



Scottish Water

Trusted to serve Scotland

Delivery Plan 2015 to 2021

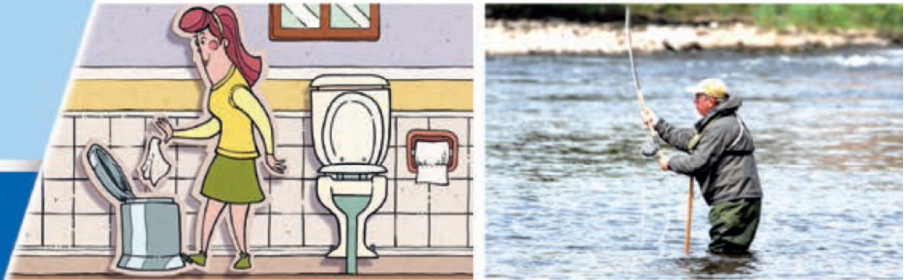
Improving performance



Enhancing service



Delivering value



For our customers



Trusted to care for the water
on which Scotland depends

Delivery Plan Update 2018
March 2018

Table of Contents

Overview3

1. Delivering for our customers.....5

2. Delivering our investment programme.....7

3. Providing continuous high quality drinking water.....11

4. Protecting and enhancing the environment16

5. Supporting Scotland’s economy and communities.....26

6. Financing our services32

7. Looking forward42

8. Scottish Water’s Group Plan and Supporting the Hydro Nation ..43

Overview

This update to our Delivery Plan is submitted to Scottish Ministers for approval. It highlights those areas where the content of our original Delivery Plan for the 2015-21 period, and the updates provided subsequently, have been revised.

We have taken the opportunity to set out key highlights of our progress so far and to confirm the investment agreed with the Output Monitoring Group through the rolling investment review 2018 (IR18) to improve drinking water quality, protect and enhance the environment and support economic development.

Key highlights of our progress

In our 2015 Delivery Plan we stated that we are determined to deliver significant further improvements for our customers and out-perform our commitments. As we conclude the third year of the 2015-21 period we continue to achieve this ambition. Key highlights of our progress so far include:

- We have successfully driven up household customer satisfaction and driven down the number of complaints. As a result, our household Customer Experience Measure (hCEM) has risen further this year to 86.4 at December 2017, well above our Delivery Plan target of 82.6.
- Since the start of the regulatory period in 2015 we have reduced the level of customer complaints by 42% with an increase in the level of customer satisfaction from 88.0% at the end of 2014/15 to 91.1% by December 2017;
- Service levels to Licensed Providers have improved with year-to-date performance up to 97% of requests processed on time, above our target of 95%. We are trialling the measurement of the service experience of our non-household customers and Licensed Providers through a separate CEM, the non-household Customer Experience Measure and propose that our outturn score in 2017/18 be set as the baseline to improve on for the remainder of the regulatory period.
- We are maintaining momentum in our investment delivery; over half our programme, around 1,650 projects, has already started on site;
- Since April 2015 we have delivered over £1.5 billion of investment and are investing on average over £53 million a month. As a result, our Overall Measure of Delivery score at the end of December 2017 is already well above our Delivery Plan year-end target of 126 points;
- We have completed the boring of the 5 kilometre-long Shieldhall waste water tunnel in the south of Glasgow. The tunnel is part of the biggest upgrade of the city's waste water network in more than a century;
- We have worked with stakeholders to agree our IR18 investment plan with the Output Monitoring Group;

- The water quality we delivered to our customers' taps in 2017 continued to outperform levels delivered in previous regulatory periods, and remains well above our Delivery Plan target;
- We have delivered further leakage reduction in 2017/18, continuing to out-perform the target level set in the Final Determination for the end of the regulatory period;
- We continue to support new housing and economic growth across the length and breadth of Scotland. In the first 3 years of the period we will have connected over 64,000 new properties to our network against our Delivery Plan forecast of 56,500;
- We now generate and host twice the amount of renewable electricity than we consume in our operations; and we have reduced our carbon footprint per household from 115 (kg CO₂e) in 2014/15 to 100 (kg CO₂e) in 2016/17;
- Through our financial planning and innovation, we are continuing to outperform the challenging financial limits set out in the Final Determination 2014 and now forecast a closing cash balance in March 2021 of £76 million compared to our 2015 Delivery Plan forecast of £40 million;
- Charge levels for 2018/19 will rise by 1.6% for household customers. The financial forecasts in this update assume charge increases of 1.6% in 2019/20 and 0% in 2020/21 in line with the regulatory settlement for the 2015/21 period. However, during 2018 we will explore the merit of smoothing charge levels into the next regulatory period in line with the Water Industry Commission's initial decision papers for the Strategic Review of Charges 2021-27; and
- We implemented charging at vacant properties on 1 April 2017 and have worked extensively with the water retail market to implement charging on the basis of 'current rateable values' from 1 April 2018.

This update to our Delivery Plan builds on our success to date and remains ambitious. We have delivered strong financial out-performance to date on revenue and costs. We are forecasting that this will allow us to manage the pressures and opportunities associated with the investment programme within the price limits set out in the 2014 Final Determination and the agreed borrowing of £760 million from the Scottish Government.

1. Delivering for our customers

Our plan has been established to ensure that we maintain the high service levels that we have been delivering and will further improve services in those areas identified as a priority by our customers. Here we set out updates on the key high level customer service metrics.

Customer Experience Measure (CEM)

We introduced our household Customer Experience Measure (hCEM) to ensure that the delivery of service to our customers continues to sit at the heart of what we do and be a key driver of our performance. Our commitment is to improve on the score of 82.6 (out of 100).



Since the start of the regulatory period all components of the hCEM have seen an improvement in performance, in particular we have reduced the level of customer complaints by 42%. The level of customer satisfaction has increased from 88.0% at the end of 2014/15 to 91.1% by December 2017; a significant improvement in overall satisfaction. Improvements have been achieved by reviewing all customer feedback that indicates where our service could be improved, intervening to prevent issues escalating, managing a programme of proactive communication with customers and learning lessons to improve our performance. As a result our hCEM at December 2017 is 86.4, well above our Delivery Plan target of 82.6.

We are trialling the measurement of the service experience of our non-household customers and Licensed Providers through a separate CEM, the non-household Customer Experience Measure. We propose that our outturn score in 2017/18 be set as the baseline to improve on for the remainder of the regulatory period. We are determined to achieve year on year improvements in the service experience to our non-household customers.

Overall Performance Assessment (OPA)



In our 2015 Delivery Plan we set out our commitment to achieve an OPA score at, or above, the threshold for leading water and waste water companies, (380 points in 2015/16 rising to 385 points by 2020/21), and our aspiration to be best in class, achieving an equivalent OPA score at, or above, 400 points.

We are again on track to exceed our 2015 Delivery Plan OPA commitment and be close to our aspiration to be 'best in class'.

Customer Trust

We are pleased that the water industry in Scotland continues to be the most trusted sector among Scottish consumers, (WHICH? Sept '17). We continue to benchmark our level of service through the Institute of Customer Service's UK Customer Satisfaction Index (UKCSI) survey to understand customers perceptions of our service experience compared to other services in Scotland.

Retail Market Developments

Activity in the retail market has continued to grow in recent years with 27 Licensed Providers now operating in Scotland and more than half of the market having switched provider since market opening in 2008.

We continue to refine our wholesale service, with the first release of our Ascend customer experience programme already delivering a more efficient, responsive and automated service to Licensed Providers with further enhancements planned in future releases. Service levels to Licensed Providers have improved with year-to-date performance up to 97% of requests processed on time, above our target of 95%.

From April 2017 water and waste water charges have applied at vacant non-household properties, aligning with the existing charging policy for households. We are working closely with the market to improve the quality of market data and to support the smooth implementation of this change.

The rateable value used in the calculation of some elements of the water and waste water charges for business customers will be aligned with the current values used for business rates from April 2018. The impact of the changes will be phased in over 3 years, April 2018 to April 2020.

Safety, Health and Wellbeing

We are proud to have achieved the Royal Society for the Prevention of Accidents (RoSPA) United Kingdom Water Industry sector award for four years out of the last six. Over recent years, we have made real improvement in our health, safety and wellbeing performance achieving lost-time accident rates amongst the lowest in the UK Water Industry. However we believe that there is no acceptable reason for anyone to be injured or to suffer ill-health as a result of work, no matter how infrequent. We have therefore revised our strategy to lead our industry in Scotland on a journey to zero harm; creating safe, healthy and productive workplaces where our people can thrive.

2. Delivering our investment programme

Our investment programme is well underway, delivering both the maintenance and improvements required to our existing assets to deliver Ministers' objectives for improvements in drinking water quality and the environment, and to support growth in the Scottish economy. Key points to note include:

- We are maintaining momentum in our investment delivery; over half our programme, around 1,650 projects, has already started on site.
- Since April 2015 we have delivered over £1.5 billion of investment and are investing on average over £53 million a month. As a result, our Overall Measure of Delivery score at the end of December 2017 is already well above our Delivery Plan year-end target of 126 points;
- Of the 26 programme areas, 25 are on or ahead of target when measured against the regulatory sign-off milestone. The one area that is behind plan is because of our decision to more effectively manage the resilience of the supply of drinking water to customers from the Amlaird system while work on the Ayrshire Resilience Scheme is progressed;
- We have made good progress in delivering the remaining projects from the 2010-15 period. At December 2017, we have already completed 33 projects leaving 4 to be completed;
- Through joint working with SEPA, and the Scottish Government, we trialled an option to achieve the required environmental outcomes in the Lower River Clyde at a substantially lower cost than envisaged in our 2016 Delivery Plan update. The trials have been successful allowing us to release the £100 million risk allowance to augment the available IR18 allowances;
- We have completed the rolling investment review 2018 (IR18) to confirm those outputs included in our Delivery Plan 2015-21 that are subject to further investigation or the level of customer demand; and
- Around 216 individual businesses employing over 2,200 people are employed in delivering the programme. Our supply chain has also provided opportunities for 64 modern apprentices and 93 graduates.

Overall Measure of Delivery (OMD)

The Water Industry Commission for Scotland introduced the Overall Measure of Delivery (OMD) as a single objective indicator of overall performance in delivering Ministers' objectives. We have updated our OMD profile in Table 1 to reflect IR18 outputs and the changes agreed by the Output Monitoring Group.

