



**BIODIVERSITY
REPORT 2020**
CONTRIBUTING
TO SCOTLAND'S
SIX BIG STEPS
FOR NATURE



**Scottish
Water**
Trusted to serve Scotland

We are pleased to present Scottish Water's 2020 Biodiversity Report in line with our duty under the Wildlife and Natural Environment Act 2011. Our report identifies how we have progressed against the goals and activities set out in our 2017 Biodiversity Statement, which will be updated in 2021.

Our service to customers is closely linked to the environment - we abstract, treat and distribute high quality drinking water; and we collect, treat and return safely to the environment society's waste water. We rely on high quality source waters and the environment's ability to assimilate recycled waste water.

Our Strategic Plan, published in 2020, sets out our purpose – to support a flourishing Scotland – and our three ambitions: Service Excellence, Net Zero Emissions, and Great Value.



Our strategy is aligned to the United Nations Sustainable Development Goals and the Scottish Government's National Performance Framework.

We aim for our services to impact positively across the water cycle:

- Protecting and enhancing the catchments of the source waters we treat to provide drinking water, and increasing water supply resilience.
- Collecting, treating and recycling Scotland's waste water in ways that generate value and protect the environment.
- Advising our customers so they only use the water they need.
- Enhancing and promoting access to the natural environment and encouraging communities to enjoy and protect it.

We are committed to reducing greenhouse gas emissions and will embrace finding nature-based solutions rather than the engineering-focused approaches of the past.

We have a role to play in creating blue-green infrastructure through our work in flood prevention, by adopting natural solutions to increase carbon capture and improve biodiversity. We have committed to carrying out the following activities by 2025:

- Work with the James Hutton Institute to establish how much carbon dioxide equivalent our land stores hold.
- Establish the biodiversity status of our land.
- Confirm the greenhouse gas storage needs and opportunities to first deliver, and then go beyond, net zero emissions.
- In partnership with NatureScot, assess potential for, then implement peatland restoration on our land and water catchments.
- Work with partners on grant applications for woodland creation and peatland restoration.

In delivering our key services, we will work with others in order to achieve a range of outcomes for biodiversity, and we will be open and transparent in our actions and progress.

This report presents our progress in line with the Six Big Steps for Nature as set out by the Scottish Government:

1. Ecosystem Restoration
2. Investment in Natural Capital
3. Quality Greenspace for Health and Education Benefits
4. Conserving Wildlife in Scotland
5. Sustainable Management of Land and Freshwater
6. Marine and Coastal

For each Big Step, we report progress to address the contributing actions set out in our 2017 Biodiversity Statement. Case studies are included to illustrate both progress to date and further action. Where appropriate, we have included links to other documents. During 2021 we shall be publishing a refreshed Biodiversity Statement covering the 3 years to the end of 2023.

Scottish Water has made good progress across all commitments made in our Biodiversity Statement, to contribute to the Scottish Government's 2020 Challenge for Scotland's Biodiversity. Some key outcomes are summarised below, and you can read more about these, and other activities we have delivered, in the report.

BIG STEP FOR NATURE 1 ECOSYSTEM RESTORATION

Contributing to Good Ecological Status of water systems through catchment management.

Exploration of how ecosystems such as saltmarshes can help resilience.

BIG STEP FOR NATURE 2 INVESTMENT IN NATURAL CAPITAL

Working in partnership with the Scottish Environment Protection Agency to develop and trial an approach to integrating Natural Capital into environmental planning and investment.

Promoting blue-green urban infrastructure to manage the drainage of surface water.

BIG STEP FOR NATURE 3 QUALITY GREEN SPACE FOR HEALTH AND EDUCATIONAL BENEFITS

Over 7,000 hours of volunteering by well over 500 employees.

Launching our interactive learning modules on the water cycle and waste water processes.

BIG STEP FOR NATURE 4 CONSERVING WILDLIFE IN SCOTLAND

Carrying out screening and surveys, and applying a mitigation hierarchy on all projects that carry environmental risk.

Successfully eradicating American Signal Crayfish from Buittle Reservoir.

BIG STEP FOR NATURE 5 SUSTAINABLE MANAGEMENT OF LAND AND FRESHWATER

Protecting drinking water catchments, and reducing emissions, through peatland restoration.

Vesting sustainable urban drainage systems.

BIG STEP FOR NATURE 6 MARINE AND COASTAL

Fighting the spread of plastic waste, through customer campaigns to working with industry and environmental stakeholders.

Undertaking the Forth Estuary study to address marine litter from our assets.



SCOTTISH GOVERNMENT BIG STEP FOR NATURE

1.

ECOSYSTEM RESTORATION

2020 CHALLENGE OUTCOME:

Scotland's ecosystems are restored to good health so that they provide robust ecosystem services and build our natural capital.

SCOTTISH WATER CONTRIBUTION:

Scottish Water owns land across Scotland that is managed for forestry, farming and to locate assets. We have a key role in ensuring land we own is managed in a way that protects drinking water sources and the environment.



1.1 Encourage and support ecosystem restoration and management, especially in catchments that have experienced greatest degradation.

Scottish Water 2017 Biodiversity Statement:
Scottish Water is an active member of the Moorland Forum, supporting engagement with relevant stakeholders.

Scottish Water is a member of the Moorland Forum and the Peatland Action Project which has a vision of a collaborative approach to peatland restoration. Progress on this activity is covered under Section 5.7 in Big Step for Nature 5.

Also relevant to Section 1.1, in the Lintrathen and Backwater reservoirs catchment we have felled mature uniform conifer plantations and restocked with areas of native species such as Scots pine, broadleaves and included an area of open ground which increases biodiversity and complements the neighbouring Site of Special Scientific Interest (SSSI). We took care not to undertake felling at certain times of year to avoid bird disturbance and to protect Schedule 1 listed bird species in neighbouring woodlands. Our Estates and Sustainable

Land Management (SLM) teams have been working together in the development of a new woodland proposal, planned for 2020/2021. The 110 hectare planting aims to protect and improve source water quality and will increase biodiversity in the area, as well as sequester carbon.

On land connected to a windfarm, we have developed a Habitat Management Plan (HMP) including stock number restrictions and a short grazing period in order to protect and enhance biodiversity on the site.

1.2 Use assessments of ecosystem health at catchment level to determine what needs to be done.

Scottish Water 2017 Biodiversity Statement:
Scottish Water participates in River Basin Management Planning (RBMP) to support Good Ecological Status (GES).

RBMP in Scotland helps protect the water environment for people and wildlife. Scottish Water is a Responsible Authority and we play our part in supporting and implementing the River Basin Management Plan. The third cycle of planning for Scotland and Solway/Tweed River Basins commences in 2021.

Scottish Water responds to all SEPA consultations on RBMP, the most recent being on Significant Water Management Issues.

To protect the ecological status of water bodies, we invest in projects to address pressures upon them, such as discharges from waste water treatment works (WWTW) and networks. We do this through studies to identify needs, followed by design and implementation of appropriate solutions.

To improve access for fish migration we have invested to remove or improve barriers, such as dams or weirs, to allow fish access to spawning areas previously made inaccessible to them. For an example of fish pass improvement, read the case study on Loch Venacher in Big Step 4.

Abstraction of source water is carefully managed as it can adversely affect water flow and river levels. We work with SEPA to improve flows in affected areas through a programme of study followed by design and implementation of measures.

Invasive Non-Native Species (INNS) are a significant pressure on land and within water bodies. Scottish Water is responsible for the control and management of INNS on our land so that they do not spread into the wild. Eradication of INNS can be very difficult to achieve, see Section 4.4 for details of our recently completed work to manage American Signal Crayfish.

1.3 Government and public bodies will work together towards a shared agenda for action to restore ecosystem health at a catchment scale across Scotland.

Scottish Water 2017 Biodiversity Statement:
Scottish Water works in Partnership e.g. with Forestry Commission Scotland (FCS) in the Loch Katrine reservoir catchment.

