



SUSTAINABILITY REPORT AITHISG SO-SHEASMHAICH

INTRODUCTION

In a drive towards a low carbon economy, the Scottish Government initially set world leading climate change targets; to slash Scotland's carbon emissions by 80% by 2050, with an interim reduction of 42% by 2020. In 2014 this interim target was met and exceeded (45.8%) with a new target set for a reduction of 50% for 2020. These targets present Scotland with significant social and economic opportunities, as well as challenges, and will require a range of actions across society and the economy.

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

Our Carbon Management Plan sets out our intention to reduce greenhouse gas emissions through its operations in line with national targets to 2050. It takes an innovative approach to carbon management, focused through a series of five-year periods, each of which is allocated a specific carbon budget. In practice, for the duration of this current plan, this requires a progressive decrease in carbon emissions of between 2.2 per cent and 2.4 per cent each year to 2020, leading to an overall 11 per cent reduction for the period 2015-2020. This ambitious target requires a transformational change in the way we factor carbon into our business operations. Our target for the 2017-18 financial year is 2.3%.

This sustainability report highlights Historic Environment Scotland's (HES) high level performance for financial year 2017-18 in a number of key areas: (GHG) emissions, 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 Sector Climate Change Duties Report via the Sustainable Scotland Network portal.

Emissions have been calculated using the UK Government GHG Conversion Factors.

2017-18 Performance Summary

AREA	ACTUAL PI	ERFORMAN	ICE	TARGET	STATUS
Total GHG Emissions		6,216	tCO ₂ e	-2.3%	-5.3%
Total Energy Consumption		19,035,181	kWh		6.4%
Total Waste Disposal		1217	tonnes		
Recycle Rate		46	%		
Total Water Consumption		78,015	m³		
Total Energy Expenditure	£	1,389,788			
Total Waste Expenditure	£	227,872			
Total Business Travel Expenditure	£	799,138			
Total Water Expenditure	£	56,941			

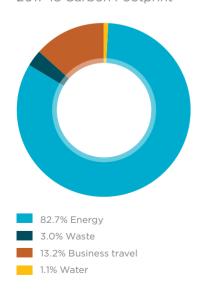
GHG EMISSIONS OVERVIEW	2014-15	2015-16	2016-17	2017-18	Annual Change	Change Against Baseline
Grand total	6,986	6,616	6,565	6,216	-5.3%	-11.0%
Energy	6,036	5,729	5,557	5,142	-7.5%	-14.8%
Waste	90	136	146	187	27.7%	107.2%
Business travel	811	693	799	821	2.7%	1.2%
Water	48	59	62	66	6.5%	38.6%

TOTAL GHG EMISSIONS BUDGET

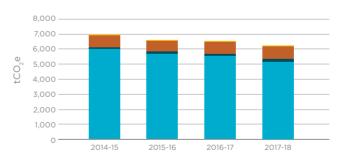
	Target HES GH	G Emissions	Actual HES GF	IG Emissions	Difference Against GHG Emissions budget	
Year	Annual Emissions Budget (tCO ₂ e)	Year- on-Year Change	Actual Emissions (tCO ₂ e)	Change	Difference (%)	Difference (tCO ₂ e)
Baseline	6,986	-	6,986	_	-	-
2015-16	6,832	-2.2%	6,616	-5.3%	-3.1%	-216
2016-17	6,679	-2.2%	6,565	-3.9%	-1.7%	-114
2017-18	6,525	-2.3%	6,216	-5.3%	-3.0%	-309
2018-19	6,371	-2.4%	-	N/A	-	-
2019-20	6,218	-2.4%	-	N/A	-	-
Total	32,625	11.0%	19,397	-14.5%	-7.8%	-638

GRAPHICAL ANALYSIS

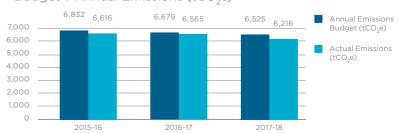
2017-18 Carbon Footprint



Annual Carbon Performance



Budget v Annual Emissions (tCO₂e)



TARGETS AND COMMENTARY

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 fiveyear 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 tCO₂e, 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 2017-18 we emitted a total of 6,216 tCO₂e GHG emissions in comparison to our 6,525 tCO₂e annual budget for 2017-18, meaning that we have made an additional reduction of 309 tCO₂e. This means that we have made a total reduction in GHG emissions of 5.3% in comparison to our annual target of 2.3% for 2017-18, which is an additional reduction of 3% beyond target. Overall (from 2014-15 to 2017-18) we have emitted 19,397 tCO₂e and made a saving of 14.5% so far. This consists of a 7.5% reduction in energy emissions against the previous year, a 27.7% increase in waste emissions, a 2.7% increase in business travel emissions and a 6.5% increase in water emissions.

Energy consumption (kWh) from Gas and Electricity has increased against the previous year. However, carbon reductions from both utilities have improved because their associated Conversion Factors have reduced due to the National Grid becoming cleaner from the integration of more renewable technologies as power sources.

