SUSTAINABILTY REPORT 2016-17

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

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Note on Conversion Factors
Emissions have been calculated using the UK Government GHG Conversion Factors, published by the Department for Environment, Food and Rural Affairs. The previous financial year's data has been amended using these conversion factors, following advice to public bodies under the Climate Change (Scotland) Act 2009. HES previously used conversion factors from Zero Waste Scotland that took into consideration the whole life-cycle of waste, therefore reported emissions from waste have reduced significantly.

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SUSTAINABILITY REPORT
AITHISG SO-SHEASMHAICH

INTRODUCTION

In a drive towards a low carbon economy, the Scottish Government has set world-leading climate change targets, to slash Scotland's carbon emissions by 80% by 2050, with an interim reduction of 42% by 2020. These targets present Scotland with significant social and economic opportunities and challenges, requiring a range of actions.

Since its creation Historic Environment Scotland (HES) has made a conscious effort to reduce its operational greenhouse gas (GHG) emissions. Our Corporate Plan for 2016-19, *For All Our Futures*, has embedded our leadership role in climate change in its objectives by setting Key Performance Indicators (KPIs) to which we will work and report over the coming years.

Our new Carbon Management Plan sets out our intention to reduce GHG emissions through HES' operations, in line with national targets, by 2050. It takes an innovative approach to carbon management, through a series of five-year periods, each of which is allocated a specific carbon budget. In practice, the current plan requires a progressive decrease in carbon emissions of between 2.2% and 2.4% each year to 2020, leading to an overall 11% reduction for the period 2015-2020. This ambitious target requires a transformational change in the way we factor carbon into our business operations.

This sustainability report highlights HES' high level performance for the financial year 2016-17 in a number of key areas: GHG emissions, from energy, waste management, business travel, water consumption, action on biodiversity, sustainable procurement and adaptation. The purpose of this reporting is to improve performance management in relation to sustainability, through greater accountability and transparency.

We will continue to publish a high-level sustainability report within our Annual Report and Financial Statements, in addition to submitting a Mandatory Public Bodies Climate Change Duties Report via the Sustainable Scotland Network portal.

2016-17 Performance Summary

AREA	ACTUAL PERFORMANCE		TARGET	STATUS
Total GHG Emissions	6,565	tCO_2e	-2.2%	-3.9%
Total Energy Consumption	17,889,444	kWh		-3%
Total Waste Disposal	1,036	tonnes		
Recycle Rate	42	%		
Total Water Consumption	86,686	m^3		
Total Energy Expenditure	£ 1,298,261			
Total Waste Expenditure	£ 147,122			
Total Business Travel Expenditure	£ 813,596			
Total Water Expenditure	£ 187,589			

GHG EMISSIONS OVERVIEW

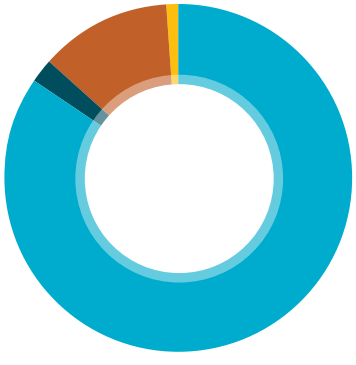
GHG emissions (tCO_2e)	2014-15	2015-16	2016-17	Annual Change	Change Against Baseline
Grand total	6,986	6,616	6,565	-0.8%	-6.0%
Energy	6,036	5,729	5,557	-3.0%	-7.9%
Waste	90	136	146	7.4%	62.2%
Business travel	811	693	799	15.4%	-1.4%
Water	48	59	62	6.1%	30.2%

TOTAL GHG EMISSIONS BUDGET

GHG emissions (tCO_2e)	Target HES GHG Emissions		Actual HES GHG Emissions			Difference Against GHG Emissions budget	
	Annual Emmissions Budget (tCO_2e)	Year-on-Year Change	Actual Emissions (tCO_2e)	Change Against Budget	Change Against Previous Year	Difference (%)	Difference (tCO_2e)
Baseline	6,986	–	6,986	–	–	–	–
2015-16	6,832	-2.2%	6,616	-5.3%	-5.3%	-3.1%	-370
2016-17	6,679	-2.2%	6,565	-3.9%	-0.8%	-1.7%	-267
2017-18	6,525	-2.3%	–	–	–	–	–
2018-19	6,371	-2.4%	–	–	–	–	–
2019-20	6,218	-2.4%	–	–	–	–	–
Total	39,611	11.0%	20,167	-9.2%	-6.1%	-4.8%	-637

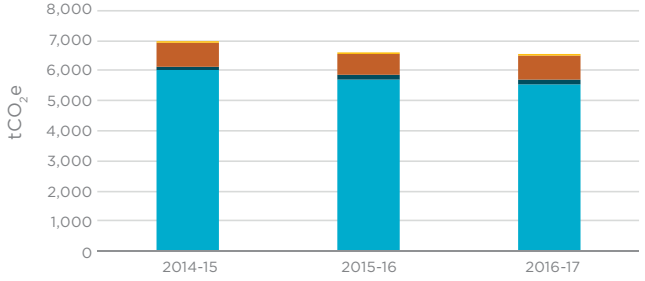
GRAPHICAL ANALYSIS

2016-17 Carbon Footprint

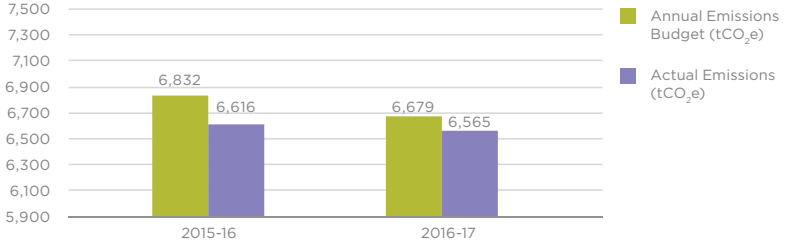


- 84.6% Energy
- 2.2% Waste
- 12.2% Business travel
- 1.0% Water

Annual Carbon Performance



Budget v Annual Emissions (tCO_2e)