	2018/19	2019/20	2020/21
Full OMD profile (including IR18)	175	210	250

Table 1: OMD profile

Maintaining momentum in delivery

We set out below the progress made on a number of investment areas during 2017/18.

Projects due to have been completed by March 2015

We started the 2015 to 2021 period with a small number of projects (37 in total) that were due for completion by 31 March 2015 but were not delivered by then. At the end of December 2017, we have completed 33 of these projects, in line with our 2017 Delivery Plan commitment of 31 to 33 projects. Of the remaining 4 projects, 1 has completed the feasibility stage, 2 are under construction and 1 is at the commissioning stage.

Strategic Glasgow Sewerage Scheme

We are continuing to progress our plan to improve the river water quality and the natural environment of the River Clyde and its tributaries; to enable the Greater Glasgow area to grow and develop, alleviate sewer flooding and deal with the effects of increased rainfall and climate change.

We completed the boring of the 5 kilometre-long Shieldhall waste water tunnel in the south of Glasgow; the tunnel is part of the biggest upgrade of the city's waste water network in more than a century. We are now working to link the tunnel to the existing Glasgow waste water network and bringing the whole new system into operation in 2018.



Ayrshire Strategic Resilience Scheme

The Ayrshire Strategic Resilience Scheme launched by Ministers in December 2015 will provide improved water supply resilience to around 85,000 properties in 4 water operational areas: Bradan, South Moorhouse, Corsehouse and Amlaird. We are delivering the scheme in three phases, as outlined below:

- Phase 1 is the main-out of Amlaird, Corsehouse and South Moorhouse water treatment works from the Glasgow system and came into operation early in 2018.
- Phase 2 of the scheme is the connection from the Amlaird trunk main to Highlees service reservoir on the Bradan water supply system, including the installation of a new pumping station. Construction of the pipeline is well underway, with around 95% complete. Work has begun on the pumping station and we forecast commissioning in late 2018. The photos below are from the Amlaird / Highlees work.



- Phase 3 of the scheme is the reinforcement of the strategic main across Glasgow. We are exploring options with key stakeholders to identify the best way forward to allow detailed design and costs to be prepared, with a view to starting on site in August 2019. Given the complexities of installing pipelines through a highly urbanised and sensitive area, we have allowed for a £15 million increase in costs until we determine the most cost effective means of delivering this part of the scheme.

Community engagement

Our customers and communities are at the heart of everything we do and we endeavour to go about our business in a way that's best for them. This starts with the decisions we make about new investment, through to the way we plan and ultimately deliver infrastructure projects. Key to the success of this is open engagement with customers about our work and the impact it will have on their communities.

Following current best practice in community engagement we engage directly with affected customers and representative bodies, such as community councils and elected representatives, prior to final decisions being made on projects. We endeavour to change or adapt projects as a result of concerns raised by communities or new information they bring to our attention.

As works begins on our investment projects we continue to communicate and engage with the local communities, listening to their comments and concerns as we go and adapting plans, timings and methods as appropriate. We also use the full range of modern communications techniques, such as social media, to communicate with other groups, such as commuters, impacted by our works.

An example of all of this is the Haymarket Sewer Replacement Project in the centre of Edinburgh. In Autumn 2017, we started a major upgrade to a section of the Victorian sewer in one of the capital's busiest streets. The £2.5 million project involves laying a new 1.2 metre diameter storm storage sewer pipe to increase capacity and help alleviate flooding in the area.

From the outset, it was clear that our work was going to have a significant impact on customers who live and work in the area. So we engaged closely with the community, including the local residents' association and built in their concerns into our timings and traffic management plans. As work got underway we adapted that plan in response to local concerns about a pedestrian crossing and signage for cyclists.



We restricted the hours we work on site to suit a sensitive neighbour and we continually engaged with residents as other issues emerged. We also used a broad range of methods to reach commuters and businesses impacted by traffic restrictions including radio advertising, warnings on motorway gantries, social media warnings, posters and banners and direct mail. All of this combined has significantly reduced the impact of the project on our customers and communities.

Rolling Investment Review (IR18)

Our Delivery Plan 2015-21 included allowances of £286.4 million (2012/13 prices) for outputs subject to confirmation through the rolling investment review (IR18), once better information is available through studies, investigations or a clearer understanding of customer demand. Through agreement with the Output Monitoring Group, we had already allocated £31.2 million to investment priorities such as improving drinking water quality to over 255,000 customers served by the Bradan and Afton water treatment works; and improving the resilience of water supplies in Ayrshire.

In March 2017, Ministers approved the proposal to increase the finance available for IR18 investment by releasing a £100 million cash risk allowance previously held for investment in Dalmarnock and Daldowie waste water treatment works (£83 million in 2012/13 prices). This enhanced the finance available for IR18 investment in the 2018-21 period to £335 million. We set out in sections 3 to 5 below how this investment will further improve drinking water quality, protect and enhance the environment and support economic development and communities. We also include a commitment of £128 million post 2021 to complete the IR18 programme to provide continuity of investment across regulatory periods.

3. Providing continuous high quality drinking water

We set out in this section the progress we have made in 2017/18, and the changes we are proposing to our 2017 Delivery Plan for providing our customers with a safe and reliable supply of drinking water.

Key highlights of our progress

Improving drinking water quality

As a result of our on-going focus the water quality we have delivered to our customers' taps in 2017, at 99.905%, continued to outperform levels delivered in previous regulatory periods.

Resilience

Our customers have told us that reducing the likelihood of long-term interruptions to supply is a priority area for service improvement. While most of our customers have never experienced a significant interruption to their water supply, they have told us that they expect us to take reasonable steps to ensure that this continues.

As highlighted earlier, we are making good progress with the Ayrshire Strategic Resilience Scheme to create a strategic connection to the Glasgow supply system. In addition to this, we are delivering projects that will enhance resilience for customers in Edinburgh, Lanarkshire, the Scottish Borders, and West Lothian whilst working on improvements to the reliability of some more isolated supplies in the north of Scotland.

Service reservoirs

We have over 1,300 operational service reservoirs across Scotland ranging in size from 10m³ to 91,000m³. While we have made improvements to the performance of service reservoirs, we have a number that are rated as at risk of failure. To address these, we plan a number of measures to improve the capability of the service reservoirs, including proactive cleaning and inspection to identify deteriorating and ineffective assets and rationalisation to reduce risk of failures. To enable these improvements to be made we have allocated additional funding between now and the end of the 2015-21 period.

Leakage

We have achieved a leakage level of 476 Megalitres per day (Ml/d) by December 2017, which is significantly below the 575 Ml/d minimum service level for the period. We will continue to target leakage over the remainder of the regulatory period where it is cost effective to do so.

Water Efficiency

Our plan to increase awareness of the benefits of water efficiency to the environment and customers is progressing. Our water efficiency trial is now in its final year of data collection and continues to show that modest consumption

reductions are possible where properties have both physical interventions and customer education activities applied. A financial incentive was included during 2017 and the results from this trial will be available from April 2018. We are continuing to work closely with the Energy Saving Trust to form strong links with water efficiency and energy reduction.

Drinking water quality IR18 programme

The drinking water quality IR18 programme has been prioritised with DWQR to improve bacteriological compliance and reduce disinfection by-products and discolouration of water in areas where a high level of customer contact regarding the water supply is experienced. The programme is shown in Table 2.

Service area	Improvement programme	Number of outputs	Capex 2012/13 prices £m		
			2015-21	Post 2021	Total
Improving drinking water quality	Water treatment works made compliant with water quality standards	6	22.7	29.3	52.0
	Water supply zones made compliant with iron and manganese standards	4	4.0	-	4.0
	Water quality studies to prepare for future investment periods	23	5.3	2.4	7.7
	Intervention development to prepare for future investment periods	-	1.4	0.6	2.0
	Sub total	33	33.4	32.3	65.7
Improving the reliability of drinking water quality	Managing catchments and improving treatment	7	7.5	18.4	25.9
	Enhancing networks and treated water storage to improve supplies	5	9.7	1.3	11.0
	Sub total	12	17.2	19.7	36.9
Improving the availability of drinking water	Reducing risk of non-compliance in distribution cleaning of water mains	894 (km)	5.7	0.7	6.4
	Infrastructure of critical reservoirs	4	1.6	3.1	4.7
	Understanding & improving water pressure at customer taps and improving where appropriate	2	0.2	2.6	2.8
	Sub total	6	7.5	6.4	13.9
Improving Water supply and drought resilience	Improved drought resilience	1	1.0	3.9	4.9
	Water supply resilience	1	1.0	3.9	4.9
	Resilience study	2	2.3	-	2.3
	Intervention development to prepare for future investment periods	-	3.7	5.6	9.3
	Sub total	4	8.0	13.4	21.4
Total		55	66.1	71.8	137.9

Table 2: Drinking water quality IR18 programme

Water treatment works made compliant with water quality standards

We have included investment to address compliance at 6 water treatments works: Invercannie, Mannofield, Tarbert, Ardrishaig, Howden and Larchfield. Improvements at Invercannie and Mannofield are planned to start before 2021 and were not envisaged when the Delivery Plan 2015 was prepared.

Water supply zones made compliant with iron and manganese standards, and length of distribution mains cleaned

We plan to undertake around 50km of network rehabilitation in 4 district meter areas in the Greenock Regulatory Supply Zone. Our approach to managing the risks from iron and manganese is now based on using innovative techniques such as mains conditioning and network flushing in different parts of the system.

Water quality studies and intervention development

We have identified 17 studies to be undertaken to understand significant water quality risks which need to be investigated and solutions developed to inform the future investment period and beyond. In addition, we have identified a further 6 studies to be undertaken to inform longer term strategic issues such as lead communication pipes; the level of organics in drinking water catchments; future risk from algae blooms; and the potential impacts from future new and changed water quality standards. We plan also to invest in the development of high priority significant disinfection improvements for delivery in future investment periods.

Managing catchments and improving treatment

We plan to improve the reliability of drinking water quality at a number of water treatment works to reduce the risk of drinking water quality non-compliance at customer taps. We have included investment to reduce the risk of non-compliance for 7 systems: Afton; Barra; Boardhouse; Dhu Loch; Forehill; Kirkmichael and Oykel Bridge. In addition, we have identified that other sites require improvements and have included investment allowances of £15.7 million to undertake disinfection work on a rolling programme basis. The prioritisation of improvements will be agreed on an on-going basis and added to the programme as and when agreed with the DWQR.