	ENERGY	2014-15	2015-16	2016-17	2017-18	Annual Change	Change Against Baseline
suc	Electricity	3,680	3,394	3,150	2,806	-10.9%	-23.7%
GHG emissions (tCO ₂ e)	Electricity (T&D)	322	280	285	262	-7.9%	-18.5%
HG el (tC	Natural gas	1,814	1,826	1,955	1,925	-1.5%	6.1%
Ŋ	Other fuels	221	228	166	148	-10.7%	-32.7%
ion	Total Energy	18,146,957	18,134,375	17,889,444	19,035,181	6.4%	4.9%
umpt (ר	Electricity	7,444,933	7,344,074	7,645,643	7,982,201	4.4%	7.2%
cons (kWh	Natural gas	9,808,991	9,871,990	9,564,716	10,453,709	9.3%	6.6%
Actual consumption (kWh)	Other fuels	893,033	918,311	679,085	599,271	-11.8%	-32.9%
	Total Energy	£1,312,506	£1,280,984	£1,298,261	£1,389,788	7.1%	5.9%
	Electricity	£922,463	£945,620	£1,011,041	£1,068,511	5.7%	15.8%
Financial indicators	Natural gas	£356,444	£324,481	£254,134	£280,021	10.2%	-21.4%
	Other fuels	£33,599	£10,883	£33,086	£41,257	24.7%	22.8%
nancia	3rd party re-charge: Electricity	-£98,217	-£28,780	-£106,311	-£215,473	102.7%	119.4%
ij	3rd party re-charge: Natural gas	-£60,964	-£29,855	-£84,352	-£95,374	13.1%	56.4%

GRAPHICAL ANALYSIS



TARGETS AND COMMENTARY

Energy use in our buildings represents 82.7% of our overall carbon footprint. Across the HES Estate there has been a 9.3% increase in natural gas consumption against the previous year, a 11.8% decrease in other fuels (i.e. burning oil, LPG and gas oil) and a 4.4% increase in electricity consumption. Because of this, total expenditure for energy bills have increased by 7.1% against the previous year. Increases in gas and electricity consumption were largely caused by a cold snap from late February to March 2018. Furthermore, the addition of a new building - Scotland's new building conservation centre, the Engine Shed (July 2017) has contributed to our overall increase in electricity and gas consumption. However, carbon emissions for energy have decreased by 7.5% overall, which includes a 1.5% decrease in natural gas emissions against the previous year, a 10.7% decrease in other fuels and a 10.9% decrease in electricity emissions.

It must also be noted that the considerable decrease in other fuels can partly be attributed to two occurrences of late invoices for gas oil at Incholm Abbey and LPG at Fort George falling beyond the 17-18 financial year (May and June 2018).

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, and the introduction of low-carbon and renewable technologies. Staff behaviour change, including through our Green Champions network is crucial to maintaining progress. 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

The greatest impacts arise from electricity and natural gas consumption in our buildings. HES continue to roll-out technical improvements to our Estate as outlined in our new Carbon 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 nondomestic customers.

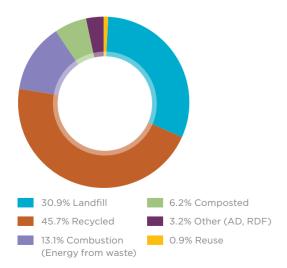
INDIRECT BUSINESS IMPACTS

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.

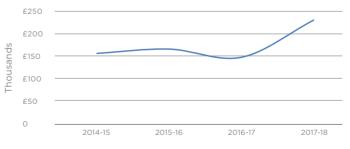
	WASTE	2014-15	2015-16	2016-17	2017-18	Annual Change	Change Against Baseline
	Total waste	90	136	146	187	27.7%	107.2%
	Landfill	77	127	139	172	24.0%	123.1%
	Recycled	10	8	6	10	72.2%	-4.6%
GHG emissions (tCO_2e)	Combustion (Energy from Waste)	2	1	2	3	128.4%	48.7%
SHG e	Composting	0.38	0.33	0.23	0.45	94.9%	18.4%
O	Other (AD, RDF)	0.00	0.00	0.00	0.85	N/A	N/A
	Reuse	0.00	0.00	0.00	0.04	N/A	N/A
	Total waste	1,291	1,078	1,036	1,217	17.4%	-5.7%
	Landfill	342	424	495	376	-24.1%	9.8%
	Recycled	774	543	430	557	29.3%	-28.1%
Actual output (tonnes)	Combustion (Energy from Waste)	112	57	73	160	120.3%	42.7%
Actua (to	Composted	63	54	38	75	95.0%	19.1%
	Other (AD, RDF)	0.00	0.00	0.00	39	N/A	N/A
	Reuse	0.00	0.00	0.00	11	N/A	N/A
Financial indicators	Total waste disposal	£155,630	£164,945	£147,122	£227,872	54.89%	46.42%
Fina	Non-hazardous waste	£155,630	£164,945	£147,122	£227,872	54.89%	46.42%

GRAPHICAL ANALYSIS

Waste Composition



Expenditure: Waste Disposal



TARGETS AND COMMENTARY

GHG emissions

Waste represents around 3.0% of our overall carbon footprint. HES has not set any specific waste reduction targets, however it is included in the overall target for GHG reduction in the Carbon Management Plan. This year has seen an increase in tonnes CO2e from waste from the 2016-17 figure: this can be attributed to a larger tonnage of waste calculated through capturing more waste streams than ever before. It is also due to the significant rise in the conversion figures for general municipal waste. It is likely this figure will continue to rise whilst we continue to complete a more accurate view of waste generation in our organisation. Once this has been established we will be drafting specific waste targets to go alongside a holistic corporate waste plan for the organisation.