Scottish Water works in partnership with other public bodies, including SEPA, NatureScot and Forestry & Land Scotland to address environmental and biodiversity management issues. We work with, and contract work to, third parties and the private sector, for example to assist with habitat surveys and environmental assessments. We work with Local Authorities to address flooding and land management issues. We have engaged with and worked in partnership with the Customer Forum (www.customerforum.org.uk) to understand and address customer issues and deliver what customers want today and for the future. We work in partnership with UK Water Industry Research, Water UK, and at an international level with Eureau. We engage with key experts in scientific and research bodies, for example with the James Hutton Institute and universities such as Cranfield, to carry out specialised work on our behalf.

1.4 Establish plans and decisions about land use based on an understanding of ecosystems and take full account of land use impacts on the ecosystem services that underpin social, economic and environmental health.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's Sustainable Land Management (SLM) approach focuses on the protection of drinking water sources by working with owners and managers of land adjacent to water bodies. Environmental screening is embedded within capital project planning and delivery processes ensuring that knowledge of designated sites, protected species and habitats is captured and considered.

The range of activities undertaken by our Sustainable Land Management team to protect drinking water catchments is covered in Section 5.3.

The work undertaken to support capital projects where there is an environmental risk is covered in Section 4.1.

BIG STEP 1 CASE STUDY:

SALTMARSH RESTORATION WORKING WITH NATURE

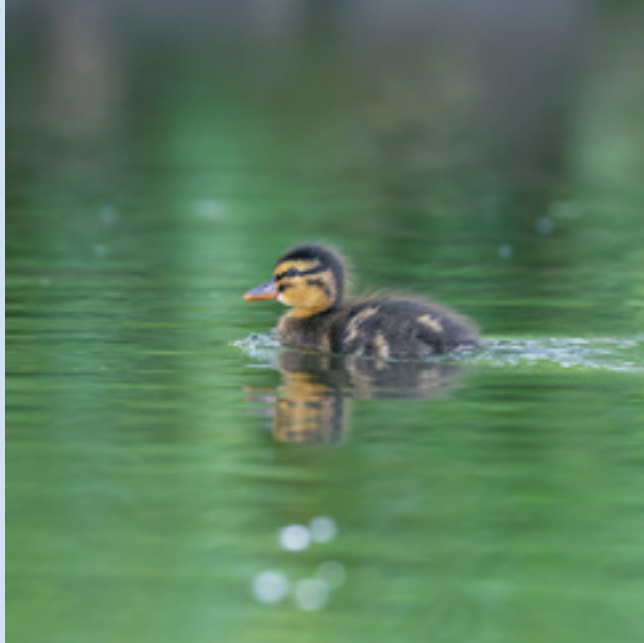
Our Waste Water Treatment Works and assets situated on low-lying coastal areas can be vulnerable to flooding, particularly on occasions when storm conditions coincide with high tides. In such events, salt water may infiltrate our assets, leading to operational issues and/or repair costs. The traditional engineering solution to address this risk is to construct large, hard protective barriers around the vulnerable asset.

We are now investigating an innovative approach that works with nature to provide natural shoreline protection, whilst at the same time restoring and enhancing degraded saltmarsh habitat. Since 2019, we have been working with Dynamic Coast (a pan-government partnership formed to establish an evidence base for coastal change) to achieve an understanding of risk to waste water assets from coastal erosion and sea level rise, in terms of scale, extent, location and rate; and to identify how assets can be made more resilient to the impacts of these risks.

We are investigating potentially suitable assets to apply this approach. Restored saltmarsh would improve the resilience of an asset by absorbing wave energy, thereby limiting the dynamic processes that cause coastal erosion. The biodiversity of the saltmarsh would be enhanced and, as saltmarshes are shown to sequester carbon, this approach could potentially contribute to our net zero emissions target.

There are additional benefits, such as the financial cost of saltmarsh restoration may be lower than that of building and maintaining traditional 'grey' infrastructure; and is more visually attractive.





BIG STEP 1 CASE STUDY:

WATER RESOURCES

In order to maintain the public water supply, we source water mainly from Scotland's lochs and reservoirs, as well as rivers and some groundwater sources such as boreholes and springs. Source water abstraction must be carried out in a sustainable way, ensuring it is not detrimental to the natural environment and protects the ecosystem services upon which we depend. To secure reliable, long-term quantities of drinking water and protect public health, we carefully plan our use of Scotland's water and carry out environmental screening and species surveys.

The rivers we abstract from are often designated for nature at a European level. Within river catchments there are national nature sites such as SSSI, Nature Reserves and Biodiversity Sites. River water quality and quantity is monitored and controlled to allow habitats and species, including migratory species, to be conserved. We engage with other water users, regulators and stakeholders to support the rivers' biodiversity.

We maintain river flows by providing a 'compensation' flow downstream of an abstraction point. When required, a 'fresnet' (a larger release of water) can be released, for example to help fish reach spawning grounds.

Understanding fish habitats and environmental needs informs the actions that can be taken to support vulnerable water supplies. 131 environmental screening reports have been carried out to identify nature designations, habitats, species and other stakeholders to consult as part of our resilience planning. To ensure we are making decisions that do not impact on fish habitats, 40 surveys have been carried out downstream of sources vulnerable to drought or likely to be used as drought mitigation.

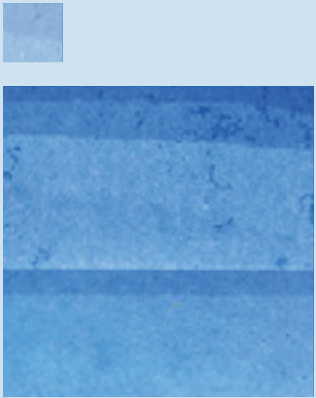
Investments for Biodiversity conservation and improving ecological conditions

We invest in improvements within water bodies used for the public supply of drinking water. During 2018-2020, many projects we carried out to meet requirements, for example of the Water Framework Directive (WFD) for Good Ecological Status (GES), had broader benefits for aquatic habitats and species beyond the intended purpose. In addition to examples elsewhere, work completed includes:

Location	Work completed	Purpose
Loch Venachar	Fish pass	Passage of migratory salmonids
Loch Katrine	Modified compensation release	Improve environmental potential
Loch Nell	Modified pumping station	
Lochgoin Reservoir	Discharge structure	
Loch Thom	Discharge structure	

We also have a number of projects planned for delivery in 2020-2023 that will contribute to conservation of biodiversity and improve aquatic ecological conditions, work to be completed includes:

Location	Work to be completed	Purpose
River Loy	Remove redundant weir	Passage of migratory salmonids
Dye Water	Install fish pass	
River Annan	Eel pass	Migratory eel colonisation
Auchengaich Reservoir	Modify	Improve downstream habitat for fish
Stantling Craig Reservoir	Investigation and community consultation for potential removal of dam	Fish passage and access
Watch Water Reservoir	Modify	Improve the downstream environmental potential
Loch Ashie	New structure	
Slateford Burn	Modify	Rewet a dry stretch of river





SCOTTISH GOVERNMENT
BIG STEP FOR NATURE

2.

INVESTMENT IN NATURAL CAPITAL

2020 CHALLENGE OUTCOME:

Natural resources contribute to stronger sustainable economic growth in Scotland and we increase our natural capital to pass onto the next generation.

SCOTTISH WATER CONTRIBUTION:

We are developing natural capital solutions for our sewer networks to provide resilience to climate change.

2.1 Encourage wide acceptance and use of the Natural Capital Asset Index including a comparable measure for the marine environment.

Scottish Water 2017 Biodiversity Statement:

Scottish Water will promote a UK water industry approach to Natural and Social Capital Accounting through UK Water Industry Research.

Scottish Water is a member of the Scottish Forum on Natural Capital.

