



# National Galleries of Scotland

## Environmental Sustainability Report 2017-18



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*Owner:* Gillian Gibson, Sustainability Officer

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2017-18 at a Glance



A new electric bus has been added to our fleet to transport visitors between galleries



NGS saved enough carbon in 2017/18 to make **96,190** hot cups of tea

The **NGS Green Team** was formed in 2018 to help engagement with staff



Electricity and gas contribute to **98%** of our carbon emissions



Improving the buildings energy efficiency is a key priority



**100%** of our waste is processed in the UK

## Introduction

### Background

The National Galleries of Scotland (NGS) strives to be a sustainable and efficient organisation – this is outlined in the corporate plan as one of the long term aims that supports the organisation to develop as an ambitious international institution that sits at the heart of cultural life in Scotland.

This report brings together all the sustainability work that is happening in and around the National Gallery, Royal Scottish Academy, Portrait Gallery and Gallery of Modern Art. This includes energy, water and waste reduction, low carbon travel, sustainable procurement, biodiversity and engagement with staff and visitors.

### Our Sustainability Journey

The main target that the National Galleries of Scotland has been working towards has been a reduction of 42% of carbon emissions by 2019/20. The sustainability report is supported by emission data from a baseline of 2008/09.

This target was successfully reached over two years early as of June 2017 and the NGS has now reduced its carbon emissions by 46% from the 2008/09 baseline.

After this achievement it was even more important to keep driving the environmental, social, economic sustainability agenda. This was addressed when in 2017 NGS invested in the position of Sustainability Officer to lead the further work that the organisation would face to continue to improve sustainability and reduce carbon across the estates.



### Next Steps

In 2018 the Scottish Government has been reviewing the national carbon emission reduction targets with a proposed 66% reduction by 2032 and 90% reduction by 2050.

Due to the success of the previous NGS targets being exceeded; we have followed a similar journey of working on a new Carbon Management Plan and Environmental Policy. This is to be launched by the end of 2018 and will incorporate new, more ambitious targets for the following four years.

Increasing numbers of visitors and growing demands on the buildings means that the next stages of the NGS sustainability journey are going to be challenging with smaller projects being addressed and more engagement being key to continuing successes.

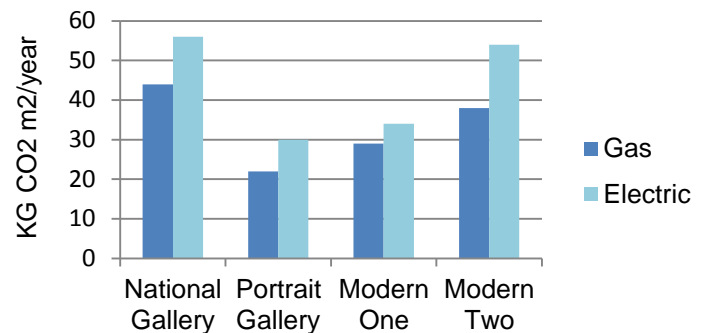
## 2017-18 Overall Performance

Overall carbon across the National Gallery Scotland galleries and stores continues to decrease. Between 2016/17 and the end of 2017/18 there was a 10.3% decrease in carbon. This means a 46% reduction since the baseline of 2008/19.

Although increases in carbon emissions can be seen from transport, waste and water; overall we are reducing our carbon emissions due to savings being made in energy (electric being the main driver) which contributes to 98% of the NGS carbon emissions. See Appendix for further breakdown.

The Scottish National Gallery and the Modern Two Gallery are our most energy intensive buildings. The Portrait Gallery has remained the best performing building since its major refurbishment in 2011. The National Gallery holds a collection with narrow environmental conditions needed to maintain them. The major improvement project at the National Gallery will begin in 2018 and hopefully provide significant carbon reductions after its completion in 2021.

