



Department for

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# **FOURTH ANNUAL REPORT ON SUSTAINABLE WATER - A LONG-TERM WATER STRATEGY FOR NORTHERN IRELAND (2015-2040)**

**November 2020**

## Executive Summary

1. The Executive's Sustainable Water – A Long-Term Water Strategy sets out a common vision for a sustainable water sector. To ensure full compliance with the Strategy, an Implementation Action Plan was agreed by all the relevant stakeholders. The Department for Infrastructure (Dfi) is responsible for managing the implementation of the Strategy and has undertaken to co-ordinate an Annual Report on its progress and furnish the NI Executive with a copy. This is the fourth Annual Report on the implementation of the Strategy.
2. The Implementation Action Plan contains 231 actions which have been drawn directly from the Strategy. The actions have been prioritised as short, medium and long-term actions and, as it is still early in the lifespan of the Strategy, progress is largely limited to the short-term actions. Some preparatory work or planning may be underway in respect of the others, but that may not be reflected in this Report. It should be noted that a large number of actions are considered 'business as usual' and as such will always be ongoing rather than having a specific end date.
3. Key achievements this period include:
  - (i) the Belfast Tidal Flood Alleviation Scheme is currently at procurement stage. The principal aim of the scheme is to provide a long-term approach to tidal flood risk management for Belfast City Centre and the River Lagan, from Belfast Lough to Stranmillis Weir. It is estimated that the identified scheme will provide flood protection to up to 1,500 properties. Climate change predictions estimate this could rise to 3,500 properties by 2080 and 6600 by 2117. The scheme is estimated to cost £17.8m;
  - (ii) the Northern Ireland Environment Agency (NIEA) hosted its Water Framework Directive stakeholder conference in October 2019, with the main focus of the day on water quality and collaborative working;

- (iii) NI Water invested around £3m to construct a new wastewater treatment works in Ballintoy, County Antrim to improve water quality in the surrounding coastal areas and support growth in local tourism and development;
- (iv) NI Water constructed a wetland in Clabby, County Fermanagh to replace the traditional wastewater treatment works, which had struggled to meet new discharge standards and was restricting growth in the village. The wetland is more efficient to construct and maintain than traditional systems and requires less energy, carbon, concrete and chemicals;
- (v) NI Water completed the restoration of the largest expanse of intact blanket bog in Northern Ireland, the Garron Bog. The aim of this work is to improve the quality and reliability of the water received at NI Water's Dungonnell treatment works, which is supplied by the Garron catchment;
- (vi) NI Water is now a formal partner in the All-Ireland Pollinator Plan, an island-wide initiative to reverse the decline of precious pollinating insects. NI Water already has some beautiful pollinator areas, an example of which is Ballynacor Wildflower Meadow, and their marginal areas are also important havens e.g. sand pits, depot storage areas and grassy corridors beside buildings;
- (vii) NI Water invested £5.3m in a new service reservoir at Lough Fea which supplies drinking water to customers in the East Tyrone area including the towns of Pomeroy, Coagh and Cookstown;
- (viii) NI Water enhanced its social media platform, to keep customers informed with live updates on planned and unplanned interruptions; and
- (ix) NI Water won the coveted Queen's Award for Enterprise for Sustainable Development 2020. This is a prestigious award which recognises companies across the UK that display best practice in Sustainable Development and address sustainability issues using innovative

approaches. NI Water's work was commended for involving employees and customers in its supply chain and using partnership working to deliver a wide range of large scale investment projects in an inclusive way. Highlights include investment projects to protect catchments and improve raw water quality, enhance biodiversity, reduce carbon emissions and flood risk, increase renewable energy generation and improve wastewater treatment across Northern Ireland.

4. Strategy actions will assist in the delivery of a number of the outcomes (detailed below) in the Executive's Outcomes Delivery Plan (ODP), and will ensure that water is respected as a valuable natural resource that is vital to life, enhances our environment and enables our economy to grow.
  - (i) outcome 1 - we prosper through a strong, competitive, regionally balanced economy;
  - (ii) outcome 2 - we live and work sustainably – protecting the environment;
  - (iii) outcome 4 - we enjoy, long, healthy, active lives; and
  - (iv) outcome 11 - we connect people and opportunities through our infrastructure.

## **KEY CHALLENGES**

### **Funding**

5. Full implementation of the Strategy will require significant financial investment over the 25-year period of the Strategy. The issue of costs and funding is of increasing concern in the current economic climate. It is recognised that reductions in funding will have an impact on key stakeholders' (government departments and NI Water) ability to deliver the objectives of the Strategy and the level of investment will depend on the Executive's budget priorities. In addition, the implications of the UK withdrawal from the EU, which are still to be clearly defined, will need to be carefully managed to minimise any potential impact on the delivery of the Strategy. The longer-term impacts of COVID-19

will also need to be more fully understood. The management of the pandemic has, however, made very clear that water plays a key role in protecting the health and wellbeing of our citizens, and this has underscored the need to manage this natural resource in a more sustainable way.

### **Increased Water Consumption**

6. The COVID-19 Pandemic lockdown period from 18 March 2020, saw increases in household demand and a slight decrease in non-household demand, which was further exacerbated during the warm weather, and the associated high demand period, at the end of May/early June 2020. The overall increase in water demand increased from 603 megalitres per day (MI/d) on 22 May 2020 to 664MI/d on 28 May 2020, reaching highest demand at 720MI/d on 2 June 2020. These figures compare to an annual average of 588MI/d during the 2019/20 financial year. When considered in the context of demands, this equates to an increase of 123% of normal household demand, coinciding with a decrease in non-household demand to 68% of pre-lockdown usage. This additional volume requirement required careful management by NI Water staff, as many pipelines and treatment works were operating at maximum capacity during this period.

### **Climate Change**

7. The latest climate projections indicate that Northern Ireland will be subject to higher average temperatures, increasing winter precipitation and more extremes of weather. The Strategy and its delivery partners will need to consider these latest climate projections in the management of flood risk, development planning and the delivery of Strategy actions.

### **Water Quality**

8. Significant challenges remain to improve the water quality of water bodies, in line with the standards set out in the Water Framework Directive. Water

catchments continue to be impacted by a wide range of pressures including urban development, industry, agriculture, abstraction, forestry and chemicals.