TARGETS AND COMMENTARY

New Carbon Management Plan and baseline

We launched our new Carbon Management Plan (CMP) 2020 on 31 March 2017. We have set a new 2014-15 baseline, aligning our emission targets with the Scottish Government national targets. Calculated by aggregating emissions data from Historic Scotland (HS) and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) prior to the formation of Historic Environment Scotland (HES) in October 2015, we set this baseline because it represents the final year of our previous CMP and is the most complete and accurate data set available. We used this baseline to develop our 2050 target and to calculate carbon budgets across the period. The baseline also serves to highlight our carbon footprint, which is essential for understanding the range of operational emissions and determining (and communicating) our carbon reduction strategy going forward.

Our target

In our CMP we have adopted the approach of setting a total 'carbon budget' for the entire target period (i.e. to 2050), based on national targets, where year-on-year carbon 'overspend' or 'underspend' can be carried forward and counted in subsequent years. This cumulative, multi-year approach helps to even out the variables (peaks and troughs) in annual Greenhouse Gas (GHG) emissions brought on by factors beyond our control (e.g. weather), in order to highlight good (or otherwise) performance across the target period. Therefore we have set a long-term GHG emissions reduction target, from April 2015 and concluding in March 2050, over a period of 35 years. This approach not only serves to highlight the long-term nature of climate change and the need for sustained commitment, but also sets out the longer term corporate commitment of HES beyond the duration of the Corporate Plan and the average period of appointment of the Board, Chief Executive and Senior Management Team, thus aiming for a degree of continuity. For each period, HES has set a five-year carbon budget (published as a new CMP) that correlates directly with the national Scottish Government 2050 target. The total carbon budget for each period represents a milestone in meeting the final 2050 target, and performance reported against these milestones will provide clear indication as to whether the organisation is on track to achieve this. This approach should help to make the long-term target more tangible for HES. It also provides natural review points at which to reassess performance, governance etc., and to produce a revised CMP if necessary. Period 1 (this current period) covers the period from April 2015 to end-March 2020. The total carbon budget allowed for HES operations over this period is 32,620 tCO_2e, calculated to match the Scottish Government's 42% reduction target for 2020. This requires an annual reduction of 2.2 to 2.4%, and an overall reduction of 11% over this period.

Our current GHG emissions

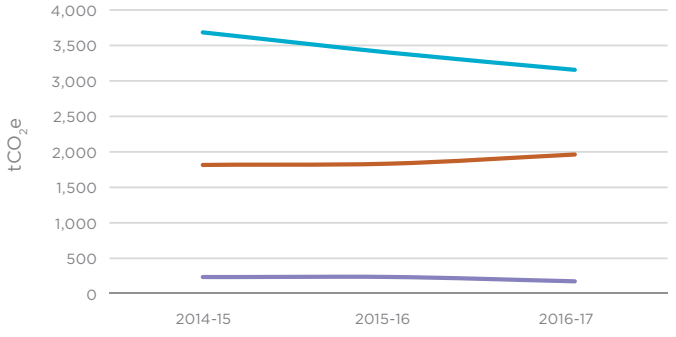
During 2016-17 we emitted a total of 6,565 $tC0_2e$ GHG emissions in comparison to our 6,679 tCO_2e annual budget for 2016-17, meaning that we have made an additional reduction of 114 tCO_2e. This means that we have made a total reduction in GHG emissions of 3.9% in comparison to our annual target of 2.2% for 2016-17, which is an additional reduction of 1.7% beyond target. Overall (from 2014-15 to 2016-17) we have emitted 20,167 $tC0_2e$ and made a saving of 9.2%. This consists of a 3% reduction in energy emissions against the previous year, a 7.4% increase in waste emissions, a 15.4% increase in business travel emissions and a 6.1% increase in water emissions. The sustained reduction in energy emissions indicates that we continue to reap the benefits of investment in energy efficiency measures made in previous years, having a positive influence on the overall emissions from HES regardless of the increase from other sources.

ENERGY

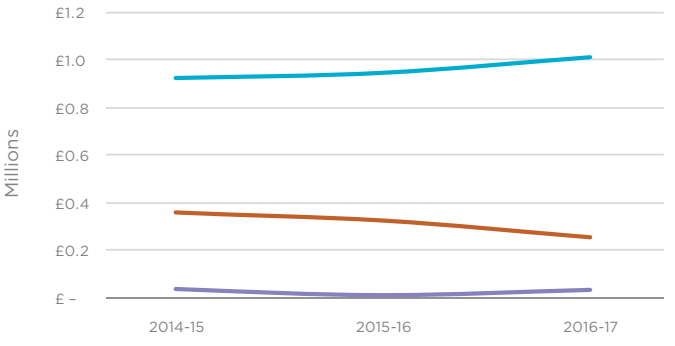
		2014-15	2015-16	2016-17	Annual Change	Change Against Baseline
GHG emissions (tCO_2e)	Electricity	3,680	3,394	3,150	-7.2%	-14.4%
	Electricity (T&D)	322	280	285	1.7%	-11.4%
	Natural gas	1,814	1,826	1,955	7.1%	7.8%
	Other fuels	221	228	166	-27.1%	-24.6%
Actual consumption (kWh)	Total Energy	18,146,957	18,134,375	17,889,444	-1.4%	-1.4%
	Electricity	7,444,933	7,344,074	7,645,643	4.1%	2.7%
	Natural gas	9,808,991	9,871,990	9,564,716	-3.1%	-2.5%
	Other fuels	893,033	918,311	679,085	-26.1%	-24.0%
Financial indicators	Total Energy	£1,312,506	£1,280,984	£1,298,261	1.3%	-1.1%
	Electricity	£922,463	£945,620	£1,011,041	6.9%	9.6%
	Natural gas	£356,444	£324,481	£254,134	-21.7%	-28.7%
	Other fuels	£33,599	£10,883	£33,086	204.0%	-1.5%
	3rd party re-charge: Electricity	-£98,217	-£28,780	-£106,311	269.4%	8.2%
	3rd party re-charge: Natural gas	-£60,964	-£29,855	-£84,352	182.5%	38.4%