Enhancing networks and treated water storage to improve supplies

Through our service reservoir inspection programme we have identified 4 storage tanks that require improvements to minimise the risk to drinking water quality. We will install waterproof membranes for the first time on the roofs of the Daer clear water tank and Dalnacoulter service reservoir to prevent surface water ingress and contamination; and replace completely the tanks at Kerse and Whitehall service reservoirs.

We have a number of storage tanks which we cannot inspect without interrupting the water supply to customers. To begin to address this issue we have included allowances for the installation of service reservoir bypasses and to develop solutions to emerging service reservoir risks identified through inspection.

We also plan to enhance the Daer network through installation of chlorine monitors following an investigation in 2015-17.

Reducing risk of non-compliance in distribution cleaning of water mains

We have included a ring-fenced amount of £6.4 million in our plan for mains conditioning and flushing of 894 km of mains across the following regulatory supply zones: Greenock; Carron Valley B; Amlaird and Barra.

Infrastructure of critical reservoirs

We have include £4.7 million to upgrade 4 dams (Loch Turret; Loch Coulter; Carron Valley and Loch Thom) to keep downstream communities safe by enabling reservoirs to be emptied in emergency situations. This is in line with improvements to dam safety practice and the associated statutory regime of inspections.

Understanding & improving water pressure from customer taps

We have included £2.8 million in our plan to pilot intelligent network technology in a trial area to assess the customer benefits in relation to short term interruptions to water supplies and low pressure, and to make improvements where appropriate.

Drought resilience & supply resilience

We will invest £24.5 million in improving the resilience of the Inverness and Nairn Water resource zone through a project which will deliver growth, security of supply and long term resilience benefits. We plan to start on site by March 2021.

Studies and intervention development - resilience

A key element of our water supply resilience strategy is the provision of alternative supplies to maintain essential services to customers in extreme circumstances. Our plan includes £2.3 million for a study in relation to strategic network modelling and a study to develop a risk assessment to understand which customers are at risk of flooding from the failure of trunk mains post the incidents at Bathgate in Spring 2016.

Our plan also includes £9.3 million for the early development of 5 more resilience schemes for delivery in the 2021-27 period, subject to prioritisation, which then will benefit customers from Dunbartonshire to the Moray Coast. We also plan to improve the instrumentation of our strategic networks to help us.

Drinking water quality programme delivery profile

We set out below our planned delivery profile of drinking water outputs for those programme areas that have altered as a result of the IR18 process or Technical Expression changes approved by the Output Monitoring Group.

	Programme area		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Post 2024
1	Number of water treatment works made compliant with water quality standard	Current	12	18	26	29	32	33	
		Previous	12	18	26	27			
2	Number of water supply zones made compliant with iron and manganese standards	Current	35	63	78	88	92		
		Previous	35	63	78	88			
3	Number of improvements to reliability of supply (catchments and treatment works)	Current	8	16	42	53	53	54	
		Previous	8	16	40	47			
4	Number of improvements to reliability of supply (networks and storage)	Current	10	23	82	87			
		Previous	10	23	81	82			
5	Length of distribution mains cleans	Current	364	2,142	5,703	6,647	6,822		
		Previous	364	2,142	5,394	5,928			
6	Number of improvements in the infrastructure of critical reservoirs	Current	9	9	58	59	60		
		Previous	9	9	56				
7	Number of zones to improve security of supply (SOSI)	Current	4	6	8	10	10	11	
		Previous ¹	4	6	8	10			
8	Number of improvements made to improve water supply resilience	Current	9	12	18	18	18	19	
		Previous	9	12	18				
9	Number of water quality studies to prepare for future investment periods	Current	227	299	362	367	368	370	
		Previous ¹	226	285	330	345			
10	Water quality completion programme ²	Current	14	18	22				
		Previous	14	19	23				

Table 3: Drinking water quality programme – cumulative outputs profile

Technical Expression changes approved during the year are set out below and included in the table above:

- Number of zones to improve security of supply (SOSI): decreased by 1 to 10 outputs due to the removal of Sandy Loch;
- Water Quality completion programme: decreased by 1 to 22 outputs due to the re-phasing of Inverness & Nairn;
- Number of water quality studies to prepare for future investment periods: increased by 1 to 345 due to the addition of Sandy Loch strategic study.

¹ Profile reflects the Technical Expression changes approved by the Output Monitoring Group during 2017/18.

² Profile reflects only the Technical Expression changes approved by the Output Monitoring Group during 2017/18. No IR18 outputs.

4. Protecting and enhancing the environment

We set out in this section the progress we have made in 2017/18 to protect and enhance the environment and the changes we are proposing to our 2017 Delivery Plan.

Key highlights of our progress

Urban Waste Water Treatment Directive

Glasgow and the River Clyde remain a major focus in our plan as we implement the outcomes of the Glasgow Strategic Study. This supports an integrated approach to the delivery of environmental and flooding needs, recognising the hydraulic dependencies across the waste water network.

Through successful joint working with SEPA and the Scottish Government, we trialled a potential option to achieve the required environmental outcomes in the Lower River Clyde at a substantially lower cost than envisaged in our 2016 Delivery Plan update. This trial has proven successful and we are now working to install permanent equipment to deliver compliance on an ongoing basis. We have worked with stakeholders to learn from the success of the collaborative approach with the aim of applying this to other projects.

We included a tunnelling project in our 2015 Delivery Plan to improve the Lower River Kelvin. In light of recent data showing improvements in river quality, we worked with SEPA during 2017 to review the required improvements for our discharges and alternative options to address these. The review concluded with a plan to address the 13 UIDs associated with the Kelvingrove project (upstream of Great Western Road) in the current planning period. We will study and look to find solutions for the water quality and screening needs downstream of Great Western Road by 2021 and deliver outcomes from the study work in a future period, subject to prioritisation.

Reducing flooding and pollution from sewers

Reducing flooding and pollution from sewers is one of our customers' highest priorities and we continue to deliver our strategy to address internal flooding for those customers at highest risk, i.e. those customers with a 10% chance or greater per annum of being flooded internally.

In 2017/18 we experienced a third consecutive year where the number of new properties identified at risk of internal sewer flooding was greater than our business plan assumption of 72 per annum. As a result of the number and complexity of additions, and particularly the 69 additions at Oak Mall, Greenock in 2016, we expect the number of properties on our 'at risk of internal sewer flooding' register will remain above the expected service level minimum of 370 until at least 2019. By 2021 we aim to have fewer than 300 properties on our internal sewer flooding register but this outcome will be dependent upon the rate of emerging properties over the remaining 3 years of this regulatory period.

Bathing Waters

We continue to work closely with SEPA on bathing waters where our assets could impact on water quality in order to mitigate the risk of failing. The projects to improve bathing waters being progressed are:

- Rockcliffe: we implemented a temporary solution during the 2017 bathing season. The results of the temporary solution are being assessed to determine next steps;
- Kinghorn Harbour: our work to eliminate the impact from the sewer at Bleaching Hill will be completed during 2018;
- Fisherrow and Portobello West: detailed investigation work is underway and we are actively working with stakeholders to agree a way forward. Any intervention required will not be in place until at least the 2021 bathing season due to the likely scale and complexity of the work required; and
- Ayrshire Bathing Waters: the strategic study of bathing waters impacted by the Rivers Ayr and Doon was completed in 2017. Detailed option development is underway and a more informed view on delivery timescales will be available during 2018.

Operator self-monitoring

We have been undertaking self-monitoring for waste water treatment works compliance since January 2017. We undertook significant work to ensure we are able to deliver this service, much of which was in partnership with SEPA to support the development of the accreditation processes and procedures to govern quality and performance. We achieved a 100% performance in terms of sample delivery, and improvements have been put in place jointly to support more effective data transfer.

Environment IR18 programme

The IR18 programme to protect and enhance the environment has been prioritised with SEPA, with priority given to improving bathing waters in Ayrshire. The environment programme is shown in Table 4.

Service area	Improvement programme	Number of outputs	Capex 2012/13 prices £m		
			2015-21	Post 2021	Total
Protecting and enhancing the environment	Urban Waste Water Treatment Directive (UWWTD)	1	0.1	2.1	2.2
	Water Framework Directive	9	3.3	5.4	8.7
	Revised Bathing Waters Directive	2	9.9	3.2	13.1
	Catchments improved to meet the Flood Risk Management Act	17	0.6	0.1	0.7
	Habitats Directive	1	0.4	-	0.4
	Industrial Emissions Directive	2	4.1	-	4.1
	Compliance Assessment Scheme	53	2.5	-	2.5
	Studies to prepare for future investment periods	9	5.7	2.1	7.8
	Intervention development	-	12.1	4.5	16.6
	Sub total	94	38.7	17.4	56.1
Reducing flooding and pollution from sewers	Internal Flooding	-	56.2	24.5	80.7
	External Flooding	2	1.0	-	1.0
	Studies to prepare for future investment periods	1	0.2	-	0.2
	Intervention development	-	6.7	-	6.7
	Sub total	3	64.1	24.5	88.6
	Total	97	102.8	41.9	144.7

Table 4: Environment IR18 Programme

We have worked closely with SEPA to review the maturity and priority of Unsatisfactory Intermittent Discharges (UIDs) from the sewerage system and the improvements required to meet the Water Framework Directive. This review has identified that the following UIDs could be re-prioritised to enable higher priority environmental outputs to be included in the IR18 programme.

- Rutherglen Road (Richmond Park)
- Clydeaway Expressway South of Sandyford Street
- Hillfoot Drive and Hillside Avenue, Bearsden
- 250 Milngavie Road

Urban Waste Water Treatment Directive (UWWTD)

We plan to begin work to relocate the discharge from Kirk Yetholm waste water treatment works, which serves 247 customers, to ensure that this is always discharging into the main river flow. We have made a ring-fenced allowance of £2.2 million to begin this work in the 2018-21 period with completion in the 2021-24 period.