### Carbon Intensity of the Galleries



Summary table of the progress we have made since the financial year 2008/09 (1 April to 31 March)

Area	2008/09	2016/17 Performance	2017/18 Performance	Change from Baseline Year	Change from last year
Carbon from Energy <sup>1</sup>	<b>3690</b>	<b>2217</b>	<b>1982</b>	-46.29%	-10.60%
Total Energy Expenditure	<b>£645,939</b>	£406,191	£421,380	-34.76%	+3.74%
Carbon from Transport <sup>1</sup>	<b>8.45</b>	14.56	16.88	+99.78%	+15.94%
Total Transport Expenditure	<b>£10,205</b>	£24,301	£30,754	+ 201.36%	+26.55%
Carbon from Waste <sup>1</sup>	<b>28.38</b>	3.87	5.51	-80.58%	+42.44%
Total Waste Expenditure	<b>£18,553</b>	£26,738	£24,178	+30.32%	-9.58%
Carbon from Water <sup>1</sup>	<b>18.09</b>	15.39	16.43	-9.20%	+6.73%
Total Water Expenditure	<b>£86,157</b>	£57,238	£50,547	-41.33%	-11.69%
Total Carbon Emissions <sup>1</sup>	<b>3745</b>	2251	2020	-46.07%	-10.28%

<sup>1</sup>: Carbon is measured in tonnes of carbon dioxide (CO<sub>2</sub>) equivalent.

# Energy Use

## Progress and Initiatives

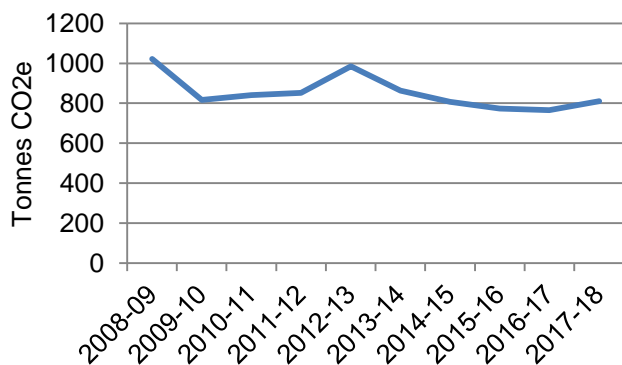
The carbon emissions from energy are still reducing, though not as rapidly as has been seen in previous years. Many of the larger projects have been rolled out across the estate and so energy reductions are now being targeted through smaller projects; for example adjustments to the Building Management System.

Electricity still sees major reductions with a 22% decrease from the previous year, 2016/17. Although there are continuing improvements to upgrade office lighting to LED; a large proportion of the decrease could be attributed to the closure of sections of the National Gallery. The grid electricity becoming less carbon intensive could also be a contributing factor.

Gas carbon emissions have unfortunately seen an increase from the previous year by 6%. This could be attributed to unexpected cold spells throughout the year. Improvements will hopefully be seen next year from the installation of fuel improvement magnets which were installed in the boilers at The Gallery of Modern Art buildings.

The organisation participated in its fifth WWF Earth Hour at the end of March 2018 to help raise awareness to staff as well as the wider public.

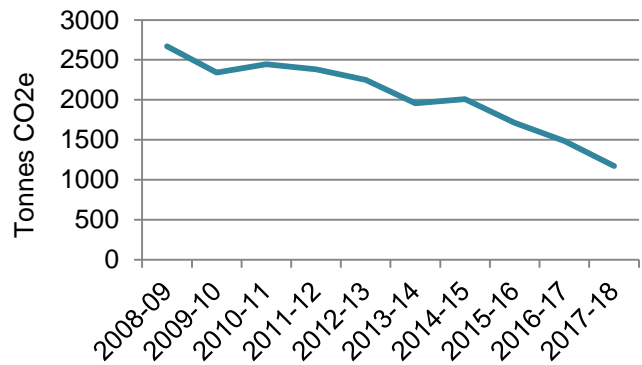
### Carbon Emissions - Gas



## Challenges

- Our galleries are Grade A listed buildings and so consideration and care must be taken into account when applying new technologies to them.
- Where buildings preclude low energy solutions to provide environments for collection care, energy use can be intensive.

### Carbon Emissions - Electric



## Future Goals

- Additional meter for heating and electricity to continue to make our building smarter and more reactive and efficient
- Further trial of secondary glazing at The Gallery of Modern Art.
- Make our buildings more sustainable through more efficient building fabric improvements.
- Reduce the impact of our IT equipment by moving our servers offsite and moving to more efficient desktop equipment.
- Work with Green Team, staff and engage with the wider public on the positive benefits of energy efficiency.

## Transport & Travel

### Progress and Initiatives

The fleet carbon emissions of NGS have increased 15% from the last year. 2018 saw NGS electric bus added to its fleet; this is used for transporting visitors and staff between galleries. An electric pool car was also added to the fleet. Although these will be producing minimum carbon the previous NGS bus remained in the fleet while we transitioned to using the electric bus. Hopefully we will see an impact on the fleet emissions next year as we reduce the number of vehicles used. An electric vehicle charging point is already installed at the Modern One Gallery for staff and public use with an additional charging point installed at the Modern Two Gallery for the electric bus.