GRAPHICAL ANALYSIS

GHG Emissions: Energy



Expenditure: Energy



Electricity
Natural gas
Other fuels

TARGETS AND COMMENTARY

Energy use in our buildings represents 84.6% of our overall carbon footprint. At Stirling Castle, where we achieved a reduction of 6%, a programme of energy improvements has been ongoing from 2015-16 to 2016-17. We have draught proofed, replaced and double glazed windows across the castle and replaced older light fittings with more energy efficiency LED alternatives. All these initiatives have enabled Stirling Castle to function in a more energy efficient and sustainable way. In 2016-17 we also invested in additional improvements to Edinburgh Castle, which achieved a reduction of 5%; these included secondary glazing, insulation and LED lighting upgrades and this is reflected in the reductions we have since been able to make.

To reduce overall emissions from energy we have managed to make the following changes across the HES Estate: a 3.1% decrease in natural gas consumption against the previous year, a 26.1% decrease in other fuels (i.e. burning oil, LPG and gas oil) and a 4.1% increase in electricity consumption. Setting this aside, our reductions can be attributed to the ongoing fabric and technological improvements throughout the HES estate, the impact of Climate Change Awareness Training to staff, the reinvigoration and rapid growth of our network of Green Champions (currently at 140) and mild weather. It must also be noted that the considerable decrease in other fuels can partly be attributed to two occurences of late invoices for gas oil at Urquhart Castle and burning oil at Blackness Castle falling just beyond the 16-17 financial year (April 2017).

Energy used in buildings remains a priority in determining project funding. Projects will continue to be supported in areas of energy efficiency improvements, energy management and control, staff behaviour change, and the introduction of low-carbon and renewable technologies. Electricity must remain a top priority because it is the main heating source at most properties, and has both high associated emissions and cost. This is closely followed by the use of natural gas, while other fuels form a much lower proportion of the overall GHG emissions and are lower priority.

DIRECT BUSINESS IMPACTS

Management Plan 2020 – 'Carbon Management Hierarchy'. Reducing our energy consumption plays a pivotal role in meeting our carbon targets. It also produces cost savings, in terms of both direct energy costs and the Climate Change Levy (CCL), a tax on energy for non-domestic customers.

INDIRECT BUSINESS IMPACTS

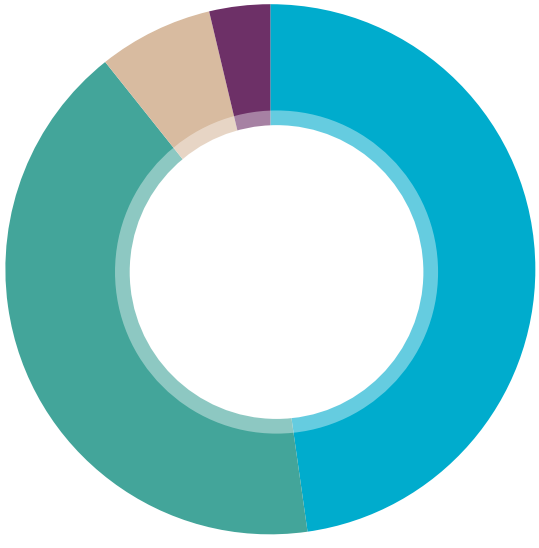
Reducing energy consumption across our large and technically challenging estate plays a role in meeting national climate change targets and our Corporate KPIs, as set out in our Corporate Plan 2016-19. Also, through our range of publications, borne from technical research and our own experiences, we continue to disseminate information to a range of audiences on improving energy efficiency in traditional and historic buildings.

WASTE

		2014-15	2015-16	2016-17	Annual Change	Change Against Baseline
GHG emissions (tCO_2e)	Total waste	90	136	146	7.4%	62.2%
	Landfill	77	127	139	9.4%	79.9%
	Recycled	10	8	6	-27.1%	-44.6%
	Energy from waste	2	1	2	33.6%	-34.9%
	Composting	0.38	0.33	0.23	-30.0%	-39.3%
Actual output (tonnes)	Total waste	1,291	1,078	1,036	-3.9%	-19.7%
	Landfill	342	424	495	16.7%	44.7%
	Recycled	774	543	430	-20.7%	-44.4%
	Energy from Waste	112	57	73	27.3%	-35.2%
	Composted	63	54	38	-28.8%	-38.9%
Financial indicators	Total waste disposal	£155,630	£164,945	£147,122	-10.81%	-5.47%
	Non-hazardous waste	£155,630	£164,945	£147,122	-10.81%	-5.47%
	Hazardous waste	–	–	–	N/A	N/A

