

Scottish National Adaptation Plan 3 - 2024- 2029

Overview

General Comments

Scottish Water is broadly supportive of the outcomes and objectives in SNAP3, particularly the focus on the resilience of natural systems and communities. We welcome the inclusion of cascade and interdependent risks and the focus on supply chain resilience. Scottish Water can deal with many aspects of climate change within its assets and landholdings, but it has many dependencies on supporting infrastructure, for example power, transport, urban drainage, and land management.

Outcome PS5 focuses on water and water services. We welcome its inclusion and are keen to develop this further noting the link to the potential legislative changes on water resources and drainage management the Scottish Government consulted on recently.

Outcome C4 could be strengthened to support PS5 by emphasising sustainable water use more explicitly in buildings and communities – building in water efficient infrastructure and ensuring premises drain sustainably.

The plan is timely, following publication of the UK Climate Change Committee's (CCC) November 2023 report on adaptation in Scotland, and the March 2024 CCC report on the UK's Third National Adaptation Plan. Both reports note significant challenges to making progress on adaptation, particularly in the infrastructure sector. The report on the UK's progress highlighted a risk that unless regulated infrastructure was mandated to consider long term climate change there was a risk of insufficient investment in the coming years, meaning that the extremes of climate change could not be managed.

The plan needs to promote understanding long term risk and adaptation responses across society and the economy and integrating into all policy areas.

Building climate change risk and action into long term investment planning, particularly for infrastructure, is vital. We need to understand what climate futures we need to adapt to, how we need to adapt, and what resources are required to deliver. It is important this is done across sectors as there are interdependencies between sectors to support a well-adapted society.

We are increasingly seeing this in areas such as urban drainage where multiple partners are needed to support integrated investment in land, drainage and the environment to manage excess rain. Strengthening partnership delivery approaches around all aspects of adaptation should be a key focus for Scotland's next Adaptation Plan.

Detailed Response – Consultation Questions

1.	What do you think the current effects of climate change are on people in Scotland?
<p>Climate change is impacting through more frequent storms, heavy rainfall in winter, and prolonged dry periods in summer. Impacts on people are generally localised and specific – e.g. flooding, drought, wildfires, but we are seeing such events taking place more frequently and more widely across the country.</p> <p>Direct impacts on water customers are felt through service interruptions, for example bursts or drinking water quality issues, and flooding from sewers. Climate change exacerbates risks, for example impacting water availability and quality, or overloading drainage systems.</p> <p>Service has largely been maintained during such events through a combination of investment and operational resilience planning. Scottish Water has deployed measures such as tankering to support service in areas where water resources are under pressure during dry periods. Customers may be more aware through information campaigns encouraging customers and communities to “use water wisely”.</p> <p>Impacts will have been felt by customers experiencing flooding during extreme rainfall, and Scottish Water has deployed measures to customers with known flood risk to mitigate such impacts whilst longer term infrastructure solutions are developed.</p> <p>Customers may not link this directly to climate change. Engaging people and communities to understand climate risk and what they may be able to do is vital. SNAP3 provides a good opportunity to engage people more widely in understanding and responding to climate change risks.</p>	
2.	The next Scottish National Adaptation Plan will cover the period of September 2024 to 2029. What effects, if any, do you expect climate change will have on people in Scotland over the next five years.
<p>Over the next 5 years Scotland will experience more extended dry and wet periods, hotter temperatures, extreme weather events, and sea level rise. This will lead to more flooding of rural and urban landscapes, damage to infrastructure, and impacts to the water environment.</p> <p>Drought depletes water sources and can damage pipelines due to dry soils subsiding whilst excess rain will erode landscapes and lead to runoff and pollution of water resources. Wet winters with heavy rainfall can overload drainage causing flooding of customers and environmental discharges and the variability of flows between dry and wet periods makes treating wastewater more difficult.</p> <p>Without adaptation there will be increased risk of interruptions to services, which we will work to minimise through operational resilience and longer-term adaptation. We suggest that SNAP3 should have a longer horizon (25-50) years to provide a longer-term context for climate risk and enable effective long term adaptation planning – i.e. ensuring we take the actions we need in the next 5 years to support long term resilience.</p>	
3.	What actions, if any, would you be willing and able to take to adapt to climate change? You may wish to consider the action you could take a) in your community and b) around your home and/or business.