Scottish Water, working with the rest of the water industry through UK Water Industry Research Ltd (UKWIR)¹, the UK water sector's collaborative research programme, has sought to understand, develop and use natural capital within a natural and social capital accounting framework. Drawing from the accounting principles of the Natural Capital Coalition², this has enabled the industry to set out guidance on its deployment, and Scottish Water has shared this with the Scottish Forum on Natural Capital.

This framework has also been used in work with SEPA, to develop methods to make more sustainable choices (see Section 2.2). Scotland's Natural Capital index has been developed more recently and we will consider how to work with this in future reporting.

Scottish Water has invested in the value of Scotland's natural capital through restoration of degraded peatland

to help local water quality and quantity and also to reduce drinking water treatment costs. Additional benefits arise through long term carbon storage in the peat and renewed vegetation supporting unique habitats and species. See Big Step for Nature 5 peatland restoration case studies and goals 5.6 & 5.7.

2.2 Use this index to influence decision making and market-based approaches, so that wider monetary and non-monetary values for ecosystems are recognised and accounted for.

Scottish Water 2017 Biodiversity Statement:

Scottish Water will engage stakeholders to explore opportunities to develop case studies for natural and social capital accounting in the water sector.

Building from the UKWIR work referenced in Section 2.1, Scottish Water has been working with SEPA to develop approaches to consider the wider environmental and social benefits and impacts associated with environmental choices. This work is ongoing under a Sustainable Growth Agreement³ between Scottish Water and SEPA in the One Planet Choices project.

This approach seeks to understand a system, such as a catchment, and to identify the range of management approaches that may be taken to deliver beneficial

outcomes. Outcomes are considered in terms of not only financial, natural and social capitals, but also manufactured (built assets), human and intellectual capitals.

A method has been developed and is presently being trialled to understand how it operates, noted in the case study on page 13. Scottish Water is also working with stakeholders to understand how these non-financial costs and benefits may be reflected in future investment decisions.

2.3 Undertake a major programme of peatland conservation, management and restoration.

Scottish Water 2017 Biodiversity Statement:

Scottish Water's Sustainable Land Management Team provides technical advice regarding all activities that take place in or near drinking water catchments.

Scottish Water will monitor water quality risks presented by climate and environmental change to inform potential future actions.

Progress on this activity is covered in detail throughout Big Step for Nature 5.

¹www.ukwir.org

²naturalcapitalcoalition.org

³sepa.org.uk

BIG STEP 2 CASE STUDY: SUSTAINABLE GROWTH AGREEMENT

In terms of water quality protection, Scottish Water and our stakeholders must prioritise and make choices to secure the outcomes needed by society. To do this we invest in studies and projects, embedding energy and resource use and social and natural capitals into our business as usual processes, such as our benefits framework. The benefits framework provides a structure for categorising the benefits of projects, so that their contribution to our strategic objectives and performance can be understood.

The Sustainable Growth Agreement (SGA) is a formal voluntary agreement between Scottish Water and SEPA that focuses on practical action to deliver environmentally positive outcomes. It centres on exploring new and innovative ways to improve environmental performance, and practical actions that our two organisations can take to deliver environmental, economic and social success.

This is particularly important where multiple sectors are also using the ecosystem services provided by the water environment. We seek to think holistically about catchments: the current status, the interdependencies, future risks such as climate change, and to ensure we develop the best measures that benefit all of the Six Capitals.

The SGA has three work areas, in which Scottish Water and SEPA are committing to develop, trial, then seek to deliver (with partners) innovative ways of working. Two of these three work areas are relevant to biodiversity:

One Planet Choices is a new method that brings natural capital into decision making, protecting Scotland's environment, minimising energy and resource use and maximising social and economic benefit. Drawing from Six-Capitals thinking, the approach is being trialled with SEPA and other stakeholders. For example, it is being used with Dundee City Council to evaluate a 'blue-green infrastructure strategy' to reduce flood risk and support

development within the St Mary's area of the City. This has many additional benefits to the local area, including the potential to enhance the green space to include a cycle route, re-naturalise a culverted watercourse and increase biodiversity within the local community.

City Blue Print aims to manage rainwater and waste water drainage to help protect the social, economic and environmental wellbeing of Scotland's towns and cities in a changing climate. As part of the project in Aberdeen City, we have been working with SEPA and Aberdeen City Council to develop an approach for planning surface water and drainage across the city, to manage flood risk and water quality whilst supporting economic development. This should have wider benefits, and we are using the method developed in One Planet Choices to understand the range of social and environmental benefits (including biodiversity and placemaking) within the long-term plan for the city. The SGA will also support Scottish Water's Storm Water Management Strategy and focus on supporting sustainable urban drainage solutions that feature placemaking blue-green cityscapes.



SCOTTISH GOVERNMENT BIG STEP FOR NATURE

3.

QUALITY GREEN SPACE FOR HEALTH AND EDUCATIONAL BENEFITS

2020 CHALLENGE OUTCOME:

Improved health and quality of life for the people of Scotland, through investment in the care of green space, nature and landscapes.

SCOTTISH WATER CONTRIBUTION:

To manage land and reservoirs allowing responsible access for certain recreational activities.

3.1 Provide opportunities for everyone to experience and enjoy nature regularly, with a particular focus on disadvantaged groups.

Scottish Water 2017 Biodiversity Statement:
Scottish Water continues to operate a volunteering programme, which commenced in 2011.

Every Scottish Water employee is entitled to two days paid leave per year to volunteer. The volunteering work our people undertake helps leave a positive legacy with our customers and their communities. In turn this helps build trust and strengthens both our relationships and our reputation, helping us to achieve our vision. Our volunteers benefit too, as volunteering develops their personal skills, aids their wellbeing, and champions teamwork across the organisation.

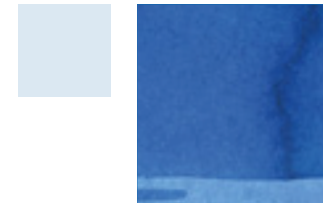
The volunteering programme covers four themes: conservation/environment, education, local community groups, and fundraising for WaterAid. In 2018 to 2020, well over 500 employees dedicated over 7,000 hours of work to volunteering.

Conservation/Environment

Our Adopt-a-Beach campaign supports employees to use their volunteering time to 'adopt' and survey a local beach. This has resulted in over 60 beaches being adopted in 2018 to 2020. The data generated through the surveys is submitted to the Marine Conservation Society and contributes to its ongoing Beachwatch programme.

Education

We are committed to engaging with school children, to tell them about the water cycle, what we do, the vital role that water and waste water services play in their daily lives, and how they can help protect the environment by using those services responsibly. One of the best ways we can support this is by allowing employees to use their volunteering time to deliver educational presentations to classes or full school assemblies. In 2018 to 2020, our people volunteered over 100 days for pupil education. See also Section 3.4.





Local Community Groups

A small team of volunteers from our Intelligent Control Centre (ICC) helped children and staff at Woodlands Early Learning Centre in Deans, Livingston. The four volunteers spent a day carrying out various tasks to improve the outdoor play area and gardens. The team cleared, sanded, primed, and applied weatherproofing wood paint to storage sheds and the children's wooden cabin to protect them from the elements. They also took on the challenge of levelling and filling planters for the children to grow vegetables.

WaterAid

WaterAid and Scottish Water work in partnership to raise awareness and funds, with the aim of providing clean water, decent toilets and good hygiene for everyone,

everywhere within a generation. We began our partnership in 1981 and still receive an overwhelming response from our employees and Alliance Partners. We have raised funds for several African countries over the decades. Currently, we are focused on two projects based in Rwanda and Malawi, which are match funded by the Scottish Government.

Making water available provides hydration, hygiene and unlocks the opportunity for children to learn - allowing them to remain in full-time education, having a transformative effect on their lives. Access to water at maternity units is essential to the health of mothers and their babies.

In Malawi, over the last 3 years, the Deliver Life Project has reached 141,000 of the poorest children, adolescent girls and mothers. We have played a role in supporting projects, for example in bringing clean water, decent toilets and good hygiene to Chikwewo Health Centre.

