

# DEVELOPING A CITY WIDE ADAPTATION VISION AND ACTION PLAN



## Case study: Edinburgh Adapts

THE EDINBURGH PARTNERSHIP

Adaptation is a challenge where we really are all in it together. The Edinburgh Adapts project has created a city wide adaptation vision and action plan that is inclusive, innovative and responsive to local priorities. The project focused on identifying actions that organisations can't implement on their own and that need a joined up response from two or more partners.

### Where does this fit in the adaptation process?

The adaptation process consists of 5 stages to help you get started with adaptation, understand and assess the impacts of current and future climate change, identify your significant climate risks, and prioritise your adaptation options. It will also help you to implement your adaptation actions, evaluate them, and continuously monitor and review your work. This case study sits within stage 4 of the process with the Edinburgh Adapts partners developing a set of ambitious adaptation actions.



View the adaptation process on our website and access tools such as the Five steps to managing your climate risks. [www.adaptationscotland.org.uk](http://www.adaptationscotland.org.uk)

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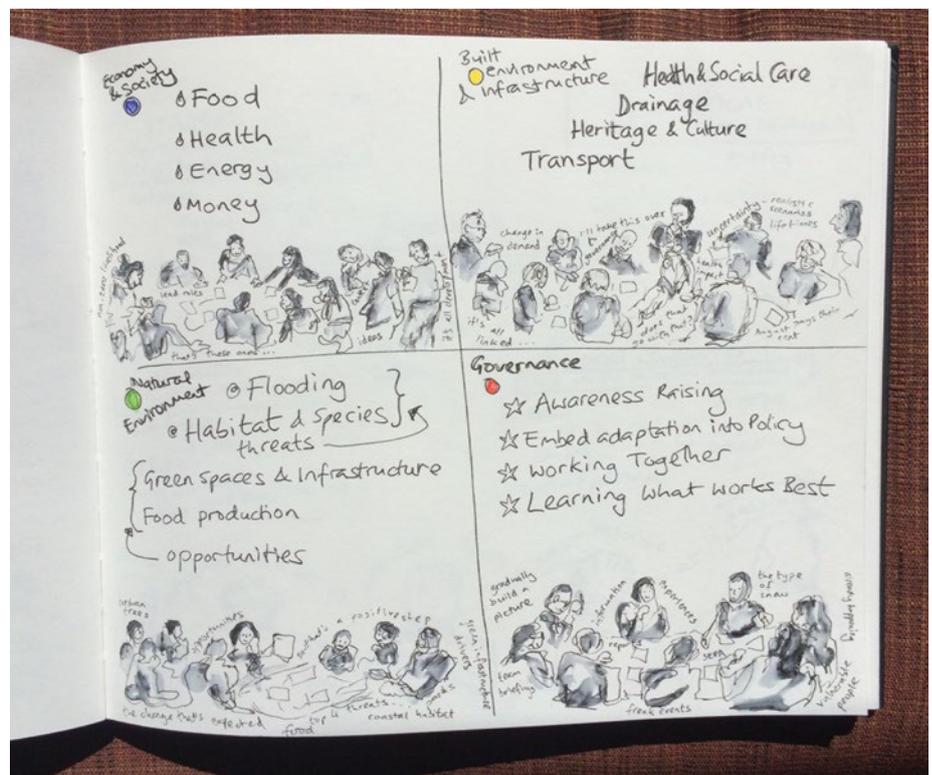
### Who was involved?

The Edinburgh Adapts project began in March 2015 as a joint initiative between the Edinburgh Sustainable Development Partnership (ESDP) and Adaptation Scotland. This focus on partnership working was built into the project from the start. The ESDP formed a dedicated Task Group that included representatives from the City of Edinburgh Council, Adaptation Scotland, Edinburgh World Heritage, Transition Edinburgh South, Edible Edinburgh, Historic Environment Scotland and the Edinburgh Centre for Carbon Innovation. The group brought valuable knowledge and expertise and helped design the engagement process.