### **Future Agricultural Policy**

9. Future agricultural policy will be developed outside the constructs of the Common Agricultural Policy. Looking ahead, this means that there will be greater flexibility to decide the shape and nature of future agricultural support and agri-environment schemes. In making decisions around this, there will need to be consideration of the details of any measures to support the strategy, alongside how the agriculture industry needs to be supported through any wider challenges and opportunities post EU exit.

### **INTRODUCTION**

10. This is the fourth Annual Report on the Executive's Sustainable Water – A Long-Term Water Strategy. The Strategy sets out a common vision for a sustainable water sector and focuses on Economic Development & Growth, Affordability, Environmental Improvement & Compliance, Flood Risk Management and Sustainable Service Delivery.
11. The Strategy will support the delivery of specific commitments in the Northern Ireland Executive's Outcomes Delivery Plan and has informed PC21 Social and Environmental Guidance for water and sewerage services, which sets out key investment priorities for the water sector.
12. The Strategy focuses on four high-level aims to cover the key water needs within a catchment:
  - i. to provide high quality sustainable supplies of drinking water to households, industry and agriculture;
  - ii. to manage flood risk and drainage in a sustainable manner;
  - iii. to achieve the environmental requirements of the Water Framework Directive in a sustainable manner; and
  - iv. to provide sustainable water and sewerage services that meet customers' needs.

## Drinking Water Supply and Demand

13. In order to “*Manage Drinking Water Quality Risks in a Sustainable Manner from Source to Tap (DW Aim 1)*”, NI Water has, in consultation with key stakeholders, put a number of plans and programmes in place:
  - i. NI Water is progressing its Sustainable Catchment Management Planning programme (SCAMP) alongside an Interreg funded Source to Tap Project across the Derg and Erne drinking water catchments. NI Water’s sustainable catchment management approach aims to meet the challenges faced in drinking water catchment areas, such as herbicide usage and drying out of peatlands. The direction of travel for NI Water is to work with key NGO’s, land owners and managers to change Northern Ireland’s approach to drinking water catchment areas, so as to improve raw water before it reaches water treatment works and therefore reduce the need for built treatment facilities, whilst restoring the natural benefits of peatland, woodland, and heathland. Some examples of projects completed this year include peatland restoration in Killylane catchment area, working with DAERA, CAFRE and QUB and one to one relationship development with land owners and managers in priority catchments across Northern Ireland. NI Water works closely with the Mourne Heritage Trust and the National Trust to address grazing, erosion control, riparian planting, invasive species control, recreation / access and wildfire prevention measures in the Mournes. This year will see the development of a Mournes Holistic Land Management Plan;
  - ii. NI Water ‘delivers what matters’ by creating and sustaining value over the short, medium and long term. The concept of value has been widened to include a focus on six capitals or pools of resources. The six capitals are financial, natural, social, human, manufactured and intellectual capitals. This wider view enables the creation of sustainable solutions for people and the planet and a mechanism to demonstrate and encourage collaborative working towards a better Northern Ireland.

- iii. the Drinking Water Inspectorate (DWI) is working with NI Water to review the mitigations identified within all the risk assessments of the Drinking Water Safety Plans; and
  - iv. the Department of Agriculture, Environment and Rural Affairs (DAERA) is preparing a groundwater protection leaflet, which will be published in late 2020, to better inform the public and stakeholders about groundwater issues in Northern Ireland. Groundwater protection presentations are also being delivered to DAERA Catchment Officer staff and other teams.
14. Over the PC15 period, NI Water has committed to the proactive replacement of over 11,000 lead communication pipes (which are outside the curtilage of the property) at consumers' properties, in addition to opportunistic lead pipe replacement under water main rehabilitation. NI Water has also carried out lead pipe replacements in response to customer requests for lead pipe replacement and/or following an exceedance of the lead standard for samples taken as part of its routine sampling programme or at the request of a customer.
15. From April 2015 to March 2020, NI Water has completed 9,407 lead communication pipe replacements under the proactive PC15 replacement programme against a target of 9,220. A number of additional actions are being taken forward to encourage the removal of lead pipes at customer properties which are outside NI Water's remit, including targeted awareness campaigns and linking together the various programmes carried out by public bodies e.g. Northern Ireland Housing Executive (NIHE). NI Water has increased customer awareness of the legacy of lead pipes that still need to be replaced, via leaflet/letter drops. The Company has publicised other tangible benefits of the Lead Pipe Replacement programme, i.e. providing customers with their own individual communication supply pipe, if previously fed off a "master or servant" or stringer supply, hence improving water pressure and flow to the customer. NI Water collaborated with NIHE and carried out a "Lead Service Pilot Study" on properties in Larne to substantiate the need for complete removal of lead into the property. NI Water are now sharing information when lead pipes are



identified in NIHE housing stock, to allow both communication and supply pipes and internal plumbing to be replaced.

16. The Drinking Water Inspectorate (DWI) is the drinking water quality regulator covering both public and private drinking water supplies. Within the Strategy, it leads on the monitoring and risk assessment of drinking water quality from private water supplies through administering the private water supply regulations. DWI undertakes an annual monitoring programme of private water supplies, and in 2019, there were over 15,000 tests carried out, with 99.29% of these tests compliant with drinking water standards at these supplies. The Service Level Agreement continues to operate with councils and the Drinking Water Working Group, with representatives from each council and DWI meeting in April 2019. In addition, two sampling training sessions were delivered for 26 council staff in June and October 2019. DWI has been actively engaged with stakeholders through the Groundwater Resources Working Group which was set up to advance the sustainable use of groundwater resources. DWI completed the development of a web-based application for the risk assessment of private water supplies in April 2019. Risk assessment training was delivered to 52 council staff in June, October and November 2019. The new application is being actively used by councils to complete risk assessments at sites using a private water supply. DWI has an ongoing support role to provide advice and guidance on protecting groundwater sources from contamination and maintaining a wholesome water supply to safeguard public health.
17. DWI also leads on a series of targets, within the Strategy, related to managing water quality risks within domestic distribution systems. These include promoting the use of the Water Safety Plan approach within buildings, where water is made available to the public, by providing appropriate advice and guidance. DWI has continued, during 2019, to work with key stakeholders, and intends, within the short to medium term, to develop and promote such an approach.
18. The Strategy aims to ensure that we “*Meet the Water Demand Needs of Society, the Economy and the Environment (DW Aim 2)*” and a key means of

achieving this is by effective forward planning. In June 2020, NI Water published its first Water Resource and Supply Resilience Plan. This Plan states that there has been a substantial improvement in the resilience of the water network since the previous Water Resource Management Plan in 2012, through the implementation of a number of capital projects. However, the Plan does recommend a small number of schemes which NI Water considers important to further improve the resilience of the network and three projects that are essential to ensure that sufficient water is available for customers over the next 25 years.