In Rwanda over the past year, we have been working to build facilities at schools, providing 2,720 girls and boys in six schools access to decent toilets with handwashing facilities. At Groupe Scolaire Kibumbwe School, an additional eight toilet stances for girls and a new menstrual hygiene management room have been built to provide somewhere private to manage their periods safely and with dignity.

3.2 Support Local Authorities and communities to improve local environments and enhance biodiversity using green space and green networks, allowing nature to flourish and so enhancing the quality of life for the people who live there.

Scottish Water 2017 Biodiversity Statement:

Scottish Water has many scenic reservoirs and landholdings across Scotland with an established history of access for responsible recreation.

Scottish Water owns the fishing rights at 62 reservoirs.

Scottish Water continues to operate a volunteering programme, which commenced in 2011 – see Section 3.1 above.

Scottish Water has an established history of access for responsible recreation. We intend to build on this by seeking out opportunities to connect communities to their local natural environment and support tourism by enabling access to our assets, particularly reservoirs and upland catchments for leisure purposes.

Many of our scenic reservoirs and landholdings across Scotland are popular for activities such as angling and walking. A lot of the reservoirs we use to source drinking water are also designated natural heritage sites and we take heed of NatureScot advice to ensure their conservation status is maintained.

Whilst we welcome visitors to our reservoirs, we urge people to stay safe, behave responsibly and not take risks around reservoirs, or any other open water such as rivers and lochs. Whilst the water may look harmless, there are many hidden dangers. Reservoirs are working parts of Scottish Water's infrastructure. They have very steep edges so the water gets deep and cold very quickly. Dams and spillways (overflows) and underwater pipework, or water movement, can also present potentially lethal hazards to people. The majority of Scottish Water's reservoirs are situated in remote locations, meaning there is a lack of immediate assistance and mobile phone reception can be poor. For these reasons and in the interests of public safety, we do not encourage swimming in our reservoirs.

3.3 Build on good practice being developed by the National Health Service (NHS) and others to help encourage greenspace, green exercise and social prescribing initiatives that will improve health and wellbeing through connecting people with nature.

Scottish Water 2017 Biodiversity Statement:
We did not originally make a statement regarding this element. However the following work over the past 3 years is relevant.

As part of the work our Flooding Team is carrying out with Local Authorities, we are working with the development and planning communities to promote a collaborative multi-disciplinary masterplan for blue-green infrastructure that provides:

- Multi-functional spaces: green spaces that act as water storage for extreme storm events.
- Movement: core paths, cycle routes, connections to the wider green network.
- Wildlife corridors: for biodiversity, wellbeing, play, placemaking and climate resilience.

3.4 Increase access to nature within and close to schools, and support teachers in developing the role of outdoor learning across the Curriculum for Excellence.

Scottish Water 2017 Biodiversity Statement:
Scottish Water provides an educational programme through its website.

Scottish Water volunteers visit schools all over Scotland delivering the message in our keep the water cycle running smoothly campaign.

Education – water cycle

Scottish Water recently launched a fun and interactive Water Cycle Education Kit for parents, carers and teachers. 'Get to Know H2O' is aligned with the Science and Social Study modules in the Scottish Curriculum for Excellence and is suitable for all primary age children. During the Covid-19 pandemic most of us adapted to a new normal. For parents and carers of some children, this means home schooling. Get to Know H2O is a digital resource that aims to teach pupils about the water cycle and how they can help protect the environment. It also encourages them to think about skills they have that could lead them to a future career in engineering, communication and more. The kit, including a short film, can be found on our website.

Education – waste water processes

We recently developed a new interactive learning module called 'Follow the Flush'. To accompany the module we have created an engaging and fun online game for children – 'Droplet and the Invasion of the Unflushables'. The module and game aim to teach primary age children about important waste water processes, why it's critical to flush only the 3Ps (pee, poo and toilet paper) and the consequences if we don't all look after our waste water network.

Keep the Cycle Running

Scottish Water's Keep the Cycle Running campaign raises public awareness of the problems caused to the waste water network, treatment works and environment by inappropriate disposal of items in the bathroom and kitchen, and explains how taking some simple steps can prevent them. The waste water system was not designed to cope with anything other than the 3Ps (pee, poo and toilet paper). The message we strive to get across is that only the 3Ps should go down the toilet; anything else should go in the bin.

In 2019, there were over 36,000 blockages within the public waste water network, around 80% of these were due to inappropriate disposal of bathroom waste items, such as single-use wipes and sanitary items, and fat, oil and grease. These items do not break down in the sewers and can accumulate together to cause blockages, which

at times can lead to waste water flooding. There is a significant financial cost associated with dealing with the blockages. During storm events, inappropriately disposed sanitary items can be discharged along with storm water into the environment. This can blight our riverbanks and shoreline, looking unsightly, reducing the amenity of an area, and impacting on wildlife that can ingest or become entangled in the debris.

Keep the Cycle Running, which is supported by both Get to Know H2O and Follow the Flush, can be found on our website.



3.5 Encourage public organisations and businesses to review their responsibilities and action for biodiversity, and recognise that increasing their positive contribution to nature and landscapes can help meet their corporate priorities and performance.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's core responsibilities are to provide good quality drinking water and recycle waste water which may have a consequential benefit in the protection of the environment, nature and landscapes.

Our Net Zero Emissions Routemap, published in September 2020, sets out how we will achieve net zero emissions by 2040. In it, we commit to increasing our positive contribution to nature, including increasing biodiversity. Based on this, further commitments will be made in our next Biodiversity Statement.

SCOTTISH GOVERNMENT BIG STEP FOR NATURE

4.

CONSERVING WILDLIFE IN SCOTLAND



2020 CHALLENGE OUTCOME:

The special value and international importance of Scotland's nature and geodiversity is assured, wildlife is faring well, and we have a highly effective network of protected places.

SCOTTISH WATER CONTRIBUTION:

To support the achievement of the Scottish Government targets for the proportion of natural features in favourable condition.

4.1 Ensure that the management of protected places for nature also provides wider public benefits.

Scottish Water 2017 Biodiversity Statement:
Scottish Water maintains in-house capabilities supporting both operational and capital delivery teams to provide advice and support to ensure biodiversity is appropriately protected.

Scottish Water carries out significant capital investment project work to design and build water and waste water assets. Our team of environmental specialists works with capital project teams to carry out environmental screening, and supports every project where there is environmental risk. Their work includes ecological surveys, which highlight the presence or absence of protected species and invasive non-native species, to allow a mitigation hierarchy to be applied and licences applied for as appropriate.



4.2 Align habitat restoration on protected areas with national goals for improving ecosystem health, with local priorities determined at the catchment or landscape scales.

Scottish Water 2017 Biodiversity Statement:
Scottish Water works with SNH to identify and undertake management activities at identified sites that will contribute to achievement of the National Indicator 'Improve the condition of protected nature sites'.

We own, have an interest in, or occupy designated nature sites across Scotland. Due to the large number of assets we operate, we interact with many different sites that are designated for features that give them natural heritage value, such as SSSIs or Special Areas of Conservation (SAC). We aim to help achieve favourable condition at sites where we have an influence on the condition; we have been working with NatureScot, other public landowners and partners for almost a decade to help deliver favourable condition within nature designated sites.

Through working with NatureScot we have established that, at present, over 80% of features on sites where Scottish Water has influence, are in favourable condition.

This includes features where there is no on-site remedy available, i.e. where no specific action could be taken locally to improve the feature, such as when climate change is the determining factor. When sites with no on-site remedy are excluded from the calculation, this figure rises to 95%.

Nature designated sites that are within catchments used for public drinking water supply and owned by Scottish Water are managed by land agents on our behalf. These are typically reservoirs and include popular walking sites, such as Holl Meadows, and larger sites incorporating tenanted farmland, such as Loch of Lintrathan. These sites all have fishing leases associated with them and the tenants are obliged to follow natural heritage legislation and guidance.

