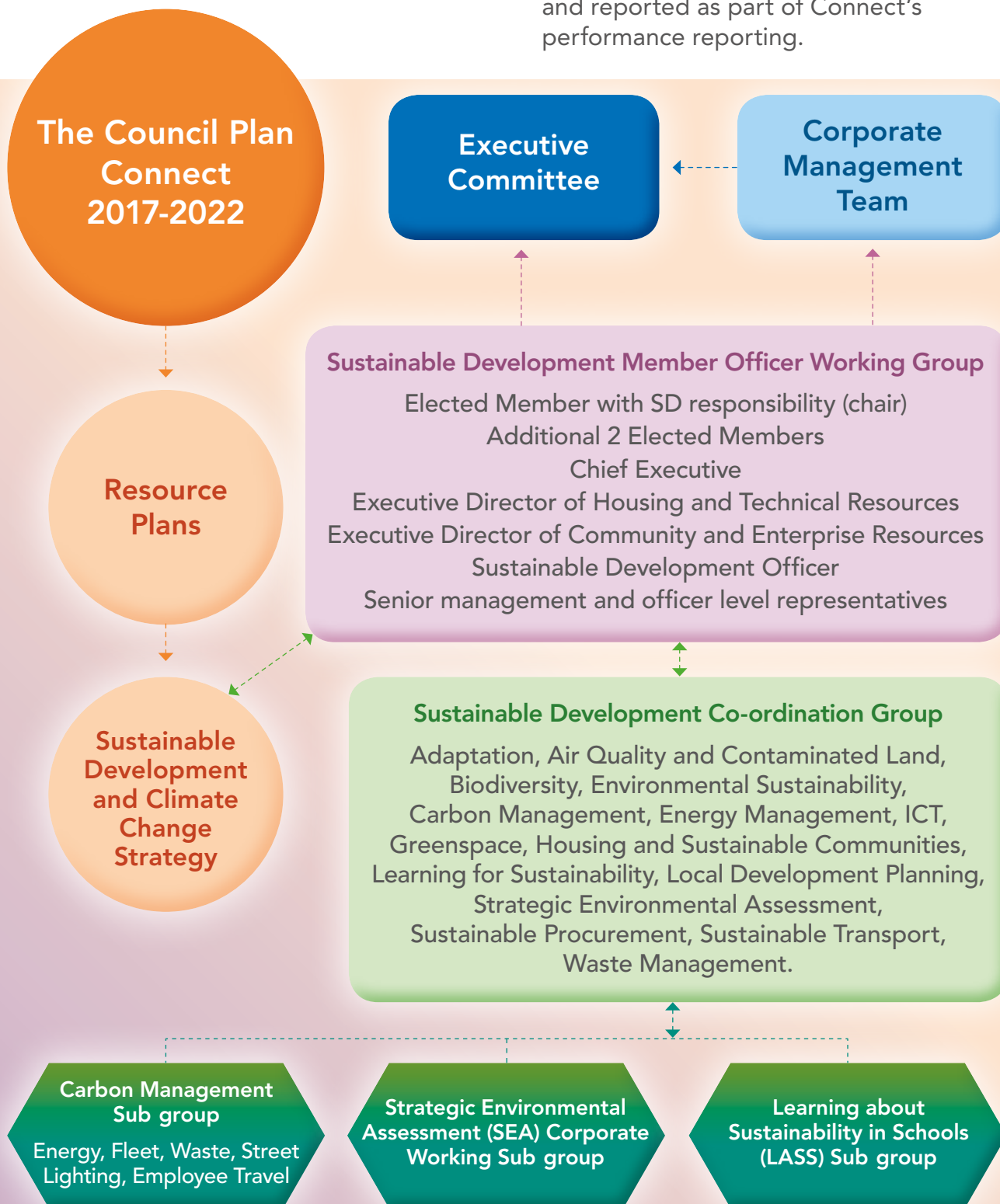
– **sustainable council, sustainable environment and sustainable communities.**

The first theme focuses on how the council's service delivery impacts on the environment and includes actions to manage and reduce our carbon emissions.



The objectives for sustainable development and climate change are coordinated through the Sustainable Development Member Officer Working Group and associated Officers' groups including the Sustainable Development Coordination Group and the Carbon Management Group.

The council has a strategic plan 'Connect' which details the council's vision, values and objectives. One of the high level objectives is to **'work with communities and partners to promote high quality, thriving and sustainable communities'**. The activities of the groups mentioned above are monitored and reported as part of Connect's performance reporting.



Governance structure of sustainable development and climate change.

## Scope of carbon management

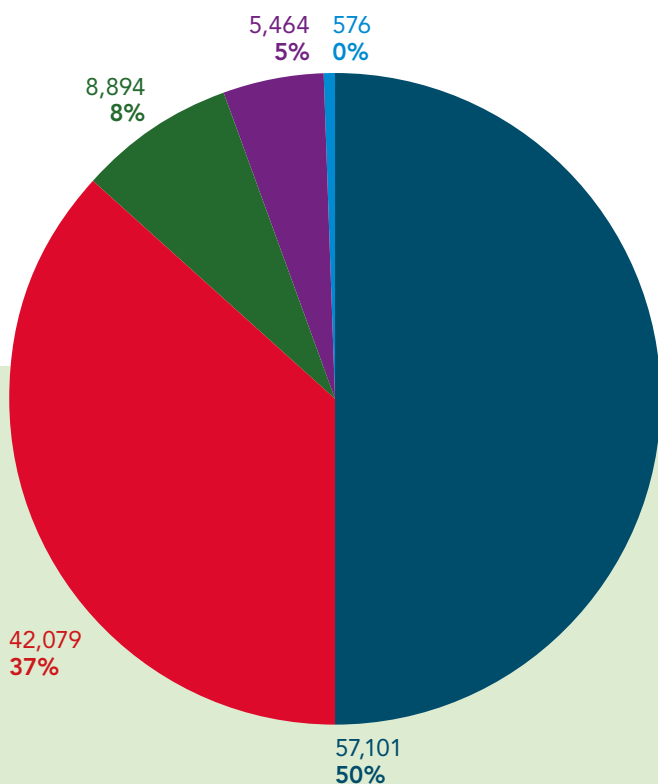
The council's carbon footprint is calculated by applying a carbon conversion factor to the energy types we use. Conversion factors were published each year by the Department of Energy and Climate Change (DECC), now the Department for Business, Energy and Industrial Strategy. Historic factors can be found at Appendix 1.