### The process

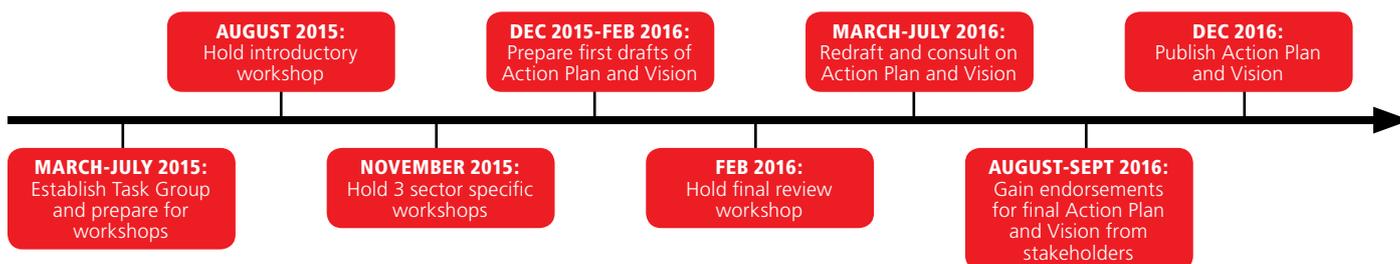
#### 1. Developing a shared vision

Creating a shared action plan and vision for Edinburgh that was truly owned by the city required reaching out to key organisations, finding out what risks and opportunities mattered most to them, and helping them work together to design shared actions to address the challenges identified. The Task Group invited organisations across the city to submit potential actions and co-designed a programme of five workshops to discuss, review and agree shared actions.



## The project timeline

The timeline below shows the dates of the key milestones of the project.



### 2. Running the workshops

The workshops were designed in three phases. The first workshop was directed at all stakeholders. It focused on introducing the concept of climate change adaptation and generating ideas for possible actions. The next three workshops were based around three themes: The Natural Environment & Greenspace, the Built Environment and Infrastructure, and Economy & Society. At these workshops, stakeholders designed shared ways of achieving the actions put forward. The fifth and final workshop brought all the stakeholders together again to review the actions and suggest further links across the themes.

In parallel with the workshops a series of one-to-one meetings were held with key partners to help them to craft their initial ideas into workable shared actions.

### 3. Agreeing actions

Between April and August 2016, a draft vision and action plan was developed, circulated for consultation, and submitted to partners for approval. On approval, forty partners committed to 100 partnership actions and a further twenty aspirational actions were identified to be developed in the future.

### 4. Implementing actions

Finally, the Task Group ran a survey with participants to identify the best

way to support the implementation of the action plan and continue to work in partnership. As a result, ESDP set up a dedicated Edinburgh Adapts Steering Group open to all. The group is now responsible for overseeing the development and implementation of the Action Plan and facilitating partnership working.

### Next steps

The Edinburgh Adapts Steering Group is already working to support implementation and develop further partnership working. Together the Group are identifying new projects and funding sources and bringing in new partners to build on the strong foundation established by the vision and action plan..

### Recommendations

1. Invite people to get involved as early on as possible – involving a wide range of stakeholders in planning the project set a collaborative tone for the process, and ensured that those ultimately responsible for implementing the action plan were invested in the city's adaptation agenda from the beginning.
2. Give stakeholders the opportunity to contribute resources – providing a workshop venue, or a presentation, reinforces the shared purpose of the

project and helps them to showcase their actions.

3. Provide a vision and back it up with action – adapting to climate change is a long term process. Developing a positive vision of an adapting future can help bridge the gap between immediate actions and long term aspirations.

“By working closely with Adaptation Scotland on the Edinburgh Adapts project, the Edinburgh Sustainable Development Partnership has been able to enhance collaboration between key organisations and communities to develop an Adaptation Action Plan that truly benefits all stakeholders.”