19. The impact of water abstraction and water usage on the environment is a key consideration and, in order to reduce water consumption, NI Water runs an extensive education campaign, visiting 246 primary and secondary schools in 2019/20. This includes bringing the Waterbus to schools and giving class talks on how to save water in the home. In addition, NI Water also attended and visited 143 community talks/events to promote water efficiency and carried out 68 farm visits in the Derg catchment as part of the Land Incentive Scheme in connection with weed-wiping projects.
20. NI Water invested £5.3m in a new Service Reservoir at Lough Fea which supplies drinking water to customers in the East Tyrone area including towns the towns of Pomeroy, Coagh and Cookstown.
21. The Northern Ireland Assembly declared a Climate Emergency where MLAs supported immediate action to cut carbon emissions. NI Water is committed to playing its part in tackling the climate emergency and working to reach net carbon zero. This is both an energy and a carbon challenge and in order to meet this commitment:
  - i. NI Water recognises that the water business is circular, as the water that it abstracts from the environment, treats and distributes to its customers is then recycled through the collection and treatment of wastewater before treated effluent is discharged back to the environment. This requires a huge amount of energy, mostly in the form of electricity;

- ii. NI Water has over 3,000 connections to the electricity grid and is the 2<sup>nd</sup> biggest landowner in Northern Ireland. It therefore has a key role, and indeed opportunity in the route to net zero through not simply being a consumer of energy, but by being an active part of the electricity network;
  - iii. NI Water, through a number of new and exciting opportunities will seek sustainable solutions associated with new and existing assets, adopt new, innovative and energy efficient treatment processes to meet its water quality and treatment targets, reduce energy consumption and provide wider environmental benefits, including biodiversity;
  - iv. NI Water will steadily reduce its dependency on energy derived from fossil fuels through self-generation together with a 'buying greener' approach to the energy market;
  - v. NI Water is exploring new technologies including the opportunities of battery storage and hydrogen generation that can deliver economic and environmental benefits; and
  - vi. NI Water's approach to land management, both within the company's own land and other landowners' land within its water catchments, plays a key role in the environment and the route to net zero. This is delivered through wetting of blanket bogs, removal of pesticides entering the water cycle, tree planting, erosion control, changing in farming practices and protecting of vital soil and other initiatives. NI Water understands that a 'circular' approach is key to meeting the net zero target, not just for NI Water, but for Northern Ireland.
22. To ensure that it can "*Resource Efficient Drinking Water Treatment and Supply Chains (DW Aim 3)*", NI Water has made significant progress reviewing its water treatment and supply systems to identify how potential energy savings might be achieved.
- i During 2019/20, NI Water's Instrumentation, Control, Automation and Telemetry (iCAT) team has developed and installed the first intelligent

Water Pumping Station (iWPS) at Ballyhome, Portrush. This work was completed in advance of The Open 2019 golf tournament and the new pumping performed as planned during The Open and since this event. This development work has informed NI Water's PC21 Business Plan submission and provides the company with an opportunity to improve performance and customer resilience, by installing the iWPS solution at further water pumping stations sites during PC21;

- ii NI Water achieved the ISO 50001 certification, the international standard for energy management systems, which allows NI Water to achieve continual improvement in energy performance;
- iii NI Water completed the restoration of the largest expanse of intact blanket bog in Northern Ireland, the Garron Bog. The aim of this work is to improve the quality and reliability of the water received at NI Water's Dungonnell Water Treatment Works, which is supplied by the Garron catchment. By improving raw water quality, the water requires less treatment before entering the supply chain; and
- iv NI Water has invested £7m in a 'solar farm' beside Dunore Water Treatment Works on the banks of Lough Neagh, which is saving NI Water around £550k each year in energy costs.

## **Flood Risk Management and Drainage**

- 23. Given the number of flood events in Northern Ireland in recent years and the widespread impact these events have caused, one of the key aims of the Strategy is to manage flood risk and drainage in a sustainable manner.
- 24. The Department for Infrastructure is the competent authority for implementing the Floods Directive in Northern Ireland, in partnership with a number of other statutory bodies and departments, including NI Water, local councils and DAERA. The first cycle Flood Risk Management Plan, published in 2015, covers the period 2015-2021. Preparation of the 2nd cycle Flood Risk

Management Plan, for the period 2021-27, has commenced and a Floods Directive Technical Stakeholder Group (FDTSG) has been established to progress this, led by DfI's Water and Drainage Policy Division

25. There are a number of stages in the development of a Flood Risk Management Plan and work on the second cycle, which runs concurrently with the first cycle Plan, is being progressed as follows:
  - i. The Northern Ireland Flood Risk Assessment (NIFRA) 2018, published in December 2018, is a high level analysis of the potential economic, social and environmental impacts which could result from flooding in Northern Ireland. This assessment has identified 12 Areas of Potential Significant Flood Risk (APSFR);
  - ii. For each of the 12 APSFR identified, the Directive required that flood hazard and flood risk maps were reviewed and, if necessary, updated and made available to the public by 22 December 2019. Although the updating of flood mapping is normally an on-going process, this exercise was completed within the statutory timeframe and the updated flood maps can be viewed at Flood Maps (NI); and
  - iii. The next stage of the Directive will be the publication and consultation on the draft Flood Risk Management Plan and associated Strategic Environmental Assessment (SEA) by 22 December 2020. This will enable the publication of the final Northern Ireland FRMP (2021–2027) and SEA on 22 December 2021. The APSFR will inform the Flood Risk Management Plan and become the focus of future actions, helping DfI and other stakeholders to work with communities to develop measures to reduce the impacts from flooding.
26. Amendments were made to the NI Regulations made under the Floods Directive to ensure that they are still operative post EU-Exit.