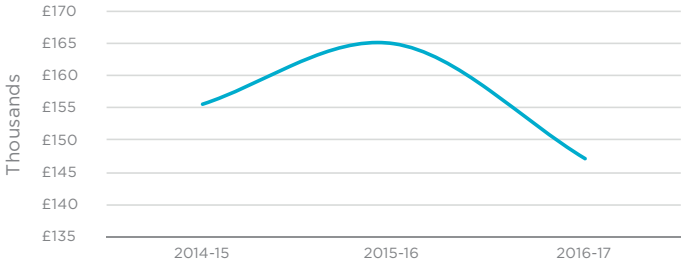
GRAPHICAL ANALYSIS

Waste Composition



- 47.8% Landfill
- 41.5% Recycled
- 7.0% Energy from waste
- 3.7% Composted

Expenditure: Waste Disposal



TARGETS AND COMMENTARY

Overview and CMP targets

Waste represents around 2.2% of our overall carbon footprint. HES has not set any specific waste reduction targets. However, the new HES Carbon Management Plan has included waste in its overall target and 'project prioritisation' to reduce operational GHG emissions. Waste is a significant source of emissions for the organisation (146.37 $tC0_2e$), although financial costs are relatively higher. Despite the publication of a Waste Prevention and Reuse Plan for Historic Scotland in 2013, waste remains a particular challenge, in part resulting from the diversity and geographical spread of HES operations. Priority needs to be given to improving waste management and assigning total actual costs against each of our waste streams (i.e. landfill, recycling, combustion and composting). Factoring in the true cost of waste to our operations (e.g. retail, events etc.) will improve accountability and stimulate action. Other priority areas for waste are:

- Working to improve waste segregation and avoid contamination in order to increase recycling rates and reduce the amount of waste sent to landfill. This will significantly reduce overall waste emissions and costs;
- Waste combustion represents approximately 7% of HES total waste tonnage, but a fairly high cost per tonne. Reducing this will help to reduce overall waste costs, though in some remote locations (e.g. Orkney) this may not be possible;
- Waste prevention through improved procurement practice (i.e. factoring waste into procurement processes) will have a fundamental impact on reducing waste. Reuse and redistribution of materials and equipment within and beyond HES have significant potential to contribute to the circular economy and reduce emissions and costs through avoiding the need to purchase new products;
- Improved communications and influencing behavioural change is a key aspect – every visitor and member of staff produces waste and can make a direct contribution.

The data above shows an overall 3.9% decrease in waste tonnage against the previous year of 2015-16. This is only a slightly lower tonnage overall, however it shows an increase in emissions (7.4%) due to changes in the conversion factors.

Overall, HES has a recycle rate of 41.5%. This is significantly worse than the previous year (50%) and indicates issues with quality of data provided by our many waste contractors as well as the technical challenges in rolling out full recycling facilities across a vast and complex Estate and a need for further staff and visitor behavioural change.

Financial indicators demonstrate a cost reduction of 10.8% against the previous year. This reduced cost can be attributed to our charitable status which means that we now qualify for free council run waste collections at some sites. It should be noted that cost figures include direct costs of waste disposal and collection only, not additional internal costs of waste management such as HES staff time and purchase of recycling bins.

Projects

Waste reduction initiatives have taken place throughout the year, including the sale of re-usable cups at the Longmore House Café. We ran a staff awareness campaign in March 2017 which focused on reuse and recycling. We continued with pilot visitor recycling at Linlithgow Palace, Stirling Castle and Edinburgh Castle.

During this year, HES contracted an environmental consultant to carry out a Corporate Waste Strategy Review. They visited and audited a total of 12 sites (in most cases including a physical audit of waste composition) and conducted telephone survey of a further 6 sites using the Baseline Survey questionnaire. The results of the review will inform strategic recommendations in relation to Waste Policy; functional guidance on waste management practices; advice on contracts and contract specifications; resourcing and staff awareness and engagement; infrastructure; and monitoring.

Future Improvements

Most of the weight data for the waste has been estimated using average bin fill assumptions and the SEPA density conversion factors. To provide more accurate results would necessitate waste contractors weighing the waste they collect; however this is not yet available through the majority of our waste contractors.

These figures only show the waste disposed of through landfill, combustion, composting and recycling and do not specify waste which is reused. Donating to charities or returning waste to suppliers for redistribution is becoming a preferred disposal method for reusable items. In 2016-17 we donated hard hats to play schemes, collected electrical items for Zero Waste Scotland during Pass it on Week and donated other items to charities.

DIRECT BUSINESS IMPACTS

HES produces a large amount of waste through a number of different operations, such as visitors, offices and construction. The organisation produces waste at approximately 150 sites, with collections from 25 contractors. Reducing our waste output, diverting the remainder from landfill and streamlining our waste management has the potential to significantly reduce our environmental impact and deliver both financial and management efficiencies.

INDIRECT BUSINESS IMPACTS

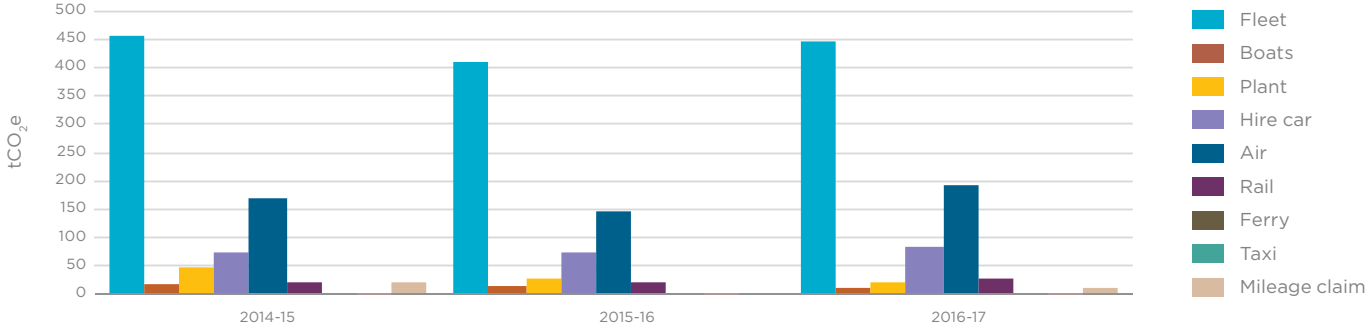
HES is able to place certain requirements on waste and other (e.g. catering, landscaping, etc.) contractors in terms of waste disposal performance. We are also in a position to influence visitors and staff members through the provision of recycling facilities and visible signage at our sites.