The following sources have been measured and reported since 2005/06

For the purposes of continuity emission factors have been set at and remain at those published in 2006. This allows us to accurately measure how effective our efforts to reduce our carbon footprint have been without the fluctuating factors outwith our control.

Source	Energy type	Units of measurement
Buildings	electricity, gas, oil	kWh
Waste	landfill waste	tonnes
Fleet	diesel and petrol	litres
Street lighting	electricity	kWh
Employee travel	miles travelled	miles

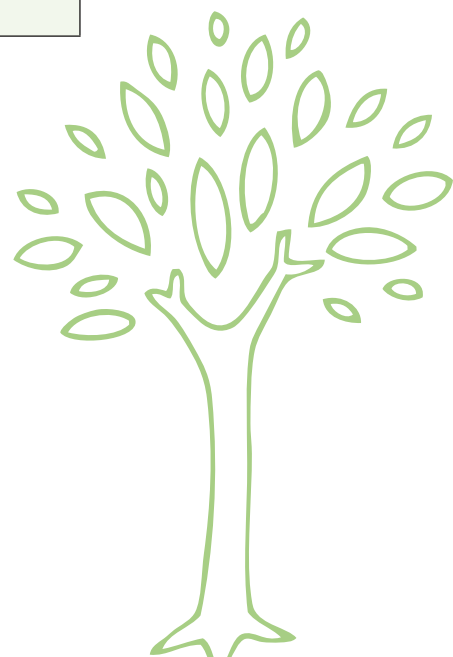
### Carbon footprint 2017-18 (tonnes)



#### Emissions Source

Buildings (electricity, gas, oil)	
Waste	
Fleet	
Street Lighting (electricity)	
Employee Travel	

Most recent carbon footprint.



## Targets and progress

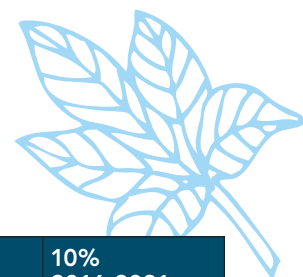
The first carbon management target was to reduce emissions by 5% between 2005 and 2011. This was achieved in 2009 and by 2011 our emissions had reduced by 9.4%.

The next target was set in 2011, and aimed to reduce carbon emissions each year by 2%. By 2016 this target had again been over-achieved and emissions had reduced by 14.9% when compared with 2010-11.

The current target was set in 2015, and aims to reduce by 10% between 2016 and

2021. This would largely bring the council in line with the national target to reduce emissions by 42% by the end of 2020 using a 1990 baseline. By 2018 our emissions had reduced by 5.1% when compared to 2015-16, again indicating that we are on target to meet the 10% by 2021.

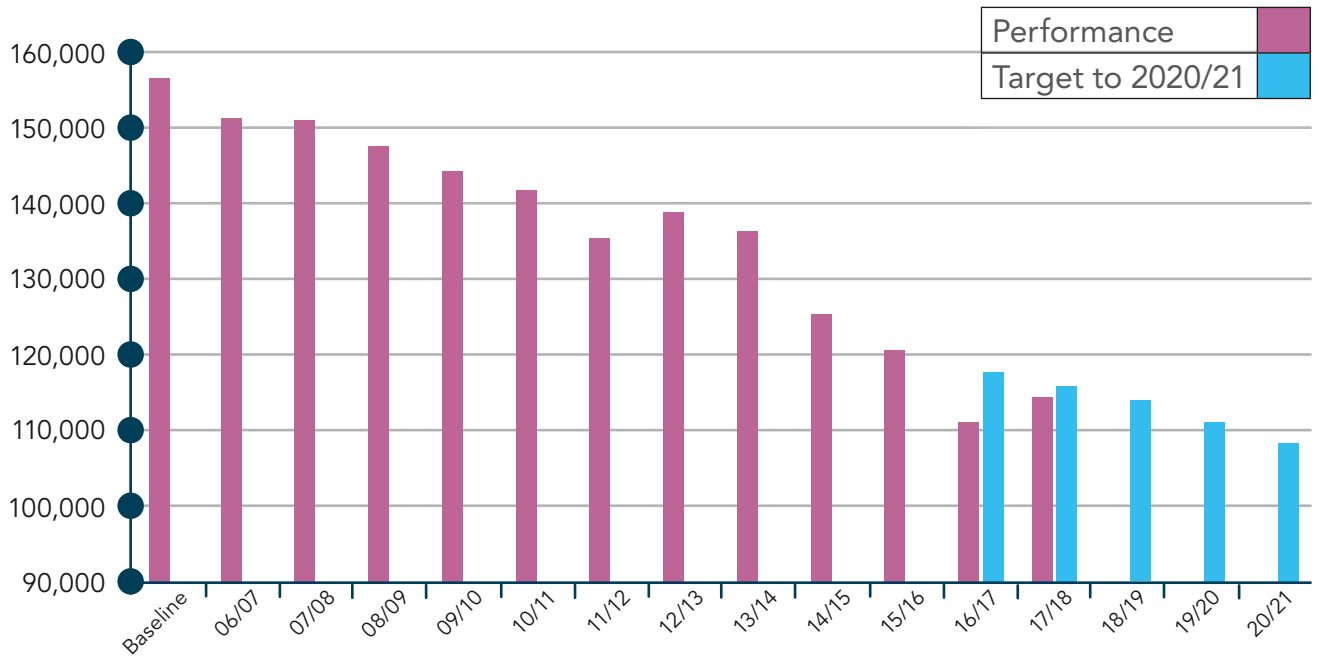
Overall the emissions reductions achieved in 2017-18 compared with the original baseline of 2005-06 is 26.8%. This achievement demonstrates the commitment to contribute to national and international targets and to lead by example.