27. Dfl Rivers is actively participating in two projects to define best practice guidance for implementing natural flood management measures on a catchment scale to reduce flood risk. Firstly, the Quantifying Nature-Based Flood Mitigation (Q-NFM) project with Lancaster University aims to quantify the effectiveness of land management techniques to slow the flow of water within catchments. Secondly, Dfl Rivers is a steering group member on a Construction Industry Research and Information Association (CIRIA) led project to provide guidance on key natural flood management measures. Both projects will contribute significantly to informing future policy and will report within the next 12 - 18 months. Dfl is currently reviewing the impact of UKCP18 climate change projection scenarios and revised UK coastal flood boundary sea level projections and will update published maps, guidance and allowances as necessary, upon completion of this review.
  
28. Land-use planning is key to managing flood risk and drainage issues and to *“Delivering Sustainable Flood Resilient Development (FRMD Aim 1)”*. Dfl is responsible for planning policy and drainage matters and it is working closely with council planning departments to enable them to make informed decisions in relation to flood risk policies that should be included in their new Local Development Plans (LDPs) and Development Management issues.
  
29. The Stormwater Management Group (SMG) is a multi-agency group jointly chaired by Dfl’s Water and Drainage Policy Division (WDPD) and NIEA. Its focus is to encourage the use of sustainable drainage systems (SuDS) as the preferred means of dealing with surface water. Work to date has been successful in increasing the implementation of hard engineered underground SuDS systems. The group is exploring various options for approval and adoption/maintenance of soft SuDS assets to encourage their uptake among developers. Any policy is likely to require legislative change and have financial impacts for one or more stakeholders. The widespread use of SuDS will further reduce flood risk in the future and provide sustainable development by retaining stormwater local to the development during flood events. LDPs from local councils have been scrutinised and comments returned to encourage inclusion

of SuDS within Plans, particularly referencing the additional benefits of soft SuDS. The SMG is continuing to engage with stakeholders to identify potential pilot soft SuDS projects. The SMG has been working alongside a number of private developers where soft SuDS feature in the development and a sub-set of the SMG has been established to identify possible risks and issues with the aim of encouraging solutions and mitigation measures to be implemented. Learning from these developments will help inform future SuDS policy and guidance.

30. In *“Managing the Catchment to Reduce Flood Risk (FRMD Aim 2)”*, it is important to consider man-made structures as well as those that occur naturally. DfI Roads and Rivers and NI Water continue to carry out routine proactive and reactive maintenance, as resources permit, to ensure that publicly-managed drainage systems are performing their function, particularly during periods of intense or prolonged rainfall. Specifically, DfI Rivers has a rolling programme of annual watercourse and drainage asset maintenance.
31. Reservoirs are significant man-made structures. It is, therefore, important that these structures are routinely monitored to ensure that the structure is fit for purpose and that any identified weaknesses are addressed to mitigate against the risk of flooding caused by reservoir failure.
32. The introduction of the regulatory framework for controlled reservoirs provided for by the Reservoirs Act (NI) 2015 is dependent on statutory responsibility for the Act being transferred from DAERA to DfI by means of a Transfer of Functions Order (TOFO).
33. The first stage in the process to transfer statutory responsibility for the Reservoirs Act (NI) 2015, to DfI, has been initiated and the agreement of the First Minister and deputy First Minister to make the TOFO has been sought. The necessary preparatory administrative work to progress the Reservoirs Act is continuing and will be presented for consideration by the Minister when statutory responsibility is transferred.

34. In the absence of the commencement of the full regulatory framework provided for by the Reservoirs Act (NI) 2015, DfI Rivers has produced a Technical Guidance Note, to provide a structured approach to the provision of advice to Planning Authorities on flood risk from reservoirs.
35. The Living with Water Programme (LWWP) is also developing a Strategic Drainage Infrastructure Plan (SDIP) for Belfast to protect against flooding, enhance the environment and enable economic growth. This is being led by DfI, with significant input from NI Water, DAERA, Belfast City Council and the Utility Regulator. The Plan will examine a range of sustainable drainage options e.g. SuDS, etc. as potential solutions. Provisional estimates indicate that over £1.45 billion will be needed to deliver the SDIP over the next 13 years. This presents a significant challenge in the current financial climate. The first major milestone is development of the draft Belfast SDIP, which is to be published for public consultation later in 2020/21. Considerable progress has been made in working with key stakeholders over the past year with joint proposals being taken forward with Belfast City Council and NI Water.
36. In an effort to *“Provide Sustainable Integrated Drainage in Rural and Urban Areas (FRMD Aim 3)”*, NI Water is piloting stormwater separation projects. In 2019/20, it removed more than around 59,586m<sup>2</sup> of impermeable area which was putting stormwater into the combined sewers, which included a major scheme in Ballykelly. From 1 April 2015 to 31 March 2020, the total impermeable area removed is now 296,313 m<sup>2</sup>. This is in excess of its target of 30,000m<sup>2</sup> per annum which was set in PC15 and reduces the risk of flooding from combined sewers. Other corporate tools such a sewer risk model and capacity mapping are being introduced to complement work on the register of properties at risk of internal (DG5) and external flooding.
37. To *“Improve Flood Resistance and Resilience in High Flood Risk Areas (FRMD Aim 4)”*, DfI Rivers maintains registers of flood hot spots that are at risk from flooding. Established in 2013, the Flood Investment and Planning Group (FIPG) continues to provide a co-ordinated approach to the identification of flooding



issues to be addressed on a multi-agency basis, including proposals for the investigation of flooding, and to propose potential solutions, prioritise investment, agree responsibilities and funding proposals, and make the case for investment. FIPG consists of representatives from Water and Drainage Policy Division, DfI Roads, DfI Rivers and NI Water who, working collaboratively, have contributed to the delivery of a number of flood alleviation investigations and schemes. Some examples include: Dromore Town Centre; and Connswater, Knock and Loop Rivers, Belfast (NI Water back drainage review).

38. The Homeowner Flood Protection Grant Scheme pilot was launched in January 2016. To the end of April 2020, 219 applications have been received and of those, 123 have been assessed as suitable and approved. Installation started in October 2017 and to the end of April 2020, 80 homes have been completed.
39. The review of the Homeowner Flood Protection Grant Scheme is well advanced and is expected to be complete in the coming weeks. This review considers the effectiveness of the existing scheme and will inform any decision on future proposals. DfI will require new legislation to progress any future substantive scheme that the Minister may wish to take forward. The scheme remains open to new applications while this evaluation is undertaken.
40. DfI Rivers spent £6.3m on drainage and flood alleviation schemes in 2019/20 which protected 91 properties.
41. In 2019/20, DfI Rivers repaired over 2.3km of designated culverts and 6.12km of fluvial defences. In addition to this, DfI Rivers also maintained over 4654 designated rural open watercourses and 99.8% of all designated culvert inlet grilles. Rivers also inspected and maintained, as required, 90% of all designated urban open watercourses.
42. DfI Rivers has progressed the £17.8m Belfast Tidal Flood Alleviation Scheme to procurement stage. The principal aim of this scheme is to provide a long term approach to tidal flood risk management for Belfast City Centre and the tidal

River Lagan, from Belfast Lough to Stranmillis Weir. It is estimated that the scheme will provide flood protection for up to 1,500 properties. Climate change predictions estimate this could rise to 3,500 properties by 2080 and 6,600 by 2117.