Scottish Water is a “major player” under the Climate Change (Scotland) Act with a duty to support Scottish Government mitigation and adaptation strategies. Scottish Water has recently completed a detailed climate change risk assessment (CCRA) of the impact on assets and services of 2- and 4-degree pathways to the 2080s.

This enabled Scottish Water to publish a [Climate Change Adaptation Plan](#) which explains the risks we face and how we will adapt and become more resilient. We will deliver the actions in the plan and embed climate change into our business and investment plans. We are keen to engage with Scottish Government, stakeholders and customers to support SNAP3 delivery.

4. What factor(s), if any, would prevent you from taking action to adapt to climate change and become more climate-resilient?

Scottish Water’s [Adaptation Plan](#) identifies key risks and actions to become climate resilient. Many are within Scottish Water’s control, subject to stakeholder approval and inclusion within business and investment plans. However, many outcomes rely on partnership and action with others to enable effective, efficient adaptation. Examples of such interdependencies include:

- Working with water users, developers, the building sector and white goods suppliers to support water efficient homes and businesses and reduce water demand.
- Engaging local authorities, roads authorities, SEPA, developers and communities to improve the resilience of shared drainage infrastructure and manage future flood risk
- Engaging with local authorities, landowners, farmers, estates and others to deliver resilient landscapes to support water quality, water resource and flooding outcomes.
- Engaging with local authorities on sea level risk, coastal erosion and coastal management – the resilience of some of our coastal assets will need to be considered within local authority shoreline management plans.

The proposed changes to water and waste water legislation to modernise the framework and align it with climate change needs will help to support this, and this can be further supported through SNAP3’s focus on partnership and collective action to deal with common risks.

More widely Scottish Water relies upon external infrastructure and services such as power, telecoms and transport to progress their own resilience plans to enable us to sustain service, and we welcome the focus in SNAP3 on resilience reporting by infrastructure operators. References to partnership in climate resilience delivery could be strengthened by including requirements for integrated climate action, particularly with respect to infrastructure.

5. What action(s) do you think the Scottish Government should prioritise in order to build greater resilience to the impacts of climate change?

Scottish Water supports the outcomes and activities set out in the plan and will focus here on cross-cutting themes. We suggest the following strategic priorities to enable effective adaptation across all areas covered in SNAP3:

Awareness, engagement and communication

Adaptation needs to be better understood by people, businesses, and organisations – risks and scenarios, what it might mean for them in their locality or organisation, and what steps they can take to prepare. This is vital to enable the development of appropriate plans and actions, to support resilient communities.

Scottish Water will engage customers and communities to help reduce water demand (Scotland's current consumption is among the highest in Europe), and support communities living with flood risk. Consistent engagement and communication between government, local authorities and public bodies of the importance of climate change, how it will impact and what people can do to prepare would be beneficial.

Common planning assumptions

Good communication of climate impacts and scenarios through SNAP3 will inform people of the climate futures that Scotland needs to adapt to. Climate change is uncertain, and it is important to apply scenarios to understand risk and plan the right investment at the right time.

The SNAP3 should set principles and expectations around the use of appropriate pathways, scenarios and timelines to support adaptation. This is important for long term decision making around landscapes and the environment, and for shared infrastructure (e.g. flooding, urban drainage) where multiple organisations need to work together for integrated, effective action.

Clear goals, outcomes and metrics

SNAP3 needs clear success criteria to support adaptation planning. The high-level outcomes identified in this consultation should inform specific goals and actions in national and local adaptation plans. Setting the right metrics for resilience is vital to track and understand the effectiveness of SNAP3.

Public Body Reporting

There is an opportunity to improve the climate change adaptation reporting element of the annual Public Body Climate Change Duty Reports. Whilst it is important reports do not become too burdensome, a requirement for public bodies to outline their actions, metrics of adaptation, and performance, linked to SNAP3, may be a powerful means to promote effective action among the 188 public bodies required to submit reports.