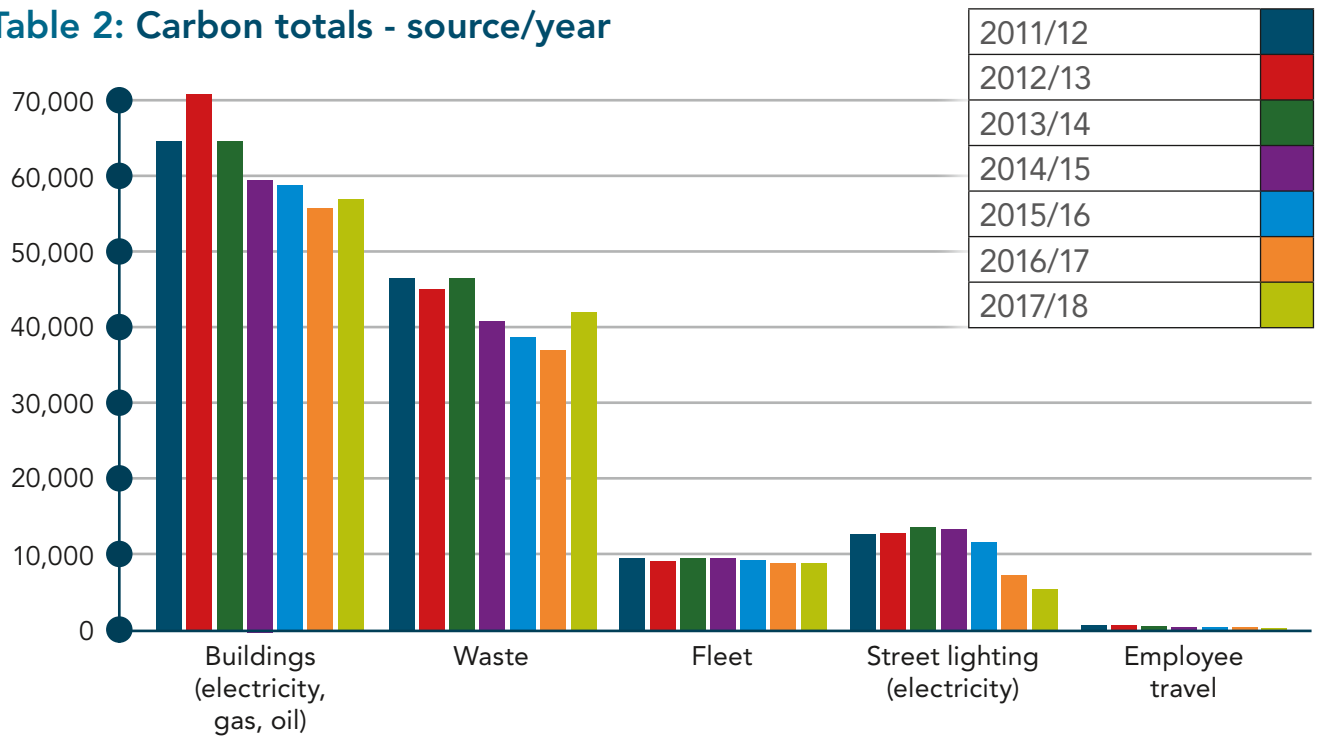
The tables below demonstrate the journey since 2005-06, table 1 includes the targets to 2020-21.

Targets	5% 2005 - 2011						2% each year					10% 2016 2021	
	2005/6 Baseline	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
<b>Carbon Totals - Source/ Year</b>													
<b>Buildings (Electricity, Gas, Oil)</b>	69,427	66,480	67,573	67,691	69,512	67,914	64,901	70,857	64,902	59,821	59,162	56,271	57,101
<b>Waste (Municipal)</b>	61,320	60,015	57,824	54,876	50,711	48,928	46,741	45,334	46,724	41,392	39,072	37,297	42,079
<b>Fleet</b>	10,418	10,290	10,210	9,710	10,039	10,032	9,704	9,338	9,760	9,789	9,511	9,148	8,894
<b>Street Lighting</b>	13,005	13,155	13,957	13,564	12,932	12,962	12,986	13,020	13,841	13,509	11,895	7,549	5,464
<b>Employee Travel</b>	1,795	1,941	1,772	1,783	1,638	1,428	924	891	789	692	635	630	576
<b>Totals (Carbon Tonnes)</b>	155,965	151,882	151,337	147,623	144,832	141,265	135,256	139,441	136,015	125,202	120,276	110,894	114,115
<b>Tonnes saved from baseline</b>	-	-	545	4,258	7,050	10,617	16,626	12,441	15,867	26,679	31,606	40,987	37,767
<b>Variation against baseline</b>	-	-2.6%	-3.0%	-5.3%	-7.1%	-9.4%	-13.3%	-10.6%	-12.8%	-19.7%	-22.9%	-28.9%	-26.8%

**Table 1: Carbon emissions trend**

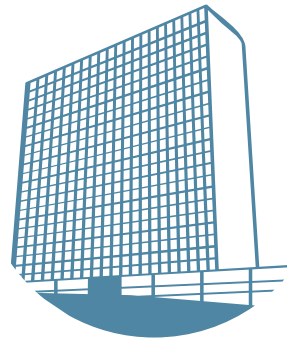


**Table 2: Carbon totals - source/year**



The Climate Change bill due to be published in 2019 is likely to increase Scottish carbon reduction targets. The council has agreed to aspire to reducing emissions further in order to contribute to the expected new national targets.