43. DfI Rivers has been progressing flood alleviation schemes through different stages in Portadown, Newcastle, Lurgan, Fintona, Antrim, Lisburn, Belfast City Centre, East Belfast, West Belfast, Newry, Drumahoe, Eglinton and Londonderry, with some of this work programmed to start in 2020/21.
44. Progress continues to identify funding and works delivery opportunities to upgrade and provide flood alleviation infrastructure. A new DfI Rivers Asset Management Plan (AMP) has now been commissioned with delivery by December 2020. Asset Management & Mapping Unit has a database of all above and below ground assets that is used to inform investment needs and asset value. Development of historical flood database is being explored. Rivers Flood Risk Management viewer contains Rivers and NI Water assets, with the NI water assets being drawn directly from NI Water's Corporate Asset Register.
45. In preparation for "*Extreme Weather Events (FRMD Aim 5)*", the Regional Community Resilience Group (RCRG) continues to deliver community resilience work across Northern Ireland, with DfI Rivers providing strategic leadership in this important area of work to manage flood risk. Community resilience developed under the guidance of DfI Rivers, is identified as one of the key measures to assist in the management of flood risk. The group is now engaging with over 30 communities at risk of severe weather.
46. Northern Ireland's second Climate Change Adaptation Programme (NICCAP2) was published in September 2019 and is a cross-departmental response to the risks posed in the 2017 UK Climate Change Risk Assessment (UKCCRA). Yearly reporting, as well as a comprehensive mid-programme review, will provide the opportunity to report on progress of Delivery Plans as well as adding additional/new plans and policies.

47. Concerns about Climate Change and its predicted impacts on the water environment have taken a leap forward this year. Local councils, particularly Derry & Strabane District Council and Belfast City Council, are now actively engaged in adaptation planning. A Belfast Climate Commission has recently been established to translate climate policy into action 'on the ground' and bring about transformative change. This impetus is likely to cascade to other council areas in the short term.
48. In its responsibilities under the EU Floods Directive, DfI completed updating of its Flood Mapping by the required December 2019 deadline; this includes flood mapping for Climate Change ([Flood Maps NI](#) link). DfI is working with councils to embed its current Technical Flood Risk Guidance on allowances for Climate Change into planning practice.
49. In November 2018, the UK Met Office, through the UK Climate Impacts Programme, released its latest UKCP18 research and DfI has been liaising with other UK administrations in considering new allowances for Climate Change in the management of flood risk and for development planning. The latest climate projections indicate that Northern Ireland will be subject to higher average temperatures, increasing winter precipitation and more extremes of weather. With UKCP18 sea level rise predictions being higher than previously indicated, views are that an even more precautionary approach to allowances will need to be taken.
50. DfI has been providing datasets and input into Climate Change Risk Assessment 2022 (CCRA3) and particularly into the Future Flood Risk Assessment project. DfI previously contributed actions and content relating to the water environment in the development of the 2<sup>nd</sup> NI Climate Change Adaptation Programme (NICCAP2) the implementation of which is being coordinated by DAERA Climate Change Unit.

## Environmental Protection and Improvement

51. DfI and DAERA work closely to help develop and implement “*Sustainable Environmental Policy and Regulation (EP Aim 1)*”.
52. NIEA hosted its Water Framework Directive stakeholder conference in October 2019, with the main focus of the day on water quality and collaborative working. The conference attracted a wide range of stakeholders from across Ireland, including environmental non-governmental organisations, local councils, rivers trusts and individuals. It was an opportunity to hear updates from government and local partnerships on the projects that are currently underway to improve water quality and also updates on emerging issues facing global and local water quality such as antimicrobial resistance and pollution from plastics.
53. Following the consultation on the ‘Significant Water Management Issues’ report, DAERA is preparing the draft River Basin Management Plan (2021-27) including a Programmes of Measures, which will be published in this reporting period.
54. DAERA is working closely with NI Water to develop an ecosystem model for both the Shared Waters Enhancement and Loughs Legacy (SWELL) project and the LWWP. DAERA is also supporting the development of a Catchment Ecosystem Model and is awaiting the outputs of the first pilot at Dundrum.
55. NIEA has engaged Agri-Food and Biosciences Institute (AFBI) on a research project on further catchment source apportionment modelling.
56. DAERA continues to take forward actions in the test recommendations made in the Sustainable Agricultural Land Management Strategy Implementation Plan in terms of research, land mobility and a knowledge and advisory framework.
57. DAERA completed a soil sampling and analysis research initiative in the Colebrooke and Strule water catchments, which involved the participation of 1,613 farms and sampling of 29,705 fields. The key recommendations from this

initiative will be used to inform the Strategic Outline Business Case to assess the need and benefits of a potential Northern Ireland-wide soil sampling scheme. The main conclusions identified from these two catchments were: scan Northern Ireland with Lidar technology to help assess the impact of phosphorus and to tailor advice to farmers; and that pilots have been successful in influencing farmer intentions to improve nutrient management practices.