Water Framework Directive

We identified a number of IR18 outputs in our Delivery Plan 2015-21 to deliver improvements that will support the objectives of the River Basin Management Plan 2 (RBMP2). IR18 investment of £2.3 million has been included to improve abstraction regimes in 4 water resource zones and £0.4 million to deliver improved opportunities for migratory fish at 2 locations. We have included £6.0 million to deliver improvements to the quality of final effluent from our waste water treatment works at Longriggend, Newton and Edgehead; these will start in the 2018-21 period.

Revised Bathing Waters Directive

In our Delivery Plan 2015 we committed to improving Ayrshire Bathing Waters during 2018-21. Our studies have shown that we can help deliver improved confidence in achieving sufficient standards at Ayr South and Prestwick Bathing Waters by improving a number of intermittent discharges and we have included a ring-fenced allowance of £12.7 million to complete intervention development and delivery activities.

Bathing Waters at Gairloch and Big Sands were designated bathing waters in 2017. Current classification suggests that these bathing waters both perform well. We have allowed £0.4 million for the costs of a study should bathing water results indicate that minimum standards at these sites are not being met; we would plan to start this work in 2020 if necessary.

Flood Risk Management Act

During the 2010 to 2015 period and in collaboration with a wide group of stakeholders, we developed Integrated Catchment Studies in 5 of our largest catchment areas to meet the requirements of the Flood Risk Management Act. We are developing further Integrated Catchment Studies in 12 smaller catchments during the current period. We have worked closely with stakeholders to develop the next steps in how the findings from these studies and the tools developed should be used.

We have included an allowance of £0.6 million to develop drainage masterplans where we will fully consider all catchment needs and risks, identifying opportunities in resolving multiple needs across flood risk, intermittent discharge and growth risks over future investment periods. Most of the focus in the 2018-21 period will be in 5 of the largest catchment areas.

Habitats Directive

Following investigation on how our weir affects the lifecycle of freshwater pearl mussels, we plan a ring-fenced investment of £0.4 million to deliver improvements at the Ardnamurchan Burn, Allt Sanna in the 2018-21 period.

Industrial Emissions Directive

We have investigated the current sludge storage requirements at Turret water treatment works and have agreed with SEPA that sludge be removed from this site in order to mitigate environmental and ground stability risks. We have included a ring-fenced allowance of £1.9 million in our plan to remove the sludge from site and to reinstate the area.

We undertook a trial of a sludge chemical stabilisation process at Clunas water treatment works to mitigate the risk of pollution to the water environment. The trial was inconclusive and we agreed with SEPA that a sludge removal solution should be put in place. We have included a ring-fenced allowance of £2.3 million to cover the additional costs of sludge removal at Clunas.

Compliance Assessment Scheme

We included investment in our Delivery Plan 2015 to improve flow monitoring equipment to allow proper recording of overflow and discharge rates at specific locations. In addition, we set aside an allowance for further improvements identified through site audits and intervention development activities planned between 2015 and 2017. We plan to invest £2.5 million during the 2018-21 period for improvements at 53 sites in order to remove the risk of licence non-compliance.

Preparation for future investment periods

We have included investment in our plan for 9 environmental studies and investigations to support effective decision making and investment planning for River Basin Management Plan 3 (RBMP3) delivery and improving compliance. These include:

- **Inner Clyde Estuary Modelling:** to improve the existing River Clyde freshwater and inner estuary models to better understand key impacts on water quality and fish life. The study will allow us to better understand the scale of future investment to improve the Clyde and its tributaries against a background of variable and improving water quality.
- **Dry Weather Flow Study:** to identify the environmental needs where dry weather flow consistently exceeds licence levels and where interventions may be required in a future investment period.
- **Sewer Monitoring - Intelligent Sewer Demonstrator (2 studies):** to pilot a new approach to managing the sewer network in a way that could reduce the number of environmental pollution incidents and customer service failures.
- **Event Duration Monitoring:** we plan to invest £4 million for event duration monitors to record and transmit combined sewer overflow spill event levels and durations in order to provide better data and therefore improve the confidence in our modelling predictions.
- **Priority Substances Directive:** to undertake further investigations to better understand risk in low dilution waterbodies to support delivery of enhancement at priority locations in the 2021-27 period.

- **Compliance Assessment Scheme (CAS) - Compliance Study:** to further investigate areas of non-compliance with licence requirements. This study will deliver a gap analysis of all non-sanitary asset provision against Controlled Activities Regulation (CAR) Licence requirements.
- **Sustainable Innovation:** to undertake further work to explore and demonstrate how we might better support sustainable outcomes within the water sector through industry practice and regulation. We will work jointly with SEPA and other stakeholders to identify and scope pilot scale projects to test better ways of doing things for delivery in a future period.
- **Legacy Sludge – Operational Works:** to undertake a study to establish how sludge is managed at all of our operational water treatment works not covered by previous study. This will determine whether improvements to storage facilities or changes in operation are required and to develop the scope of the work required where necessary.

We also plan to undertake a study to understand how we improve the resilience of the Glasgow sludge main following a number of recent failures. The sludge main is an ageing strategic asset and key to linking all of the waste water treatment works in Glasgow to the sludge processing centre at Daldowie.

Intervention development to protect and enhance the environment

In order to develop solutions to the appropriate level of certainty to allow commitment in future investment periods, we have included a number of allowances for detailed intervention development activities:

- We have included an allowance of £4.5 million to develop UID interventions in 2018-21 and will work with SEPA to prioritise the UIDs for delivery in the 2021-27 period.
- North Berwick WwTW has been identified as an emerging need where population growth is forecast to increase the catchment served to above 10,000 population equivalent, triggering the need for additional treatment to comply with the Urban Wastewater Treatment Directive (coastal waters). We have included an allowance of £1.9 million to undertake a strategic study of growth across the wider Edinburgh and East Lothian catchment and will carry out intervention development activities to allow the delivery of the preferred solution in the 2021-27 period.
- We committed in our Delivery Plan 2015 to investigate and monitor sludge storage areas at 10 locations where the environmental risk had not yet been fully confirmed. Studies are on-going at 7 of these sites. We have included an allowance of £1.7 million to be used to progress remediation and to progress intervention development for delivery in the 2021-27 period.
- We plan to invest £0.2 million in the 2018-21 period to undertake intervention development work to support a wider roll out of between 200 to 250 additional event duration monitors at high amenity locations during the 2021-27 period. We have also included a further £2.4 million post March 2021 for intervention development work at a further 2,400 sites, especially at those combined sewer outfalls that we suspect will spill.

- Where we have completed integrated catchment studies in previous investment periods, we have included investment of £4.4 million to develop the interventions required and agreed with stakeholders to address the risk of flooding to support delivery in the 2021-27 period.
- We have included £0.8 million to develop interventions to meet the requirements of the Water Framework Directive, following studies in the 2015-21 period. In addition, we have included £0.4 million to support an environmental cost benefit assessment to improve fish passage opportunities at Caddon Water.
- We recognise that the RBMP3 might include priority substance or nutrient removal objectives impacting our waste water treatment works. We have included £0.4 million to allow Plan and Prepare activities to be undertaken at priority locations to support these objectives.

Internal Sewer Flooding

Our Business Plan 2015-21 identified our customers' priority to reduce the incidence of sewer flooding. We are continuing to implement measures to reduce flooding incidents caused by blockages. More significant investment was identified to address areas where the capacity of our sewer network was causing flooding.

We have reviewed the emerging rate of new properties at risk of internal sewer flooding and unit costs of resolution and continue to assume the same emerging rate of 72 properties per annum as assumed for our Business Plan 2015.

We have increased the planned investment to 2021 from the initial IR18 allowance of £33.1 million to £56.2 million to seek to bring the number of properties at risk of internal flooding below 300 by March 2021. The end position will be dependent on the rate of new properties emerging and the specific costs of individual solutions to reduce the risk of flooding for emerging properties.

We have reviewed and developed alternative outcome / phased solutions approaches to resolve as many of the issues as we can. These include delivering a minimum 1:10 solution to remove the customer's property from the at risk register; resolving the internal flooding whilst leaving the risk of external flooding; innovative solutions such as road re-profiling; engineered boundary walls; and property purchase or long term lease.

We will continue to look for opportunities to reduce the scope and costs further as internal sewer flooding projects mature through our Plan, Prepare, Deliver process. In addition, we propose to explore with the Customer Forum and our stakeholders the extent to which a value for money test should be applied.

External Sewer Flooding

Where appropriate, we are delivering solutions to external flooding where this is linked to internal flooding. We have reallocated the finance from the delivery of standalone external flooding projects to maximise the delivery to customers at the highest risk of internal flooding. We have committed £1 million to deliver 2 external flooding schemes by 2021; at Clarkson and Carstairs.

Intervention development to reduce flooding and pollution from sewers

We have made allowance of £3.8 million to develop solutions to address emerging internal sewer flooding in the post 2021 period and £2.9 million for external flooding. While we are addressing the risk for our customers who have already experienced sewer flooding, we are continuing to improve our approach. Utilising the latest hydraulic and surface flow modelling techniques, we are building a wider understanding of the latent sewer flood risk to all properties.

Environment programme – delivery profile

We set out below our planned delivery profile of environmental outputs for those programme areas that have altered as a result of the IR18 process or Technical Expression changes approved by the Output Monitoring Group.

	Programme area		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Post 2024
1	Number of improvements delivered to meet UWWTD – above ground works	Current	8	20	22	25	25	25	25	26
		Previous ³	7	20	22	25				
2	Number of improvements delivered to meet UWWTD – networks ⁴	Current	17	21	31	42	59			
		Previous	17	21	32	43	60			
3	Number of improvements required to meet UWWTD – Glasgow completion ⁴	Current	42	61	69	85				
		Previous	42	61	69	94				
4	Number of improvements to meet the Water Framework Directive	Current	10	11	12	23	26	30		
		Previous	10	11	12	21				
5	Number of improvements and studies to meet the Revised Bathing Waters Directive	Current	1	2	2	12	12	13		
		Previous	1	2	2	11				
6	Flood Risk Management Act: number of models and integrated catchment studies	Current	22	62	123	222	224	235		
		Previous	22	62	123	216	218			
7	Number of improvements to meet the requirements of the Industrial Emissions Directive	Current	8	10	10	14	17			
		Previous	8	10	10	13	15			
8	Number of improvements to meet the Habitats Directive	Current	1	1	1	2				
		Previous	1	1						
9	Number of improvements required under the Compliance Assessment Scheme	Current		8	45	73				
		Previous		8	20					
10	Number of studies to prepare for future investment periods	Current	1	32	58	132	135	137		
		Previous ³	1	32	58	127				
11	2015-21 outputs planned to complete in the 2015-21 period	Current	9	12	13	15				
		Previous	9	12	13	16				
12	Reservoirs Act: number of improvements to dams	Current	16	24	37	55				
		Previous	17	25	39	57				

Table 5: Environment programme – cumulative outputs profile

³ Profile reflects the Technical Expression changes approved by the Output Monitoring Group during 2017/18.

