INCLUDING ADAPTATION IN CAPITAL MAINTENANCE PROGRAMMES

Case study: Scottish Water

As climate change alters rainfall patterns and brings more heavy downpours, flood risk is likely to increase in the future. This case study looks at how Scottish Water has addressed the impacts of flooding on the River Spey through incorporating adaptation projects in their five year capital maintenance programme.

Scotland's changing climate

We are already seeing evidence of Scotland's climate changing. Over the last few decades our climate has warmed, sea-levels have risen, rainfall patterns have changed and we have been impacted by extreme weather events. These changes are projected to continue in the decades ahead. The UK Climate Projections 2009 data suggests that, for Scotland:

- the average climate will become warmer throughout the year;
- rainfall is likely to become more seasonal with a typical summer becoming drier, and a typical autumn and winter becoming wetter; and
- sea levels will rise.

We can also expect to see:

- increase in summer heat waves, extreme temperatures and drought;
- increased frequency and intensity of extreme precipitation events; and
- reduced occurrence of frost and snowfall.

Source: ukclimateprojections.metoffice.gov.uk

Adaptation Scotland
supporting climate change resilience

How flooding affects infrastructure and water quality

River flows in the River Spey can be relatively low during dry weather. During periods of snowmelt and heavy rain there is a significant rise in the river level onto the flood plain. Scottish Water's aim was to improve the level of treatment to protect and improve water quality, and at the same time make the infrastructure resilient to an increased risk of flooding. With climate change likely to alter rainfall patterns and bring more heavy downpours, flood risk is expected to increase in the future.

What we did

We worked with Local Authority planners and the Scottish Environment Protection Agency (SEPA), and consulted with various stakeholder groups and the Cairngorm National Park Authority. This identified development growth pressures and flood risk areas as an issue throughout the River Spey catchment. This was the basis for planning a series of upgrades to the treatment plants at Newtonmore, Kingussie, Aviemore, Boat of Garten, Grantown and Nethybridge, as well as modifications to two pumping stations.

Control panel for wastewater pumping station raised above the flood level at Aviemore.

Scottish Water has presented this information as part of the Adaptation Learning Exchange (ALE).
The ALE was set up by Adaptation Scotland to support the public sector plan for the impacts of a changing climate.

This picture shows the Boat of Garten site with the new works on the left and the old septic tank site in the flooded area, beyond the fence in the middle.

Climate change was a focus in this planning:

- Detailed flood risk assessments were carried out to identify the areas prone to flooding.
- Treatment plants were sited to avoid the impact of increased flood events
- Resilience to flood risk was built into the upgraded facilities.
- A variety of methods were used to adapt the sites to future flood risk. This included
  - using bunds to prevent flood water reaching the treatment plant,
  - building up the land surrounding the plant, and
  - creating compensatory storage for flood waters at other points upstream.

Noting the key findings from the climate projections, the improvements also took into account the possibility of longer periods of dry weather. This presented challenges for the level of treatment required.

What has changed as result of this process?

The upgraded treatment plants and pumping stations can continue to operate and treat wastewater even when the River Spey bursts its banks. The work has both increased the flood resilience of the assets and improved their capability to protect the Special Area of Conservation of which the River Spey comprises a large part.

Recommendations

- Engage and collaborate with a wide range of organisations to explore options and opportunities
- Consider key findings from the climate projections to assess future business risk
- Review existing strategic plans and policies for exposure to climate-related risks and identify opportunities for adaptive strategies to be incorporated into them and their associated processes.

Next steps

- Complete work with Local Authorities on catchments at risk of flooding and agree a prioritised strategy for flood mitigation measures.
- Incorporate climate change scenarios when designing all new treatment plants and upgrading existing ones.
- Use the outcomes from the climate risk assessment to inform future investment decisions.

Further information

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Adaptation support

The Adaptation Learning Exchange (ALE) is a programme to support organisations with adaptation planning, enabling them to address common adaptation challenges and explore opportunities. For more about the ALE, visit our website or contact **sophie@sniffer.org.uk**

www.adaptationscotland.org.uk

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