The majority of our carbon emissions come from waste we are sending to landfill totalling, 172.30tCO₂e. Most of this waste is coming from our general municipal waste and partly from skips used by our work teams on construction or depot sites. For some of these figures, if we were unable to get data regarding rates of recycling from general waste bins or skips following collection, then we have assumed that 100% of this waste goes to landfill. An error was made in last year's figures with landfill waste classified as Average Construction which does not have a conversion factor. This year this classification has been amended to Commercial and Industrial waste. As amended, last year's landfill GHG emissions

should have been 161.90tCO₂e rather than the 139.5tCO₂e published. This still shows that our GHG emissions have risen from landfill even though we have reduced our overall tonnage in this area by 120.8 tonnes. This is due to the conversion factors for municipal waste rising.

For this year's reporting we have also included three new waste processing categories for our conversion calculations: Anaerobic Digestion (AD) (17.95 tonnes), Refuse Derived Fuel (RDF) (21.28 tonnes) and Reuse (10.80 tonnes). Currently, there are no GHG conversion factors for RDF, we therefore used those associated with combustion as the nearest alternative. Reuse is a priority to us, however this year only a small percentage of donations have been recorded, with the figure representing mainly aggregates from construction and a very small percentage of reuse of IT equipment and donations. Towards the end of the financial year we signed up to Warp It, an online resource distribution network, to aid reuse for all staff and to help record a more accurate view of reuse. This will be reported on in 2018-19.

Waste weights

Waste tonnage has increased by 179.24 tonnes from the year before (2016-17). The majority of this weight data has been calculated using estimates, either by estimating the average bin fill level for the year and using the DEFRA density conversion figures for the specific waste stream, or by using the average weights provided by contractors. This

means that our overall tonnage is only a very rough indication of the real figures we are generating. In addition, due to the widespread nature of our sites and offices and a history of ad hoc collections managed locally, there is always inevitably waste that has not been captured through this exercise. For this year's figures we have included IT recycling figures, printer toner recycling figures, sanitary waste and event waste figures for the first time. This is partly accounting for the increase in tonnage this year, alongside the addition of the Engine Shed to our estate. Nonetheless, some other sites have been removed from the list such as Bute House where the waste is now managed by Scottish Government, along with other sites which we previously believed we were paying for waste but a data cleanse has identified it is not ours.

Costs

Along with a rise in tonnage, waste costs have risen dramatically by £80,750. This can be attributed to a better data capture from our waste streams, and in the main from adding sanitary waste into the analysis which has added on £24,225 in itself. This year we have also added into the cost analysis the consumables relating to waste such as bin liners from figures we took from our largest waste contract which covers 33 of our sites out of our total number of 103 waste producing sites. Therefore, this cost only represents around a third of what we are spending on these types of consumables for the rest of the estate. However currently we are

not tracking this type of data for the rest of our sites, although this is something we will look to do in the future so we can estimate the true cost of waste. Currently other costs such as staff time in managing and transporting waste and costs of transport of waste, waste containment and vehicle use have not been included in this analysis. A report we commissioned in 2016-17 estimated that these true costs may amount to around 10 times more than the costs directly associated with contracts.

Recycling

Our recycling figures have improved only very slightly this year with us recycling around 45.7% of our waste. This improvement is attributed to receiving better data on how much of this waste is diverted from landfill and where our general waste goes to Material Recovery Facilities (MRFs). Our waste contractor for 33 of our sites combined the diversion from landfill figure into a recycling category and couldn't provide more details on the true processes this waste is subject to which includes a combination of recycling and combustion. Therefore, we have halved the percentage diverted from landfill and assigned half to recycling and half to combustion. We have requested that next year this proportion of the general waste is reported on, as combustion ensues differing conversion factors to carbon emissions and it also does not give a fair representation of our actual recycling rate. The figures for how much waste we are putting

directly into our general waste and recycling bins show that we are only segregating 32% of our waste into recycling bins, with 68% going directly into general waste bins. This can be attributed in part to some of our sites transporting recycling waste to recycling centres rather than having regular collections. This is something we are working to change currently, and our next year's figures should hopefully improve this rate.

Projects

We are striving to reduce waste and improve infrastructure and management of waste. We recruited a Circular Economy Project officer in January 2018 to drive these projects forward and to draw up a holistic waste plan for the organisation. Improving data capture and management continues to be a priority alongside a stronger emphasis on waste prevention at purchasing stage and the introductions of more circular models within our business. Our waste reduction initiatives in 2017-18 included more work on reducing disposable coffee cups in our head office and at the Engine Shed including the sale of discounted keep cups along with a complete ban of disposables for climate week. We also took part in a trial being run by Zero Waste Scotland where we charged 5p for disposable cups, with the findings of this trial being fed into a paper for Scottish Government regarding future policy on disposables.

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.