⁴ Profile reflects only the Technical Expression changes approved by the Output Monitoring Group during 2017/18. No IR18 outputs.

Technical Expression changes approved during the year are set out below and included in the table above:

- Number of improvements delivered to meet UWWTD - above ground works remained at 25 outputs although the profile changed due to the removal of Kirk Yetholm and the addition of Peebles WwTW temporary phosphorus treatment.
- Number of improvements delivered to meet UWWTD – networks decreased by 1 to 59 due to the removal of Victoria Place CSO.
- Number of improvements required to meet UWWTD - Glasgow completion: has decreased to 85 due to the removal of 9 UIDs.
- Number of studies to inform the requirements of the revised Bathing Waters Directive increased by 1 to 11 due to the addition of the study at Portobello West & Fisherrow Sands.
- Number of environmental studies to inform future periods decreased by a net 3 to 127 due to the removal of Galashiels Catchment study; Chapelhill Abstraction study; Fullarton Water (Edgelaw Reservoir); Redside Burn (Edgelaw Reservoir); Manor Water and the addition of Milnbie Cauld; and Lower Kelvingrove Scoping study.
- 2010-15 outputs planned to complete in the 2015-21 period decreased by 1 to 15 due to the removal of Portobello West.
- Reservoirs Act: number of improvements to dams decreased by 2 outputs to 55 as new information highlighted that Forehill Service Reservoir and Loch of Brough Cullivoe are already covered by the Act.

5. Supporting Scotland's economy and communities

We set out in this section the progress we have made in 2017/18 and the changes we are proposing to our 2017 Delivery Plan.

Key highlights of our progress

Supporting economic development

We continue to support new housing and economic development across the length and breadth of Scotland. In the first 3 years of the period we expect to connect over 64,000 new properties to our network against our Delivery Plan forecast of 56,500 for the 2015-18 period. In addition, we have broadened our investment approach to provide strategic capacity for the water and domestic sewerage services for additional business demand as well as new housing.

Over the last year we have continued to seek greater collaborative working with the development community and early engagement in the planning process. We are currently assessing all proposed development sites for treatment and infrastructure capacity to ensure the best strategic, sustainable and cost effective solutions are delivered. We are proactively developing network solutions for development sites with the aim of reducing the response time to developers. Through this early engagement and proactive planning, we are able to understand better developers' priorities and influence when they choose to develop sites, to align with when we are able to support them. We are making good progress in identifying strategic network solutions to give greater certainty to developers.

Asset Vesting

We estimate that there are about 15,000 developer-constructed assets to be vested into Scottish Water. Vesting is the process of transferring ownership and maintenance of an asset from one party to Scottish Water. We launched our Project Vesting Cycle in July 2015 to bring these assets into Scottish Water ownership and to improve our processes in this area. In November 2017 we reached a key milestone having vested 1,000 assets.

We have reviewed our processes and following consultation with customers and key external stakeholders from the development community we launched a new facilitation process in April 2017. This introduced significant improvements to the overall process for vesting of assets including the introduction of compulsory site inspections during construction for complex assets to give us confidence that assets are built to the standards and specification required.

Energy programme

Our energy strategy supports the Scottish Government's ambition of a greener and stronger economy and is a key part of our strategy to reduce the cost of delivering water and waste water services to customers.

Through our core renewable energy generation and the hosting of large scale wind projects on our land, we are enabling renewable energy generation in excess of our total annual electricity consumption. We now generate and host twice our annual electricity consumption.

By the end of December 2017, we have delivered 11.25GWh of renewables and energy efficiency projects, ahead of our Delivery Plan target of 7.9GWh. By 2021 we are aiming to deliver a combined total of at least 17.5GWh of energy efficiency and renewable energy.

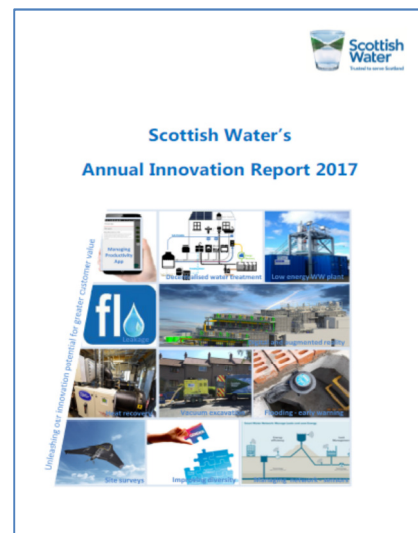
Although significant cuts have been made to renewable support tariffs by the UK Government, which have affected the financial viability of some of our schemes, we will continue to seek opportunities to generate renewable electricity and heat for the benefit of Scotland and communities.

Starter Farms initiatives

We continue to support the Scottish Government's Farming Opportunities for New Entrants programme. From the initial 10 possible sites indicated in our Delivery Plan 2017 update, we will have 4 sites totalling 18 hectares to promote under the initiative in Spring 2018. We are also working to release some further sites where possible later in the year.

Research and Innovation

We continue to recognise that innovation is a key enabler for delivering a sustainable high quality affordable service for our customers and we have a track record of delivering performance improvements across all aspects of our business. As demonstrated in our Annual Innovation Report 2017, we have an active research and development programme and are working to accelerate the adoption of new technologies and to embed innovation as a core capability across the business. We have enhanced our innovation capability and have delivered innovative solutions that will benefit our customers.



Two particular areas of focus have been:

- Exemplary compliance: seeking ways to optimise existing water systems, evaluate new systems, and addressing immediate and future wastewater needs to improve our water and wastewater services; and

- Sustainable rural communities: addressing the challenges of providing cost effective and sustainable services for customers on the public system, considering new technologies and systems that will deliver better outcomes.

Close partnerships with academia, the supply chain and the wider industry (including our regulators) remain vital to ensure we build a reputation for being an organisation that is open to new ideas. This will put us in the best place to meet the challenges placed upon us by our customers, regulators and the broader environment.

Voluntary Registration of Land

Scottish Water owns in the region of 90,000 acres of land. Although registering the catchments we own, which account for the vast majority of the 90,000 acres, is relatively simple there is considerable complexity in registering the very large number of small parcels of land we own for minor pumping stations, kiosks etc. We have recruited a team of solicitors to complete the voluntary registration of land and to liaise on an ongoing basis with Registers of Scotland and other public bodies.

Peat Restoration

In 2017 we completed our first peat restoration project at Sandy Loch, near Lerwick, Shetland. The land around the loch consists of large areas of peat which was in particularly poor condition, resulting in large areas of eroding peat. When peat is in a poor condition it can result in high levels of natural organic matter in our source water, which needs to be removed through the treatment process.

We worked closely with land owners, the Shetland Amenity Trust and Scottish Natural Heritage to provide a solution that would not only deliver improved water quality to the treatment works but provide significant environmental benefits as well. In November 2017 we received local recognition for this work by winning the Shetland Environmental Award.



We are currently assessing future opportunities for peat restoration in several of our drinking water catchments. To achieve this we will be working with local communities and Scottish Natural Heritage.

IR18 Programme: Supporting economic development

The IR18 programme to further support economic development and improve IT security and communication is shown in Table 6.

Investment area	Programme	Number of outputs	Capex 2012/13 prices £m		
			2015-21	Post 2021	Total
Supporting economic development	Strategic Capacity (Part 4)	73,290	67.0	11.9	78.9
	Reasonable Cost Contributions (Part 2&3)	126,000	56.0	-	56.0
	Adoption of developer constructed assets (Part 2&3)	-	1.9	-	1.9
	Relocating Services for Transport Projects	-	9.2	-	9.2
	First Time Provision of water services	-	1.9	3.1	5.0
	Sub total		136.0	15.0	151.0
IT security and communication	Security and Communications	-	20.8	-	20.8
Total			156.8	15.0	171.8

Table 6: IR18 Programme: Supporting economic development

Investment to support new development across Scotland is driven by developer demand. It is a ring-fenced allocation within the investment plan and has been updated as part of the IR18 process, taking into account our current understanding of developer demand. As a result of the increase in developer demand we have increased the IR18 allowance from £121 million in our Delivery Plan 2015 to £136 million; with a commitment of £15 million post 2021.

Strategic Capacity (Part 4)

In our Delivery Plan 2015 we included an investment allocation of £80 million to finance additional Part 4 strategic capacity in waste water for around 58,000 people during 2015 to 2021. We included £49 million of this investment as an IR18 allowance to be reviewed in light of the actual and latest forecast demand.

In view of the increase in growth demand and our commitment with the Scottish Government that we would provide Part 4 strategic capacity to support economic development, we have revised our assumptions to provide strategic capacity to 73,290 people at an estimated cost of £98 million in the 2015-21 period; increasing the IR18 allowance required to £67 million. Our plan also includes a post 2021 commitment of £11.9 million in relation to the growth project for Inverness and Nairn.

A summary of the changes from our Delivery Plan 2015 assumptions include:

- an increase in waste water treatment capacity from 58,000 to 73,290 people;
- the inclusion of Part 4 strategic capacity for drinking water; including Inverness and Nairn WRZ, Arinagour WTW, Ardfarn WTW and early definition work for Turriff WTW; and
- intervention development work to better define scope for delivery in the 2021-27 period.

We are adopting operational solutions for the provision of Part 4 strategic capacity through increased desludging frequencies at Connel and Gullane. We are also adopting more innovative approaches for the provision of network capacity where we have been working with developers to identify and remove existing surface water; examples include Winchburgh, Aberdeenshire and East Lothian. In addition we have developed a Readiness Indicator which gives early visibility to developers of potential capacity constraints.