6.	<p>Which of the following actions should the Scottish Government prioritise? Please check all that apply.</p> <ul style="list-style-type: none">i. More trees and green spaces in built-up places for flood resilience and coolingii. More joined up natural habitats (“nature networks”)iii. Managing pests and diseases which will be more prevalent with climate changeiv. Restoring forests and peatlandv. Reinforcing natural coastal barriers such as dunesvi. other
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All 6 actions stated above are important to deliver effective adaptation for the “nature connects” outcome, depending on the location and context.

From a water perspective it is important to think about catchments from upland source to sea. The resilience of upland areas (land, soil, nature) supports water resources and water quality for nature, farming, water supply, flood storage and other such “ecosystem services”. This extends into lowland, urban and coastal areas for adaptation planning where the land-water interface is where the effects of climate change will be most strongly felt (e.g. flooding).

Strengthening nature in all environments will make the services we gain from nature

more resilient – and hence support adaptation. This must be an ongoing process, aligned with Scotland’s biodiversity strategy. All the above actions could operate within a framework to support the right approach, delivered in the right way for landscape scale resilience.

7. When you consider your local natural space e.g. park, canal, woodland or beach, what would you like to see improved in terms of blue and green space in your local area?

Managing rainfall through blue-green infrastructure will be a key strategy to ensure cities are resilient to future rainfall. Water management in the urban environment is about land management. Creating space for water through natural systems – from slowing water flows higher in catchments through riparian management, healthy wetlands and flood plains to creating sustainable drainage in urban areas and disconnecting road and roof runoff. Objective PS5 references many of the right measures to support this but the key challenge is in working in partnership across agencies, authorities and developers to deliver.

Examples of good practice include joint work between Dundee City Council, SEPA, NatureScot and Scottish Water to deal with flooding in the St Mary’s area of Dundee. A local grassed area is being developed to capture rainfall in a blue-green system to manage excess water flows, deliver biodiversity benefit and to create a more attractive amenity space for the community.

There are other good examples available of “raingardens” and “pocket parks” – small urban green areas with appropriate planting that take flows from road and roof to slow flows down whilst also providing biodiversity and amenity benefit. Along with urban tree planting this will help support more resilient urban areas for both water management and urban cooling.

To do this we need integrated planning and delivery of urban greenspace and sustainable drainage systems, engaging communities, local authorities, roads authorities, developer sand Scottish Water. Models such as the Metropolitan Glasgow Strategic Drainage Project and Edinburgh and Lothians Strategic Drainage Partnership provide good examples of practical delivery and we would welcome further engagement to develop these further across Scotland.

8. For Scotland to adapt to the impacts of climate change, lots of different groups, such as individuals, communities, businesses and public bodies, will need to work together and support each other. How could others support you (or your organisation) to adapt to climate change over the next five years? You might want to think about some of the groups listed below and the roles that they could take:
Central and local government
Other public bodies, such as NHS Boards or enterprise agencies
Small and large businesses
Third sector organisations
Communities

Whilst there are many actions that Scottish Water can deliver directly, we need to work in partnership with others to ensure effective adaptation. These include:

- Central and local government
- Consistent communication – it is important we have alignment in messaging on the

impact of climate change and the importance of efficient water use and reflect the importance of water in national and local adaptation planning.

- Building regulations – reflecting the importance of water efficient homes, fixtures and fittings, and sustainable drainage in requirements for new developments is vital to help Scotland minimise future demand on the environment.
- National Planning Frameworks – building sustainable water and drainage requirements into future planning is as important for adaptation as energy efficiency is for mitigation.
- Integrated adaptation – creating the national and local adaptation planning frameworks that enable Scottish Water and others to work effectively on joint infrastructure adaptation.

Other public bodies

- Local resilience partnership involving the emergency services, critical infrastructure, local authorities are a vital part of climate resilience, and a regular review of the effectiveness of resilience plans will be important.

Infrastructure providers / Interdependent risks

- We depend on electricity, transport, communications, and others for many services. The adaptation plans of these businesses are vital and whilst some sectors (e.g. energy) are reserved, SNAP3 should assess the effectiveness of adaptation plans for Scotland’s infrastructure.