COUNCILLOR LESLY HINDS,  
CHAIR OF THE ESDP

#### Further information

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## Adaptation support

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# SCREENING FOR NATURAL HAZARDS TO INFORM A CLIMATE CHANGE RISK ASSESSMENT



HISTORIC  
ENVIRONMENT  
SCOTLAND

ÀRAINNEACHD  
EACHDRAIDHEIL  
ALBA

## Case Study: Historic Environment Scotland

This case study explains how Historic Environment Scotland developed a GIS-based approach to screen their properties for climate-related natural hazards such as flooding, coastal erosion and ground instability. The project has been an important component of ongoing work to assess climate change risk across the Estate.

### Where does this fit in the adaptation process?

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### Who was involved?

Historic Environment Scotland (HES) have worked in close partnership with the British Geological Survey (BGS) and the Scottish Environment Protection Agency (SEPA) to conduct a Climate Change Risk Assessment for the 335 Properties in Care (PICs) on the Estate. This will improve decision-making for prioritising the on-going conservation and maintenance programmes, thus ensuring the long term survival of these monuments and buildings.

### Why focus on natural hazards?

Many of the properties HES care for are situated in landscapes that are vulnerable to climate-related natural hazards. Although a number of the properties are well adapted to everyday weather events, changes in the climate are pushing the properties into uncharted territory, with many

now facing challenges they were never designed to deal with. This is why this research is so crucially important.

By screening for current natural hazards we have been able to generate a set of climate-related risks across our entire Estate of 335 properties. Although these do not explicitly include *climate change* risk, it does inform us about sites that are likely to be most at threat from climate change – and enable better use of resources which can be targeted to particular priority sites.

We decided that this screening approach was sufficient for our needs in our current risk assessment process, and it was more beneficial to focus further effort on the investigation of specific properties. At the property-level we will be able to include a wider range of climate impacts, more detailed information about the property, and the knowledge and expertise of those involved with site management.



Conservation work underway at Elcho Castle, one of HES's 335 Properties in Care (©Historic Environment Scotland).

## Using a GIS-based approach

We developed a GIS-based approach to combine asset management information with natural hazard datasets obtained from BGS and SEPA. We carried out a spatial analysis by overlaying hazard layers with site specific spatial information, focusing on the area of ownership or guardianship for each site. This generated a hazard profile for each property, which we combined with information about property type, allowing an appropriate risk score to be assigned.

Our analysis provided a site-specific report on natural hazards that will be made available for use by our conservation architects and works managers. This will allow us to match up the modelled data with real-life observations, site management practices, and additional information on climate impacts.

## Recommendations

Based on our experience during this project, our key lessons for those wishing to undertake a similar process would be:

- **Broaden your assessment** – we were already acutely aware of climate-related risks at specific sites, where there are existing issues. However, as a result of this project we now have an assessment that can be used to better understand climate-related risk across our Estate – as well as identify sites likely to be most at threat.
- **Seek peer support** – this project was conducted whilst part of the Adaptation Learning Exchange for Organisations, facilitated by Adaptation Scotland. Regular meetings with others undertaking a risk assessment (NHS Scotland, Scottish Water, and Aberdeen City