Reasonable cost contributions (Parts 2&3)

Developers are required to meet the costs of providing additional local capacity to meet the demands from their developments. We reimburse the cost of providing this infrastructure subject to a reasonable cost threshold. In our Delivery Plan 2015 we included £108.3 million for Part 2&3 infrastructure based on 113,000 new connections over the 2015-21 period. Demand for new connections has increased since our Delivery Plan 2015 was prepared.

We have assumed 126,000 connections will be made over the 2015-21 period and an average reasonable cost unit rate of around £830 per connection; this is lower than that assumed in our Delivery Plan 2015 and reflects our experience of payments made in the first 2 years of the regulatory period. On this basis, we have reduced the IR18 allowance required from £59.3 million in our Delivery Plan 2015 to £56.0 million, giving a total requirement of £105 million over the 2015-21 period.

Adoption of developer constructed assets (Part 2 & 3)

Investment for the adoption of developer constructed assets has increased as our understanding of the number of assets, as well as the associated remedial work to bring assets to the standards required by Scottish Water, has improved. On the basis of the demand to adopt developer constructed assets as part of the public network we have included an additional allocation of £1.9 million.

Relocating Services for Transport Projects

Our support for service relocations to support major transport projects is greater than forecast in our 2015 Delivery Plan. The IR18 allowance of £9.2 million reflects the expected requirements

First time provision of water services

We have included £5 million as a ring-fenced allowance for the connection to the public drinking water supply for customers currently served by private supplies, including Bridge of Orchy.

IT Security and communications

To keep our asset and customer data safe and secure, we plan to invest £17.1 million to improve cyber security for emerging threats as required by a new Ministerial Objective issued to Scottish Water in March 2017. Changes in OFCOM regulation are causing withdrawal of existing analogue leased line services. We plan to invest £3.7 million on information networks as current services are being withdrawn.

Supporting economic development IR18 programme – delivery profile

Below we set out our planned delivery profile of outputs for those programme areas that have altered as a result of changes through the IR18 process or approved by the Output Monitoring Group.

	Programme area		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Post 2024
1	Number of new homes and businesses connected (Part 2&3)	Current	79,700	102,900	126,000				
		Previous	56,500	56,500	56,500				
2	Delivery of waste water capacity to customers (Part 4)	Current	31,103	62,016	73,290				
		Previous			58,000				
3	Delivery of drinking water capacity to customers (Part 4)	Current						33,000	
		Previous							

Table 7: Supporting economic development programme – cumulative outputs profile

6. Financing our services

The main changes reflected in this update to our Delivery Plan are:

- inclusion of the audited actual results for 2016/17;
- updated forecasts for 2017/18 and 2018 to 2021;
- revised delivery profile and costs for the investment programme; and
- customer charges to be applied in 2018/19.

The key assumptions underpinning our financial projections are that:

- CPI inflation applied to prices for 2015/16 is 1.3%; -0.1% for 2016/17; 0.9% for 2017/18; 3.0% for 2018/19; 2.5% for 2019/20; and 2.2% for 2020/21;
- RPI inflation applied to costs is 1.1% for 2015/16; with 2.14% for 2016/17; 4.0% for 2017/18; 3.5% for 2018/19; 3.2% for 2019/20; and 3.0% for 2020/21;
- Our domestic customer base will grow by 0.74% p.a. on average;
- The overall charge cap for household customers remains as originally planned as 1.8% less than CPI over the 2015 to 2021 period. However, during 2018 we will explore the merits of smoothing charge levels into the next regulatory period in line with the Water Industry Commission's initial decision papers for the Strategic Review of Charges 2021-27;
- Wholesale charges for 2018/19, 2019/20 and 2020/21 will increase by 2% p.a. The 2% annual tariff increase is part of the tapered implementation for the move to live rateable values (RVs) during these 3 years. Revenue will be reviewed at the end of the 2015-21 period to reflect the actual impact of RV appeals by customers and actual CPI inflation in order to confirm any under/over recovery from customers. Although the new charging of vacant properties was effective from 1 April 2017, there is currently uncertainty surrounding the financial impact of how this scheme may be amended. Therefore, the wholesale revenue forecast for 2018/19 onwards reflects this uncertainty; and
- The Delivery Plan reflects an estimated impact of £3 million from the restriction in use of tax losses as per the Finance Act 2017.

Table 8 sets out our forecasts for key financial metrics. Our financial projections are presented at forecast outturn prices.

Financial projections (IFRS) Outturn prices - £m	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Turnover	1,121	1,149	1,182	1,196	1,221	1,233
Profit before interest and tax	275	270	281	249	249	239
Net interest payable (inc PFI)	172	170	172	174	177	181
Profit before tax	103	100	109	75	72	58
Tax	-21	-3	21	15	16	11
Retained profit (IFRS)	124	103	88	60	56	47
Capital investment	462	627	640	700	769	784
Net new borrowing	-	-	120	210	215	215
Closing debt	3,424	3,424	3,544	3,754	3,969	4,184

Table 8: Key financial projections

Financing

Revenue forecast

Table 9 sets out our forecast revenue based on the assumptions set out above.

Revenue Forecast Outturn prices - £m	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21	Total
Household revenue	821	840	860	878	899	906	5,204
Wholesale revenue	292	298	312	308	312	316	1,838
Other revenue	8	11	10	10	10	11	60
Total revenue	1,121	1,149	1,182	1,196	1,221	1,233	7,102

Table 9: Revenue 2015 to 2021

Borrowing requirements

We are forecasting £760 million of net new borrowing from the Scottish Government over the 4 years from 2018 to 2021. This, together with the price limits set out in the 2014 Final Determination, the outperformance we have delivered to date and are forecast to deliver over the remainder of the regulatory period, will allow us to deliver this plan.

Forecast costs of delivering services 2015 to 2021

Table 10 summarises the forecast financing and costs of delivering this plan over the 2015-21 period, excluding IFRS adjustments.

Financing and Expenditure £m	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21	Total
Customer revenue	1,121	1,149	1,182	1,196	1,221	1,233	7,102
Net new borrowing	-	-	120	210	215	215	760
Infrastructure Charges Income	12	14	16	17	18	18	95
Grants and contributions	16	10	14	8	6	7	61
Disposals	16	7	8	1	1	1	34
Use of cash balances	-23	134	-12	6	69	96	270
Total financing	1,142	1,314	1,328	1,438	1,530	1,570	8,322
Capital investment	462	627	640	700	769	784	3,982
Operating costs	368	381	395	416	426	440	2,426
PFI contracts	154	155	160	170	176	181	996
Interest	153	148	151	154	158	163	927
Tax	-	-	-	2	1	-	3
Working capital	5	3	-18	-4	0	2	-12
Expenditure for trading purposes	1,142	1,314	1,328	1,438	1,530	1,570	8,322

Table 10: Financing and expenditure 2015 to 2021

Our assessment, in outturn prices, of the overall cost of delivering our plan is £8,322 million during the 2015 to 2021 period. We will finance this with revenue from customer charges of £7,102 million, net new government borrowing of £760 million, utilising £270 million of opening cash balances and £190 million from infrastructure charges, customer contributions and asset disposals.

Capital investment

Our forecast investment profile for the 2015 to 2021 period is shown in Table 11.

Capital Expenditure profile (£m)	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21	Total
Sustaining existing high service for customers	253	278	280	281	293	295	1,680
Enhancement 2015-21	102	151	183	209	217	221	1,083
Sub total (2012/13 prices)	355	429	463	490	510	516	2,763
Nominal inflator (RPI)	1.060	1.083	1.126	1.166	1.203	1.239	
Sub total (nominal prices)	376	464	521	571	613	639	3,184
Re-phasing of investment	-41	-24	9	19	14	14	-9
SR10 completion costs	75	123	77	65	18	3	361
PFI completion	4	1	1	-	-	-	6
Infrastructure charges investment	2	15	11	6	6	8	48
Exceptional capital maintenance	30	38	8	-	15	17	108
Additional IR18 investment	0	0	0	33	33	34	100
Additional investment financed from customer contributions	16	10	13	8	7	7	61
Sub total (nominal prices)	462	627	640	702	706	722	3,859
Additional capital maintenance risk	-	-	-	-	50	50	100
Demand risk from growth and ring-fenced projects	-	-	-	-	15	15	30
Transfer to operating costs	-	-	-	-2	-2	-3	-7
Net investment profile	462	627	640	700	769	784	3,982

Table 11: Forecast investment profile 2015 to 2021

We expect to deliver annual capital investment within +/- 10% of the overall annual profile of forecast investment set out above⁵.

Our forecast of the size of the investment programme is higher than in our 2017 Delivery Plan as a result of increased investment financed from infrastructure charges and customer contributions, an improved understanding of the costs of the exceptional capital maintenance programme as these projects have matured and risk allowances to cover demand risk on areas such as growth.

Operating costs

Our forecast operating costs for the 2015-21 period are set out in Table 12.

Operating costs - £m	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Forecast total operating costs per 2015 Delivery Plan (2012/13 prices)	354	355	354	352	350	350
Revised nominal inflator (RPI)	1.060	1.083	1.126	1.166	1.203	1.239
Forecast Total Operating Costs per 2015 Delivery Plan (outturn prices)	375	385	400	411	421	434
Adjusted for:						
(i) Reduction in actual & forecast costs	-4	-1	-2	-	-	-
(ii) Transfer from capital to operating costs (see Table 11)	-	-	-	2	2	3
(iii) Lower local authority rates charges - impact of 2010 and 2017 revaluations	-3	-3	-5	-6	-6	-6
(iv) Additional legislative and pension costs (Table 13)	-	-	2	9	8	9
Forecast Total Operating Costs (Outturn Prices)	368	381	395	416	426	440

Table 12: Annual operating costs (non IFRS)

Around £7 million of new costs associated with cyber security and IT costs for the transfer of system operations to cloud based environments are included but have been offset by reductions in capital costs as shown in Table 11. It is important to note that there are several costs we incur that are not fully in our control. While indexing of costs by RPI will protect us from most cost changes, there are risks of one-off changes to our costs that we may not be able to manage within this plan. These risks were set out in our 2015 Delivery Plan.

Table 13 details the additional costs associated with legislative changes and pension increases.