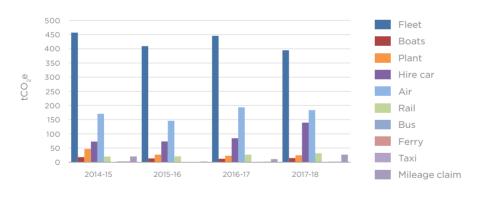
BUSINESS TRAVEL	2014-15	2015-16	2016-17	2017-18	Annual Change	Change Against Baseline
Total business travel	811	693	799	821	2.7%	1.2%
Fleet	457	409	446	395	-11.4%	-13.6%
Boats	18	13	12	15	19.4%	-16.9%
Plant	47	27	23	25	8.4%	-47.3%
Hire car	73	73	85	140	65.2%	92.1%
Air	171	146	194	183	-5.3%	7.2%
Rail	20	21	26	32	20.5%	60.6%
Bus	0	0	0	1	N/A	N/A
Ferry	3	0	1	2	42.2%	-28.2%
Taxi	3	1	2	2	2.1%	-35.2%
Mileage claim	20	2	11	27	149.2%	32.7%
Total business travel	£679,310	£582,985	£813,596	£799,138	-1.8%	17.6%

GRAPHICAL ANALYSIS

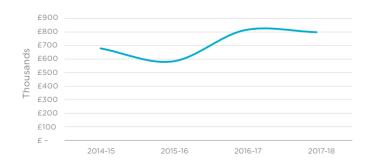
GHG emissions (tCO,e)

Financial indicators

GHG Emissions: Business Travel



Expenditure: Business Travel



TARGETS AND COMMENTARY

Business travel represents 13.2% 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's 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 video conferencing and more efficient use of vehicles through improved journey planning, monitoring and reporting. Further initiatives we have implemented are the support and use of sustainable travel alternatives (cycling, walking, and public transport). Notable projects this year include the rollout of five HES branded pool bikes to Edinburgh staff as an

alternative to using taxis, their own vehicles and even public transport. In 2017-18 a total of 102 miles were cycled by staff, saving approximately 0.03 tCO₂ instead of using taxis and public transport.

This year, we launched 'Cyclescheme', an employee benefit that offers tax discounted bikes and can be paid off through salary sacrifice. This gives staff a cheaper, healthier and more sustainable travel option for commuting to and from work. For Bike Week (June 2017) we hosted Dr Bike sessions, a cycle breakfast and an afternoon ride to Craigmillar Castle to support cycling across the organisation.

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. To help tackle this, and to devolve further responsibility to directorates, an initial carbon footprint analysis was carried out with the Heritage directorate to measure progress on annual reductions of business travel, with plans to expand this to other directorates across the organisation. Promotion of the Business Travel Policy and alternative modes for short journeys would also 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 activities 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 and this is reflected in 2017-18 in the rise of rail travel against the previous year (20.5%).

Overall, business travel emissions have decreased by 2.7% when compared with the previous year. Emissions from our fleet have decreased by 11.4% against the previous year and this is by far the largest source of emissions for HES business travel. This may be partly due to data improvements since the introduction of a Fleet Management Service, However, emissions from hire cars show a significant increase of 65.2% against the previous year, and a 149.2% increase in Grey Fleet (staff use of own vehicles). The decrease in air travel emissions. a 5.3% decrease from the previous year, is a result of reduced international travel.

Business travel expenditure has decreased by 1.8% against the previous year. This decrease is partially caused by a decrease in domestic air travel and the improvement of its associated Conversion Factor. 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.

DIRECT BUSINESS IMPACTS

Reducing staff travel and switching to lower carbon modes will help to reduce HES's 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.

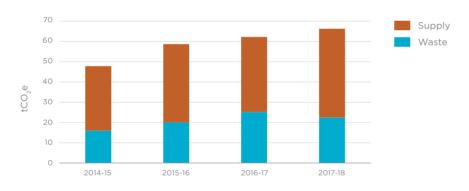
INDIRECT BUSINESS IMPACTS

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 facilities available for staff and visitors at both of our headquarters and at Edinburgh and Stirling Castle (currently being rolled out to other sites). We have a salary advance scheme available to staff for the purchase of bicycles and season tickets for public transport. 'Cyclescheme' has also been provided for staff to get access to tax discounted bikes.

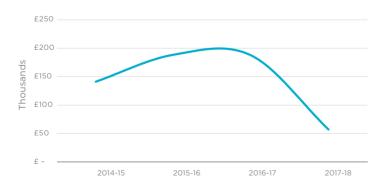
WATER	2014-15	2015-16	2016-17	2017-18	Annual Change	Total Change
Total water emissions	48	59	62	66	6.5%	39%
Supply	16	20	25	22	-10.9%	40%
Waste	32	39	37	44	18.3%	38%
Metered supplies	46,401	58,319	73,202	65,198	-10.9%	41%
Unmetered supplies (estimate)	11,048	12,408	13,485	12,817	-5.0%	16%
Water supply	£141,199	£188,595	£187,589	£56,941	-69.6%	-60%
3rd party re-charge: Water	-£34,225	-	-	-	N/A	N/A

GRAPHICAL ANALYSIS

GHG Emissions: Water



EXPENDITURE: WATER SUPPLY



TARGETS AND COMMENTARY

Water represents 1.1% 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 acquisition 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 decreased by 10.9% when compared with the previous year. This could partially be caused by improved monitoring and targeting of consumption due to an increase of 3 Automated Meter Reading (AMR) device installations against the previous year. It is also likely to be linked to the addition of some larger consuming sites to Half-Hourly (HH) online monitoring software, allowing for better understanding and management of water consumption. Water expenditure has significantly reduced by 69.6% due to large advanced payment refund from our water supplier.