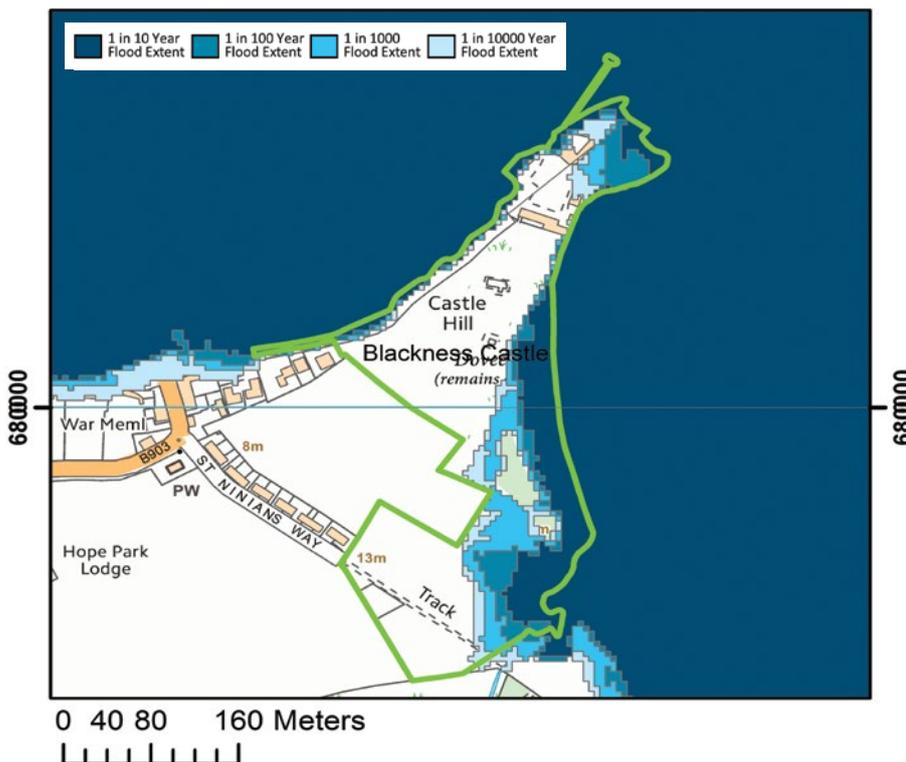
Council) allowed us to ‘sense-check’ our approach at different stages of the process.

- **Develop your own approach** – each organisation should develop an approach to risk assessment based on their own operations and priorities. Our priority was to develop a consistent and justifiable climate risk scoring system to sit alongside wider environmental risk assessment for the valuable assets in our care.
- **The specific property matters** – it was a challenge to adjust risk scoring for a diverse range of property types, while remaining practical in terms of approach. For example, a flood at a field monument or stone circle will have very different consequences to flooding of an occupied castle with valuable contents and interiors.

## Next steps

The GIS-based screening of climate-related natural hazards has allowed us to identify those sites most likely to be threatened by flooding, coastal erosion, and ground instability. We are now looking at site-specific studies to further understand climate change risk.

The hazard profiles generated will also be used as part of a suite of information that we use to assess and manage our properties.



GIS map showing Blackness Castle Coastal flooding dataset (©NERC and SEPA) indicating areas that may be vulnerable to coastal flooding and erosion. (©Historic Environment Scotland).

### Further information

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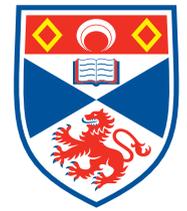
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# ASSESSING CURRENT AND FUTURE CLIMATE THREATS AND OPPORTUNITIES



University of  
St Andrews

## Case study: University of St Andrews

Situated on the east coast of Scotland, the University of St Andrews is tasked with the challenge of both the maintenance of historic buildings and improving the resilience of its historic and modern buildings to the impacts of a changing climate. This case study explains how the University has undertaken a climate impact assessment workshop with staff and senior managers from the Estates department.

### Where does this fit in the adaptation process?

The adaptation process consists of 5 stages to help you get started with adaptation, understand and assess the impacts of current and future climate change, identify your significant climate risks and prioritise your adaptation options. It will also help you to implement your adaptation actions, evaluate them, and continuously monitor and review your work. This case study sits within stage 2 of the process. The University of St Andrews are assessing the impacts of climate change in the Estates department and intend to use this process with other departments across the University.



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### What is a climate impact assessment?

A climate impact assessment is a process that allows an organisation to assess their current and future climate threats and opportunities for their critical functions, and to respond by identifying strengths and weaknesses to managing the threats. The exercise is based on a SWOT analysis.