4.3 Integrate protected areas policy with action for wider habitats to combat fragmentation and restore key habitats.

Scottish Water 2017 Biodiversity Statement:
Our Statement did not include any activities for this objective.



4.4 Develop a wildlife management framework to address the key priorities for sustainable species management, conservation and conflict issues, including reintroductions and invasive non-native species.

Scottish Water 2017 Biodiversity Statement:

Scottish Water has an internal framework of advice & guidance that supports management of species, habitats, non-native species (NNS) and invasive non-native species (INNS).

Scottish Water manages non-native species e.g. American Signal Crayfish / Japanese knotweed in compliance with legislation.

Scottish Water is a corresponding member of the National Species Reintroduction Forum.

Within Scottish Water, teams work together to ensure the appropriate management of species etc. An internal framework of updated guidance, based on current legislation and regulations, is available to all staff. This includes the need to protect all birds during the nesting season and support with bird licencing requirements to ensure we remain compliant.

Operational teams have access to specialist contractors to ensure appropriate levels of management of INNS. We often liaise and engage with our Regulators, advisory bodies and other stakeholders. This was particularly important during a significant project, commenced in 2016, to eradicate American Signal Crayfish (ASC) from one of our reservoirs. This project was described in detail in the 2017 Biodiversity Report. As there was significant interest in this project, we have provided the results of the subsequent surveys and describe how work is continuing to monitor and deal with ASC in the area.

In 2013, Galloway Fisheries Trust received reports that adult ASC had been located near the Buittle Reservoir dam wall. It was decided that we should attempt eradication of the ASC population by biocide application. The key objective was to prevent ASC spreading throughout the wider River Urr catchment which had been shown to contain no ASC populations. In addition, we committed to survey and monitor the reservoir for the following 5 years.

In 2016 our contractors undertook a biocide eradication programme. The first monitoring survey was carried out in 2017 and no evidence of ASC was found. Surveys have been carried out annually and we are pleased to report that no evidence of ASC has been found during any of the surveys. The exercise is therefore considered to have been successful, not only in terms of eradicating the ASC but

also because fish are flourishing in the restocked reservoir, providing a valuable recreational resource for anglers and the local community. In addition to the eradication and monitoring, extensive work was carried out to develop, design and build engineering solutions for the outlet of the reservoir. This will help to ensure that, should there be any further invasions of ASC, they are contained within the reservoir and not allowed to spread.

Scottish Water has also commissioned surveys to establish the presence or absence of ASC in a number of other reservoirs and tributaries, with mixed results. As these are fully operational reservoirs, performing an essential role in the provision of public drinking water, they must continue to function. Where ASC are found, this presents particular challenges in terms of eradication. All operations and activities on site have a strict biosecurity system in place, dependant on the risk level, so that we do not allow ASC to spread.

We are a corresponding member of the National Species Reintroduction Forum. We consider it important to remain aware of proposals for species reintroduction and to ensure Forum members understand where these are likely to interact with our operations.

4.5 Involve many more people than at present in this work and improve our understanding of the poorly known elements of nature.

Scottish Water 2017 Biodiversity Statement:

We did not originally make a statement regarding this element. However, due to the increased work in the area of plastics and microplastics and their negative impact on wildlife, we are able to report progress against this activity relating to the environmental impact from plastics.

The use of plastic is commonplace worldwide, and an unintended consequence is that plastic waste has become ubiquitous in the environment. Scottish Water has been working to understand our role in reducing the impact of plastics and microplastics on water habitats through the encouragement of control at source, understanding plastic and microplastic pathways.

We welcomed the introduction in Scotland of a ban on plastic cotton bud sticks, and the recent introduction of the WaterUK 'Fine to Flush' standard. We will continue to

work with stakeholders at national and European levels to promote effective labelling of non-flushable products, as well as product substitution and the banning of single-use plastics where appropriate. We will continue to run campaigns (such as Keep the Cycle Running, mentioned in Section 3.4) to raise public awareness of the problems caused by inappropriate disposal of plastic-containing items.

We have been working with Keep Scotland Beautiful on their Upstream Battle Campaign to help tackle marine litter in the Clyde Valley. With 80% of marine litter coming from land via drains and waterways, it is important for people to be aware of the impact their actions have on our fragile marine environment. The campaign aims to reduce these impacts. Unfortunately, workshops that were planned and financed by Scottish Water have been affected by Covid-19 restrictions.

We have set up an internal group with expertise in associated areas of work. We have committed to carry out an audit of plastic use within our organisation, and review the results to identify where we can reduce single-use plastic items and work on improving the recycling of those we cannot avoid.

Microplastics are thought to be widespread in all aspects of our environment – water, land and air. We are working with UKWIR and academic institutions in actively researching plastics to more fully understand the sources, impacts and behaviours of microplastics in our water and waste water systems. Initial results suggest that both water and waste water treatment are highly effective at removing microplastics from the water cycle, thereby protecting public health and the environment. We will make investment to improve our systems where this is demonstrated to deliver benefits for our customers.



BIG STEP 4 CASE STUDY: LOCH VENACHAR

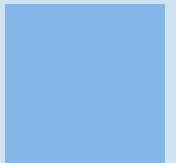
The project at Loch Venachar demonstrates that full consideration was taken of the historic built environment and of the needs of nature, ensuring that wildlife is conserved.

Working with SEPA we have made structural changes to the existing fish pass to help improve fish welfare and their chance of passing through the weir to reach the loch. The loch is home to salmon and sea trout that migrate from the sea, through the Forth Estuary and up the River Teith to spawn. Salmon are an iconic species for Scotland, and this work will contribute to an increase in the number of fish successfully spawning.

Loch Venachar is a freshwater compensation reservoir. The outlet dam, including the existing fish pass, was constructed in the 1850s and commissioned in 1859 as part of the Katrine Water Project to supply Glasgow with fresh water. The reservoir is also a popular location for recreation and fishing so the project may bring benefits to the local angling community.

The dam has Category-A Listed status, meaning it is of special architectural or historical interest as an outstanding example of a particular period, style or type. For that reason a team of experts was brought in to oversee the work and ensure improvements for fish passage didn't compromise the existing structures or detract from their historic value.

The enhancement complements the existing Victorian fish pass on the south channel. The baffles will break up the water flow in the spill channel and assist the fish in leaping across the dam spillway on their journey upstream to reproduce. Our environmental team ensured that appropriate measures were taken, including consulting with fish ecologists, to ensure the work was carried out with full respect for the local environment.



BIG STEP 4 CASE STUDY:

WORKING WITH RSPB TO INCREASE THE TREE SPARROW POPULATION

The tree sparrow is a species native to Scotland, and is currently on the Red List as a Bird of Conservation Concern, meaning its status is considered highly threatened. Although there are signs of recovery, with numbers on the rise since 1994, the current population estimate is only a small percentage of what it was in the 1960s.

Research has shown that the availability of wetlands (such as rivers, ditches or ponds) near nest sites provide a rich source of insect food and thereby can increase breeding. That means our water treatment sites were ideal locations for bird boxes to be installed to encourage tree sparrows to breed.

The RSPB approached Scottish Water to collaborate in helping to increase the tree sparrow population, by providing some new homes across our sites in Dumfries and Galloway. The locations were chosen because RSBP advice showed the Annan, Nith, Urr and Dee river valleys to be key habitat corridors for wintering and breeding birds. Our sites at Annan, Dalbeattie, Dalscon, Dumfries, Lochmaben, Lockerbie, Thornhill, and Troqueer were chosen as locations for the nest boxes.

Our local staff took a keen interest and hoped the nest boxes would be a success, making a difference to tree sparrow numbers. Both Scottish Water and RSPB staff installed 21 woodstone bird boxes in time for the 2018 breeding season. RSPB advised this type of box was the most durable and had already proved successful in attracting tree sparrows to nest.