A Travel Action Plan was created in partnership with City of Edinburgh Council; this aimed to help raise awareness with staff of sustainable travel options. Events included a Travel Roadshow to promote available support and facilities around the organisation for staff as well as a Doctor Bike maintenance session for cyclists. Sustainable Travel maps were also displayed in staff social areas to show accessible routes for walking, cycling and public transport.

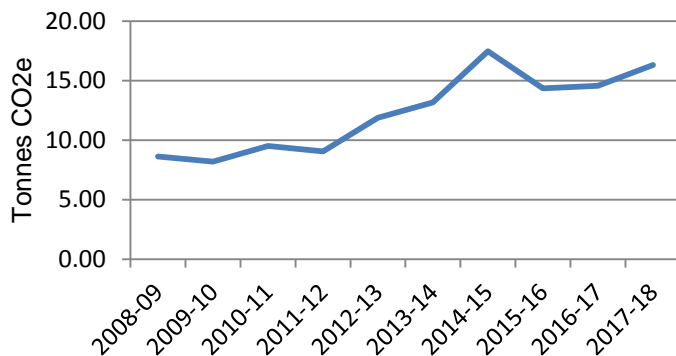
Funding has been secured from Cycling Scotland to install more bike shelters around The Gallery of Modern Art to help promote and encouraging cycling; with staff and visitors bikes now being covered during wet or windy weather. These will be installed by the end of 2018.

### Challenges

- Increase in size of fleet is increasing transport emissions.
- Encouraging staff to use active travel for commuting to/from work and business travel when possible



**Carbon Emissions - Fleet**



### Future Goals

- Replace more of our fleet with electric vehicles where possible.
- Encourage and increase the use of active travel to work by employees.
- Promote sustainable transport to visitors coming to the galleries and moving between them.

# Waste Management

## Progress and Initiatives

In 2017-18 we have seen an increase of 42% in the NGS waste. Although a third of this was recycled, this is a decrease from previous years where we saw half of the waste being recycled. Despite the recent increase carbon emissions from our waste has now dropped by 81% from our baseline though we are still looking to improve going forward.

NGS uses Changeworks Recycling to dispose of recycling and waste and are looking to engage more with staff on recycling around the work place to help increase the amount that is recycled and to reduce the amount of contamination of our recycling bins.

The cafes on all of our sites continue to recycle food waste and the cafes in our Gallery of Modern Art and Portrait Gallery use Vegware packaging which is fully biodegradable.

We have completed a Litter Prevention Action Plan in partnership with Zero Waste Scotland which outlines actions that we will be taking to help support the Scottish Government strategy 'Towards a Litter Free Scotland'.

## Challenges

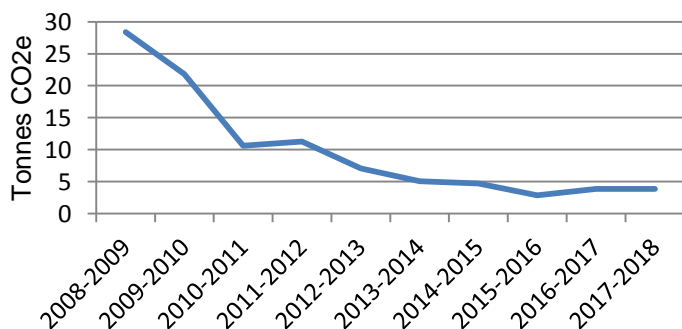
- Items not being disposed of correctly between recycling and general waste bins causing issues with contamination and increased amount of waste not being recycled.



## Future Goals

- Improve recycling rates at NGS
- Complete actions from the Litter Prevention Action Plan
- Work with staff to increase awareness of how waste is dealt with and how our recycling system works.
- Provide training for staff, such as café and cleaning staff who are dealing with disposing of waste.
- Review our waste management strategy to mitigate against added pressure from increasing visitor numbers.

**Carbon Emissions - Waste**





## Water

### Progress and Initiatives

Water consumption remained approximately the same through 2017-18 with only a slight increase in carbon emissions of 6.76% by the end of March 2018.

The Jencks landform at the Modern One Gallery was identified to have issues with leaks, some of these were identified and repaired at the beginning of 2018 and hopefully we will see a reduction in water consumption at this gallery over the coming year.

An audit of the staff toilets has been completed with the view to reduce water consumption throughout the buildings.