# Sources of emissions



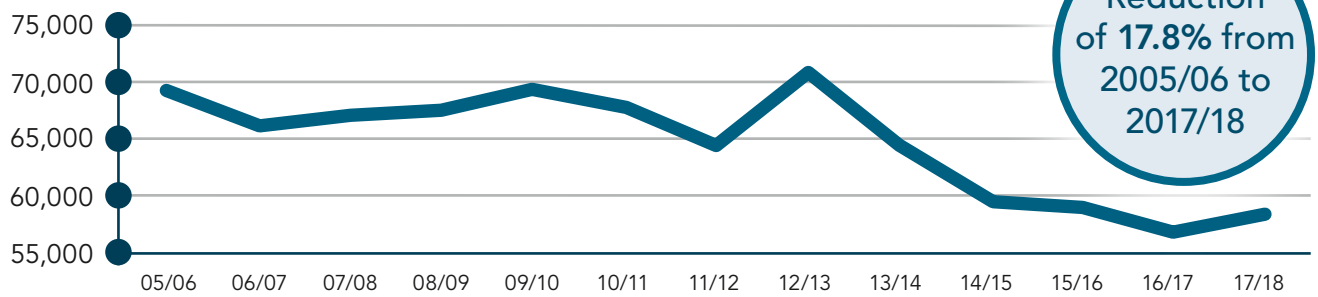
## Buildings

Carbon emissions from our buildings are calculated by measuring the amount of gas, electricity and oil we use for heat, light and powering our appliances.

Our buildings estate includes 20 secondary schools, 131 primary schools, 9 principal offices, 14 depots, 23 leisure centres, 8 halls, 24 libraries, 8 care homes and many more buildings used for a wide range of activities with varying operating hours.

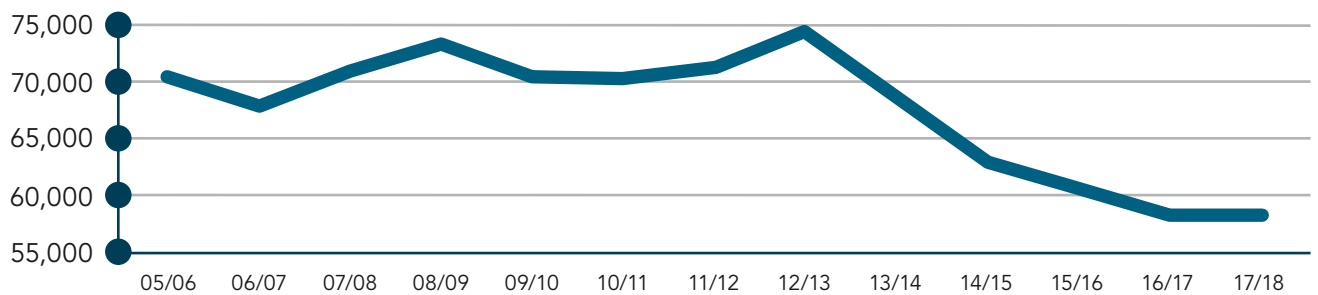
Good reductions have been achieved in recent years, having reduced from over 69 thousand tonnes in 2005-06 to just over 57 thousand tonnes in 2017-18, a reduction of 17.8%.

**Table 3: Buildings carbon emissions**

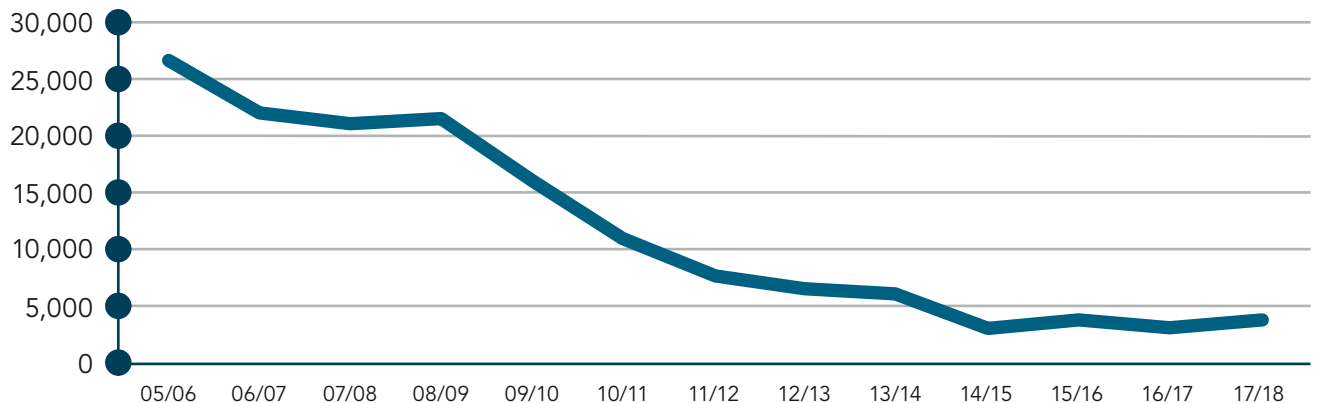


Consumption of electricity has decreased significantly across the estate, as has our reliance on using oil for heat in some of our rural schools. Gas consumption has seen a more erratic pattern as the use of gas is largely related to the weather and the need for heating coupled with the replacement of oil fired boilers and from installing CHP heating units. The tables below demonstrate the progress.