In 2019, after the nest box checks, RSPB confirmed 15 of the boxes had been used by nesting birds and six of these were inhabited by tree sparrows. Although we had all expected at least some of the boxes to be used, both Scottish Water and RSPB were delighted with the positive uptake. This is a very good result for year one, because tree sparrows can often take a couple of years to get used to new boxes. As the tree sparrow is a colonial nester, we plan to increase the number of boxes at the three sites (Thornhill, Lockerbie and Annan) that have proved most successful.





SCOTTISH GOVERNMENT BIG STEP FOR NATURE

5.

SUSTAINABLE MANAGEMENT OF LAND AND FRESHWATER

2020 CHALLENGE OUTCOME:

Nature is faring well, and ecosystems are resilient as a result of sustainable land and water management.

SCOTTISH WATER CONTRIBUTION:

To protect and enhance our environment through compliance and responsible management.

5.1 Promote an ecosystem approach to land management that fosters sustainable use of natural resources and puts biodiversity at the heart of land-use planning and decision making.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's Sustainable Land Management team promotes appropriate catchment management in collaboration with landowners and developers to protect drinking water sources.

One of Scottish Water's primary roles is the provision of public drinking water. To do this effectively and efficiently we manage, protect and where possible enhance source water quality. This has additional benefits of improving the environmental quality of the land and water as well as resilience of supply. This work often takes place in upland areas, with peatland restoration featuring as a natural solution to protect source water quality. Additional benefits are to local habitats, the species that depend on them, and the locking up of carbon within the peat.

We don't own all of our catchments, so working with other landowners is a key activity in protecting our source waters. We have recently concluded the 3-year Farming with Nature project, in collaboration with the

Soil Association and the RSPB. Through this project in the River Ugie catchment, we shared information on different approaches such as non-chemical management of rush pasture, peatland restoration and an alternative slug control product. By working with farmers to switch slug treatment from metaldehyde to ferric phosphate, we have seen a reduction in detections of metaldehyde at customers' taps, resulting in increased compliance with drinking water standards.

We receive and process applications for aerial spraying of pesticides in drinking water catchments. Almost one third of these were considered high risk to our water sources. Through this notification process, we are able to provide advice to a range of external stakeholders on protecting source water quality.



5.2 Ensure that measures taken forward under the Common Agricultural Policy (CAP) encourage land managers to develop and retain the diversity of wildlife habitats and landscape features.

Scottish Water 2017 Biodiversity Statement:
Scottish Water owns and manages farmed land, taking account of CAP & priority catchment requirements, e.g. at Lintrathen Loch.

Scottish Water owns many and varied land holdings across Scotland, from office sites and treatment works, to large reservoirs with their surrounding farmland and forestry. We manage the land we own within our source water catchments to ensure drinking water sources are protected.

Within the catchments that Scottish Water owns there are working farms managed through tenancy agreements. Some restrictions on practices and chemicals are in place to protect water quality from diffuse sources of pollution. Low levels of nutrient run-off are managed by restricting the quantity of fertiliser farmers can apply.

We are mindful of the overall importance of farming and farmers to the economy and to the environment. In support of the Scottish Government's Farming Opportunities for New Entrants, to enable younger and new farmers to get a 'step on the ladder' and establish new farm businesses, we have created three new starter farming tenancies in different locations across Scotland.

We supported one of our tenant farms in Fife to participate in the Agri-Environment Climate Scheme (AECS), which included management of species-rich grassland, wetland, mown grassland for birds and some additional water margin activities. In the Scottish Borders we supported a tenant to participate in an AECS which included moorland management.

We continue to support farming where there is a wish to farm; but where there is no longer a desire to do so, we are keen to find where we can change land use to support biodiversity and carbon sequestration.

5.3 Support 'High Nature Value' farming and forestry.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's Sustainable Land Management team's primary focus is on the protection of drinking water sources by working with owners and managers of land adjacent to water bodies.

Our Sustainable Land Management team has a process in place to protect drinking water catchments from a range of activities, including forest management and felling, wind farms, hydro schemes, civil engineering projects and spraying of pesticides. We welcome early consultation so that we can determine whether a proposal is located within or close to a drinking water catchment. We assess risk and any potential impacts to water quality and make recommendations or provide advice on appropriate protection measures to mitigate the risks.

In the last 3 years we have carried out 44 catchment investigations based on Natural Organic Matter risk. The purpose of these investigations is to identify areas where peatland restoration can take place for the benefit of water quality, biodiversity and carbon capture.

Our SLM team has proactively taken part in five peatland restoration projects on third party land: four phases at Sandy Loch, which serves Lerwick in Shetland; and phase 1 of North Lochs, Isle of Lewis. These projects are either wholly or dual funded in collaboration with the Peatland Action Group. The group's members include NatureScot, the National Parks, and Forest and Land Scotland.



5.4 Put in place the management necessary to bring Scotland's protected areas into favourable condition and improve the ecological status of water bodies.

Scottish Water 2017 Biodiversity Statement:
Scottish Water engages with SNH to inform the development of the investment programmes to identify improvements required to benefit the environment.

We work with NatureScot to consider any interventions that could be made by Scottish Water to conserve or enhance biodiversity. This has led to projects within our 2015-2021 investment period under the Habitats & Birds directive driver. For example, we removed a redundant weir to support a European Protected Species; and to protect bottlenose dolphins we provided additional treatment to improve waste water discharges into the Moray Firth.

See also Section 4.2



5.5 Ensure that biodiversity and ecosystem objectives are fully integrated into flood risk management plans, and restore wetland habitats and woodlands to provide sustainable flood management.

Scottish Water 2017 Biodiversity Statement:
Scottish Water supports development of Sustainable Urban Drainage Systems (SUDS) and has set out appropriate technical specifications and guidance, for SUDS that may vest with Scottish Water, in our Sewers for Scotland manual.

Sustainable Urban Drainage Systems (SUDS) can provide amenity and environmental benefit to an urban area through provision of open spaces, enhancing air quality and reducing pollution. By mimicking the natural flow of surface water, flood risk can be managed to reduce impacts on people and property; the improved water quality enhances ecology and helps biodiversity. SUDS can help reduce embodied and operational

emissions from building and operating conventional surface water management systems, as well as offer scope for sequestering emissions through planting. SUDS can be developed in incremental stages, through creation, retro-fitting and enhancement.

Scottish Water's Sewers for Scotland document provides developers with technical standards applicable to SUDS that will vest to Scottish Water. Vesting is the process whereby transfer of ownership of an asset takes place from one party to another, in this case from developer to Scottish Water. We recognise operational and environment risks associated with unvested SUDS and the benefits that vesting SUDS can provide, and a project has been set up to address this. However some SUDS cannot be transferred and will remain in private ownership.

As of mid-2020, 929 detention basins and ponds are being considered for vesting. These are the types of SUDS most likely to contribute to amenity and biodiversity. Of these, 70 have been vested, 87 will remain private, and there are 772 progressing through the process.



5.6 Restore and extend natural habitats as a means of building reserves of carbon and to help mitigate climate change.

Scottish Water 2017 Biodiversity Statement:
Scottish Water is working to update climate change risk assessments for drinking water catchments.

We have delivered the FREEDOM project, which allow us to predict Total Organic Compound (TOC) levels over a 40 year period. TOC is a measurement of the amount of carbon found in organic matter and is often used as a non-specific indicator of water quality. Overall, the FREEDOM model and project outputs add a rigorous scientific evidence base to questions around water quality, net zero, investment appraisal and land management.

Much of the clear fresh drinking water that Scottish Water provides to our customers comes from peatland catchments. We are therefore acutely aware of the links between peatland condition and our raw water sources. As peatland dries, greenhouse gases are released into the atmosphere and erosion of the peat soil allows more organic matter to enter source waters. High levels of organic matter make it harder for the treatment process to achieve the high quality required for compliance with

drinking water standards at customers' taps. By working to restore damaged peatlands, the amount of organic matter entering our treatment process is reduced, which can lead not only to increased compliance but also reduced costs and energy use, as well as helping to protect the natural environment and reduce greenhouse gas emissions.