### What are the benefits?

Working through a climate impact assessment raises awareness of the impacts of severe weather events facing each department, or service of an organisation. By involving Service Managers, you will be able to use their operational knowledge to inform the

process and increase their understanding of the climate threats and opportunities. The approach allows others within the organisation to identify and implement actions that increase climate resilience, which encourages climate resilience to be embedded across the organisation and reduces the time pressures on one member of staff.

### The process

A climate impact assessment workshop was run with the Estates department at the University of St Andrews. The exercise involved working through the following questions:

1. What are the **current climate**-related threats to the department?
2. What are the **future climate**-related threats to the department?



Waves over-topping a car park between East Sands beach and the Estates department during a storm in 2010.

The University of St Andrews is taking action on climate change as part of the Adaptation Learning Exchange (ALE). The ALE was set up by Adaptation Scotland to help organisations plan for the impacts of a changing climate.

East Sands beach and the Estates department on a sunny day in summer 2016.



3. What are the departments' **strengths** - what are you already doing well to manage the threats?
4. What are the departments' **weaknesses** – what are the barriers to managing the threats?
5. What **opportunities** does a changing climate present for the department?
6. What **more could be done** to manage the threats?

## The Findings

### 1. Current climate threats

The Estates department identified a number of climate threats based on severe weather events that had occurred in recent years. This included high wind speeds which caused damage to the cladding of roofs, heavy rainfall resulting in surface water flooding, a storm surge that ran alongside the Estates' building and coastal erosion to cliffs that house University buildings.

### 2. Future climate threats

Staff noted that an increase in heavy rainfall could cause: blocked or over-topping drains as they reach full capacity; flooding of

ground floors, and the deterioration of traditional stone buildings, internally and externally, as they become saturated with water. In addition, they noted that increased temperatures could cause staff discomfort on warmer days.

### 3. Strengths

Building maintenance is currently being managed using condition surveys, Computer Aided Facilities Management (CAFM) software and site knowledge. Staff referred to having a crisis management plan that details what to do in the case of a flood event. They also noted the use of back up generators in the event of power failure.

### 4. Weaknesses

Staff are investigating prevention of the deterioration of traditional stone buildings in a changing climate and felt more guidance was needed to better understand this element. In addition, more clarity was needed over the responsibility for the drains in town which affect University buildings.

### 5. Opportunities

Identifying increased heavy rainfall as a climate threat is useful for the department to be able to make improvements to, for example, the material of ground floor doors and the width of gutters, as and when funding allows. Design teams for new projects now report on how they have considered adaptation to climate change in their processes.

### 6. What more could be done?

Staff felt that there were preventative measures for increased heavy rainfall. This included filling and storing sandbags before a flood event occurs, preventing grease from entering and blocking drains, and clearing gutters more often. Other

actions included implementing a data recording system for weather event information, embedding climate change in business continuity plans, and opening a dialogue on climate change through the introduction of a newsletter.

## Next steps

Our next steps are to have a follow-up discussion about climate change thresholds and to develop an adaptation action plan for the department and later expand this to include all services and departments across the University.

## Recommendations

1. Work with departments that are either engaged already first and/or those that you believe to be most affected from climate impacts now and in the future;
2. Don't be scared by the prospect of undertaking a climate impact assessment – it is a way of having a structured conversation and doesn't require in depth knowledge of climate projections;
3. Follow up your workshop by discussing how to implement those quick wins, and develop a plan for implementing the remaining adaptation actions as soon as possible. Once people are engaged, it's important to keep the momentum going.

### Further information

To find out more about this project, please contact:

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# ASSESSING CLIMATE CHANGE RISKS AND OPPORTUNITIES

## Case study: Scottish Water and Mott MacDonald



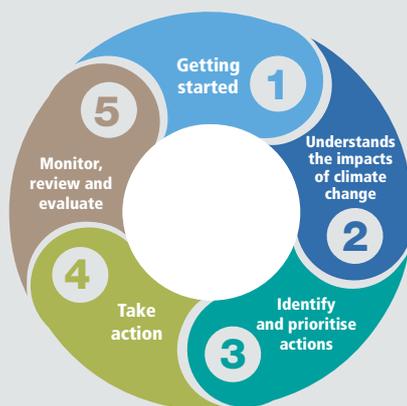
**Scottish Water**  
Always serving Scotland

This case study explores how Scottish Water undertook an update of its strategic Climate Change Risk Assessment (CCRA) for assets, to refine the understanding of future climate-related risks and to identify knowledge gaps for further research.