58. As part of this exercise, an AFBI science paper "Carrying capacity framework for soil phosphorus and hydrological sensitivity from farm to catchment scales" has been published from the data collected and analysed in one of the pilot catchments. The results include modelling which can be applied to other catchments in the future to assist farmers get the best outcomes from participation in the Environmental Farming Scheme (EFS), including the group measure aimed at catchment scale water quality targeting. Forty one land mobility agreements are now in place, which facilitate the option for longer term land management best practices.
59. NI Water launched a campaign to inspire people to 'Join the Refillution', aimed at encouraging everyone to stop buying single use plastic bottles and instead refill a reusable one with tap water.
60. To work towards "*Sustainably Managing the Catchment to Improve Water Quality (EP Aim 2)*", DAERA has recently established a multi-agency Priority Catchment Working Group, involving marine colleagues, and focusing on the Dundrum catchment. This should provide a model for addressing other catchments with multiple problems.
61. DAERA's (EFS) aims to deliver specific environmental measures in order to restore, preserve and enhance biodiversity; improve water quality; and foster carbon conservation and sequestration in agriculture. The EFS contains a Higher Level, which is aimed at environmentally designated land and priority habitats, and a Wider Level which is aimed at the wider countryside. Water quality measures are largely being delivered through the Wider Level of EFS. This is because the Wider Level targets more intensively farmed land, where agricultural pressures on water quality are greatest. The first three tranches of

EFS opened for applications in 2017, 2018 and 2019. Through these first three tranches, 4,192 Wider Level agreements and 779 Higher Level agreements have been put in place. Tranche 4 Higher Level opened in May 2020 and tranche 4 of Wider Level is planned to open in summer 2020.

62. Uptake of water quality measures has been good, with some 77% of Wider Level agreements including at least one of the five specific water quality options. In total, through the three tranches some 2,912km of watercourses have been protected by fencing and 187km of riparian zones created. The water quality measures implemented through EFS will help to reduce nutrient inputs and sedimentation arising from farming activities. Therefore, they will contribute to the Executive's Outcome Delivery Plan - Outcome 2, we live and work sustainably - protecting the environment.
63. In the second cycle River Basin Management Plans (2015-2021), the NIEA Catchment Teams' efforts have been focused on water bodies failing to reach their WFD objective due to only one failing parameter, and those water bodies that have deteriorated in status. The catchment investigations involved additional sampling and survey work to pinpoint the pressures within the catchments, such as areas of increased nutrient loading. The measures applied to these water bodies were bespoke to the failing element and pressures identified. Where the additional nutrient loading was related to farming practices, this resulted in cross-compliance visits to farm businesses known to be impacting on water quality. Where appropriate, the catchments were highlighted for agri-environmental training and guidance from the Knowledge Advisory Service within DAERA.
64. One such water body that the Catchment Team prioritised was the Grillagh River. The Grillagh rises in the Sperrins close to Maghera and flows to the Lower Bann. It was prioritised as it had deteriorated in status due to reduced Dissolved Oxygen (DO) levels, resulting from increased nutrient loading. The catchment investigation identified one tributary of the Grillagh with elevated Soluble Reactive Phosphate (SRP), and suppressed DO. This prompted a detailed survey of this tributary, which identified an increased nutrient load

traced to a farm. This information was passed to the local Water Quality Inspectors, who were able to resolve the issue. The DO levels were restored to “high” status; for this water body that requires DOs greater than 75%.

65. In more general terms, water catchments continue to be impacted by a wide range of pressures including, but not limited to: urban development, industry, agriculture, abstraction, forestry and chemicals. The 3<sup>rd</sup> cycle River Basin Management Plans will take these pressures into account and will set out what measures will be taken to protect and improve our water environment, enabling them to reach good status by 2027.
66. Training and support for Nutrient Management and Land Management continues to be delivered to farmers on a sectorial basis by the Business Development Groups (BDG) and approximately 3,500 farmers will be enrolled, once new applications are processed.
67. DAERA’s Forest Service met its business plan target for 2019/20, supporting 150 hectares of new privately-owned woodland, supplying a wide range of ecosystem services including flood mitigation. In addition, Forest Service also planted 52 hectares of new woodland on DAERA’s land during 2019/20.
68. In 2020, 35 hectares of Slieveanorra Forest on the banks of the Glendun River, Antrim, formerly leased for sheep grazing, was planted with native tree species. This is the first stage in an overall design plan to establish a 65 hectare native woodland water buffer along almost 6 kilometres of this sensitive watercourse.
69. Forest Service has also increased the use of native woodland water buffers in Forest Service managed headwaters of riverine Special Areas of Conservation (SAC), to improve water quality and improve habitats valuable to priority species under stress due to habitat loss elsewhere and climate change.
70. Going forward, it will be important to ensure that government policy on woodland expansion, to help mitigate climate change and deliver other ecosystem services, such as improvement in the water environment, is incorporated into future agricultural and environmental policy development. Greater promotion of Natural Flood Management will also be important and this

could be supported by strengthening the references in a future revision of Sustainable Water.

71. To provide “*Effective and Efficient Wastewater Collection and Treatment (EP Aim 3)*”, NIEA continues to regulate NI Water discharges. NIEA and NI Water have commenced the development of new compliance assessment measures to gather more evidence on the environmental performance of NI Water Assets. Improved data collection will ensure capital investment is targeted to achieve good environmental outcomes.
72. NI Water continues to expand its exploration of sustainable wastewater treatment. Trials planned, or underway, to date include: Integrated Constructed Wetlands (ICW), Phragmafiltre (aerated reed bed), Nereda (purification of wastewater using aerobic granular biomass) and a 5000 population equivalent ICW and Aerofac (naturally aerated lagoon). NI Water has also completed its first Nereda pilot at Dungannon (Phase 1).
73. NI Water has rolled out Best Efficiency Point (BEP) pumping control at nine wastewater pumping stations with a further six sites to be completed by the end of September 2020. This has improved the pumping performance of large pumping assets, delivering energy savings. In addition, NI Water is now focusing on reducing the energy used in the odour control process, with a trial underway at the North Coast wastewater treatment works (WwTW).
74. NI Water constructed a wetland in Clabby, County Fermanagh to replace the traditional wastewater treatment works, which had struggled to meet new discharge standards and was restricting growth in the village. The wetland is more efficient to construct and maintain than traditional systems and requires less energy, carbon, concrete and chemicals.
75. NI Water invested around £3m to construct a new wastewater treatment works in Ballintoy, County Antrim to improve the water quality in the surrounding coastal areas and support growth in local tourism and development.