BUSINESS TRAVEL

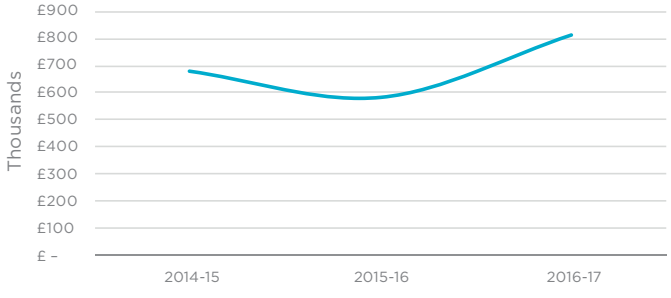
		2014-15	2015-16	2016-17	Annual Change	Change Against Baseline
GHG emissions (tCO_2e)	Total business travel	811	693	799	15.4%	-1.4%
	Fleet	457	409	446	8.9%	-2.5%
	Boats	18	13	12	-6.3%	-30.4%
	Plant	47	27	23	-15.2%	-51.4%
	Hire car	73	73	85	15.2%	16.3%
	Air	171	146	194	32.5%	13.2%
	Rail	20	21	26	27.8%	33.2%
	Ferry	3	–	1	4817.2%	-49.5%
	Taxi	3	1	2	211.7%	-36.5%
	Mileage claim	20	2	11	339.3%	-46.8%
Financial indicators	Total business travel	£679,310	£582,985	£813,596	39.6%	19.8%

GRAPHICAL ANALYSIS

GHG Emissions: Business Travel



Expenditure: Business Travel



TARGETS AND COMMENTARY

Business travel represents 12.2% of our overall carbon footprint. We have not set any specific business travel reduction targets; however, since business travel is the second-highest contributor to HES' emissions, it is still considered a priority.

HES fleet is a priority for action because we have direct control of it. Reducing emissions in this area will be delivered via a reduction in vehicle use through use of alternatives such as videoconferencing and more efficient use of vehicles through improved journey planning, monitoring and reporting. Further initiatives will be implemented such as supporting and implementing sustainable travel alternatives (cycling, walking, and public transport), plus fleet rationalisation and transfer to lower emission vehicles. Other significant areas of business travel such as air travel and hire cars would benefit from improved management and monitoring. Taxi use, while low in terms of proportional carbon emissions, is highly visible to the public, and addressing it will signal a transformational approach to business travel. Promotion of the Business Travel Policy and alternative modes for short journeys would support the above initiatives.

We are a large and geographically spread organisation with a range of business functions and staff travel is essential to carry out day to day business objectives. Part of our mission is to share and celebrate our cultural heritage with the world and our "Lead" strategic theme states that we will fulfil a leading and enabling role through our activites and by supporting, empowering and collaborating with others. In many circumstances, fulfilment of these may require us to travel outwith Scotland, to other parts of the UK or abroad and this is reflected in 2016-17 in the rise of emissions from air and rail travel against the previous year.

Overall, business travel emissions have increased by 15.4% when compared with the previous year. Emissions from our fleet have increased by 8.9% against the previous year and this is by far the largest source of emissions for HES business travel. This may be partly due to considerable improvements since the introduction of a Fleet Management Service. Emissions from hire cars show a 15.2% increase against the previous year. The increase in air travel emissions, a 32.5% increase on the previous year, is a result of more international travel, which included travel to international conferences and for meetings relating to developing collaborative projects with other countries.

Business travel expenditure has increased by 39.6% against the previous year. This increase is partially caused by increased air travel for networking internationally, but may also be due to improvements on data quality and cost code structuring from our Finance Team. To help reduce emissions, we currently have a Fleet Management Service agreement with Scottish Natural Heritage, which is enabling us to implement continuous improvements to management and data quality. Our Senior Management Team approved a new Fleet and Driver Policy and associated guidance in November 2016. This will help us deliver fleet efficiencies, led by our Fleet Management Team.

DIRECT BUSINESS IMPACTS

Reducing staff travel and switching to lower carbon modes will help to reduce HES carbon footprint, though this is a relatively small proportion of our overall emissions compared to energy. The greatest impacts will be a reduction in both direct and indirect costs. Encouraging employees to choose healthier forms of travel for short journeys, such as walking or cycling, can help to improve staff well-being and increase productivity.

INDIRECT BUSINESS IMPACTS

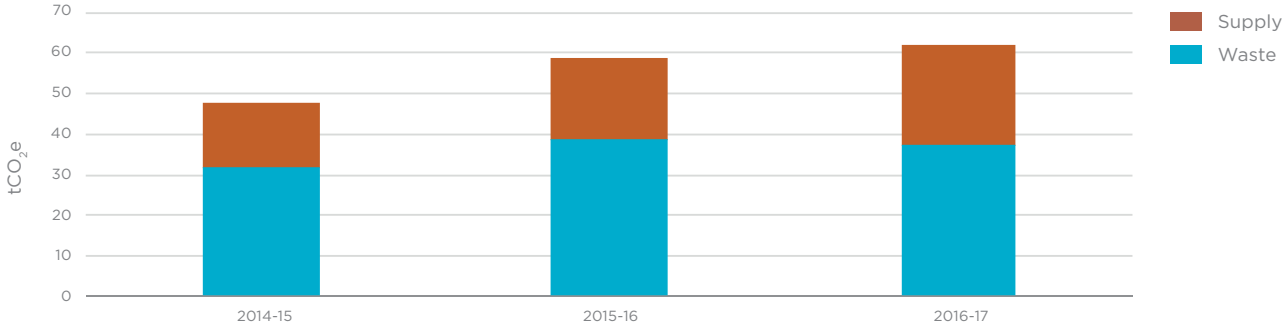
Reducing emissions from business travel will play a part towards achieving national climate change targets and demonstrating exemplary behaviours. We are also in a position to influence staff members, third party organisations and visitors in choosing more sustainable forms of transport. For instance, we include links to Traveline Scotland and the National Cycle Network on our website to help visitors plan visits to our sites in a sustainable way. We are a Cycle Friendly Employer and have bicycle racks available for staff and visitors at our headquarters and at some of our sites (currently under review), including Stirling Castle. We have a salary advance scheme available to staff for the purchase of bicycles and season tickets for public transport.