**Table 4: Electricity MWh**

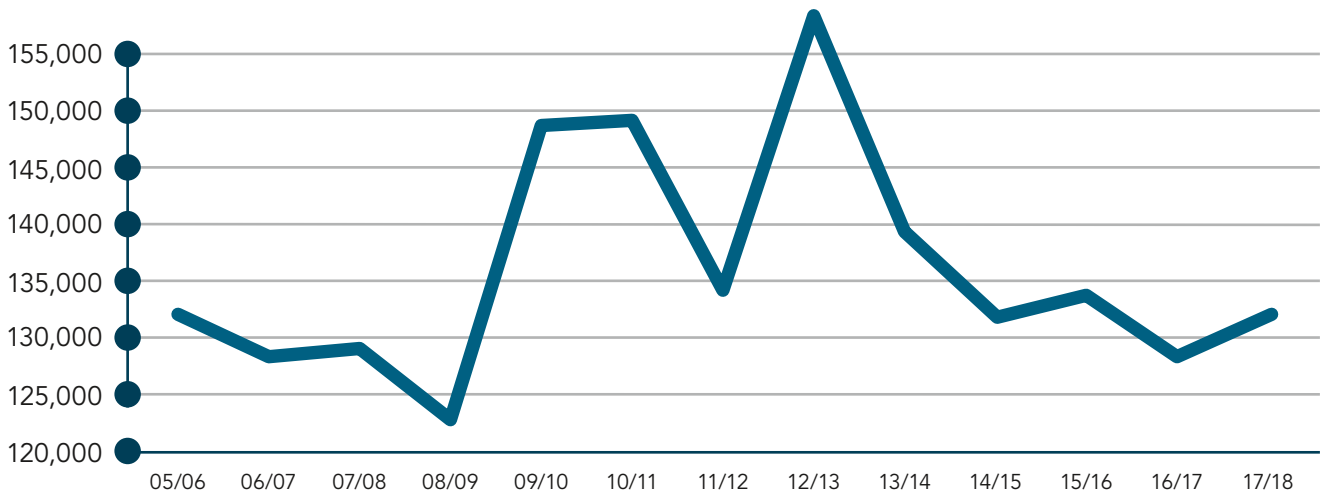


**Table 5: Oil MWh**



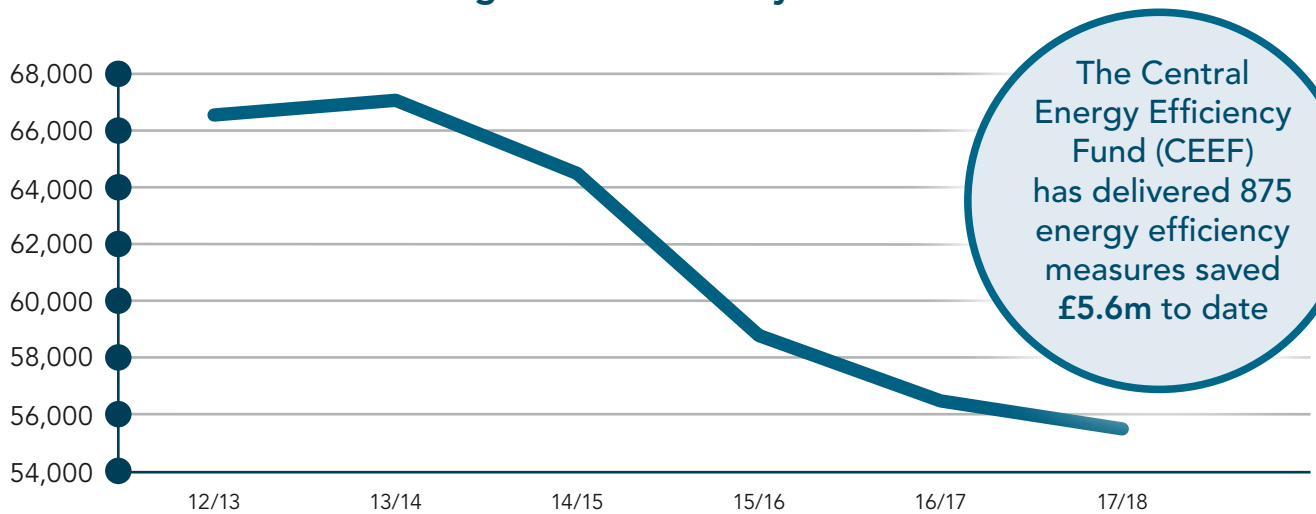


**Table 6: Gas MWh**



Buildings emissions have increased and decreased over the years due partly to the weather but also due to the targeted investment in improving our properties. Since 2012 we have used weather corrected data to better understand the effects of our projects and initiatives without the varying effects of the weather. Good progress is displayed in the graph below.

**Table 7: Weather corrected gas and electricity - carbon tonnes**



Many improvements have been made to our building stock to make them more energy efficient. Since 2004 all our schools have been rebuilt or majorly refurbished making them more efficient and fit for future purpose. By 2019 128 primary schools and 12 standalone nurseries will have been completed at a total cost of £866m. The Central Energy Efficiency Fund (CEEF) which was set up in 2005 has seen 875 energy efficiency measures delivered at a cost of £3.98m which has saved £5.6m to date.