9. In what way(s) could the plan help different groups across Scotland and/or its regions to collaborate on climate adaptation?

Greater collaboration might be achieved through clear and consistent communication of the climate futures we need to prepare for, and the impact of not adapting. Longer term (25+ years) adaptation planning is vital, especially for major infrastructure. Making this a requirement for national and local adaptation plans, and making it visible, would enable others to understand how they can support delivery to enable the most cost-effective adaptation pathways to be adopted.

SNAP3 could also identify key interdependencies between sectors, where organisations will need to work together to address common risks and deliver effective adaptation.

10. Scotland’s net zero targets are part of global efforts to limit global temperature rise to 1.5°C. At the same time, the Climate Change Committee’s advice is to adapt now to a minimum global temperature rise of between 1.5 and 2°C for the period 2050 – 2100, and to consider the risks of up to a 4°C warming scenario. Should the Scottish Government adopt the Climate Change Committee’s advice to “adapt to 2°C and assess the risks for 4°C”?

Strongly Agree
Please share detail on your answer:

Scottish Water would welcome the Scottish Government adopting the Climate Change Committee’s advice. This is important to drive a more collective and consistent approach to adaptation – it would not make sense for different organisations in the same area to have different assumptions on the future they are planning for.

The risk assessment undertaken by Scottish Water and published in our [Climate Change Adaptation Plan](#) follows this approach with assessment of both 2°C and 4°C futures, extended to the 2080s. as noted above a long term view of risk and response

is needed when planning for resilient infrastructure. A shared view of the future is vital for Scottish Water when working with others to manage water resources and drainage systems.

11. Some decisions, for example those in relation to long-term planning or infrastructure investment, may require greater consideration of future climate conditions. Would further guidance on the appropriate future climate scenario(s) to consider when you (or your organisation) are making plans and investment decisions be useful?

Yes

Scottish Water provides a critical public service with short (<5 year), medium (10-25 year) and very long-life assets (25-100 year). Our current climate change risk assessment uses 2050 as a near term time frame, whilst also assessing risk out to 2080.

We would welcome more guidance to inform water resource planning in areas such as:

- Population projections taking account of different scenarios that might impact population change and potential climate-induced migration.
- Climate implications for other water users (e.g. agriculture) to understand potential future changes in environmental demand.

We note that some of this may be linked to parallel proposals for national and regional water resource planning.

12. Would an assessment of “cascading” risks from weather-related disruptions to infrastructure help you or your organisation to adapt?

Yes

An assessment of weather-related disruptions would improve understanding and visibility of the vulnerability of sectors we rely on or need to work with during events. The assessment would enable a more collective view of Scotland’s vulnerabilities when such events occur.

In the Scottish Water [Adaptation Plan](#) we refer to cascade risks as “interdependent risks” (roads and transport disruption, power outages, telecom failures, supply chain disruption) which previously have affected us during weather-related disruptions. An assessment of cascading risks would make visible the importance of adaptation planning across sectors to support resilience.

13. What, if any, are the barriers to businesses accessing advice and support on climate risks?

Scottish Water has been able to access relevant information and whilst communication and engagement could be improved, we have no comment with respect to other businesses.

14. How should farming, fishing and forestry businesses be supported to adapt to climate change?

Scottish Water has been able to access relevant information and whilst communication and engagement could be improved, we have no comment with respect to other businesses.