Operating costs (£m)	2017-18	2018-19	2019-20	2020-21
Apprenticeship Levy (i)	0.7	0.7	0.7	0.8
Land Registration (ii)	0.5	0.5	0.5	0.6
Holiday Pay (iii)	0.5	0.5	0.5	0.6
Water Quality Regulation charges (iv)	0.4	0.4	0.4	0.5
General Data Protection Regulation (v)	-	0.6	0.3	0.3
Increased pension contributions (vi)	-	6.3	6.3	6.3
Additional legislative and pension costs	2.1	9.0	8.7	9.1

Table 13: Additional legislative and pension costs

⁵ Our forecast costs of the investment programme continues to exclude the post 2021 investment completion referenced in our 2015 Delivery Plan.

Notes:

- (i) Apprenticeship Levy costs were introduced by HMRC from 1 April 2017, as announced in the 2015 Budget, on all employers with annual pay bills over £3 million.
- (ii) To meet Scottish Government's target for voluntary registration of land.
- (iii) Due to the European Working Time Directive, recent case law means all employers need to 'top up' eligible employee's holiday pay to include other payments that are an appropriately permanent feature of that employee's normal remuneration.
- (iv) Scottish Ministers, under the Scottish Water (Payment) (Scotland) Directions 2017, have directed Scottish Water to fund the exercise of functions by the DWQR in relation to Scottish Water.
- (v) New obligations with regard to data protection have arisen since the Delivery Plan 2015 was agreed. These legislative changes place more onerous duties on organisations which collect and process personal data.
- (vi) Following the March 2017 triennial valuation of the Scottish Local Government Pension Funds, annual pension contributions have to increase by £6.3 million to maintain the funding positions of the Strathclyde and North East Pension Funds and improve the funding position of the Lothian Pension Fund.

Interest payable

Closing debt as of 31 March 2017 was £3,424 million. The forecast weighted average interest rate of the outstanding long-term debt as at 31 March 2018 is 4.38%, a reduction from 4.86% at March 2015. For new borrowing the assumed average interest rates are 3% in 2018/19 and 3.5% in the 2019 to 2021 period. Interest charges also include interest payable to Licensed Providers at 4% on prepaid charges.

Financial Strength

We exited the 2010-15 period with £346 million of cash balances. The planned cash utilisation profile during the 2015 to 2021 period, assuming borrowing of £760 million over the 2017 to 2021 period, is summarised in Table 14.

£m, actual / forecast outturn	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Opening cash balance	346	369	235	247	241	172
Closing cash balance	369	235	247	241	172	76
Cash utilised	-23	134	-12	6	69	96

Table 14: Cash balance profile

As shown in Table 14, we are forecasting a cash balance in 2021 of £76 million, which equates to around 2 weeks cashflow.

Financial Projections

Profit and Loss Account (IFRS)

£m, actual / forecast outturn	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Turnover	1,121	1,149	1,182	1,196	1,221	1,233
Operating expenditure	368	381	395	416	426	440
PFI operating costs	113	114	119	129	135	140
Depreciation charges - non infrastructure assets	226	238	233	240	242	244
Depreciation charges - infrastructure assets	17	16	17	18	17	18
Depreciation charges - PFI assets	19	19	20	19	19	19
Infrastructure capital maintenance charge	119	118	125	125	134	134
Amortisation of deferred income	-1	-1	-1	-1	-1	-1
Operating Profit	260	264	274	249	249	239
Profit or loss on disposal of fixed assets	15	6	7	-	-	-
Net interest receivable less payable	-149	-148	-151	-154	-158	-163
Interest on PFI and pension scheme net liabilities	-23	-22	-21	-20	-19	-18
Profit Before Taxation	103	100	109	75	72	58
Taxation - current	-	3	-2	-1	-	-
Taxation - deferred	21	-	-19	-14	-16	-11
Retained Profit	124	103	88	60	56	47

Statement of Comprehensive Income

£m, actual / forecast outturn	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Retained profit for the year	124	103	88	60	56	47
IAS19 adjustments:						
- Actuarial gains/(losses), net of tax	83	-90	-	-	-	-
- Service & finance costs, net of tax	-17	-13	-23	-	-	-
Total comprehensive income for the year	190	0	65	60	56	47

Table 15: Profit & loss account and Statement of Comprehensive Income

The Statement of Comprehensive Income includes all of the International Financial Reporting Standard (IFRS) adjustments resulting from International Accounting Standard 19 'Employee Benefits'. This layout is consistent with the layout in the Regulatory Accounts (M Tables) as agreed with the Water Industry Commission for Scotland in 2016.

Balance Sheet (IFRS)

£m, actual / forecast outturn	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Fixed Assets						
Tangible assets	5,168	5,396	5,634	5,929	6,285	6,650
PFI assets	364	345	328	309	289	270
Grants and contributions	-14	-13	-12	-11	-10	-9
Other Operating Assets and liabilities						
Working capital	-306	-306	-335	-344	-349	-350
Cash	369	235	247	241	172	76
Net operating assets	5,581	5,657	5,862	6,124	6,387	6,637
Non-operating assets and liabilities						
Borrowings (excluding Government loans)	-1	-1	-1	-1	-	-
Investment in subsidiaries	35	35	35	35	35	35
Total non-operating assets and liabilities	34	34	34	34	35	35
Provisions for liabilities & charges						
Deferred tax provision	-371	-371	-393	-406	-421	-432
Post-employment liabilities	-92	-192	-215	-215	-215	-215
Other provisions	-19	-15	-10	-10	-10	-10
Total provisions	-482	-578	-618	-631	-646	-657
Net assets employed	5,133	5,113	5,278	5,527	5,776	6,015
Capital and reserves						
Government Loans	3,423	3,423	3,543	3,753	3,969	4,184
PFI debt/lease	364	344	324	303	280	257
Retained earnings	1,213	1,213	1,278	1,338	1,394	1,441
Other reserves	133	133	133	133	133	133
Total capital & reserves	5,133	5,113	5,278	5,527	5,776	6,015

Table 16: Balance Sheet

Cashflow statement

£m, actual / forecast outturn	2015-16 (actual)	2016-17 (actual)	2017-18	2018-19	2019-20	2020-21
Turnover	1,121	1,149	1,182	1,196	1,221	1,233
Operating expenditure	-368	-381	-395	-416	-426	-440
PFI operating costs	-113	-114	-119	-129	-135	-140
Capital maintenance expenditure	-261	-301	-315	-327	-353	-366
Amortisation of deferred income	1	1	1	1	1	1
Operating profit for regulatory purposes	380	354	354	325	308	288
Reconciliation of regulatory operating profit to net cash flow						
Operating profit for regulatory purposes	380	354	354	325	308	288
Movement in working capital	8	22	12	-7	1	-3
Capital maintenance expenditure	261	301	315	327	353	366
Amortisation of deferred income	-1	-1	-1	-1	-1	-1
Net cash flow from operating activities	648	676	680	644	661	650
Taxation						
Taxation paid	-	-	-	-2	-	-
Returns on investments & servicing of finance						
Interest received	1	1	1	1	1	-
Interest paid	-154	-149	-152	-155	-159	-163
PFI interest payable	-23	-22	-21	-20	-19	-18
PFI finance lease repayments	-18	-20	-20	-21	-23	-23
Net cash flow from returns on investment & servicing of finance	-194	-190	-192	-195	-200	-204
Net cash flow before investment and maintenance charges	454	486	488	447	460	446
Capital expenditure and financial investment						
Capital enhancement expenditure	-198	-340	-305	-354	-410	-410
Capital maintenance expenditure	-261	-301	-315	-327	-353	-366
Infrastructure Charges Income	12	14	16	17	18	18
Disposal of fixed assets	16	7	8	1	1	1
Net cash outflow from investing activities	-431	-620	-596	-663	-744	-757
Net cash flow before financing	23	-134	-108	-216	-284	-311
Financing						
New Government loans	324	343	243	333	340	350
Government loans repayments	-324	-343	-123	-123	-125	-135
Net cash inflow from financing	-	-	120	210	215	215
Decrease (increase) in cash and cash equivalents	-23	134	-12	6	69	96
Net cash flow	-23	134	108	216	284	311

Table 17: Cashflow statement

Risk

In 2015 we identified the key risks to the Delivery Plan, which included the associated potential financial impacts for the 2015-2021 period. This analysis has been subsequently reviewed in 2017, alongside consideration of risks to viability of the business as reported in our 2016/2017 Annual Report & Accounts.

Key changes to our risk profile include:

- Critical Assets:** Knowledge and understanding of water and waste water assets has continued to mature since the production of the 2015 Delivery Plan. During 2016, water resilience assessments were completed on 17 of the largest water systems which provide water to around 3.4m customers. These assessments involved the detailed consideration of low likelihood/high consequence risks, and a walk-over assessment of circa 600km of associated trunk mains. Development of the risk mitigation strategy continues, with proposals for the initial phases being incorporated in the business planning for the 2021-27 period. Assessments for the remaining systems serving greater than 15,000 customers are planned for completion by March 2021.
- Cyber Security:** The information technology (IT) landscape has evolved significantly in recent years. A number of global cyber-attacks have occurred across 2017, some with far reaching ramifications for the businesses affected, and has in turn rapidly changed and informed the wider risk environment. We undertake continual review of IT processes, procedures, organisational culture and behaviours. The additional allowance of £17 million will help to further improve our cyber security, in accordance with the latest guidance from the National Cyber Security Centre and the Scottish Government's cyber resilience requirements. While this investment will significantly reduce Scottish Water's risk exposure, it will not eliminate the risk given the external and continually evolving nature of this risk.
- PFI:** Financial and operational risk should a PFI plant or operations fail to deliver in accordance with the contract terms. This remains a risk as PFI contracts enter their final stages of the contract term. Ministers recognise that 3 of the 9 PFI contracts mature in the 2021-27 period and have asked us to consider the options and costs for the future operation and funding of these assets as part of the Strategic Review of Charges 2021-27.
- Vacant Properties:** In April 2017 the Scottish Government made the decision to remove water charge exemption from non-domestic vacant properties. Over 2017/18 the water retail market has sought to trace and bill property owners, with Licensed Providers experiencing challenges in key areas. There is a risk that the revenue anticipated from vacant charging will not be fully recoverable.