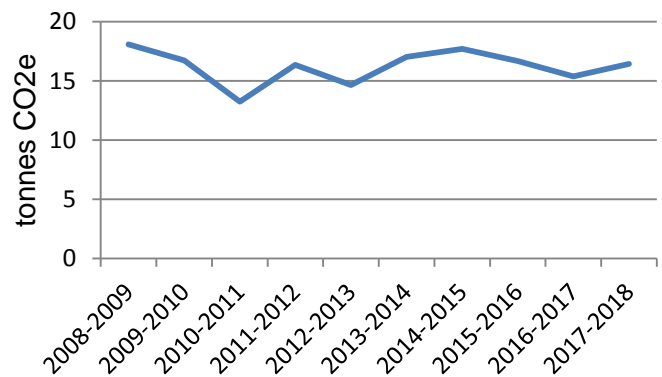
More improvements are being sought to install water efficient taps and also install more sub water meters so that we can more accurately track areas of high water demand across the estate.



### Challenges

- Large amounts of water are consumed by our humidifiers. Reduction in this will only be seen in conjunction with more efficient environmental control of our exhibition areas.
- Increasing amount of visitors means more water resources being used in galleries as well as cafes.

### Carbon Emissions - Water



### Future Goals

- Focus on water efficiency devices and communications throughout the galleries.
- Consider the viability of galleries for rain water harvesting.
- Engage with our cafes to investigate more efficient water use practises.
- Install more water efficient devices in our staff toilet facilities.

## Biodiversity

### Progress and Initiatives

We are committed to maximising our green spaces for the encouragement of increased biodiversity as well as educating the public on the link of food from earth to plate.

The surrounding grounds of The Gallery of Modern Art have 16 bird boxes to encourage more nesting birds. Along with this we have erected 6 bat boxes to encourage more bat activity.

The woodlands around The Gallery of Modern Art buildings are managed to encourage more insect activity with fallen tree retention in some areas. Leaves from the trees are used onsite for composting.

The café has developed a kitchen garden which produces fresh vegetables, fruits and herbs that are used on the menu. This garden consists of an orchard, raised beds, fruit patches, composting area and an insect hotel. The garden area has never had herbicides or pesticides used on it and we are looking to support the biodiversity.

Two bee hives have been installed in the grounds. We have had a wild garden planted around them to encourage honey production from the bees.

A well-established allotment space is situated on the grounds of Modern Two that is managed by Dean Allotments. A large array of soft fruits and vegetables are grown all year round with the grounds surrounded by apple and pear trees. The space is managed to a high standard of cultivation and all produce is organic. Green waste from the surrounding Gallery parkland is composted and used in the allotments to provide organic fertiliser.

### Challenges

- Green space in our estate is predominantly at The Gallery of Modern Art, with limited biodiversity opportunities at our other galleries.



### Future Goals

- Continue to look to introduce new measures and installations that encourage increased flora and fauna activity onsite.
- Engage and educate the public on biodiversity where possible.

## Sustainable Procurement

### Progress and Initiatives

Sustainable Procurement is one of the seven key priorities in Our Procurement Strategy 2016-19; this supports our commitment to economic, environmental and social sustainability.

NGS are signatories to the supplier charter which gives businesses access to public contracts. A framework for supported business would also be used whenever possible, to increase community benefits.

Our cafes run on the ethos of 'Scottish – Seasonal – Sustainable'; using local suppliers to source their food and Life Cycle Assessment (LCA) carried out on any large purchasing decisions to help decrease in the carbon footprint of their supply chain. This contributed to The Scottish Café & Restaurant at the National Gallery being 'Commended' in the 2017 Scottish Environment Business Awards (VIBES).

Our IT equipment is Energy Star certified which ensures it meets stringent environmental and energy efficiency standards.

Our office paper is EU-ecolabel certified which means it meets stringent criteria which take the whole product life cycle into account - from the extraction of the raw materials, to production, packaging and transport, right through to use and then the recycling bin.

We report to government on our sustainable procurement activities through the annual Public Bodies Climate Change Duties reporting requirement.

### Challenges

- Lack of centralised management for purchasing can lead to inconsistencies in our approach to sustainable procurement.



### Future Goals

- Increase the level of environmentally friendly office supplies purchased within the organization.
- Provide Sustainable Procurement information and training for staff with procurement responsibilities.