15.	Climate change is projected to increase disruption of international and domestic supply chains. How do you anticipate disruption to domestic and/or international supply chains caused by climate change will affect Scottish business, industry and consumers?
<p>Much of the materials and equipment used in Scottish Water’s service delivery or capital programme come from overseas, and climate change has the potential to disrupt supplies. This can apply to raw materials, overseas manufacturing sites, or the transport of goods and materials to the UK due to local climate impacts or storm events impacting transport.</p> <p>Scottish Water’s Climate Change Adaptation Plan highlights supply chains as a key inter-dependant risk. This is leading to a focus on the resilience of supply chains and consideration of procurement strategies (stockpiling, nearshoring supply chains etc). SNAP3 should highlight these issues for sectors to consider in their risk assessments.</p>	
16.	What, if any, should the role of government be in supporting more resilient supply chains?
<p>The Scottish Government could consider the criticality of key supply chains and their vulnerability to climate change. An assessment of the impacts to society and the economy of climate disruption to supply chains would enable us to understand the vulnerability of key sectors and to support resilience measures for materials and supplies.</p>	
17.	What, if any, support would be required to encourage businesses in Scotland to take advantage of innovation opportunities arising from climate change?
<p>Setting clear climate scenarios and providing support and guidance on how it will impact land, soil, water and nature will help the land sector understand risks and how resilient landscapes can be supported.</p> <p>The draft SNAP3 proposes many of the correct measures in terms of aligning rural payment schemes and forestry grants with measures that support climate and nature resilience, as well as skills development and guidance. Proposals for research into climate resilient farming are welcome – we need to understand how agriculture might change in the next 50 years.</p> <p>We welcome the focus on riparian woodland creation as part of forestry schemes but suggest that water management could be strengthened within the rural framework. The health of water catchments should be a key objective of rural payment schemes to support the resilience of Scotland’s water environment for all sectors, including agriculture.</p> <p>There is potential for innovative opportunities for businesses in developing solutions to the key climate challenges, and the consultation rightly notes areas being pursued under CivTech. Some further examples of innovation opportunities include:</p> <ul style="list-style-type: none"> • Objective NC1 focusses on “nature-based solutions”. This covers natural systems or materials used to deliver outcomes such as sustainable drainage, water treatment, environmental engineering and land management. Innovation and pilot work is needed to build confidence in products, performance and specifications to enable greater adoption. 	

- There are growing needs for better environmental data to understand and monitor climate impacts. Innovative technology around remote monitoring and control systems to assess and respond to events would be helpful. Scottish Water is engaged with Stirling University through the Hydro Nation agenda to create “digital observatories” to understand water flows across a catchment, water quality and flooding. Such technology will be important in long term resilience and adaptation planning.
- Water recovery and re-use will be a major need in the coming decades to reduce demand on the environment. Innovation is needed across all aspects of water use – from water efficient fixtures, fittings and white goods in homes to technologies that support cost effective recovery and use of grey water in buildings and urban areas.

18. What, if any, support would be required to encourage businesses in Scotland to take advantage of innovation opportunities arising from climate change?

Making clear how the climate will change, the hazards and impacts, and the responses and outcomes needed across all sectors of the economy is critical. This should highlight the challenges for businesses to adapt, and where they will need to innovate.

Stronger links with academia to help them understand climate and innovation needs of business should shape pure and applied research. Support will also be required in the commercialisation of innovation – getting products to market – for adaptation. Initiatives such as the Hydro Nation agenda within the water industry are a good example of how we can bridge the innovation and industrial application gap.

19. How could the Scottish Government support communities impacted by climate change across the world?

The Scottish Government should continue to support international communities impacted by climate change through the Hydro Nation International Centre. The centre should be used to share knowledge and develop solutions for sustainable water management.

20. Scotland is known for its excellence in climate change research. Are there international adaptation focused research opportunities which Scottish-based academic work should focus on?

We agree with many of the statements in SNAP3 around the leading research in land and the environment in many of Scotland’s institutions. From a water perspective we note that world class research currently supported through the Hydro Nation Chair at Stirling University. Work in areas such as digital observatories to support catchment scale resilience planning (Forth-ERA project) and sustainable rural communities (Glasgow University) is internationally important and we need to see more of this to address the challenges in water and environmental management in the coming years.

21. Both public finance and mechanisms to leverage greater private finance will be required to deliver adaptation action. What do you see as the main barrier to private investment for adaptation action?

Alignment and co-ordination of different investment streams to focus on common outcomes would help support action in many areas. With respect to urban land planning, adaptation requires investment by multiple sectors. Models such as the Metropolitan Glasgow Strategic Drainage Programme have brought together public (Scottish Water, Local Authority, Scottish Canals) with private businesses and developers to focus on the key challenges – flooding, environmental quality and development. This has enabled long term investment in strategic solutions over

successive funding cycles.