WATER

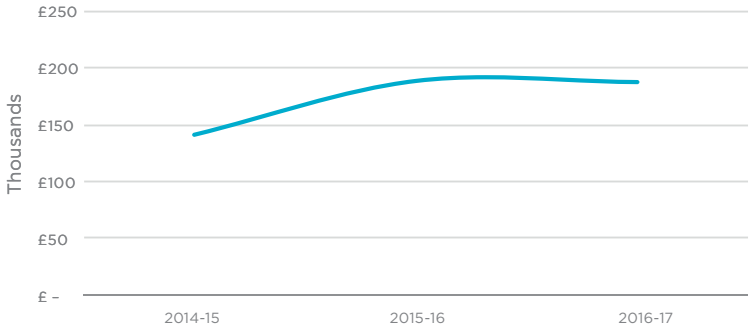
		2014-15	2015-16	2016-17	Annual Change	Total Change
GHG emissions (tCO_2e)	Total water emissions	48	59	62	6.1%	30%
	Supply	16	20	25	25.5%	58%
	Waste	32	39	37	-3.9%	16%
Actual consumption (m^3)	Metered supplies	46,401	58,319	73,202	25.5%	58%
	Unmetered supplies (estimate)	11,048	12,408	13,485	8.7%	22%
Financial indicators	Water supply	£141,199	£188,595	£187,589	-0.5%	33%
	3rd party re-charge: Water	-£34,225	–	–	N/A	N/A

GRAPHICAL ANALYSIS

GHG Emissions: Water



Expenditure: Water Supply



TARGETS AND COMMENTARY

Water represents around 1% of our overall carbon footprint. We have not set any specific water reduction targets but believe that there are still emission and cost savings to be made from water consumption reduction measures. However, improved monitoring and data aquisition forms part of our actions to reduce emissions through increased implementation of smart meters across our estate.

The data demonstrates that metered water consumption has increased by 25.5% when compared with the previous year. This could partially be caused by improved monitoring and data aquisition from sites due to an increase of 20 Automated Meter Reading (AMR) device installations against the previous year. It is also likely to be linked to the record-breaking visitor numbers at some of our flagship properties, such as Edinburgh Castle. Water expenditure has reduced by 0.5%.

Because water emissions form a small proportion of our carbon footprint, we have not prioritised water efficiency to the same level as energy and waste. However, there is still potential for savings through reduced and more efficient consumption and this will be promoted through the Green Champions network.

DIRECT BUSINESS IMPACTS

The greatest impacts arise from electricity and natural gas consumption in our buildings. We continue to roll-out technical improvements to our Estate as outlined in our new Carbon Management Plan 2020 - 'Carbon Management Hierarchy'

Reducing water consumption across our Estate would help to reduce costs and carbon emissions. However, given the small proportion that water consumption represents, this must be carefully considered on a cost/benefit basis.

INDIRECT BUSINESS IMPACTS

The processing, pumping and sanitation of fresh water is an energy intensive process, contributing 4% to the UK's national CO_2 emissions. Reducing water consumption and improving efficiency can play a vital role in meeting national targets.

BIODIVERSITY

TARGETS AND COMMENTARY

Biodiversity report

The management of properties in care has opportunities for supporting biodiversity improvement and understanding. Properties in care can be special for biodiversity, many have been protected from development, particularly agricultural improvement, which has allowed the preservation of local habitats and species. Many sites therefore support populations of rare birds, bats, amphibians and many invertebrates as well as providing important wildlife corridors which allow plants and animals to migrate as part of normal activity and to spread as a result of pressure from development and climate change.

Ranger activities

During 2016-17 our Ranger Service has undertaken a number of activities to promote and support biodiversity. These include:

1. Education and outreach

- Undertaking a programme of education focusing on the conservation of the natural and historic environment to 124 education groups, totalling to 2,132 children and students.
- Raising awareness to the wider public and encouraging participation through delivering 44 guided walks and activities involving 746 participants. Activities this year have included Toad Week. The week involved 60 volunteers helping the migrating toads to cross park roads safely allowing them to complete their migration to spawn.
- Updating interpretation at our sites to include information on biodiversity. This year panels have been updated at Linlithgow, Dryburgh, Inchcolm, Inchmahome, Caerlaverock, Dumbarton and Threave.

2. Volunteer Programme

- Continuing to run our volunteer programme to provide opportunities for those with an interest in nature and conservation to get involved in the conservation, monitoring and protection of our natural landscapes. This year saw 12 new Volunteer Rangers recruited alongside a continued programme for wildlife survey volunteers.
- Working with volunteers to carry out 117.5 hours of surveys for 5 different species: adder's-tongue fern, Himalayan balsam, wood sage plume moth, maiden pink and sticky catchfly.
- Providing opportunities to 10 young people to get involved in nature conservation through the Junior Ranger Scheme.

3. Research and Conservation

- Undertaking 310.5 hours of survey work (117.5 Volunteer hours, 183 Ranger hours) for 7 different species and groups of species (Himalayan balsam, adder's-tongue fern, maiden pink, plume moth, sticky catchfly, bumblebees and butterflies). 2017 saw an estimated 90% reduction in the population of Himalayan balsam.
- Surveying rare and scarce mosses during winter, including the Grimmia anodon which is thought to occur nowhere else in the British Isles except on a single rock in Holyrood Park.
- Continued monitoring of the sticky catchfly reintroduction and maiden pink translocations in Holyrood Park.
- Completing 41 Statements of Natural Importance as part of an ongoing program to cover all of the 324 properties managed by HES, with 292 reports now completed. These report on key species with importance to biodiversity, as well as helping to inform the management of the site to help boost biodiversity.
- Protecting rare species and habitats.