5.7 Provide clear advice to land and water managers on best practice.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's Sustainable Land Management team, engage with landowners/managers and farmers to provide support and advice on water quality, regulations and best practice.

Scottish Water is a member of the Moorland Forum and Peatland Action Forum, we are also members of a Peatland Restoration Working Group which has a vision of a collaborative approach to peatland restoration across the country, NatureScot, the National Parks, and Forestry and Land Scotland are notable members.

We are members of Deer Management Groups in areas where deer numbers have caused pressure on drinking water sources through Cryptosporidium risk. We are members of the Orkney Goose Management

Group and have developed sound working relationships with NatureScot, Scottish Forestry, Forest and Land Scotland, SEPA and a number of private estate managers, landowners and land agents.

We have organised and participated in several meet & greet sessions across Scotland with Forest and Land Scotland, Scottish Forestry and SEPA. The sessions were set up to develop relationships with the environmental agencies as well as get a deeper understanding of each other's roles and explore where collaboration could take place.



BIG STEP 5 CASE STUDY: PEATLAND RESTORATION

UGIE PEATLAND PARTNERSHIP MOSS OF KINMUNDY PEATLAND RESTORATION

The Ugie Peatland Partnership (UPP) was formed to identify specific restoration projects, within the River Ugie catchment in Aberdeenshire, that would positively impact on source drinking water quality, biodiversity, and restore and protect the peatland for the delivery of multiple ecosystem services. We are working collaboratively with NatureScot, RSPB Scotland, Aberdeenshire Council, IUCN Peatland Programme, SEPA, Forest and Land Scotland, and Peatland Action as part of UPP to restore 1,500 hectares of peatland. The diversity of the partnership's member organisations highlights the diverse interest in the Ugie peatlands and the importance of their restoration in order to positively impact on climate change, safeguard this important natural habitat, and protect drinking water quality.

The peatland has deteriorated over time; areas of the carbon-rich peat soil suffer from significant levels of degradation due to the combined impacts of drainage, forestry and historic peat extraction. As a consequence, more organic matter was entering the River Ugie, a drinking water source for a large area of Aberdeenshire.

Moss of Kinmundy, one of 20 priority sites identified for restoration within the Ugie catchment, was the first area to be completed. Covering approximately 50 hectares, restoration focused on increasing the amount of water held on the bog to reverse the drying that has taken place. To do this, approximately 700km of ditches were blocked and two hectares of poor growing plantation were removed. Nearly 2km of eroded banks of peat, known as hags, were reshaped and vegetated.

As well as improving water quality and reducing greenhouse gas emissions, natural wetland habitat for native and migratory wildlife will be improved. This will create benefits for species including wading birds such as golden plover, and butterflies such as the Large Heath Butterfly – identified as a priority species due to its declining numbers across the UK.



BIG STEP 5 CASE STUDY: PEATLAND RESTORATION

LOCH ORASAIGH PEATLAND RESTORATION ON THE ISLE OF LEWIS

This project was carried out collaboratively between Scottish Water and Peatland Action. Locally we worked closely with the Soval estate owner and Ranish common grazing committee. The project focused on restoring 11 hectares of damaged and eroded peatland. Historical peat cutting had created drainage channels, allowing natural organic matter to be washed into Loch Orasaigh, the main source for North Lochs water treatment works.

The restoration of the peatland was carried out in phases. Covering 11 hectares, phase 1 was completed in late 2019. Much of the work on-site was to block man-made ditches and revegetate areas of bare peatland. The scheme offers a relatively inexpensive way of tackling climate change, as well as potentially reducing water treatment costs.

While the peatland restoration project aimed to improve water quality and restore natural systems, there are also benefits to two of Scotland's protected bird species found in the Outer Hebrides – Black Throated Divers and Great Skua.

The success of Phase 1 of the project is reflected in the decision by both Soval estate and Ranish common grazing committee to agree to a Phase 2, and 27 hectares of restoration started in late 2020. The restoration plays an important part in protecting this strategically important drinking water source and supply in the Outer Hebrides for many years to come.

The photographs were taken 15 months apart, showing the dramatic restoration that can be achieved.





SCOTTISH GOVERNMENT BIG STEP FOR NATURE

6.

MARINE AND COASTAL

2020 CHALLENGE OUTCOME:

Scotland's marine and coastal environments are clean, healthy, safe, productive and biologically diverse, meeting the long-term needs of people and nature.

SCOTTISH WATER CONTRIBUTION:

To protect and enhance our environment through compliance, responsible management and investment.

6.1 Adopt a Scottish Marine Plan and develop regional marine plans to aid balanced decision making in the marine environment.

Scottish Water 2017 Biodiversity Statement:

Scottish Water will contribute to the development of the Marine Plan and Marine Planning at National & Regional level by responding to consultations and attending stakeholder events.

Scottish Water provides treatment and safe return to the environment of society's waste water. In doing so, our assets often interact with the marine and coastal environment. Maintaining the integrity of outfalls and pipelines that discharge treated waste water to the sea is vital in providing this essential service safely. These assets are vulnerable to damage from other activities within the marine environment, the assets and licenced activities they carry out must be safeguarded.

We have contributed to Scotland's Marine Plan Interactive regarding the location of our waste water treatment works that are operated under the Urban Waste Water Treatment Directive.

The Marine Plan and existing Regional Marine Plans are taken into consideration during planning and implementation of projects.

6.2 Establish a coherent network of Marine Protected Areas, promoting sustainable use and conservation.

Scottish Water 2017 Biodiversity Statement:

Scottish Water will continue to contribute to the development of the Marine Protected Area (MPA) network through participation and consultation.

We review all Marine Protected Area (MPA) consultations and respond to those that lie within our areas of operation. We are supportive of MPAs for nature conservation, historical heritage and for demonstration purposes and heed NatureScot advice and guidance regarding our operations and activities.

Coastal MPAs are the most significant to Scottish Water in terms of our coastal assets and discharges. While pipeline placement on the seabed is dealt with through the Marine Licensing process, discharges are controlled through compliance with Controlled Activity Regulation licences and other legislation such as the Urban Waste Water Treatment and Bathing Water Directives.

We seek to engage early with our environmental stakeholders in discussions relating to siting, design and construction of new assets, including outfalls and pipelines. By carrying out environmental screening our in-house team of specialists ensure natural and historical heritage is considered in our project decisions. These decisions are important as, once the assets and discharges are in place, there is often little scope to move them in favour of an incompatible activity or new heritage site designation.



6.3 Collate information on the location and sensitivity of priority marine features, and make this information available to support their protection.

Scottish Water 2017 Biodiversity Statement:
Our Statement did not include any activities for this objective.

6.4 Achieve good Environmental status for Scottish seas.

Scottish Water 2017 Biodiversity Statement:
Scottish Water's core waste water activities include:

- managing discharges to the marine environment in keeping with regulatory licences.
- investing in discharges where needs are identified (e.g. bathing water, environmental quality, shellfish water, Sewage Related Debris (SRD)) and prioritised within agreed regulatory investment plans.

- contributing to the Marine Strategic Framework Directive (MSFD) descriptor 10, by working with Marine Scotland to develop and implement Scotland's Marine Litter Strategy.
- taking MSFD into account when considering aesthetic improvements to our networks under the Urban Waste Water Treatment Directive.
- undertaking studies to gather evidence to confirm asset maintenance needs and/or enhancements required to reduce the risk of SRD where required.

There are 33,655 miles of sewer pipes taking waste water away from homes and businesses; we operate 1,826 Waste Water Treatment Works (WWTW) across Scotland, treating more than 950 million litres of waste water before returning it safely to the environment. Scottish Water protects environmental quality in the marine environment in accordance with a range of legislation to ensure compliance with licence conditions. The performance of our assets is managed by a system of documented policies, procedures and inspections, which ensure assets and screens are maintained, minimising the release of sewage related debris (SRD) to the environment.