The growing interest in the role of private finance in nature and carbon suggests there may be routes to channel investment that delivers carbon, biodiversity and climate resilience outcomes at landscape scale. The work that NatureScot is pursuing to look at how such models can develop (e.g. through the pilot Landscape Enterprise Networks) should be explored further.

22. How can SG support/incentive more private investment? Some potential ways of promoting private investment are provided below.
- Blended finance models
 - Mainstreaming adaptation in existing market codes
 - Grant funding schemes
 - Open data platform and industry-led common metric

Please note response to Question 21.

23. The draft Adaptation Plan sets out plans to develop an adaptation monitoring and evaluation framework. Our proposed approach is for annual reports to include a set of quantitative indicators to monitor progress to the Adaptation Plan's objectives. In addition, we propose to publish a baseline at the start and report on progress at the end of the Adaptation Plan to track longer-term outcomes. Do you agree with the proposed approach to monitoring adaptation?
Strongly Agree Agree Disagree Strongly Disagree Don't know

Strongly Agree

24. Do you have suggestions of data or indicators that could be used to track adaptation outcomes in Scotland? The proposed outcomes and objectives of this draft Plan are set out here.

There are a number of metrics that might be considered, but tracking outcomes of the plan should also consider the need to monitor the progression of climate change and its impacts on the environment and society.

Understanding the pace of climate change in Scotland and the way it is impacting land and water is critical to help us understand how and when many sectors may need to adapt. This demands the development and management of long term data sets for rainfall, riverflows, water quality, soil erosion and many other factors. Some of these data sets already exist to a greater or lesser extent across various organisations whilst others may not currently be monitored.

A key action for SNAP3 should be to consider the data we will need in the coming years to understand climate impact and make good adaptation choices. It should also explore the establishment of a national climate change data service across multiple agencies. We would be keen to work with Scottish Government and others to explore this further.

With respect to specific metrics consideration could be given to:

Objectives NC1 and NC5 focus on the health of natural systems, and **Objective PS5** includes water quality for drinking supply. Metrics of success in delivering resilience can link to policy areas in biodiversity, natural capital and forestry and include:

- National data reporting on peatland condition assessment

- Hectares of peatland restored annually
- National cover of woodland
- Hectares of new woodland created each year
- Hectares (or %) of agricultural land under management for nature through payment schemes
- % of Scotland's land under management for nature (link with Scottish Biodiversity Strategy 30 by 30 goal)

For **Objective PS5** (The management of water, sewerage and drainage services builds resilience to drought and flooding and protects water quality and quantity.), it would be helpful to use the following indicators:

- Total Water Abstracted annually by sector to track changes in demand and pressure on environmental systems.
- Water Body Condition, as provided by the Water Classification Hub, to demonstrate the overall quality of Scottish water bodies.
- % of urban areas with permeable land cover to track progress of blue-green infrastructure in the coming decades.
- Extent of blue-green infrastructure to manage rainwater drainage across Scotland.

We are keen to discuss these further with Scottish Government.

25.	What, if any, impacts do you think this Adaptation Plan will have on groups/individuals who share the aforementioned protected characteristics?
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Scottish Water has no comment

26.	In respect to protected characteristics, what, if any, measures could be taken to strengthen any positive impacts or lessen any negative impacts of the draft Adaptation Plan?
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Scottish Water has no comment

27.	What, if any, impact do you think this Plan will have on inequality caused by socio-economic disadvantage?
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Scottish Water has no comment

28.	In respect to inequality caused by socio-economic disadvantage, what, if any, measures could be taken to strengthen any positive impacts or lessen any negative impacts of the draft Adaptation Plan?
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Scottish Water has no comment

29.	What, if any, impact do you think the Adaptation Plan will have on children's rights and wellbeing?
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Scottish Water has no comment

30.	What, if any, measures could be taken to strengthen any positive impacts or lessen any negative impacts in this respect?
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Scottish Water has no comment

31.	What, if any, impacts do you think the Adaptation Plan will have on Island communities?
Scottish Water has no comment	
32.	What, if any, measures could be taken to strengthen any positive impacts or lessen any negative impacts in this respect?
Scottish Water has no comment	

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