Total water emissions have increased by 6.5% because waste water emissions have increased by 18.3% against the previous year. This is partly attributed to improved data acquisition and report improvements and should be similar for the next financial year thereafter.

Because water emissions form a small proportion of HES's 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

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 CO₂ emissions. Reducing water consumption and improving efficiency can play a vital role in meeting national targets.

BIODIVERSITY

TARGETS AND COMMENTARY

Biodiversity report

There are many opportunities across our operations to support biodiversity whilst fulfilling our role as the lead public body for Scotland's historic environment. 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. Our Scheduled Monument Consent process includes a section on wildlife to ensure proposed works do not affect European Protected Species, and to ensure that adequate mitigation is put in place.

Our Ranger Service, based at Holyrood Park, Linlithgow Peel and the Heart of Neolithic Orkney World Heritage Site, undertake site management, education and interpretation at these and other sites, and a large proportion of their work is related to biodiversity.

We also have a Natural Heritage Advisor supporting staff and others on biodiversity issues relating to site management, interpretation and education, and have over 100 HES staff are formally recognised as Green Champions, undertaking local initiatives to promote sustainability and good environmental practice across our sites.

Ranger activities

During 2017-18 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 482 education groups (an increase of 289% against the previous year), totalling to 9414 (342% increase) children and students.
- Raising awareness to the wider public and encouraging participation through delivering 120 (173% increase) guided walks and activities involving 3184 (327% increase) participants.
- 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 16 (increase of 33% against previous year) new Volunteer Rangers recruited alongside

- a continued programme for wildlife survey volunteers.
- Working with volunteers to carry out 296 (152% increase) 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 16 (60% increase) young people to get involved in nature conservation through the Junior Ranger Scheme.

3. Research and Conservation

- Undertaking 745 (140% increase against previous year) hours of survey work (296 Volunteer hours, 449 Ranger hours) for 7 different species and groups of species (Himalayan balsam, adder'stongue fern, maiden pink, plume moth, sticky catchfly, bumblebees and butterflies). 2017-18 saw a significant reduction in the intensity of the Himalayan balsam population but a rise in extent.
- Gorse has been cut back to help prevent encroachment on rare and scarce mosses within Holyrood Park.
- Continued monitoring of the sticky catchfly reintroduction and Maiden pink translocations in Holyrood Park. 2017-18 saw the first self-seeded plant at Haggis Knowe.
- So far, 41 Statements of
 Natural Importance have
 been completed as part
 of an ongoing program to
 cover all of the 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. We have developed and improved the depth and detail of existing surveys such as Statements of Natural Heritage Significance to further improve understanding of Biodiversity at Properties in Care. Protecting rare species and habitats.

- 4. Site management for biodiversity
- Continued Implementation of meadow management and altering grass cutting regimes at sites, now including the Ring of Brodgar, Dryburgh Abbey, Edzell Castle, Spyne Palace and Doune Castle.
- Continued to erect bat and bird boxes throughout our estate.
- Continued to time works to avoid conflict with wildlife, for example roosting bats and nesting birds.
- Continued tree and hedge planting and maintaining were appropriate.
- 5. Partnership Working
- Continued support of local and national Biodiversity Action Plans such as the Edinburgh City Biodiversity Action Plan were 17 out of 17 actions either completed or on course for completion in stated timeframe. This included 3 new wildflower meadows created in Holyrood Park, along with 5 rare plant and 4 rare insects surveyed.
- Working with 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 (NTS) 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. This is now in its third year and an additional four chicks were born in 2017-18, a total of 7 since partnership began three years ago.
- Continue to work with NTS
 Osprey viewing facility to
 raise awareness amongst
 visitors of the nesting birds.
- 6. Statutory duties The Nature Conservation (Scotland) Act 2004 places a statutory duty on all public sector bodies in Scotland to further the conservation of biodiversity. The Wildlife and Natural Environment (Scotland) Act 2011 also introduced a requirement for all public bodies to make a report publicly available on their compliance with biodiversity duty. Biodiversity duty reports are required every three years. The following actions were taken in 2017-18 to help deliver on such 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.
- Published our first Biodiversity Report 2015-17 detailing our current activities and future plans and objectives relating to Biodiversity (December 2017).
- Initial drafting of a HES Biodiversity Policy being carried out by ranger team (started in February 2018).
- Published our Biodiversity
 Delivery Statement which
 commits to ensure that
 biodiversity is highlighted
 more closely, and is more
 broadly taken into account
 through our policies, actions
 and activities that might
 directly or indirectly impact
 biodiversity (March 2018).

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/ 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.

For relevant contracts we require 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.