76. NI Water is continuing with its monitoring programme of combined sewer overflows and emergency overflows, prioritising designated bathing and shellfish waters.
77. NI Water continues to strengthen its partnerships with environmental stakeholders such as Environmental Health (in all councils) to work collaboratively to raise awareness of how to dispose of fats, oils and greases appropriately.
78. NI Water has introduced Wipezilla, the wet wipe monster, to towns across Northern Ireland, in a bid to raise awareness of the damage caused, by wet wipes, to sewers and our natural environment and to reinforce the message of flushing only the “Three Ps: pee, poo and paper”.
79. To ensure that it can “*Maintain Sustainable Levels of Water in the Environment (EP Aim 4)*”. NIEA works with NI Water on the review of abstraction licences and these reviews are based on sound evidence and strong Habitat Regulation Assessments to protect the environment. An extensive monitoring programme has been put in place by NI Water, guided by NIEA, to gather the appropriate level of evidence required to review abstraction licences.
80. To assist in “*Improving River and Coastal Water Morphology and Biodiversity (EP Aim 5)*”, DAERA is working through the delivery of the second cycle of River Basin Management Plans. The goal set in 2015, was to achieve Good Ecological Status, in up to 70% of Northern Ireland’s water bodies, by 2021, from a baseline of 37.4% at Good Ecological Status in 2015. However, a mid-cycle review carried out in 2018 showed that overall water quality had stalled and that only 36.6 % of water bodies achieved good status. The new lower figures include water bodies that had improved, but this was offset by a higher number of water bodies that deteriorated in status. DAERA published its consultations on the Significant Water Management Issues (SWMI) in December 2019 in preparation for the third cycle draft River Basin Management Plan. The SWMI report identified key pressures originating from sewage-related and agricultural activities. The third cycle draft River Basin Management Plan will identify existing and continuing measures, as well as new measures, to

address and reduce the impacts of the key pressures affecting water quality in Northern Ireland.

81. DfI and DAERA reconvened the Coastal Forum during this reporting year. The Forum is the agreed mechanism through which members, including local councils, DfI, DAERA and the National Trust, work collaboratively in progressing coastal management issues. It met in May 2019 and November 2019 and was co-chaired by the DfI and DAERA Permanent Secretaries. An outcome from these meetings was the formation of a Coastal Forum Working Group, which met on three occasions during the same period, in August 2019, October 2019 and January 2020. The Working Group has produced a draft Coastal Forum Work Programme.
82. To help develop a programme of salmonid fish habitat improvement work, DAERA has met with fishery organisations and angling clubs to review habitat assessments. This has informed the development and delivery of a programme of work consistent with the North Atlantic Salmon Conservation Organisation (NASCO) plan and also the Water Framework Directive Programme of Measures.
83. To develop a more integrated ecosystem approach to terrestrial, marine and freshwater conservation and to help safeguard ecosystem services, DAERA has developed a framework for licensing to cover marine and shellfish licensing. This is to ensure compliance with the UK Marine Policy Statement and draft Marine Plan and to ensure that all Directive requirements are considered within the licensing processes.

## **Water and Sewerage Services**

84. NI Water strives to “*Provide Efficient and Affordable Water and Sewerage Services (WSS Aim 1)*” and this is overseen and monitored by the Northern Ireland Authority for Utility Regulation (“the Regulator”), which sets challenging targets for year on year efficiency improvements. In order to fully assess how NI Water is performing, the Regulator uses the Overall Performance Assessment (OPA) framework. This monitors the overall level of service that

NI Water provides to its customers, by combining 11 individual service measures and scoring them against a reasonable range. Scores are then weighted in order of importance and combined to give an overall picture of service level performance.

85. NI Water outperformed its PC15 OPA target (of 232) for 2019/20 by 16 points, with a score of 248. Over the 2019/20 year, NI Water met or exceeded planned delivery in all but eight of the 45 Key Outputs, these being:

- DG2 properties receiving pressure below the reference level at end of year;
- Leakage;
- DG5 properties at risk of flooding - number removed from risk register by company action;
- Compliance of small wastewater treatment works (WwTW) (works greater than or equal to 20 population equivalent (p.e.) but less than 250p.e.);
- Delivery of improvements to nominated unsatisfactory intermittent discharges (UIDs) as part of a defined programme of work;
- Small wastewater treatment works delivered as part of the rural wastewater investment programme;
- Combined sewer overflow and emergency overflow discharges at which event and duration monitoring equipment has been installed; and
- Number of sustainable WwTW solutions delivered (p.e. < 250).

As PC15 funding has not been provided to meet Final Determination levels, this impacted on NI Water's ability to meet these targets.

86. In its aim to *"Provide High Quality Services to All Water and Sewerage Customers (WSS Aim 2)"*, NI Water has enhanced its social media platform, to keep customers informed with live updates on planned and unplanned interruptions. It also promotes Quick Check 101, a scheme that provides reassurance to members of the public about callers to their door claiming to be from utility companies.

87. NI Water has also developed an Interruptions to Supply Strategy that sets out what it needs to focus on to improve supply interruption performance and achieve better service for its customers.
88. NI Water's strategic partner, Ipsos MORI, undertook significant consumer research, to help inform NI Water's PC21 Business Plan.
89. NI Water places great importance on "*Providing High Quality Customer Service and Customer Information (WSS Aim 3)*" and continues to make efficiencies through its ambitious Achieving Customer Excellence programme. Part of this programme involves an extensive data quality project to improve the overall accuracy of the information held on NI Water's corporate systems relating to various customer accounts. NI Water has deployed a modern meter data management system to collect and record meter readings on site and return to the corporate billing system in real-time with an out-turn success rate of >99.2%. NI Water is also starting deployment of automatic meter reading equipment and utilising mobile telephone technology to remotely read key meters whilst investigating the potential for SMART metering.
90. NI Water continually updates customers using a wide range of communication channels including Facebook, Twitter, Website, Instagram, LinkedIn, as well as through radio, press, TV, outdoor poster, leaflets and presentations and attendance at briefings/events/exhibitions.
91. NI Water's web self-service, is now well established for several services, e.g. bill payments and requesting a septic tank de-sludge, of which >30% of requests are recorded via this channel. NI Water continues to encourage and promote the use of self-serve with its customers. In addition, its Interactive Voice Response platform has been enhanced, further improving options for customers and removing calls from its contact centre. In 2019/20, >20% of payments were made via this channel.
92. Despite, its budgetary constraints, NI Water met or exceeded planned delivery in all but five of the 16 Key Performance Indicators (KPIs) for 2019/20.

During 2019/20, NI Water failed to meet the following KPIs:-

- (i) Target 5 (leakage) - Despite the implementation of the new technology to improve leakage detection, NI Water did not meet its leakage target of 155 million litres per day in 2019/20, with an actual level of leakage of 161 million litres per day. To help meet future leakage targets, NI Water believes it needs to find more innovative ways to track down leaks and save water. In 2020/21, NI Water is trialling the use of satellite technologies, which use various wavelengths of the visible and invisible light spectrum to locate leaks.