4. Site management for biodiversity

- Implementing meadow management and altering grass cutting regimes at sites including the Ring of Brodgar.
- Erecting bat and bird boxes throughout our estate.
- Timing works to avoid conflict with wildlife, for example roosting bats and nesting birds.
- Tree and hedge planting and maintaining where appropriate.

5. Partnership Working

- Supporting local and national Biodiversity Action Plans such as the Edinburgh City Biodiversity Action Plan with 17 out of 17 actions either completed or on course for completion in the stated timeframe. This included 3 new wildflower meadows created in Holyrood Park, along with 5 rare plant and 4 rare insects surveyed.
- Working on development of the Edinburgh Adapts Action Plan on Natural Environment and Greenspace Actions including ensuring our sites continue to act as corridors for species to migrate through, altering grass cutting regimes and meadow management.
- Working with Scottish Natural Heritage and the National Trust for Scotland to protect a newly nesting pair of peregrine falcons at Threave Castle. Parts of the castle and island were closed to visitors to avoid disturbance, and site staff monitored bird behaviour closely.
- We partnered with the NTS Osprey viewing facility to raise awareness to visitors of the nesting birds.
- Supporting the Royal Society for the Protection of Birds, Inner Forth project aimed at increasing opportunities for birds around the Forth Estuary. The RSPB carried out bird survey at a number of HES sites, including Clackmannan Tower, Culross Abbey, Linlithgow Palace and Blackness Castle. As a result of the project a number of conservation projects were undertaken, including hedge planting at Blackness Castle by RSPB volunteers.

6. Statutory duties

- Integrating natural designation screening in the Scheduled Monument Consent process. Assessing the impact of any proposed works on European protected species, sites of special scientific interest, special protection areas and special areas of conservation.
- Promoting the requirement of applicants to seek specialist advice and provide ecological surveys or licences to support applications.

DIRECT BUSINESS IMPACTS

Through improved biodiversity, HES has an opportunity to enhance visitor experience at sites, through public engagement. This provides strong reputational and revenue drivers, to ensure we can continue to protect, conserve and manage the historic environment for generations to come.

INDIRECT BUSINESS IMPACTS

Protection and promotion of biodiversity will not only play an important role in enhancing Historic Environment Scotland sites, but will also safeguard native species. Through interpretive media, our public outreach will help to raise awareness and carry this important message to both national and international communities.

SUSTAINABLE PROCUREMENT

TARGETS AND COMMENTARY

HES has a dedicated Sustainable Procurement Policy that aims to apply the principles set out in the Scottish Ministers' Sustainable Procurement Action Plan. This Policy provides staff with purchase guidance in a number of key business areas, including access, interpretation and visitor management works; facilities management and office services; janitorial and cleaning, waste management and recycling; catering; grounds and land management; publications and research; and ICT.

We attend 'Meet the Buyer' events to engage with existing and potential suppliers, advising them on our procurement processes and providing contact details of teams within the organisation to encourage suppliers to get in touch with our business areas to identify opportunities.

In line with best practice guidance, we have included the evaluation of employment practices and 'workforce matters' in the pre-selection documents for larger projects. This is seen as a key driver of service quality and contract delivery.

We use 'Sustainability Tests' for larger contracts to ensure that we build sustainable criteria into the specification of the product or services where possible and also link this to evaluation criteria. We will, where applicable, use the Sustainable Procurement Tools currently being constructed by the Scottish Government in response to the sustainable procurement duty included in the Procurement Reform (Scotland) Act 2014.

We continue to promote the use of Supported Businesses and related organisations within HES with the result that several contracts have been placed with businesses who have a social and environmental purpose and those who are committed to giving people with disabilities the opportunity to be involved in a work environment.

We require, for relevant contracts, confirmation that goods have been procured in line with fair and ethical requirements e.g. procurement of timber goods with regard to Scottish Government Timber procurement policy. Included in the procurement of uniform items is a requirement that all goods are produced in line with the employment legislation of the country of origin and in accordance with all International Labour Organisation (ILO) conventions that have been ratified by the country of origin. Suppliers are asked to provide evidence of responsible sourcing and supply chain monitoring.

DIRECT BUSINESS IMPACTS

Through sustainable procurement, HES has an opportunity to act as an exemplar in supporting local communities, jobs and skills. With effective management, this will provide many reputational benefits.

INDIRECT BUSINESS IMPACTS

The use of sustainability criteria in the tender evaluation process creates a demand for sustainable business, promoting wider competition and encouraging businesses to be more socially and environmentally responsible in providing their services. Through sustainable procurement and with our wide geographical coverage, HES can assist in supporting local skills and jobs, subject to the overarching Procurement Regulations requirements.

CLIMATE CHANGE ADAPTATION

Climate Ready Scotland: Scottish Climate Change Adaptation Programme sets out the government's aims to prepare Scotland for climate change. In this, Historic Scotland was mandated to research the impacts of climate change on traditional buildings, disseminate knowledge, skills and tools to manage these, and work to increase the resilience of Scotland's built heritage and historic environment. These objectives transferred to HES and are a focus for us, with annual progress being reported here. These obligations reaffirmed our approach to climate change adaptation as set out in our Climate Change Action Plan 2012-2017.

The impacts of climate change on the historic environment are wide-ranging and potentially devastating. However, the climate change agenda is a significant opportunity for the historic environment sector. By recognising its inherent sustainability, its resilience and longevity, and acknowledging the fact that it has always changed over time, the historic environment should be in a positive position to deal with the challenges ahead.