We also include a requirement in our major projects for the successful bidder to incorporate a number of areas, including maximising the skills and training outcomes from its projects, with Skills and Training Key Performance Indicators to monitor progress; consideration in the use of social enterprise organisations in the delivery of requirements and engaging with the local community by means of Community-Based Activities, centred around alleviating the

effects of living in poverty including social isolation and poor health; positive approach to workforce-related matters as part of a fair and equitable employment and reward package.

In addition, Procurement are working closely with the Climate Change Team so that sustainable outcomes can be built into future projects.

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

Introduction

In May 2014, the Scottish Government published "Climate Ready Scotland: Scottish Climate Change Adaptation Programme", which sets out the government's aims over the next five years 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 have transferred to HES and continue to be 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, which came to an end in December 2017. For now, this action plan still forms the basis and steer of our work focused around climate change adaptation. A new Climate Change Strategy for Historic Environment Scotland will be launched towards the end of 2018, with climate change adaptation forming a key strand of this new plan.

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 Scientist Role

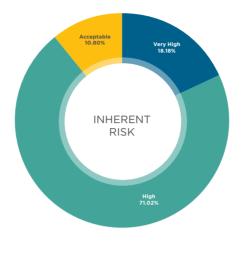
In May 2017, we appointed our Climate Change Scientist (Environmental Risk Management) as a full time addition to the Climate Change Team at Historic Environment Scotland. The increased capacity that this role brings to the team has allowed for more specific research on the impacts of climate change on the historic environment. A key component of this role has been to continue to build and strengthen relationships with external partners, such as those with Adaptation Scotland and the Historic Environment Adaptation Working Group (HEAWG).

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 January 2018 we formally published the results which indicated that out of the 352 sites investigated, 89% are exposed to high, or very high levels of risk (some of our 336 PICs have more than one area of 'guardianship' or 'ownership', meaning we ran the assessment for 352 'sites'). 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 evidencebased decision-making in order to prioritise on-going investment through our conservation and maintenance programmes, thus ensuring the long-term survival of the properties in our care.



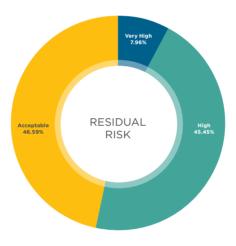


Figure 1: Initial results from the CCRA. The 'inherent risk' score does not take into account any mitigants and controls already in place at our PICs. An assessment of staff and visitor presence at our PICs alters the risk score to produce the 'residual risk'. More information available in Section 2.3 of the full report.

The project generated a huge amount of public and media interest with all of Scotland's national newspapers reporting on it in the days after the official launch. The Guardian started the media attention with an exclusive article published to coincide with the official launch of the report. The Herald published an opinion piece in which they referred to HES as being world-leaders in our ambition to tackle climate change and preserve our nation's heritage for future generations. There was an overwhelmingly positive international response to the report on social media, including tweets from organisations such as Greenpeace who made reference to the fact it's not only our future that is at risk from climate change, it's our past as well. NBC from the United States interviewed Ewan Hyslop (Head of Technical Research and Science) for a film piece they published online (historicenvironment.scot/extraordinary-humans-S1-E16).

As part of our dissemination plan for this project, we planned to host a one day seminar at the Engine Shed, part of a series of events in March. The purpose of this event was to showcase a range of work being undertaken in the heritage sector with respect to climate change impacts on the historic environment, and to demonstrate the relevance of this work to sectors out with our own. It would also serve as a platform through which to showcase our own Climate Change Risk Assessment. The event was due to take place in early March 2018, but we took the difficult decision to postpone this due to the impacts of a severe cold-spell, with much of the UK covered by a Met Office weather warning. The seminar was rescheduled to take place in May 2018.

Adaptation Scotland

Throughout 2017/2018 we have continued to work closely with Adaptation Scotland (AS), and as with previous years have benefited directly from their continued input and advice, particularly concerning our Climate Change Risk Assessment, which was launched in January 2018. Adaptation Scotland is a programme funded by the Scottish Government and delivered by the sustainability charity Sniffer, which provides advice and support to help organisations, businesses and communities prepare for, and build resilience to climate change impacts. We were asked to join an expert working group set up by AS to refresh their Five Steps to Climate Change Adaptation Guidance. To date this has involved attending various workshops to trial new

In July 2017 we published a third case study through the Adaptation Scotland website. This case study was about increasing skills for adapting and maintaining traditional buildings. A shortened version of this case study was incorporated into AS guidance for businesses that also featured cases studies from St Andrews University and SP Energy Networks.

In February 2018 we invited Adaptation Scotland to feature in a series of short films we have had commissioned to discuss the importance of partnership working. These films are due to be launched later in 2018. In March 2018 we hosted Adaptation Scotland's bi-annual Adaptation Learning Exchange meeting at the Engine Shed in Stirling. This event saw around 50 climate change adaptation experts from across Scotland come together to share knowledge and expertise. Based on the success of our CCRA launch, we were asked to join a panel discussion alongside colleagues from Scotland's National Coastal Change Assessment (NCCA) project, to share our lessons learnt and best practice from launching milestone projects such as our CCRA.