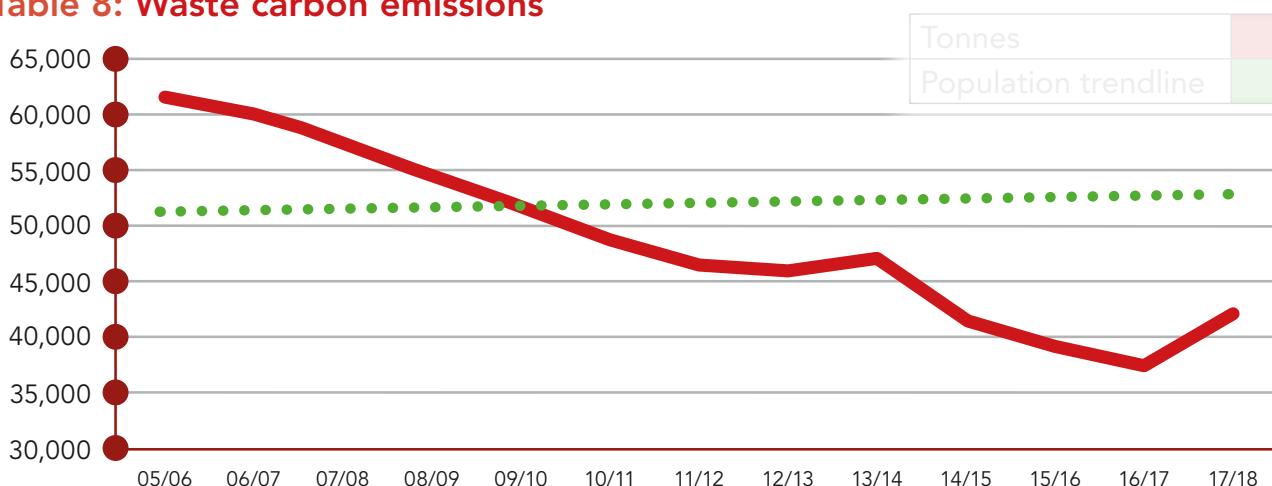
The projects which have been completed have included a range of technologies -

- **Voltage optimisers** – to date we have installed 38 voltage optimisers which are saving electricity and carbon in many of our corporate offices, leisure centres and secondary schools. The technology optimises the incoming site voltage to a level such that electrical equipment runs more efficiently and consumes less energy.
- **Building Energy Management Systems (BEMS)** – there are 181 BEMS enabled sites, 109 of which are remotely connected to a central BEMS computer. There are daily checks and periodic adjustments made to ensure that energy is being used as efficiently as possible. Most of our BEMS systems are in our primary school estate and our specialist BEMS Engineer and Maintenance Team use the opportunity for early intervention when plant performance reduces.
- **LED energy efficient lighting** – to date there have been in excess of 20 lighting replacement projects. Up to 90% savings can be achieved by replacing standard lighting with LED with no reduction in performance. Maintenance requirements are reduced as LED bulbs last markedly longer than their halogen counterparts thereby saving on re-lamping costs. Many more projects are planned within our corporate office buildings.
- **Combined heat and power units (CHP)** – There are 12 CHP units in operation in council properties. The units use natural gas which drives an electrical generator. The “waste” heat from the CHP is piped into the building’s boiler system so that the boilers do not have to fire as often to maintain the same temperatures. Additionally the electricity produced by the electrical generator is cabled directly into the buildings electrical system thereby reducing electricity bought in from the national grid.
- **Biomass boilers** – we currently have 49 sites with biomass boilers which burn naturally grown wood for heating and hot water systems. As wood is considered a renewable fuel it helps achieve carbon reduction targets but is only installed after consultation with planning colleagues and taking air quality into consideration.
- **PV and Solar arrays** – we currently have 32 solar PV arrays fitted on council buildings. Solar photovoltaic (PV) cells generate electricity from sunlight using a silicon semi-conductor material. Solar PV systems are most viable on any flat roof or southwest, south or southeast facing pitched roof provided that the roof structure can withstand the additional weight of the solar panels.
- **Ground and Air source heat pumps (GSHP / ASHP)** – there are 8 GSHPs in operation in council properties. The heat pump performs the same role as a boiler but uses ambient heat from the ground rather than burning fuel to generate heat. The pump needs electricity to run, but uses less electrical energy than the heat it produces. There is one ASHP in operation in a primary school with many more installed in our domestic properties. The ASHP takes heat from the air and boosts it to a higher temperature using a heat pump.

The council’s planned maintenance programme considers the effectiveness and efficiency of all our plant and equipment. Buildings need to be well maintained to be energy efficient and so investment in maintenance is made each year. Since the last carbon management plan many of our older boilers have been replaced with more efficient types and air conditioning units have been improved. Automatic meter readers and BEMS are used to identify unusual consumption behaviour so that early repairs can be made. In 2017-18 there was over £5m spent on building maintenance.

# Waste

**Table 8: Waste carbon emissions**



We report carbon emissions from our waste by measuring the amount of waste we send to landfill. There are many ways to calculate the amount of carbon emitted by each type of waste stream but for the purposes of managing our carbon footprint we use a static conversion factor which was set by DECC in our baseline year of 2005-06. We measure the landfilled 'municipal' waste which is a term used by Scottish Environment Protection Agency (SEPA) to describe household and commercial waste.

Emissions from waste have reduced year on year with two exceptions, with a reduction of 31.4% in 2017-18 when compared with the baseline year 2005-06. The increase shown in the graph above for 2013-14 was due to changes in reporting parameters and the increase in 2017-18 was due to changes to the residual waste contract.

By the end of 2018, a significant amount of residual waste generated by households will be thermally treated at a new Energy from Waste facility in Dunbar, East Lothian. Residual waste treatment means that waste from black (or green) bins will no longer be landfilled; instead the material will be incinerated, with the heat generated used to produce steam that in turn generates electricity. This new method of treating residual waste will allow the council to comply with the 2021 ban on the land-filling of biodegradable waste.

Kerbside recycling services were further improved in 2015 and this process is still

continuing, with on-going reviews of service provision for multi-occupancy and rural properties. The majority of households can now collect paper, card and cardboard in blue bins. This material is taken to a recovered paper processor where it is bulked and sent to paper mills throughout Europe.

New food and garden waste collection services has resulted in significantly less residual waste and instead goes to a local processor to be turned into compost.

Glass, cans and plastic containers are collected in light grey bins, the materials are sorted in to different waste streams and sold on to manufacturers as a replacement for virgin materials. The collection of high quantities of high quality recyclable material is a key element of the Scottish Government's vision of the circular economy.

A new 'You've Bin Tagged' initiative was introduced in 2018 to educate householders on the need to put the right types of waste in the right bin. The initiative has led to significant improvements in the quality of recovered paper being delivered to our processor.