NI Water has improved its monitoring of domestic consumption habits with the installation of 'fast-logging' at various sites throughout its network, which provides the ability to analyse water usage on a minute-by-minute basis. Over recent years, a change in consumption habits during the night have been noted, which is the period of time that leakage is assessed. This refinement in understanding consumption patterns will help NI Water to more accurately calculate the level of leakage.

- (ii) Target 8a (DG5 Sewer Flooding: Properties removed from the at-risk register) – Re-phasing of construction as a consequence of the engineering complexity and traffic management constraints of the Ravenhill Avenue sewerage scheme meant that the DG5 target for 2019/20 was not achieved and that the final PC15 target is unlikely to be achieved by the end of 2020/21;
- (iii) Target 13 (Operating Costs) – Operating costs at £220.5m were £4.1m (1.9%) higher than forecast. This is mainly due to staff costs which, at £54.4m, were £3.6m (7.1%) higher than forecast, primarily due to a £3m allowance accrual for past service costs reserve in respect of the pensions reform;
- (iv) Target 14 (Operating Profit) – Operating profit at £192.8m was £5.0m (2.5%) lower than forecast. This is mainly due to Operating Costs (above).

Total income was also £0.9m lower than forecast largely as a result of an estimated £0.8m reduction in income arising from the current COVID-19 pandemic; and

- (v) Target 16 (Nominated Outputs) – The following nominated outputs failed to meet target:-
- a. DG5 (see (ii) above);
  - b. UIDs - In advance of the commencement of 2019/20, NI Water advised DfI and principal stakeholders of the funding profile necessary in 2019/20 and 2020/21 to enable completion of PC15 nominated outputs. Whilst this did not exceed the total anticipated funding envelope for PC15, it necessitated a capital budget in 2019/20 of c. £171m and c. £123m in 2020/21. Ultimately, this level of funding was not available in 2019/20 and, as a consequence of the resulting late start of multiple projects, several UID projects did not achieve beneficial use in 2019/20 and will not achieve beneficial use in the PC15 period; and
  - c. Small WwTWs - By the end of 2019/20 a total of 32 small WwTW have been declared to be in “beneficial use” (compared to a target of 36). Construction was complete at a further four sites, awaiting final trial sampling before beneficial use is confirmed. We anticipate achieving the PC15 target by the end of 2020/21.
93. In order to “*Provide Resilient and Secure Water and Sewerage Service (WSS Aim 4)*”, NI Water has prepared its first Water Resource and Supply Resilience Plan and has taken steps to insulate key components in its water and wastewater treatment works, against extreme cold.
94. NI Water not only provides us with valuable water and sewerage services, but it also “*Utilises its Estate to Promote Recreation, Biodiversity and Cultural Heritage (WSS Aim 5)*”. A list of heritage sites within NI Water's estate has been established under the Protocol for the Care of the Government Historic Estate. A project to assess the condition of these sites has been completed with

a number of recommended actions with a total cost of implementation of £2.8m. NI Water has developed a business case to seek funding for the implementation of the recommended actions. In addition to this, NI Water completed a project to repair the Mourne Wall.

95. NI Water continually organises and works in partnership with other organisations, to deliver a range of events annually at several NI Water sites. These events have impacted positively on the social, cultural, industrial and natural heritage of Northern Ireland and include Biodiversity walks, Themed Days, Built Heritage talks and tours, School visits, Community visits/talks and sporting activities.

### **NI Water Funding**

96. NI Water continues to be underfunded and, therefore, its ability to meet future customer needs, especially in respect of wastewater treatment capacity to facilitate economic growth and much needed housing is severely constrained. This is likely to lead to negative planning consultation responses for large areas of Northern Ireland, which may result in the refusal of planning applications.
97. The Government has set a target to bring all greenhouse gas emissions to net zero by 2050. To help achieve this, all water companies in Great Britain have set a net zero operational carbon target for 2030. If NI Water is not funded adequately, it will fail to keep pace with GB water companies.

### **EU Funding**

98. There has been ongoing engagement between NI Water and Irish Water in progressing two projects which have been awarded EU funding under the INTERREG VA Programme (2014-2020) for the water sector within both jurisdictions. The 'Source to Tap' Project aims to develop sustainable, catchment-scale solutions for the protection of rivers and lakes, which are the main sources of our shared drinking water and has been awarded €4.9m. The 'SWELL' Project (Shared Waters Enhancement and Loughs Legacy) aims to

enhance water quality within the shared waters of Carlingford Lough and Lough Foyle through improvements to wastewater assets at key population agglomerations on both sides of the border. The project has been awarded €35m and was officially launched by Eoghan Murphy, TD, Minister for Housing, Planning and Local Government in Ireland and Denis McMahon, Permanent Secretary, Department of Agriculture, Environment and Rural Affairs on 25 June 2019.

### **The UK's Exit from the EU**

99. Much of the legislation governing the management of water, in terms of quality, quantity and the wider environment, has been developed under EU Frameworks and Directives. Relevant legislation has been amended to ensure that it remains operable after IP completion day. Work is also ongoing with Defra and the Ministry of Housing, Communities and Local Government to ensure that DfI and DAERA are fully engaged in the development of relevant Common Frameworks, which will be the means of ensuring the appropriate level of commonality of approach to policy development across the Devolved Administrations after the United Kingdom has left the European Union.

### **Conclusion**

100. This fourth Annual Report on Sustainable Water – A Long-term Water Strategy highlights continued progress in a number of areas. However, the increasing constraints on budgets across all areas involved in the Strategy, especially NI Water's, is a real cause for concern and may impact on the Executive's ability to meet all its objectives in the medium to long term which, critically, includes facilitating future economic development. Delivering the Strategy will also help to fulfil commitments in the Executive's Outcomes Delivery Plan.
101. The impact of the UK's withdrawal from the EU is still not yet clearly defined, and this will need to be carefully managed to minimise any potential impact on the delivery of the Strategy. The longer-term impacts of COVID-19 will also need to be more fully understood. The management of the pandemic has,



however, made very clear that water plays a key role in protecting the health and wellbeing of our citizens, and this has underscored the need to manage this natural resource in a more sustainable way.