### Where does this fit in the adaptation process?

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### Why revisit the risk assessment?

Scottish Water conducted a CCRA in 2011-2012. An update was necessary to incorporate new climate impact research and resources developed by the water industry. It also provided an opportunity to include an updated asset base in the assessment.

### The process

The work was undertaken over a six-month period (2015-2016) by embedding a consultant from Mott MacDonald into the team at Scottish Water – bringing in expertise, but also integrating this into the organisation.

This was particularly important because the most substantial component of the work involved engaging with key staff across Scottish Water.

Scottish Water have a large and diverse asset base subject to a wide range of climate-related risks. This strategic CCRA focused on risks to asset type, rather than to individual assets. The approach chosen was largely qualitative, synthesising key industry guidance and stakeholder knowledge to arrive at a best estimate of risk. Adaptation Scotland's 'Five steps to managing your climate risks' risk assessment template was used to inform the methodology, in addition to the UK Water Industry's research guidance.



Backwater Reservoir, Angus, during the drought



Aviemore wastewater pumping station control panel raised above the flood level

## Recommendations

From working through and revisiting the CCRA process, there are a number of lessons learnt that others who are planning to undertake a similar approach may wish to consider. These are as follows:

### 1. Clearly scope out your approach

The scope of a CCRA is potentially wide, ranging from corporate-level risks to those for individual assets. Even more so if third party and supply chain risks are considered. The first key step is to agree on the scope of a CCRA, what's in and what's out. Budgets and timescales provide additional constraints and set the boundaries of the work.

This project was carefully planned, with a scoping document developed that helped a number of different stakeholders understand the aims, inputs and outputs required.

### 2. Define your risks and make them specific

There needs to be a clear risk description. It is important to relate a specific climate *hazard* with an *impact* on an objective, service or asset. It is tempting to amalgamate or generalise risks to create a smaller set of risks. However, this

often makes risk scoring difficult – especially when it comes to assessing future climate change.

### 3. Identify your current climate risk first

Some start a CCRA with a detailed assessment of future climate. However, it is difficult to undertake a useful CCRA if you don't understand the relationship between an asset/service and the risk from current climate impacts. Our approach to this strategic CCRA used, where appropriate, a detailed climate assessment for specific risks (based largely on existing information) and the use of expert judgement from a range of sources.

### 4. Explicitly deal with uncertainty

Embracing uncertainty is a cornerstone of a good CCRA. It's important that this aspect does not paralyse a CCRA nor should it be ignored. For a number of the climate-related risks faced by Scottish Water incomplete information or significant uncertainty exists. The availability of probabilistic projections, to some extent, provides an indication of model uncertainty – although we also took account of a 'worst case' scenario to ensure robust decision-making.

### 5. Make use of available information

The CCRA needed to be able to readily assimilate existing relevant information from a variety of sources to avoid reinventing the wheel. For example, the UK Water Industry Research (UKWIR) and Water UK both provided guidance on a general climate change risk assessment approach for water utilities, as well as detailed information on specific risks.

### 6. Embed climate change within existing risk management frameworks

Climate change is just one of a number of future risks that an organisation needs to address. If it is to be implemented consistently it needs to be compatible with the existing mature risk management policy and framework. This was explicitly considered at the scoping stage of the project.

## Next steps

This work has helped Scottish Water identify key climate change risks that may affect both drinking water and wastewater assets. It informed the prioritisation of research on specific climate change risk, which is currently underway.

### Further information

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