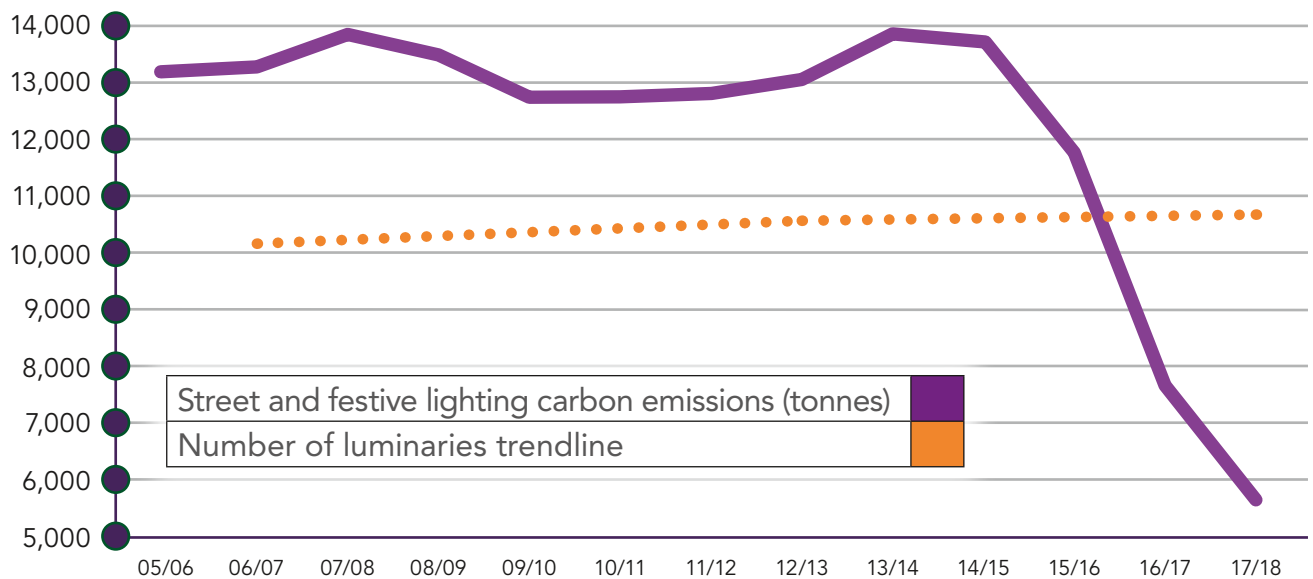
Census data shows that the number of residents living in South Lanarkshire has steadily risen over the term of the carbon management plans. Providing access to recycling services, both at kerbside and at local Recycling Centres has been crucial in ensuring the amounts of waste to landfill is reduced.

# Street lighting

The carbon emissions from street lighting are calculated by measuring the electricity used to power our street lanterns, road sign lights and festive lighting displays. Emissions have reduced most years since the baseline of 2005-06, with reductions of 58% reported in 2017-18.

In South Lanarkshire there are many new developments each year which require street lighting. There are currently 64,550 council owned street lights and road sign lights, 210 traffic signals and 64 festive lighting displays and the numbers increase each year. Developers are obliged to install LEDs in any new developments so this will have kept increases from additional lanterns to a minimum.

**Table 9: Street and festive lighting carbon emissions (tonnes)**



Many technologies and energy saving initiatives have been implemented over recent years to make our street lighting estate as efficient as possible. The fitting of photocells and a photocell array which adjust switch on and off times, dimming regimes and the installation of lower energy light-emitting diodes (LEDs) has reduced the carbon emissions.

An ambitious LED street lighting replacement programme began in June 2015 and was scheduled to take place over 3 years. The programme was completed in 2018 and has seen over 59,000 lanterns replaced with LED.

The first phase of the programme focused on standard residential and footpath street lighting with the more difficult distribution

roads and decorative lighting taking place in the final phases. The programme has also allowed over 7,250 lighting columns to be replaced.

Almost half of our traffic signals have been fitted with LED, and any new signals are fitted using LED. The voltage is also reduced within the controller which also contributes to energy savings. Solar and/or wind power is used to illuminate over 300 of our vehicle activated road signs. Not all signs are appropriate for renewable energy but where possible it is installed.

It is expected that future carbon emissions from street lighting will stabilise and are likely to remain at 2018-19 levels, although new technologies will continue to be trialled and considered as opportunities arise.

## Travel

The carbon emissions from our fleet are calculated by measuring the amount of fuel used to run our vehicles and plant equipment. Our fleet currently consists of 611 small cars and vans, 296 large vans, 165 tippers, 74 passenger buses, 48 heavy refuse collection vehicles, 34 sweepers, 26 electric cars and another 100+ specialised vehicles, including platform lift trucks, 4x4 all terrain vehicles, refrigeration vans and library vehicles. The number of road going vehicles fluctuate each year dependant on the needs of the services.

In 2017-18 emissions from fleet and employee travel had reduced by 22.5% since 2005-06.

We have over 14,000 employees with many travelling throughout the working day on council business. Most of the miles travelled are in council fleet vehicles but some journeys will be made in council pool cars and in employee's own vehicles.

Various initiatives within the council's fleet of vehicles have ensured that fuel consumption is kept to a minimum. These initiatives include the installation of speed limiters, right sizing our vehicles, driver training, route planning and using a telematics management tool.

The pool car scheme was set up in 2011 and currently has 104 vehicles. These vehicles have been right sized for their purpose and are as fuel and cost efficient as possible. We have 26 electric vehicles which have been leased using funding from Transport Scotland's 'switched on fleet' scheme.

Emissions from travel have reduced almost consistently over the course of the carbon management plans despite an increasing fleet. This fleet increase is due to the extension of kerbside household recycling which has required additional vehicles, the introduction of the pool car scheme and other operational changes within council services using fleet vehicles.