## Staff & Visitor Engagement

### Progress and Initiatives

A large part of addressing sustainability in the National Galleries of Scotland is about engaging with staff and visitors on how they can contribute to reducing the carbon emissions of NGS and using the building sustainably.

The Green Team has been formed to help spread sustainability awareness throughout the NGS. Comprising of enthusiastic individuals from all different estates and departments the Green Team will be working on projects to help promote sustainable behaviour throughout the galleries in the coming year.

The National Galleries of Scotland is working through creating a new Strategic Plan with 'sustainability' identified as a key driver. Through this planning stage a group has been created to help embed the priorities throughout NGS with the Sustainability Officer sitting on this group to help promote and advise.

Although the amount of time that visitors use the galleries varies widely, it is still important for NGS to be promoting its sustainable credentials to the wider public. In 2017-2018 all of the galleries have been working towards accreditation of the Green Tourism Award which showcases organisations who care for 'People, Places and Planet'.

With a drive for reducing single-use plastic the NGS cafes have signed up to be represented on the Refill app which allows people to find places where they will be able to refill their own reusable bottles for free. A 'Chuck the Cup' campaign was also run to encourage people to use their own reusable cups.

We also run a volunteer program providing opportunities for people to gain valuable experience in the arts. We were the first national arts organisation to achieve the Investing in Volunteers UK quality standard.

### Challenges

- Staff on multiple sites can mean that sustainable practises can vary in each estate.
- Limited amount of time to promote and convey sustainability to visitors; dependant on the length of their visit to the galleries.



### Future Goals

- Green team projects being rolled out throughout the galleries.
- Promotion of the NGS Sustainability ethos to visitors.
- Completion of all criteria for the Green Tourism Award.

## APPENDIX: Performance Figures

The following table provides a summary of how we are performing against our carbon reduction targets.

	EMISSIONS	2008-09 (Baseline)	2016-17	2017-18	Change from previous year
Targets	Total Carbon (CO2e)	3,745	2,251	2,020	-10.3%
	Our Target 42% by 2019/20	-	-30.55%	-34.36%	-3.8%
	Difference	-	+10.82%	+12.85%	-

The following chart provides a summary of how we are performing in energy use.

	Scopes	2008-09 (Baseline)	2016-17	2017-18	Change from previous year
Gross Emissions (Tonnes Co2e)	Scope 1 : Direct (gas)	1,021	765	826	+7.97%
	Scope 2 : Indirect (electricity generation)	2,476	1,344	1,075	-20.01%
	Scope 3 : (electricity transmission & distribution)	193	142	119	-16.2%
	Total	3,690	2,251	2,020	-10.26%

The following chart provides a summary of how we are performing in transport.

Transport	Scope 1	2008-09 (Baseline)	2016-17	2017-18	Change from previous year
Gross Emissions (Tonnes Co2e)	Direct (vehicle fleet)	8.62	14.56	16.88	+15.93%

The following chart provides a summary of how we are performing in water.

Water	Scope 3	2008-09 (Baseline)	2016-17	2017-18	Change from previous year
	Water m3	20,639	16,637	17,096	+2.76%
	Water tonnes (CO2e)	18.09	15.39	16.43	+6.76%

The following chart provides a summary of how we are performing in waste.

Waste	Scope 3	2008-09 (Baseline)	2016-17	2017-18	Change from previous year
	Waste Total (tonnes)	117	184	255	+38.59%
	Waste Recycled (tonnes)	16	122	57	-53.28%
	Waste to Anaerobic Digestion (tonnes)	0	20	41	+105%
	Waste to Refuse Derived Fuel (tonnes)	0	69	31	+55.07%
	Waste to Landfill (tonnes)	97	0	0	-
	Waste (Co2e) tonnes	28.38	3.87	3.86	-0.26%

## Emission Factors 2016/17

Electricity Generation (kWh)	Electricity Transmission & Distribution (kWh)	Gas (kWh)	Water Supply (m3)	Water Treatment (m3)	Waste to Landfill (tonne)	Waste Recycled (tonne)	Diesel (Litre)	Petrol (Litre)
0.3515	0.0328	0.1842	0.344	0.708	588.906	21	2.6002	2.1984

## Scope Definitions

Scope 1: Direct – This includes directly consumption of gas and oil. Emissions from NGS owned fleet vehicles are included.

Scope 2: Indirect – This is for emissions which result from energy consumed which is supplied by another party. For us this is electricity generated by another party.

Scope 3: Others – This is for emissions relating to official business travel, waste disposal, water supply and treatment and electricity transmission and distribution.