- **Live Rateable Values:** In April 2018 non-household charges will transition to live rateable values. While there will be no direct wholesale revenue impact to Scottish Water, the implementation, communication and transition carries significant reputational risk for the industry.
- **General Data Protection Regulations (GDPR):** New obligations with regard to data protection have arisen since the Delivery Plan 2015 was agreed. These legislative changes place more onerous duties on organisations which collect and process personal data. Failures may result in significant fines and could impact the reputation and level of trust in Scottish Water should these obligations fail to be effectively implemented.
- **UK Departure from the European Union (Brexit):** The implications of Brexit are continuing to be considered across Scotland and the UK, with the ongoing identification and analysis of risk and opportunities for Scottish Water. We continue to consult with the Scottish Government and work with relevant industry groups to ascertain the potential impacts of Brexit. In the short to medium term, the impact on Scottish Water is primarily financial; arising from ongoing economic volatility due to uncertainty regarding the impact of exit from the European Union. Further clarity on the risks and opportunities are likely to emerge now that agreement has been reached on the terms of the UK exit, and as trade negotiations mature during 2018.

7. Looking forward

We are working with customers, stakeholders and regulators to prepare for the future through the Strategic Review of Charges 2021.

Building on the success of the Strategic Review of Charges 2015, we have entered into a tri-partite agreement with the Water Industry Commission and Citizens Advice Scotland to establish a Customer Forum to participate in the Strategic Review of Charges 2021. We are working with the Customer Forum on understanding better the priorities and preferences of our customers and in securing the most appropriate outcome for customers by seeking to establish an agreed Business Plan for the 2021-27 period.



The Water Industry Commission for Scotland has published its methodology for the Strategic Review of Charges (2021), setting out how it intends to conduct the strategic review of charges, and its initial decision papers.

In partnership with Citizens Advice Scotland and the Customer Forum, we are undertaking a programme of high quality, behavioural, quantitative and qualitative research to establish customers' priorities for service level improvement and expectations in terms of the level of charges.

As part of the Strategic Review of Charges 2021, we have published for consultation our draft Strategic Projections. Our Strategic Projections have been informed by our horizon scanning and scenario planning work, as well as extensive research with our customers, discussions with the Customer Forum and our stakeholders.



8. Scottish Water Group Plan Update & Supporting the Hydro Nation

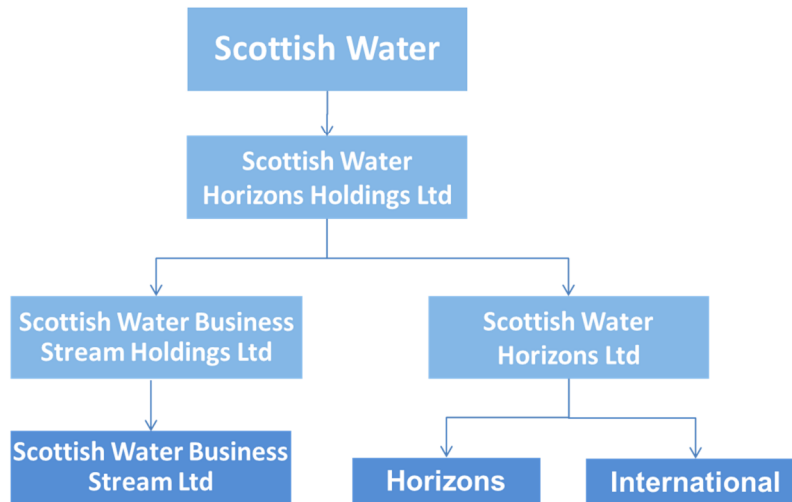
Business model

Scottish Water operates a business model comprising 4 main trading areas:

1. Scottish Water, which supplies households and wholesale Licensed Providers with regulated water and waste water services;
2. Scottish Water Business Stream Ltd (Business Stream), our licensed retail subsidiary which supplies water and waste water services to business customers;
3. Scottish Water Horizons (Horizons) which provides non-regulated services to customers; and
4. Scottish Water International (International) which provides non-regulated services to clients outside Scotland.

The Scottish Water group structure is summarised in Figure 2:

Figure 2 – Scottish Water group structure from April 2018



In accordance with the Governance Code (agreed with the Water Industry Commission for Scotland) Business Stream, which provides retail services to non-domestic customers, is operated and managed independently of Scottish Water. Horizons and International maintain separate trading identities while operating as part of the same legal entity, Scottish Water Horizons Limited.

We have set out our plan for Scottish Water’s core water and waste water services in Sections 2 to 7 above, and below we set out how we support the Hydro Nation agenda, including through Scottish Water Horizons and Scottish Water International.

Supporting the Hydro Nation Agenda

Scottish Water maintains its commitment to support the Hydro Nation agenda of developing the value of Scotland's water resources. The main pillars of our work in this area remain renewables, international activities, supporting innovation and developing the next generation of water experts.

Renewable energy

Since 2013 we have more than doubled our installed, renewable capacity to over 54GWh and diversified our portfolio to include hydro, wind, biomass, photovoltaic and combined heat and power (CHP).

We currently have 37 hydro turbines on 25 sites in operation; 18 small-scale wind schemes; 32 photovoltaic solar schemes; 3 biomass boilers and 3 combined heat and power schemes. These are helping to offset the amount of electricity we need from the grid, with more than 70 of our sites now either partially or fully self-sufficient. In February 2018, Afton wind farm was connected to the grid and started exporting power. Through these activities, and by hosting renewable energy on our catchments, we are now generating and hosting more than twice the electricity than we consume annually.

In 2017/18, Horizons completed its largest solar PV (photo voltaic) installation to date, featuring a massive 4,800 panels providing electricity to Spey Boreholes with an investment of £1.2 million.



Following the successful commissioning of the UK's first sewage heat recovery project at Galashiels, Horizons is partnering with SHARC Energy Systems, to accelerate the deployment of the technology across Scotland. The first of which is the Bandwidth project comprising of two separate installations at Glasgow and Campbeltown. The projects have been awarded grant funding from the Scottish Government's Low Carbon Infrastructure Transition Programme.

In addition to this, Horizons is also seeking to deliver an energy centre for a low carbon energy solution in collaboration with Stirling Council. This project will provide power to the waste water treatment works at Stirling and deliver heat into a new district heating network being developed by Stirling Council.

Borders College (Galashiels) Heat recovery system utilising SHARC technology and Scottish Water's sewer achieved best newcomer award at the recent Green Gown awards held in Manchester and best innovation award at the Scottish Green Energy Awards held in Edinburgh.

International Activities

We will continue to support international activity in three ways: through knowledge exchange with European and international partners to promote the Scottish water industry model; through our international consulting business; and through our support for international WaterAid.

Scottish Water International

Scottish Water International's purpose is to develop business opportunities abroad utilising the skills and expertise in Scottish Water to offer specialist consultancy services to utilities, governments and other international clients. The principal product is utility transformation, building on Scottish Water's own journey to improve efficiency and service to customers.

Since its inception, Scottish Water International has built a network of partners, contacts and clients. Over the last year, Scottish Water International has been actively engaged in Qatar, Australia, Ireland, Europe and New Zealand, and has ambitions to promote its expertise in the transformation of water services further afield.

Under the Scottish Government's Climate Justice Fund, Scottish Water International has secured a grant funding agreement from the University of Strathclyde to provide a Project Manager to assess and develop a strategic plan to support the Malawi Government to 'reach United Nations Sustainable Development Goal 6 by 2030'. The Sustainable Development Goal 6 target is to ensure availability and sustainable management of water and sanitation for all.

In the 2018 to 2021 period, Scottish Water International will continue to work alongside larger partners to build on its successes to date and focus on expanding its reach in a competitive global market

International Water Aid

In addition to sharing our water industry experience and knowledge through Scottish Water International, we will continue to support WaterAid, the chosen charity of the water industry in the UK. Our employees are on target to raise £200,000 by March 2018 to support WaterAid's work in Zambia, Malawi and Rwanda. This has included World Water and Toilet Day events, as well as individual fundraising events such as charity cycles.

Supporting innovation in the water sector

The Development Centres at Bo'ness and Gorthleck, created in partnership with Scottish Enterprise, are fully operational and visibly supporting the Scottish Government's Hydro Nation Agenda.

Collaboration

A consortium has been formed to create a North West Europe wide collaboration of water industry development centres. The role of Scottish Water Horizons in this partnership is lead partner. The aims of the partners are to exchange knowledge, accelerate innovation for SMEs through providing test facilities and innovation support packages, attract a wider audience of SMEs to the test facilities and support the Hydro Nation agenda.

Together with Stirling Council, Horizons has been awarded Innovative Local Energy Solutions (ILES) funding. The grant is to carry out work to assess the technical and financial feasibility of capturing heat at its point of generation, e.g. a heat pump at a wastewater treatment works, and transport it to an off gas grid location using phase change materials. If the project is successful, an investment grade proposal will be developed by November 2018. We set out our approach and progress in our annual innovation report.

Developing the next generation of water experts

Developing sustainable capability for the future remains a key strategy for Scottish Water. We recognise that the need to attract and develop the next generation of people for the water industry in Scotland is both socially responsible and a business imperative. Our activities include:

- Being a key partner in the Hydro Nation Scholars programme through our involvement in the advisory steering panel. We act as mentors/ sponsors to several of the scholars.
- Our Future Leaders Programme, a 2 year accelerated development programme for selected individuals with long-term senior leadership potential is ensuring a pipeline of emerging leadership talent.
- Actively supporting modern apprenticeship and graduate programmes by working with our partners and suppliers to create opportunities for young people to learn new skills. We now have 139 apprentices in development within Scottish Water and 56 graduates. Each year we typically support 10 STEM interns to complete development programmes with us and we provide work experience and mentoring for between 10 and 15 Career Ready students from high school each year. We have also facilitated the development of over 200 apprentices and 100 graduates within our partnerships and supply chain.
- Creating a Knowledge Centre of Engineering Excellence reflecting the recommendations of the Glasgow Youth Employment Action Group. The Centre of Excellence provides in-depth sector-based learning to complement subject learning for pupils, and Continual Professional Development (CPD) for teachers.

For more information on Scottish Water and our services contact our Customer Helpline on **0800 0778778*** or visit **www.scottishwater.co.uk**. Alternative formats of this document can be made available free of charge.

For information on Braille, large print, audio and a variety of languages, please call our Customer Helpline.

*We record all calls for quality and training purposes.