Fit for the Future

In the autumn of 2017 Fit for the Future (FFtF) created its first Climate Change Adaptation Group which will see members of FFtF collaborating and sharing knowledge to become adaptive organisations together. The group will develop a shared approach to climate change adaptation for all members across the Network to ensure land and buildings become fit for the future. The group is spear-headed by National Trust and RSPB, with input from Historic England, the Royal Household, Wildfowl and Wetlands Trust, Sustainability West Midlands, Heritage Lottery Fund and Historic Environment Scotland.

Fit for the Future is a solutionsharing network for organisations that want to become more sustainable, reduce their energy bills and lower the impact they have on the environment. It works on the principle that, more often than not, the solutions are already out there. FFtF allows us to tap into the collective knowledge of hundreds of environmental practitioners from more than eighty organisations.

Historic Environment Adaptation Working Group

We continue to participate in the quarterly meetings of the Historic Environment Adaptation Working Group (HEAWG). This is a UK wide group chaired by Historic England with numerous member organisations including the National Trust, Cadw, The Church of England and many more. These meetings allow all member organisations to share expertise and ideas in order to achieve our common climate change adaptation goals.

Adaptation Conference In June 2017, around 1000 international Climate Chart

European Climate Change

In June 2017, around 1000 international Climate Change adaptation experts gathered in Glasgow for the 3rd European Climate Change Adaptation (ECCA) Conference. HES supported Scotland's bid to host from the outset and 11 HES staff members were involved directly in coordinating HES's representation at the conference.

One of the highlights of the conference was The Climate Ready Scotland Exhibition of case studies coming out of Scotland's pioneering partnership approach to climate change adaptation. The exhibition showcased examples on how this approach to partnership working is delivering across Scotland's economy, society and environment. HES were featured in several of the case studies, including Edinburgh Adapts, Dynamic Coast: National Coastal Change Assessment and the Climate Change Risk Assessment (CCRA) for the HES Estate. HES's work with SEPA and BGS on this project was mentioned as a great example of partnership working by Cabinet Secretary Roseanna Cunningham in her opening speech. Our Climate Change Scientist, David Harkin, delivered a well-received presentation on our CCRA as part of a series of drop in presentations in the main exhibition hall.



Our Sustainability Officer, Katie Carter, at ECCA 2017.



Mairi Davies (Climate Change Manager), Ewan Hyslop (Head of Technical Research and Science) and Carsten Hermann (Senior Technical Officer) ran a conference session on "Understanding, Analysing and Adapting to Climate Change Impacts on the Historic Environment", which included presenters from Scotland, England and Norway. A speaker from our session (Pat Graczyk from Edinburgh World Heritage (EWH)) was one of four shortlisted for the ECCA 2017 Best Young Presenter Award.

Mairi Davies also co-authored "Can Scotland deliver coastal adaptation into the 21st century?", delivered by Prof Jim Hansom (University of Glasgow) in a session on "Living with coastal change: risk, resilience, adaptation and working with nature". HES was also mentioned as a key partner in other presentations during the conference.

To round off an exciting week, HES led two of the conference excursions, one in partnership with EWH to highlight climate change impacts, adaptation and mitigation in Edinburgh's Old Town and one to the Engine Shed and Stirling Castle.

Technical Research and Guidance

In order to promote relevant climate change adaptation quidance already published on our website, including the Climate Change Adaptation Short Guide and the Climate Change Risk Assessment, we commissioned and produced a series of short films. These films have been designed to act as gateways to our published guidance and were produced in such a way as to publicise these resources to audiences that have been hard to reach in the past. Three films were produced each dealing with a slightly different focus, those being (1) The impacts of climate change on our heritage, (2) The importance of partnership working with respect to tackling climate change and (3) What actions people that look after traditional buildings can do to play their role in adapting the historic environment. These films are currently in postproduction and will be officially launched later in 2018.

Our Technical Research Team continued to explore how traditional buildings can be better adapted to deal with a changing climate through sponsored case studies throughout 2017/18. The results of this work to date has been made available to the public through training and events. Refurbishment Case Studies on climate change adaptations for Falkland House Stables, Crawfordjohn Church and Balmerino Abbey will be formally published in FY18/19. These case studies will have a focus on how traditional buildings can better handle increased rain fall as a result of our changing climate.

Dynamic Coast: National Coastal Change Assessment / NCCA2

Historic Environment Scotland continued its involvement in the Scottish Government's Dynamic Coast: National Coastal Change Assessment (NCCA) project, where we held a position on the projects Steering Committee. The first iteration of Dynamic Coast aimed to create a shared evidence base to support more sustainable coastal and terrestrial planning decisions in the light of a changing climate. Dynamic Coast aimed to inform existing strategic planning (Shoreline Management Plans, Flood Risk Management Planning, Strategic and Local Plans, National and Regional Marine Planning etc.) and to also identify those areas which may remain susceptible in the coming decades and require supplementary support. The research commenced in January 2015 and concluded in March 2017. It was officially launched by Roseanna Cunningham MSP, Cabinet Secretary for Environment, Climate Change and Land Use in August 2017. The launch generated a host of media interest, including a feature on the BBC's Reporting Scotland. Find out more about the project here.