Assets and discharges close to Bathing Waters and that may impact on the bathing water standards, receive additional pre-bathing water checks and have special conditions included in their licences. To identify investment needs, we undertake studies and gather evidence to confirm enhancement requirements, which are prioritised in an agreed regulatory process.

Inappropriate disposal of sanitary items is a societal challenge and waste water systems have been identified as a pathway for SRD to enter the marine environment. We removed 9,500 tonnes of grit and screenings from our sewer networks in 2017, and clear approximately 36,000 blockages annually at a cost of £6.5 million. Sanitary products combine with fats, oils and grease in the pipes, causing 80% of sewer blockages. The associated environmental pollution incidents and service problems impact our waste water networks, WWTW and the environment. As well as causing unsightly aesthetic issues on the shoreline, SRD can present a danger to wildlife, such as seabirds and mammals, through ingestion or entanglement.

Scottish Water strongly supports the environmental principle of source control, irrespective of 'biodegradability'. Our key message is that only the '3Ps' - Pee, Poo and toilet Paper- should be flushed down the toilet. Products that contain plastics (mainly wet wipes and sanitary products) cause the most harm and are the most pervasive in the environment.

Our approach to source control includes: customer education and awareness campaigns; working with policy makers; influencing product labelling and design; examining our own use and reliance on single-use plastic items; working with Marine Scotland on the Marine Litter Strategy; and working with SEPA through the Environmental Pollution Incident process.

Customer education and awareness campaigns

Our awareness campaigns have been covered in Section 3.4. The campaign itself can be found on our website: www.scottishwater.co.uk/cycle

Working with policy makers

We work with industry and environmental stakeholders to raise awareness and to draw attention to the wider issue of single-use plastic products that include 'synthetic material', typically incorporated into items such as wipes, sanitary items and incontinence wear, personal care products and packaging.

Microplastics (plastic between 5 millimetres and 100 nanometres in size) can enter our waste water network from washing clothes, road run-off (containing wear from vehicle tyres and road paint), and from the breakdown of larger plastic items. We are collaborating with others in the water industry and keeping a close watching brief on how we can contribute to policy, regulation and control of microplastics.

Influencing product labelling & design

Scottish Water fully supports 'designing out' the inclusion of plastic where possible. We worked with stakeholders at national and European level to promote effective labelling of non-flushable products, as well as product substitution and the banning of single-use plastics where appropriate. We participated in the 21st Century Drainage project, which developed Water UK's Fine to Flush⁴ standard. Manufactured wipes that pass strict tests, to prove they will break down in the waste water network, can now

feature the official UK water industry 'Fine to Flush' symbol on the packaging. The symbol makes clear to consumers that the product does not contain plastic and won't contribute to blockages in the waste water network.

Reducing our reliance on plastic

Scottish Water has formed a Plastics Impact Reduction Group, comprising of stakeholders with expertise from within the business. This group aims to reduce the impact of plastic on the environment through a number of different initiatives. We have prepared a position statement on plastics, available to view on our website: www.scottishwater.co.uk/about-us/energy-and-sustainability/sustainability-and-climate-change/plastics

Marine Litter Strategy

Scottish Water works with Marine Scotland as members of the Marine Litter Strategy Group to develop, implement and review the Marine Litter Strategy (MLS). We contribute to the Marine Strategic Framework Directive (MSFD) which aims to achieve or maintain Good Environmental Status in European seas through action on descriptor 10, litter, by considering aesthetic improvements under the Urban Waste Water Treatment Directive.

⁴www.water.org.uk

Environmental Pollution Incident process

One of the key drivers of improvements at an operational level is the Environmental Pollution Incident (EPI) process, which is used when one of our assets is involved in the pollution of a waterbody. We have an obligation to report each EPI verbally and in writing to SEPA. EPIs are categorised and take into account amenity, ecosystem/habitat, fish species and economic impact. Reporting an EPI sets in motion a process of reactive maintenance – we attend onsite to investigate, initiate clean-ups, put mitigation in place to prevent further harm and carry out a detailed root cause analysis. The EPI record of an asset can also help identify longer term investment needs. By working closely with SEPA and by identifying best practice, we can continue to improve Scotland's water environment.

6.5 Bring Common Fisheries Policy fish stocks to levels consistent with Maximum Sustainable Yield wherever possible, and take into account biodiversity in managing inshore fisheries.

Scottish Water 2017 Biodiversity Statement:
This objective is not relevant to Scottish Water.

6.6 Implement a rapid response framework to prevent colonisation of new invasive species in Scotland's seas and islands.

Scottish Water 2017 Biodiversity Statement:
Scottish Water maintains an awareness of rapid response and reporting requirements.

We maintain an awareness of rapid response and reporting requirements, see Section 4.4 for information on how we address and manage Invasive Non-Native Species.

6.7 Improve the monitoring of the marine environment to identify changes and guide progress towards the above outcome.

Scottish Water 2017 Biodiversity Statement:
We did not originally make a statement regarding this element. However, the following ongoing activity is relevant.

Our Annual Monitoring Plan requires specified Final Effluent discharges to be sampled and analysed on suites of determinands. The relevant resulting data contributes to OSPAR. Based on the Oslo and Paris Conventions, this is the mechanism used to control dumping and land-based (including offshore) pollution in the North East Atlantic.

6.8 Improve understanding of how coastal ecosystems are likely to adapt to climate change and develop strategies for coastal zone management.

Scottish Water 2017 Biodiversity Statement:
We did not originally make a statement regarding this element. However, the saltmarsh restoration working with nature case study in Big Step for Nature 1 on page 8 indicates how we may act in future.

BIG STEP 6 CASE STUDY:

THE FORTH ESTUARY STUDY IMPACT OF SEWAGE RELATED DEBRIS

Sewage related debris (SRD), including sanitary items and other materials inappropriately discharged to sewer, can be released from the waste water system during times of heavy rainfall. We deal with SRD in different ways, from customer campaigns to prevent flushing inappropriate items, to focusing on addressing problems at our assets. The ban on single-use plastics is a welcome step in helping us to address such items.

In complex drainage systems that interact with dynamic marine currents, it can be difficult to identify and target the specific assets that may be causing SRD problems, which may occur at sites remote from the point of discharge. Understanding this is critical to ensure that we invest wisely to deliver benefit.

The Forth Estuary Study (FES) responded to continuing concerns regarding SRD in the estuary, to provide an understanding of assets potentially contributing to SRD pollution at multiple coastal locations around the estuary. The study covered 13 hydraulic catchments with

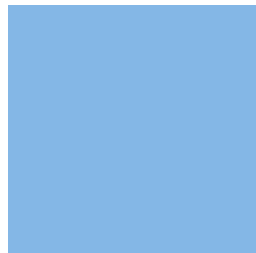
121 assets serving a population of approximately 150,000, with large flow volumes through the networks and waste water treatment works.

A model, originally built for investigations into bathing waters, was applied to understand the dispersal of SRD in the estuary from three locations linked to impacts on the shoreline, Edinburgh and the north and south shores of the inner estuary. Results showed that SRD released from all three locations remained close to their source after one day, and that progressively over the course of a month they became dispersed through the estuary.

A review was also carried out, to include our activities within the catchments discharging to the estuary. This work included: reviewing the condition and operation of drainage assets; drainage hydraulic models and catchment studies; Environmental Pollution Incident reports; telemetry data from our assets; and Met Office and tide data. From this, we were able to gain a better understanding of the conditions giving rise to SRD pollution, and the assets likely to be causing the problem.

The outcome from this study is helping to inform evidence-based investment needs for prioritisation; and we are now able to apply the methodology elsewhere, where a better understanding of the impact of our assets is required.





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