Climate Change Risk Assessment (CCRA)

In partnership with the Scottish Environment Protection Agency (SEPA) and the British Geological Survey (BGS), we have undertaken a comprehensive analysis of natural hazard risk, to our properties in care. This has resulted in the development of: (i) a current climate risk register for the HES estate, and (ii) a methodology for assessing the impacts of climate change on heritage assets in the wider historic environment.

Our CCRA was a desk based, Geographic Information Systems (GIS) analysis of natural hazard risk to our 336 PICs that involved overlaying spatial boundary data for our PICs with natural hazard datasets supplied by the BGS and SEPA. We then used the vulnerability to natural hazards, such as flooding and coastal erosion, as indicators of susceptibility to the changing climate, allowing us to identify what sites we believe to be most at risk from climate change.

In developing our approach, we benefited from membership of the Adaptation Learning Exchange Risk Task Group; facilitated by Adaptation Scotland, which enabled us to share experience with other public bodies undertaking similar risk assessments, namely NHS Scotland, Scottish Water and Aberdeen City Council. Adaptation Scotland also published a case study on our project, in October 2016, which is available to download at **www.adaptationscotland.org.uk/how-adapt/case-studies/screening-natural-hazards-inform-climate-change-risk-assessm**. Initial analysis of the results, published in our Annual Conservation Report in January 2017, indicated that out of the sites investigated, 89% are exposed to high, or very high levels of risk. When we then consider the mitigating factors and controls already in place, such as routine maintenance and ongoing conservation work, the number of sites classified as 'at risk' is reduced to 53%. With this new information, we can now conduct a more in-depth analysis of climate change risk at the high-risk sites identified in the baseline study. This evaluation of climate change risk will provide improved evidence-based decision-making in order to prioritise ongoing investment through our conservation and maintenance programmes, thus ensuring the long-term survival of the properties in our care.

During this year, we also worked closely with Adaptation Scotland on a Climate Ready Scotland exhibit to form the focal point of exhibition space at the next European Climate Change Adaptation Conference, to be held in Glasgow in June 2017. This exhibit will include our CCRA project as one of the key case studies.

During the financial year 2016-17, the Climate Change team began to develop an approach to internal engagement for the CCRA. This included: (1) Working with colleagues in the Collections Team to highlight the flood risk at Duff House and to build our CCRA data into their collection salvage plans. This included presenting at a Salvage Training Day at Duff House, to an audience which included National Galleries of Scotland, Scottish Fire and Rescue Service, the HES staff, and our salvage contractor. (2) Holding our annual Green Champions conference, with part of the day dedicated to talking about the work the Climate Change Team have undertaken

on risk assessment. (3) Holding workshops with Conservation Directorate managers at their bi-annual training and development day. With the creation of a new and permanent Climate Change Scientist post, due to be filled early in the next financial year (2017-18), there will be increased capacity within the team to build on this work.

The Engine Shed

Construction and fitting out of the Engine Shed continued at pace throughout 2016-17, with doors due to open to the public in July 2017. The Engine Shed is Scotland's first dedicated building conservation centre, as well as a free visitor attraction. Located in Stirling, the centre will help to increase the understanding of traditional building materials and skills among the public and professionals alike, and will raise standards in conservation for traditional buildings. This resource of skills and knowledge will play a vital role in the adaptation of the historic environment to climate change, and is the platform through which we will publish our technical research and guidance.

Technical Research and Guidance

Our technical research, often carried out in partnership with others, has been disseminated through events, training and publications. In October 2016 we published a Short Guide on 'Climate Change Adaptation for Traditional Buildings'. This free guide describes key aspects of the external envelope of a traditional building that provide protection against the elements, and considers how these can be improved or adapted to increase a building's resilience to extreme weather events. It also considers the internal environment within older buildings, and how this can be best managed to cope with changing environmental conditions.

Complementing the adaptation Short Guide, our Technical Research Team produced a further seven Refurbishment Case Studies, including one on Haa of Sand, Shetland. This case study described work carried out to an exposed gable of a listed building in Shetland, which had been subject to ongoing wind-driven water ingress. The measures carried out increase this building's resilience to the changing climate.

National Coastal Change Assessment (NCCA)

We are on the Steering Committee for Scottish Government's Dynamic Coast: National Coastal Change Assessment, a major Scottish Government research project collating information on coastal change, resilience and susceptibility to future coastal erosion. The NCCA aims to inform existing strategic planning (Shoreline Management Plans, Flood Risk Management Planning, Strategic and Local Plans, National and Regional Marine Planning etc.) and to identify those areas which may remain susceptible in the coming decades and require supplementary support. The identification of susceptible assets will enable the development of future management policies and adaptation plans robustly based on a strategic and objective evidence base. The results of this project are due to be formally launched in August 2017 and webmaps and reports can be viewed at **www.dynamiccoast.com**.

Edinburgh Adapts

We sit on the Steering Committee for Edinburgh Adapts, a project to develop the city's first climate change action plan to help the city prepare for, and adapt to, the impacts of climate change. As one of the main partner organisations for this project, we helped to develop an action plan that will help achieve the vision for an adapted Edinburgh by 2050. As part of this plan, we have specific actions, many of which will be achieved in partnership with other organisation such as Edinburgh World Heritage. These actions include producing guidance on building maintenance and adaptation, tailored to Edinburgh's rich and diverse built heritage. The plan was formally launched in December 2016 by Roseanna Cunningham, Cabinet Secretary for Environment, Climate Change and Land Reform, at an event hosted by us at Holyrood Park Education Centre in Edinburgh.

SCAPE

HES grant-aids the work of SCAPE (Scottish Coastal Archaeology and the Problem of Coastal Erosion), including SCHARP (Scotland's Coastal Heritage at Risk Project), enabling a deep understanding of the impact of coastal erosion on archaeology.

Historic Environment Scotland is the lead public body established to investigate, care for and promote Scotland's historic environment.

We are committed to ensuring this publication is accessible to everyone. If you need it supplied in a different format or language, please get in touch.

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