In January 2018 the second phase of the project (NCCA2) was officially launched. We have retained a position on the steering committee for this next package of work. The next phase will map and categorise the resilience of Scotland's natural coastal defences (i.e. identifying where low dunes may breach), it will estimate how future climate change may exacerbate erosion on our soft (erodible) coast. It will incorporate the latest monitoring techniques to inform natural resilience and vulnerability of our shoreline. At five 'super sites' it will forecast future change, anticipated damage and develop mitigation and adaptation plans

with stakeholders. This will help demonstrate the applicability and need for adaptation actions across the public sector. Importantly it will also consider the social justice implications of existing and climate change exacerbated coastal erosion in Scotland. Skara Brae in Orkney, one of our 336 Properties in Care, is one of the five selected 'super sites'.

We invited Professor Jim Hansom (University of Glasgow), one of the NCCA project leads to feature in a series of short films we have had commissioned to discuss HES's involvement in the NCCA project and how that relationship is of mutual benefit.

Skara Brae, Orkney, one of the five 'super sites' selected for detailed investigation in NCCA2.



Edinburgh Adapts

Throughout 2017/18 we have continued to make progress towards fulfilling the actions set out to us in the Edinburgh Adapts Action Plan. This is 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 develop the action plan that will help achieve the vision for an 'adapted' Edinburgh by 2050. One of the objectives set out to us was to pilot our own climate change risk assessment methodology with the aim of making the results of this publically available. This was achieved with the launch of our CCRA report in January

2018. Progress on our shared actions with Edinburgh World Heritage has been delayed due to staff resource issues they have been experiencing. These joint actions will be progressed further in 2018/19. A full progress report on the action plan can be accessed on the City of Edinburgh Council website.

A one-day seminar will be held early in the new financial year 'Edinburgh Adapts: From Ambition to Action', that will bring together various stakeholders from across the city to identify more opportunities that could come out of the action plan. HES is assisting in the delivery of this event, with Dr Mairi Davies presenting at the event.

SCAPE

HES continues to grant-aid 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. In late 2017 SCAPE had a funding proposal from the Scottish University Insights Institution accepted in which HES has a place on the project board. This short programme of works, due to take place in June 2018 will see a range of stakeholder groups come together on an intensive fieldtrip and series of workshops. Researchers, practitioners and community stakeholders will address the issues of climate change and the impact it is having on our cultural heritage, including the possible loss of certain aspects of it. The outcomes of this project will assist in Historic Environment Scotland's decision making processes, feed into sector-wide change via Scotland's Archaeology Strategy and will be of wider societal relevance, giving insights into how we manage change and foster greater understanding of climate change impacts in Scotland by 2030. This project has a truly international dimension to it with colleagues from Florida Public Archaeology Network and the National Parks Service in the USA due to take part in the field excursions and discussions.

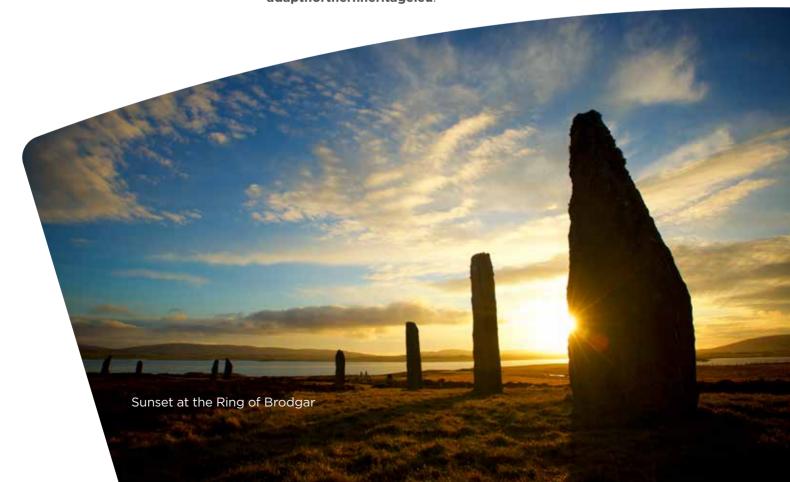


Adapt Northern Heritage

Adapt Northern Heritage (ANH) is a project supporting communities and local authorities to adapt northern cultural heritage to the environmental impacts of climate change and associated natural hazards through community engagement and informed conservation planning. Running from June 2017 to May 2020, the project involves four Project Partners and eleven Associated Partners from Iceland, Ireland, Norway, Russia, Scotland and Sweden and is supported by Iceland, Norway and the European Union through the Interreg programme for the Northern Periphery and Arctic.

The Project Partners, Historic Environment Scotland, Minjastofnun Íslands (the Cultural Heritage Agency of Iceland), the Norsk institutt for kulturminneforskning (Norwegian Insitute for Cultural Heritage Research) and Riksantikvaren (Norway's Directorate for Cultural Heritage), will develop a risk and vulnerability assessment method for historic places and associated guidance for their adaptation, trial and demonstrate this method in eleven case studies and initiate a community network for interdisciplinary learning, knowledge exchange and stakeholder networking.

HES hosted an ANH project meeting in Inverary in March 2018. You can find out more about the project, and sign up to the quarterly newsletter at adaptnorthernheritage.eu.



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

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