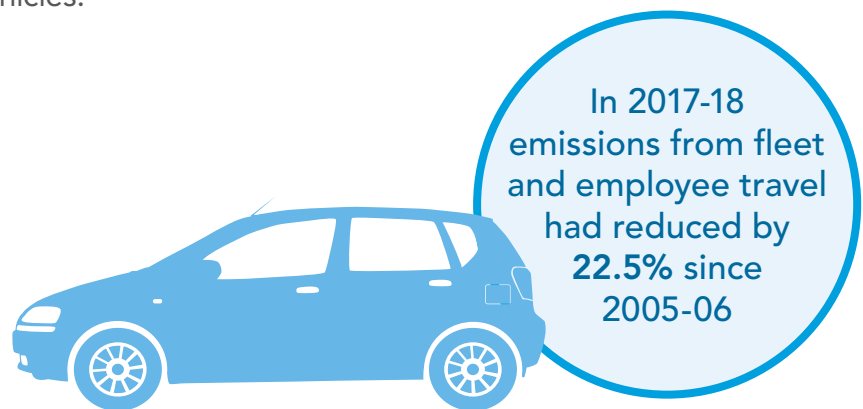
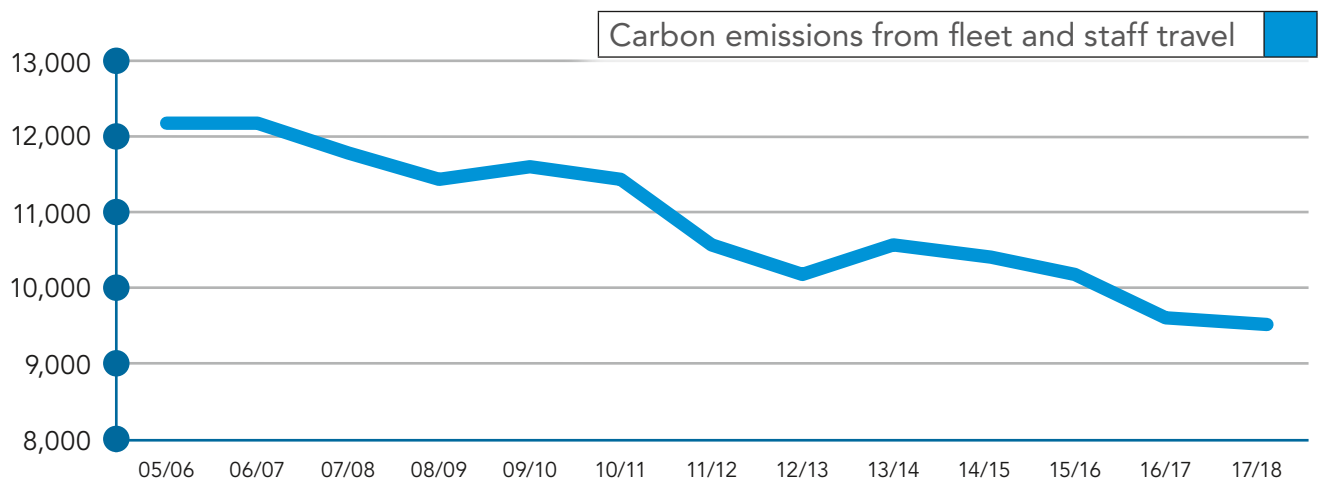


Table 10: Fleet and staff travel



## Future actions

### Energy Framework

Energy efficiency in our buildings is important and has significant financial and environmental implications. An energy framework group meets every 2 months with a remit to improve the energy efficiency of properties, deliver new builds to a high standard of energy efficiency and ensure building projects use sustainable materials and dispose of waste responsibly. The group considers current energy performance, areas for investment, potential funding sources and new and emerging legislation and technologies.



The council will continue to work with partners and investigate potential funding sources to expand the area's charging network.

### Employee engagement

There are many ways in which employees are encouraged to help us achieve our targets. The Works magazine has a regular article 'Carbon Corner' which features information covering a range of subjects. Employees are encouraged to comment and request further information. On-line courses are available for employees who are keen to learn more or would benefit from the modules within the scope of their post.



### Waste strategy

The long term waste strategy is very much dependant on government legislation and other external factors.

The development of the Household Waste Recycling Charter and the proposed Deposit Return Scheme (DRS) which is out for consultation is likely to have an impact on future recycling targets for Local Authorities. The charter and potential DRS will impact our current collection systems and processing contracts on how we design our services for the future.



The 'Sustainable South Lanarkshire' flash is displayed on a variety of publications which help employees understand the variety of topics which affect our environmental performance and carbon footprint. The council's environmental statement is promoted to employees with information on exactly how they can contribute to the commitments.

Many national campaigns are regularly promoted and supported such as WWF's Earth Hour, Zero Waste Scotland's Recycle Week and Energy Saving Scotland's Home Energy Scotland campaign. These are promoted with employees and schools as well as to the general public via social media.

### Transport strategy

The Scottish Government has reported an ambition to phase out the need for new petrol and diesel cars and vans by 2032, with a long term plan to largely decarbonise our road network by 2050. With this in mind the council is developing a transport strategy. The strategy will outline the council's approach in contributing to these targets. There needs to be the infrastructure to support electric vehicles and whilst the council has installed 88 public charging points across South Lanarkshire there is still further development required to support more electric cars on our road network, including within our own fleet.



A plan to reduce our reliance on single use items is in place with all employees expected to play their part. Reductions have been made in the number of single use items used within the catering service, within both corporate venues and schools. Work will continue to identify other single use items and design them out or identify reusable alternatives. The changes in climate have and will continue to impact on the council's ability to reduce our carbon footprint but we will continue to be as resource efficient as possible and look to new technologies and other strategies to mitigate against these changes.

# Carbon Council

# Plan



If you need this information in another format or language, please contact us to discuss how we can best meet your needs.

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